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PRIRODOSLOVNO-MATEMATIČKI FAKULTE, BIOLOŠKI ODSJEK

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FAUNISTIČKE, TAKSONOMSKE I BIOGEOGRAFSKE ZNAČAJKE NADPORODICE NOCTUOIDEA (INSECTA, LEPIDOPTERA) IN SJEVERO-ISTOČNOM KAZAKHSTAN (PAVLODARSKA REGIJA)

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Zagreb, 2018

This doctoral thesis was made in S. Toraighyrov Pavlodar State University and Department of Biology, Faculty of Science, University of Zagreb, under the leadership of prof. Mladen Kučinić, within the University's postgraduate doctoral study of Biology at the Department of Biology, Faculty of Sciences, University of Zagreb.

University of Zagreb
Faculty of Science
Department of Biology

Doctoral thesis

FAUNISTIC, TAXONOMIC AND BIOGEOGRAPHICAL FEATURES OF SUPERFAMILY NOCTUOIDEA (INSECTA, LEPIDOPTERA) IN NORTH-EASTERN KAZAKHSTAN (PAVLODAR REGION)

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This doctoral thesis is focused on 3 Noctuoidea families of Macroherocera to establish their faunistic, taxonomic and biogeographical features. 485 species were found in the Pavlodar region (North-East Kazakhstan). The Noctuoidea fauna of the Pavlodar region has a similar quantitative-species distribution in the main geomorphological landscapes of the region. In the West Siberian Plain 394 species (81.23%), and in Kazakh Upland 366 species (75.46%) were found. In the bionomic structure of the Noctuoidea fauna of the Pavlodar region, most species are mesophilous (159 species, 32.78%) and xerophilous (125 species, 25.77%). Comparison of the taxonomic composition of the fauna of Noctuoidea in Croatia and the Pavlodar region showed that the greatest similarity between the faunas of the two territories at the taxonomic level is observed among 23.57% species.

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Doktorski rad

FAUNISTIČKE, TAKSONOMSKE I BIOGEOGRAFSKE ZNAČAJKE NADPORODICE NOCTUOIDEA (INSECTA, LEPIDOPTERA) U SJEVEROISTOČNOM KAZAKHSTANU (PAVLODARSKA REGIJA)

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Ovaj doktorski rad je usmjeren na obradu 3 porodice iz nadporodice Noctuoidea, skupine Macroherocera, u cilju utvrđenja faunističkih, taksonomskih i biogeografskih značajki. U pavlodarskoj regiji (sjeveroistočni Kazahstan) utvrđeno je 485 vrsta. Fauna Noctuoidea pavlodarske regije ima sličnu rasprostranjenost u različitim geomorfološkim područjima regije. Na zapadnoj sibirskoj ravnici zabilježeno je 394 vrste (81,23%), a u kazahstanskom visočju 366 vrsta (75,46%). U fauni Noctuoidea pavlodarskog područja, većina vrsta je mezofilna (159 vrsta, 32,78%) i kserofilna (125 vrsta, 25,77%). Usporedba sastava faune Noctuoidea u Hrvatskoj i Pavlodarskoj regiji pokazala je da sličnost faune od 23.57% između tih dvaju područja.

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1. INTRODUCTION

1.1. General information

The nature of Northeastern Kazakhstan is heterogeneous. It is a characteristic steppe zone consisting of moderately arid, arid and deserted steppes. A variety of landscape-biotopic groupings, for which biota, including Lepidopteran insects, is characteristic.

Noctuoidea is the largest lepidopteran group of insects in the world. The breadth of morphological and ecological features allowed this group to become widely spread in the world on all continents except Antarctica. Representatives of this superfamily are one of the main and most important elements of most ecosystems.

For the first time in history, extensive studies of Macroheterocera were carried out in the Pavlodar region of Kazakhstan, among which the main object is Noctuoidea, the largest superfamily of lepidopteran insects in the world.

In this paper, I only consider a complex of families of quadrifid species, such as Erebidae, Nolidae and Noctuidae. The family of Notodontidae from the group of trifine lepidopterans was not included in this work, since the results obtained are not yet complete, Notodontidae need additional studies. I assume that the forest-steppe zone of the West Siberian Plain landscapes in the northern part of the Pavlodar region in the early spring and late autumnal phenological period may contain, with a high degree of probability, still unregistered species for fauna. It is also worth mentioning that many of the known genera from this family are currently subject to a large-scale revision, for example, the genera *Cerura* and *Furcula*. Based on the above, I do not see the possibility of including this family in our study at this stage and leave it for the near future. Thus, our study is entirely devoted to the quadrifid group of lepidopteran insects. Such families as Euteliidae from the group of quadrifid species are absent in the fauna of Kazakhstan.

1.2. Morphological characteristics of the superfamily Noctuoidea

Most representatives of the Noctuoidea superfamily are medium-sized butterflies from the family Noctuidae whose wingspan is 25–45 mm, but the largest species of our fauna include species from the Erebidae family: *Lymantria dispar* ♂ – 45–50 mm., ♀ – 80–95 mm.; *Catocala deducta* and *C. fraxini* 80–110 mm. The smallest species of the family are among Nolidae: *Nola*

aerugula, *Nola crambiformis* – 8–10 mm. and Erebidae: *Eublemma pallidula* – 5 mm, *Thumatha senex* – 6–8 mm, *Clethrogyna dubia* – 10 mm.

One of the largest species of the Lepidoptera group in the world, *Thysania agrippina* (Cramer, 1776) with a wingspan of up to 250–300 mm is distributed in South America and belongs to the superfamily Noctuoidea (Fibiger, 1990; Kononenko, 2003).

The head is rounded, the forehead of most species smooth, relatively convex, characteristic for some species and genera is the presence of rounded frontal protrusions – pointed outgrowths.

Antennae are mostly simple, filiform, less serrate, combed or pubescent, in males, as a rule, the structure is more complex.

The eyes of most species are rounded, large, bare; in some subfamilies (Pantheinae, Hadeninae) and in some species of Noctuinae (some *Xestia*), the surface of the eyes is covered with short dense hairs. Sometimes the eyes are bordered by long cilia (Cuculliinae, Oncocnemidinae). Hetozema is absent. Proboscis usually developed, spirally twisted, but in some genera it is partially or completely reduced.

The imago of species from the subfamilies Lymantriinae and Arctiinae are aphagous, the proboscis is underdeveloped or completely reduced. The labial palpi are well developed.

Lower-lobe palps, mostly short, pressed, in some subfamilies (Herminiinae, Hypeninae, part of Catocalinae) elongated, extended, elongated or sickle-shaped. The head, chest and abdomen are covered with dense hairs and scales; on characteristic segments of the thorax and abdomen, crestlets of scales and hairs are often developed; in many species of Lymantriinae, long bristles are formed at the end of the abdomen in the form of a brush. Species whose imago occur during the cold periods of the season or inhabiting high mountain habitats, as a rule, have dense hairy integuments formed by hair-like scales. The tympanal organs are located laterally on the posterior part of the midthorax. Their structure is often used to classify higher taxa of Noctuoidea (Ronkay & Ronkay, 1994, 1995; Kononenko, 2003; Goater et al., 2003).

The shape of the wings is often triangular or elongated-triangular, less often rounded-triangular, adapted to a fast and long flight. The venation of the wings is generally monotonous.

Females of the genus *Clethrogyna* are wingless. Females of the genus *Thylacigyna* have strongly reduced wings, while males of these species have developed wings and are active during the day, which is not typical for the family as a whole.

The color of the wings and body is often dark, grayish, brownish, dark-brown or yellowish tones. The hind wings are usually lighter than the forewings, darker along the outer margin (Fibiger, 1990, 1993; Kononenko, 2003).

On the frewings of most Noctuoidea, a characteristic noctuoid pattern is developed, consisting of a system of fields, bandages, spots and lines. Features of wing color and pattern are used for the species diagnostics. Hind wings can have a discal spot lying on the transverse vein, and a terminal border along the outer margin. In individual genera of the subfamily Catocalinae and some other subfamilies, the hind wings can be brightly colored, often yellow, or red, white, blue, with a well expressed dark terminal margin and often with a median band or discal spot. Many taxa of Noctuoidea are characterized by a deviation from the general scheme of the pattern, caused by the reduction of individual elements, bandages and spots or, on the contrary, by their amplification (Goater et al., 2003; Kononenko, 2003).

Some representatives of the subfamilies Lymantriinae and Arctiinae have a pronounced sexual dimorphism: males differ sharply from females in smaller sizes, coloration and pattern of wings.

In males of some species from the Noctuidae family, androconial apparatuses are developed from the hair brushes and "pockets" or special scales associated with odoriferous glands. This organ is most characteristic for the subfamilies Hadeninae, Cuculiinae and some Noctuinae (tribes Apameini, Xylenini). In some species of the Erebidae family, the androconid apparatus can be found on the legs of males (the subfamily Herminiinae) or on the outer surface of the valva (Kononenko, 2003; Sviridov, 2003).

The structure of the genital apparatus is species-specific. This practically excludes the possibility of hybridization, as the sculptures of chitinous armatures of the male and female genitalia approach each other according to the principle of "key to the lock". Therefore, if their structure does not coincide, successful copulation and fertilization are practically impossible. Therefore, the peculiarities of the structure of the genitalia are important characteristics for species determination and systematic relations. It is often impossible to reliably determine species which are morphologically similar or significantly varying in the pattern and coloration without studying the structure of their genital apparatuses. The structure of the genital apparatus of males and females is described in detail by V.S. Kononenko (2003).

Eggs are between 0,4 to 1,7 mm in diameter, height – from 0,02 to 1,1 mm; usually hemispherical, somewhat flattened down, rounded from above. The surface of the egg has a cellular or ribbed sculpture. The structural features can be used for diagnostic purposes. Females

lay eggs one by one or in groups ("mirrors", chains) on host plants, soil or plant remains. Females of some species cover the eggs with the secretion from special glands or hairs from the tip of the abdomen. The potential fecundity of females in some species is very high and amounts to 2000 eggs (Kononenko, 2003).

Caterpillars are mostly gray, brown, green or yellowish, rarely brightly colored. The pattern is more or less pronounced, consists of a system of longitudinal bands: a light dorsal strip shaded laterally by darker blurred lines and 2 dorsal-lateral (subdorsal) bands, two lighter supralateral (overstigmal) bands, a darker spiracal (stigmal) band and a broad, light substigmal band. Body is mostly naked, covered with sparse primary bristles on sclerotized scutes, rarely developed secondary setae evenly distributed over body or grouped on tubercles. The skin is usually smooth, sometimes with granulation or covered with small spines. Noctuoidea caterpillars have 3 pairs of thoracic legs and 3–5 pairs of abdominal or false legs on the 3–6th and 10th segments of the abdomen. In caterpillars of first instars, as well as in adult caterpillars of individual subfamilies (Erebidae) and (Noctuidae), the abdominal legs are underdeveloped or absent. The surface of the sole of the abdominal legs is seated with numerous hooks, the arrangement of which is characteristical for the family.

Pupae are of obtect type, in some genera (*Cucullia*) with protruding proboscis (Kononenko, 2003).

2. AIMS OF THE STUDY

The urgency of the study was determined by insufficient knowledge and scarcity of data on fauna composition, taxonomic structure and biogeographic distribution of the group in Northeast Kazakhstan (Pavlodar region).

The aim of the study was to conduct large-scale systematic studies of fauna, taxonomic and biogeographical features of lepidopteran insects from the superfamily Noctuoidea (Erebidae, Nolidae, Noctuidae) in Northeast Kazakhstan (Pavlodar region). The objectives of the study were: (1) inventory and taxonomic analysis of the Noctuoidea fauna of the Pavlodar region; (2) biogeographic analysis of species; (3) landscape-biotope analysis of the fauna; (4) revealing of the bionomic structure of the fauna; (5) revealing of the species, bionomic and horological structure of the faunas of the geomorphological landscapes of the Pavlodar region; revealing of the fauna structure in steppe subzones and geobotanical districts of the Pavlodar region; (7) phenological analysis of the fauna; (8) comparative analysis of the faunas of the Pavlodar region and Croatia; (9) revealing of rare species and species new for science.

The fauna of the Noctuoidea superfamily of North-East Kazakhstan is characterized by high taxonomic diversity and richness, which is determined by the location of the Pavlodar region at the junction of the two zoogeographical regions of the Palaearctic (Boreal and Paratetis regions), as well as by a significant variety of natural conditions. The mountainous shrub steppes of the Kazakh Upland in the Bayanaul-Karaganda geobotanical district possess the greatest species richness of the Northeast Kazakhstan, which corresponds to the prevalence of species with a subboreal steppe type of range in the fauna of this region.

A detailed analysis of fauna was carried out for the first time, extensive data were obtained on the faunistic, taxonomic, biogeographical, bionomical, landscape-biotopic, geobotanical and zonal distribution of Noctuoidea species in the territory of North-Eastern Kazakhstan (Pavlodar region).

The results of the work can be used to compile various faunistic and systematic lists, to compare the fauna of adjacent territories, as well as drawing up new schemes for zoogeographical zoning and reconstruction of various stages of faunogenesis.

The works are important because they were made for the first time in history. The process of introduction is already taking place in the State National nature park Bayanaul. The results of fauna research are included in the structure of the developing Internet site “Lepidoptera of Kazakhstan” https://kzbiodiversity.wordpress.com, dedicated to the biodiversity of Lepidoptera insects of Kazakhstan. The obtained data will help in the future to assess the biological wealth of the Pavlodar region and the whole of Kazakhstan.

3. LITERATURE OVEREVIEW

3.1. Biological characteristics of the subfamily Noctuoidea

Caterpillars of the superfamily Noctuoidea are active mainly at night, they hide during the day. There are 3 ecological groups of caterpillars: leaf-eating, ground root-eating and intra-stems. Most larvae of noctuidea species are fed with higher vascular plants, a small number have other types of nutrition like plant litter (detritophagy), lichens (lichenophagy). Caterpillars of some species, along with plant nutrition, exhibit facultative predation (Kononenko, 2003).

Along with the vegetative organs of plants, caterpillars can damage flowers and fruits, and some species can even eat the mature grains in the warehouse. (Kononenko, 2003). A number of species are belongs to quarantine species of insects. For example, population outbreaks sometimes occur in *Lymantria dispar* (Linnaeus, 1758) Erebidae; caterpillars of this species can damage forests of different types, not only in Eurasia, but also in North America. Species from the Noctuidae family, such as *Mamestra brassicae* (Linnaeus, 1758), some species of ground root feeders like *Agrotis* spp., *Euxoa* spp. *Hydraecia* spp. can significantly damage the vegetable and grain crops.

Imagoes of Noctuoidea species are mainly active at dusk and at night. Only a few species are day active, like *Spiris striata* (Linnaeus, 1758), *Hyphoraia aulica* (Linnaeus, 1758), *Amata transcaspica* Obraztsov, 1941, *Amata caspia* (Staudinger, 1877), males of *Thylacigyna antiquoides* (Hübner, [1822]) and *Clethrogyna dubia* (Tauscher, 1806), *Euclidia glyphica* (Linnaeus, 1758), *Callistege mi* (Clerck, 1759) from Erebidae family. One species from the Noctuidae family, *Schinia cognata* (Freyer, 1833), is active only by daily, but many other species from the same family are sometimes active during the day and in the twilight, although they are mostly active at night: *Heliothis peltigera* [Denis & Schiffermüller], 1775), *Heliothis viriplaca* (Hufnagel, 1766), *Heliothis adaucta* Butler, 1878, *Helicoverpa armigera* (Hübner, [1808]), *Autographa gamma* (Linnaeus, 1758) and *Macdunnoughia confusa* (Stephens, 1850). Daytime activity in species with a reduced proboscis is directly related to reproduction, mainly in species of the Erebidae family, the activity of species with a developed proboscis directly depends on nutrition on flowering plants, especially in the early spring, late summer and autumn phenological period when insects are deficient in nutrition.

A number of species (*Macdunnoughia confusa* (Stephens, 1850), *Protoschinia scutosa* ([Denis & Schiffermüller], 1775), *Agrotis ipsilon* (Hufnagel, 1766) is characterized by migratory

ability, which is usually associated with prevailing wind direction in a certain period of the year (Kononenko, 2003).

Life cycles vary in different species. Growing caterpillars pass 4–5 molts and have V– VI instars. The species with one generation predominate. Some species feeding on lichens have a several years long development cycle, depending on the species. Pupation of caterpillars of most species occurs in the soil at a depth of 5–7 cm, some species pupate on the soil surface in the litter, other in light cocoon on host plants or in tree hollows. Noctuoidea species hybernate at different stages of development, as pupae, eggs or caterpillars of different instars, species from some taxonomic groups, hybernate as imago. Life cycles and the appearance of the Noctuoidea imago is seasonal and associated with vegetation of host plants. A number of characteristic taxonomic groups form the phenological aspects for the season (Kononenko, 2003).

3.2. Phylogeny of the subfamily Noctuoidea

Superfamily Noctuoidea is the most numerous group of insects in the order of Lepidoptera. According to Kitching & Rawlins (1998), the superfamily numbers 70,000 species known to science. It is likely that the species richness of the superfamily is even higher, given that a large number of taxa are described yearly from around the world, especially from the tropical regions of the planet (Zahiri et al., 2011).

There are many variants of classifications of this superfamily, which, depending on the authorship of the system, have a taxonomic structure of 5 to 13 families. (Miller, 1991; Poole, 1995; Speidel et al 1996; Kitching & Rawlins, 1998; Scoble, 2002, Fibiger & Lafontaine, 2005; Lafontaine & Fibiger, 2006; Zahiri et al., 2006, 2012).

The superfamily Noctuoidea is traditionally divided into trifine and quadrifine groups. This division is based more on the basis of venation of the wings, and also on the basis of the structure of the genital apparatus (Fibiger & Lafontaine, 2005).

The following is a brief overview of recent classification systems in chronological order. In 1991, Miller (1991) and later Scoble (2002) came to the classification of the super-family Noctuoidea, divided into six families: Oenosandridae, Doidae, Notodontidae, Lymantriidae, Arctiidae and Noctuidae.

In 1995, Poole (1995) proposed the classification of trifine Noctuidae, in which he divided this group into the subfamilies Eustrotiinae, Condicinae, Plusiinae, Acontiinae, Amphipyrinae (sensu stricto), Stiriinae, Eriopinae, Psaphidinae, Agaristinae, Heliothinae,

Acronictinae, Bryophilinae, Pantheinae, Cucullinae , Oncocnemidinae and Noctuinae (*sensu lato*). The last included the tribes Noctuini, Hadenini, Apameini, Xylenini, Antitypuni and Caradrinini.

A year later Speidel et al. (1996) proposed their own version of Noctuoidea classification, based on an extensive analysis of imago morphology. In his work Speidel et al. (1996) divided the superfamily Noctuoidea into families of Oenosandridae, Notodontidae, Lymantriidae, Arctiidae, Aganaidae and Noctuidae. Among other things, Noctuidae included, in the rank of subfamilies, such taxa as Camptolominae, Chloephorinae, Sarrothripinae, Nolinae, Aedinae and Tytinae.

In 1998, Kitching & Rawlins (1998) proposed a classification according to which the superfamily Noctuoidea is divided into three groups: the trifine Doidae, Notodontidae, Oenosandridae, and Quadrifid families (Lymantriidae, Arctiidae, Nolidae, Pantheidae, Noctuidae).

In 2005, Fibiger & Lafontaine (2005) came to a new classification of the superfamily Noctuoidea, in which the superfamily is divided into ten families: Oenosandridae, Doidae, Notodontidae, Strepsimatidae, Nolidae, Lymantriidae, Arctiidae, Erebidae, Micronoctuidae and Noctuidae.

In 2006, Mitchell et al. (2006) proposed a new classification on the basis of molecular studies of 146 species from the family Noctuidae. The authors constructed a clade diagram reflecting the common origin of the species, in which Noctuidae (*sensu lato*) are divided into 2 large clades – 1) quadrifine Noctuoidea, including Nolidae, Arctiidae, Lymantridae and quadrifine Noctuidae, and 2) trifine clade, trifine Noctuidae, which in turn is divided into 4 large clades, 1) Plusiinae, 2) the cuculline group of subfamilies, 3) a group of subfamilies including Eustrotiinae, Acontiinae and Old World Stiriinae, and 4) a group of subfamilies including Heliothinae, Condicinae, Eriopinae, Bryophilinae and Noctuinae *sensu lato*.

In the same year Lafontaine & Fibiger (2006) revised their classification using molecular methods and morphology of the preimaginal stages, and changed the status of the families Strepsimatidae, Nolidae, Lymantriidae, Arctiidae and Erebidae to the level of subfamilies. The families isolated earlier, with the exception of Micronoctuidae, were again fused into a single Noctuidae family. In addition to the groups previously attributed to Noctuidae, other families from the superfamily Noctuoidea, namely Lymantriidae and Arctiidae, were included in the family.

In 2011, Zahiri et al. (2011) published a study containing the results of molecular analysis of 152 species from the superfamily Noctuoidea. Their study showed that the families Oenosandridae and Notodontidae belong to the noctuoididae, and Nolidae, Euteliidae, Noctuidae and Erebidae belong to the quadrifid Noctuoidea group. The Erebidae family included Lymantriidae and Arctiidae, which were reduced to the level of subfamilies. The former family Micronoctuidae was placed in the subfamily Hypenodinae in the rank of the tribe.

Also, studies by Zahiri et al. (2011) have shown that the trifine signs of venation of the wings developed several times on the basis of quadriphin traits. The tribes Arctiini and Dyopsini, previously classified as quadriphines, were placed in a trifine group.

In 2012, Zahiri et al. (2012a) published the results of a more detailed analysis of Erebidae. The result of this study was support for the division of the family into 18 subfamilies: Scoliopteryginae, Rivulinae, Anobinae, Hypeninae, Lymantriinae, Pangraptinae, Herminiinae, Aganainae, Arctiinae, Calpinae, Hypocalinae, Eulepidotinae, Toxocampinae, Tinoliinae, Scolecocampinae, Hypenodinae, Boletobiinae and Erebinae. In the same year Zahiri et al. (2012b) published an article on the molecular phylogeny of the family Nolidae, in which they divided the family into subfamilies Diphtherinae, Risobinae, Callomeninae, Beaninae, Eligminae, Westermanniinae, Nolinae and Chloephorinae.

A year later, Zahiri et al. (2011) published a paper on molecular studies of basal lines [lineages] Noctuidae (*sensu stricto*). In this work, the separation of quadrifid Noctuoidea into families of Euteliidae, Erebidae, Nolidae and Noctuidae was supported. The Noctuidae family, in turn, was divided into the subfamilies Dyopsinae, Plusiinae, Eustrotiinae, Cuculliinae, Dilobinae, Raphiinae, Eucocytiinae, Pantheinae, Acontiinae, Bagisarinae, Amphipyrinae, Metoponiinae, Acronictinae, Agaristinae, Aediinae, Condicinae, Heliothinae, Bryophilinae and Noctuinae. The subfamily Noctuinae included a number of tribes, previously treated as independent subfamilies: Hadenini, Xylenini, Glottulini, or as tribes within these subfamilies (Apameini and Orthosiini).

In addition to these studies, various authors (Regier et al., 2009; Mutanen et al., 2010; Timmermans et al., 2014) conducted extensive analysis of the Lepidoptera order to elucidate the phylogenetic relationships between superfamilies, families, and subfamilies. These studies showed that the Doidae family does not belong to the superfamily Noctuoidea, but should belong to the superfamily Drepanoidea. Studies by Regier et al. (2009) and Mutanen et al. (2010) also showed that the superfamily Noctuoidea is a monophyletic group, as well as the entire Macrolepidoptera group, according to Minet (1991), except for (Rhopalocera) and the superfamily Calliduloidea.

In this work, I take as a basis of the classification of Noctuoidea, the classificaton proposed in a series of works by Zahiri et al. (2011, 2012) as the most new and progressive.

3.3. Preconditions and regularities in the history of studying Noctuoidea in the Pavlodar region of Kazakhstan

Before describing the basic history of the study, the author found it necessary to describe the general patterns that influenced the degree of study of the Noctuoidea fauna in the Pavlodar region.

At a time when many areas of Kazakhstan and Russia, adjacent to Pavlodar region, were intensively studied during the last centuries, the Pavlodar region was in a certain "vacuum". Lepidoptera fauna was studied, but in a very sluggish and unproductive way. The period of such researches have touched the borders of three centuries, the rule over the territory was changed by three states and its conditional status "Terra incognita" Pavlodar region retained until the beginning of the second decade of the 21st century. Lepidoptera and also other orders of insects and even some groups of vertebrates are still insuficiently studied. In my deep opinion there are to two main factors why Pavlodar region was so poorly explored: its remote location from major cultural centers and transport infrastructure. Almost the entire territory of Kazakhstan, with the exception of Western and North-Eastern Kazakhstan, has remained insufficiently studied.

In August 1906, in the Pavlodar region, entomologist A.G. Jacobson conducted entomological fieldwork. Dates from the labels, tell that the researcher moved from the upper reaches of the Irtysh downstream, most likely by water, becouse the chronology of the daily toponymic records on the labels corresponds to the impressive distance between them. According to toponymic records it can be seen that the not reach collections of A.G. Jakobson are confined only to the locations where there were navigable piers in the past. It is also obvious that the researcher returned through the Pavlodar region, rafting down the Irtysh River to the lower Omsk, for departure along the Trans-Siberian Railway to St. Petersburg, from where he originally started his expedition. In what expedition was A.G. Jacobson, how long it lasted and many other details are not yet known to us. The scattered information about his insect collections has come down to us from some literary sources (Kozhantshikov, 1929, 1937; Klyuchko & Matov, 2006; Volynkin, 2012) and the collections of the Zoological Institute of the Russian Academy of Sciences (St. Petersburg, Russia).

June 4th, 1919 a well-known zoologist, entomologist, Professor S.D. Lavrov went on a zoological expedition on the steamship "Pleshcheev" from Omsk upstream the Irtysh river to Lake Zaisan (Berezovikov & Lavrov, 2016). It is known that the route from Omsk to Semipalat insk took 6 days, but I do not have any information about the entomological studies conducted on this way, most likely because they have not been implemented. Several years later, on August 14th, 1923, S.D. Lavrov visited the city of Pavlodar and conducted light trapping of moths by electric lamp (Klyuchko & Matov, 2006).

For a long time the entomologists was not given special attention to the Pavlodar region, and in most cases remained only a transit territory along the way of expeditions to the south and east.

After the end of the Second World War, intensive agricultural development of the territory of the region was started. Most of the primary steppe landscapes were destroyed and the soil was subject to severe wind erosion. During this period, which went down in history as "Celina" or "the period of mastering Celina" in the 60s of the 20th century, Lepidoptera studies were also conducted, but the state was interested only in quarantine studies aimed at combating pests at that time. Objectives to study the richness of the fauna of the regions were not raised. I must say that most likely the fauna of Lepidoptera was strongly oppressed in that period, since the research of S.M. Pospelov for the period from 1958–1960 were able to identify in agrocenoses only 50 species of Noctuoidea. The natural habitats of many species were destroyed. After S.M. Pospelov similar studies were continued, but with even poorer result. In the early 80's, scientists from the Institute of Zoology made unsuccessful attempts to study the fauna of Northern Kazakhstan. The expedition that they undertook was the only one and the work was not continued. Further on the declining curve, the research did not clarify the richness of the fauna. Single finds of different collectors and authors do not change the situation, until the collapse of the USSR in 1991. At the same time, in 1991 Kazakhstan gained independence and was experiencing difficulties related to the formation of a new state and, first of all, the formation of an economy. During this period, the studies were also insignificant and were mainly published by scientists from the near abroad, Russia (Dubatolov & Zolotarenko, 1990; Khodyrev et al., 2008; Ivonin et al., 2013).

At the beginning of my research, the Lepidoptera fauna on the area of my research was poorly studied, and contrasted very strongly against the background of the adjacent, better studied areas.

The author of this work published the main body of data in a single work, without splitting the information in a variety of different sources (Titov et al., 2017b). As exceptions, species found far from their known areals, new to the fauna of Kazakhstan or to the science,

3.4. History of Noctuoidea study of Pavlodar region of Kazakhstan

The author of the first data on the Noctuoidea fauna of the Pavlodar region is M.I. Suvortsev. In 1894 for the modern territory of the Pavlodar region, M.I. Svortsev cites one species from the family Noctuidae – *Hadena albimacula* (Borkhausen, 1792).

In publication from 1929, lepidopterist I.V. Kozhanchikov describes two new species for the science of the family Noctuidae – *Euxoa filipjevi* Kozhantshikov, 1929 and *Euxoa goetria* Kozhantshikov, 1929. Later both species were synonymised (Kononenko, 2005; Volynkin, 2012) *Euxoa filipjevi = Euxoa deficiens* (Wagner, 1913), *Euxoa cursoria* (Hufnagel, 1766) = *Euxoa goetria*.

In 1950 I.V. Kozhantshikov (Kozhantshikov, 1950) publish a monograph of the family Orgyidae in which one species of *Lymantria dispar* (Linnaeus, 1758) (as *Ocneria*) from the Bayanaul mountains, and the city of Pavlodar for the Pavlodar region is given.

From 1958 to 1960 the study of pests of agricultural plants (Pospelov, 1960, 1962) is carried out by S.M. Pospelov.

An earlier work (Pospelov, 1960) is devoted to one species of pest from the family Noctuidae – *Apamea anceps* (Denis & Schiffermüller, 1775). In the second work (Pospelov, 1962) a faunistic list of species from the families Erebidae and Noctuidae collected by the author in the period from 1958 to 1960 is given. 50 species from the family Noctuidae is listed for the Pavlodar region (Figs 1–2): *Agrotis exclamationis, A. ripae, A. trifurca, A. vestigialis, Apamea. anceps, A. leucodon, A. oblonga, A. lateritia, Acronicta megacephala, A. psi, Tyta luctuosa, Xestia c-nigrum, Macdunnoughia confusa, Caradrina. albina, Cucullia, biornata, C. biradiata, C. xeranthemi, Eucarta virgo, Catocala fraxini, Euxoa adumbrata, Conisania leineri, Anarta trifolii, E. cursoria, E. nigricans, E. phantoma, Earias clorana, Acontia trabealis, Enargia paleacea, Eriopygodes imbecilla, Euxoa ochrogaster, E. nigrofusca, Hadena magnolii, Protoschinia scutosa, Heliothis viriplaca, Lygephila pastinum, Lygephila ludicra, M. deserticola, Lacanobia blenna, Lacanobia suasa, Lacanobia thalassina, Mamestra brassicae,*

Mythimna velutina, Polia serratilinea, Actebia squalida, Sideridis turbida, Spaelotis ravida, Acontia lucida, Pseudeustrotia candidula, Deltote bankiana and *Deltote uncula.*

In 1975 G.Kh. Shek (Shek, 1975) published his work in which 33 species from the family Erebidae and Noctuidae is given for the Pavlodar region, 10 of which is published for the *first time: Rhyacia simulans, Agrotis vestigialis, A. ripae, A. trifurca, Euxoa ochrogaster, E. basigramma, E. phantoma, E. cursoria, E. obelisca, E. recussa, E. deserta, E. adumbrata, E. adumbrata, P. hepatica, Conisania leineri Lacanobia blenna, Hadena. magnolii, Eriopygodes imbecilla, Mythimna pallens, M. deserticola, Cucullia. splendida, C. xeranthemi, Calophasia lunula, Acronicta. Rumicis, A. megacephala, Apamea. leucodon, Longalatedes elymi, Eucarta virgo, Deltote bankiana, Pseudeustrotia candidula, Earias clorana, Catocala fraxini, C. puerpera, Lygephila ludicra*. Obviously, the specimens determined as *Agrotis fatidica* refer to *A. characteristica*, similar by external morphology.

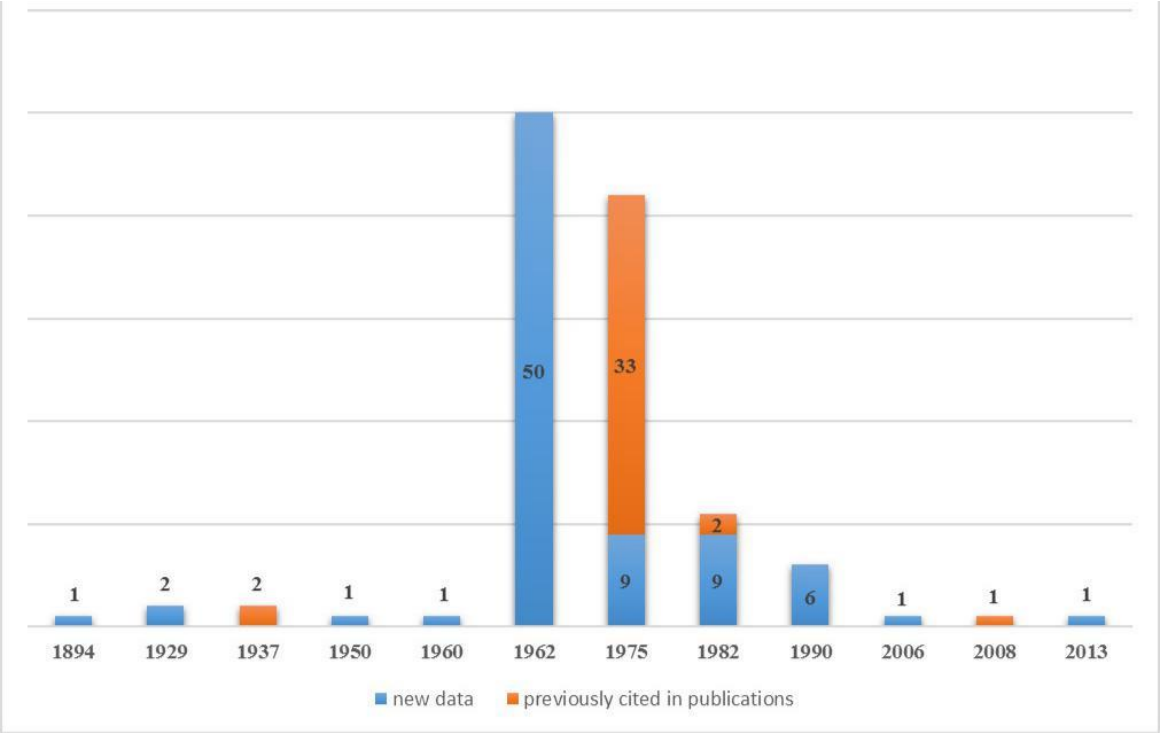

Figure 1. Chronology of the publication output and the species quantitative dynamics of the research of Noctuoidea fauna in the Pavlodar region of Kazakhstan in the period preceding the main studies.

In 1982, H.A. Aibasov and A.B. Zhdanko (Aibasov & Zhdanko, 1982) cites 8 species from the family Erebidae and Noctuidae, three of which are listed as new species for the fauna of the region: *Lacydes spectabilis, Anarta stigmosa, Cucullia argentina.*

In 1990 in the work of G.S. Zolotarenko and V.V. Dubatolov (Dubatolov & Zolotarenko, 1990) 6 species from the family Erebidae: *Stigmatophora micans, Stigmatophora flava, Cybosia mesomella, Arctia caja, A. flavia, Eucharia festiva*. are published for the Pavlodar region. In 2006, in the publication by Z.F. Klyuchko and A.Yu. Matov published (Kluchko & Matov, 2006) one species from the Erebidae family – *Catocala puerpera* – is given for the Pavlodar region.

In 2013, Ivonin, et al. published first records of *Clethrogyna dubia* Erebidae for the Pavlodar region (Ivonin et al., 2013).

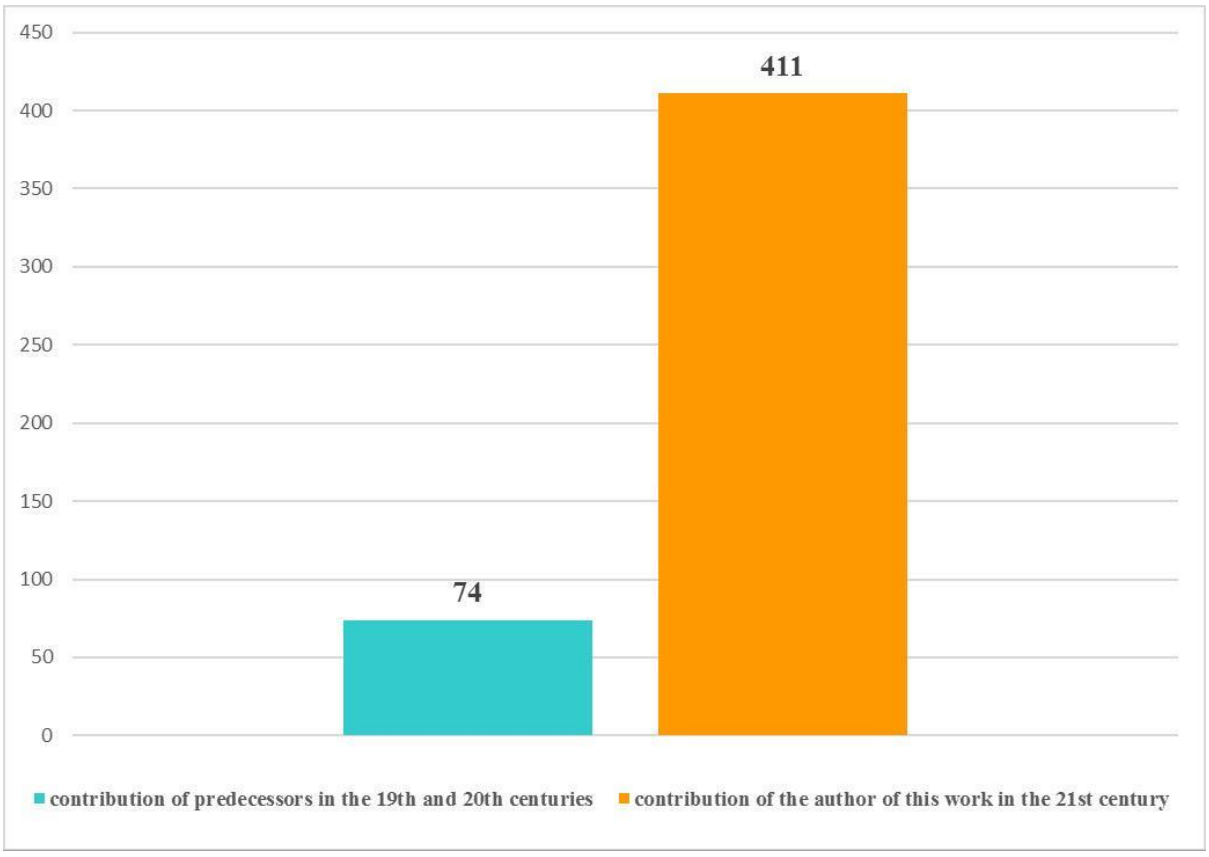

Figure 2. The degree of contribution to the study of the species richness of the Noctuoidea fauna of the Pavlodar region by the author of this work and his predecessors in the 19th and 20th centuries.

Thus, prior to our studies, different authors and at different times published data on the composition of the Noctuoidea fauna of the Pavlodar region, which comprised in total of 81 species. In the diagram 1 the chronology of publications and the species quantitative dynamics of the research of Noctuoidea fauna in the Pavlodar region of Kazakhstan in the period preceding the main studies are presented.

From 2013 to 2017, a series of publications by the author and his colleagues is published (Titov & Volynkin, 2013, 2014, 2016; Dubatolov & Titov, 2015; Volynkin & Titov, 2016a, 2016b, 2016c; Titov et al., 2016, 2017a, b) on the study of the fauna of the Pavlodar region.

As a result of many years of research on the Noctuoidea fauna of Northeast Kazakhstan, the author and his colleagues summarized the publication of Noctuoid moths (Lepidoptera: Erebidae, Nolidae, Noctuidae) of North-East Kazakhstan (Pavlodar Region) (Titov et al., 2017b). There are 485 species of Noctuoidea in the region. The figure 2 shows the degree of contribution to the study of the Noctuoidea fauna of the Pavlodar region by the author of this work and his predecessors in the 19th and 20th centuries (Fig. 2).

4. MATERIALS AND METHODS

4.1. The main localities of collecting

The work is based on the methodological provisions of the synthetic theory of evolution, biogeography.

When writing this work, the author used the original material collected from 2003 to 2017. The author and his assistants used the expeditionary method of investigation. We conducted research on the territory of all 12 administrative districts of the Pavlodar region (Figure 3): Zhelezinsky, Irtysh, Kashir, Aktogay, Pavlodar, Sharbaktin, Lebyazhin, Bayanaul, Maysky, Aksu, Ekibastuz, Uspensky districts. Field work was carried out from early April to middle November. At our disposal there were also extensive collections conducted specially for our studies by different collectors: in the city of Pavlodar and Pavlodar region: N.E. Tarasovskoy, L.N. Ivanko, V.B. Titov, K.S. Titov, V.I. Blokhin, A.S. Karim; in the Zhelezinsky area: C.A. Lorentz, V.S. Bychkov, M.Yu. Volkova; in the Bayanaul region: S.M. Reznichenko, A. Steidel (Gera, Germany), M. Czernila (Kamnik, Slovenia), A.V. Volynkin (Barnaul, Russia). Also for our studies, O.V. Lyakhov (Pavlodar, Kazakhstan) took photos of insects on the territory of Pavlodar, Ekibastuz, Lebyazhye, Maysky and Bayanaul districts. The chronology of studies of the Noctuoidea fauna in different regions and locations conducted by different collectors is presented in the table 1.

The main localities of collecting are presented on the maps (Figs 3–5) and in the Appendix 2. The locality Z6 is missing on the map.

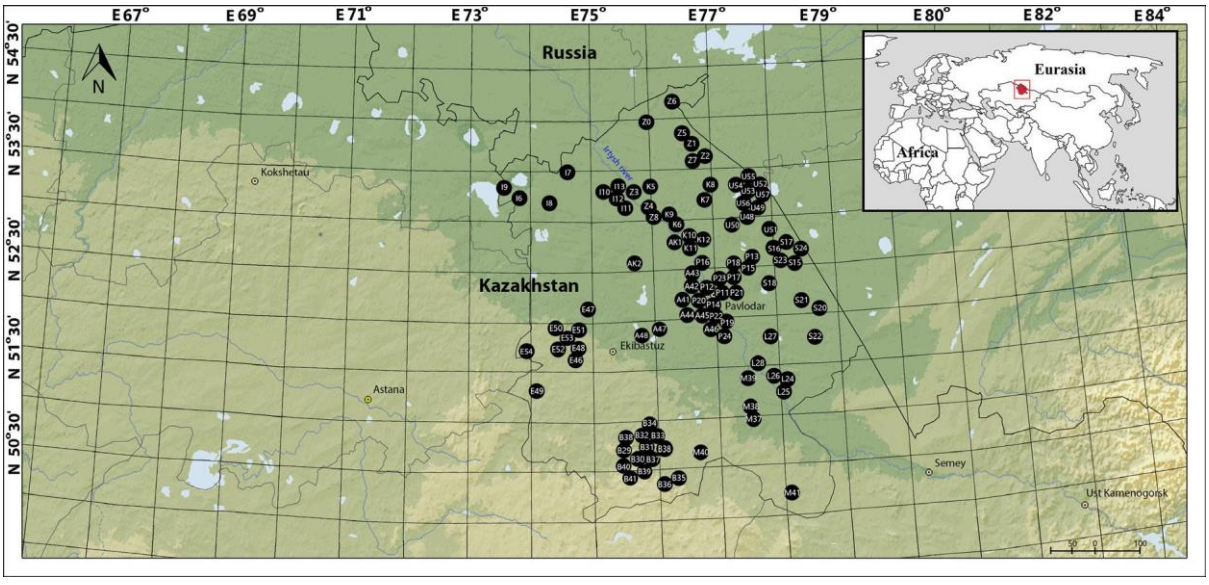

Figure 3. Noctuoidea collection points in Northeast Kazakhstan (Pavlodar region).

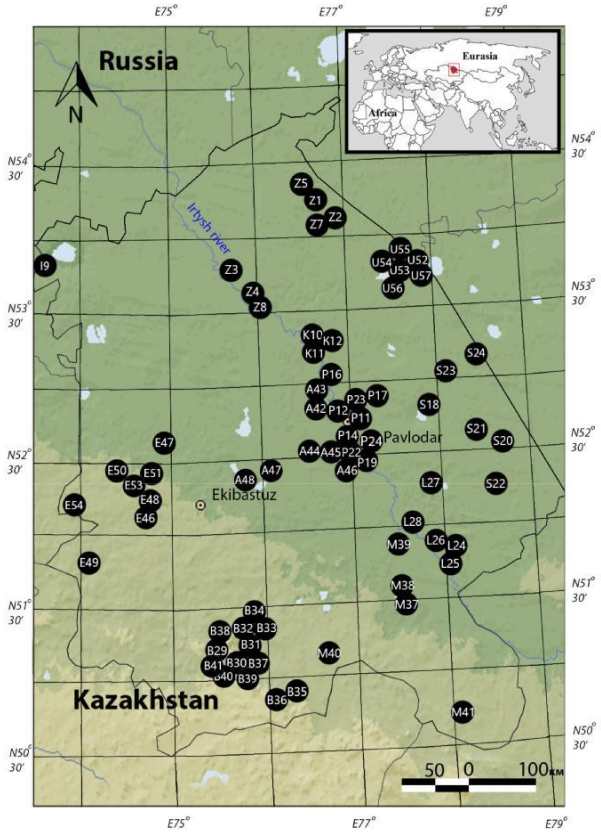

Figure 4. Localities of the author's collection.

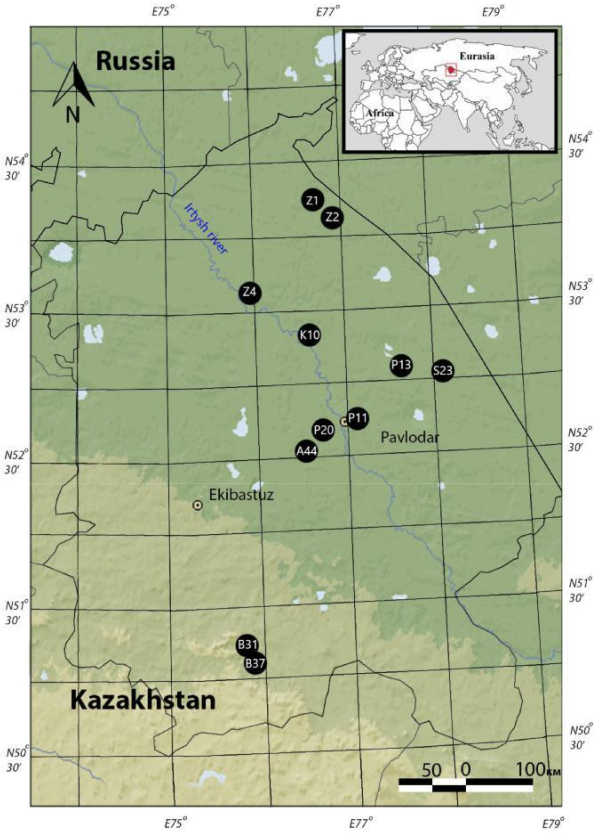

Figure 5. Localities of the author's assistant's collection in the time of author's study.

Table 1. Chronology, locality codes, toponymic names for the localities of Noctuoidea fauna studies in the Pavlodar region.

Year	Date	Locality code	Locality and the author of the material collection
1990	25.06.1990	S21	vic. of Galkino vill. (S.V. Titov)
1994	06/07/08	E46	Zhartas natural landmark (S.V. Titov)
	16.08.1994	E46	Zhartas natural landmark (S.V. Titov)
1995	10.07.1995	E46	Zhartas natural landmark (S.V. Titov)
	01.08.–16.08.	A48	Western shore of the lake Kudaykol (S.V. Titov)
1999	06/07/08	B37	Bayanaul Mts., Zhasybai lake (S.V. Titov)
	24.07.–25.07.	B37	Bayanaul Mts., Zhasybai lake (S.V. Titov)
	13.08.–14.08.	B38	Bayanaul Mts., Zhumbak natural landmark
	18.08.1999	B37	Bayanaul Mts., Zhasybai lake (S.V. Titov)
2003	8.05.–10.05.	B37	Bayanaul Mts., Zhasybai lake (S.V. Titov)
	14.07.–15.07.	E46	Zhartas natural landmark (S.V. Titov)
	10.09.–11.09.	P11	Pavlodar city (S.V. Titov)
2006	15.05.–18.05.	B35	Kyzyltau Mts., vic. of Zhana Zhosaly vill. (S.V. Titov)
	26.06.–27.06.	P11	Pavlodar city (S.V. Titov)

Table 1., continued.

2006	09.09.–15.09.	I9	Seletyteniz lake (S.V. Titov)
2007	03.05.–10.05.	E46	Zhartas natural landmark (S.V. Titov)
	10.05.–17.05.	B32	Bayanaul Mts., vic. of Kempirtas Mt. (S.V. Titov)
	10.06.–13.06.	E47	vic. of Karazhar vill. (S.V. Titov)
	15.06.–16.06.	S20	vic. of Shaldai vill. (S.V. Titov)
2007	16.06.–25.06.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	27.06.–30.06.	A42	Zholpak river duct (S.V. Titov)
	14.07.–15.07.	I9	vic. of. Seletyteniz lake (S.V. Titov)
	16.07.–18.07.	S20	vic. of Shaldai vill. (S.V. Titov)
	18.07.–19.07.	S24	vic. of Georgievka vill. (S.V. Titov)
	19.07.–20.07.	E46	Zhartas natural landmark (S.V. Titov)
	21.07.–22.07.	S20	vic. of Shaldai vill. (S.V. Titov)
	25.07.–27.07.	A48	Western shore of the lake Kudaykol
	28.07.–30.07.	S23	vic. of Sharbakty vill. (S.V. Titov)
2008	26.05.–28.05.	P11	Pavlodar city (S.V. Titov)
	29.05.–30.05.	P11	Pavlodar city (N.E. Tarasovskaya)
	09.06.–17.06.	B29	Bayanaul Mts., vic. of Birzhankol lake (S.V. Titov)
	11.06.–12.06.	P11	Pavlodar city (N.E. Tarasovskaya)
	12.08.–13.08.	B32	Bayanaul Mts., vic. of Kempirtas Mt. (S.V. Titov)
	22.06.–23.06.	P20	vic. of Leninsky vill. (A. Kulakhmetova)
	27.06.–28.06.	B29	Bayanaul Mts., vic. of Birzhankol lake (S.V. Titov)
	01.07.–07.07.	A42	Zholpak river duct (S.V. Titov)
	08.07.–09.07.	P11	Pavlodar city (S.V. Titov)
	11.07.–12.07.	A43	vic. of Rebrovka vill. (S.V. Titov)
	20.07.–21.07.	B29	Bayanaul Mts., vic. of Birzhankol lake (S.V. Titov)
	27.07.–28.07.	P11	Pavlodar city (N.E. Tarasovskaya)
	29.07.–30.07.	P11	Pavlodar city (N.E. Tarasovskaya)
	10.08.–11.08.	E47	vic. of Karazhar vill. (S.V. Titov)
	17.08.–18.07.	E46	Zhartas natural landmark (S.V. Titov)
	22.07.–23.07.	P16	vic. of Sychevka vill. (S.V. Titov)
	05.08.–08.08.	E46	Zhartas natural landmark (S.V. Titov)
	22.08.–23.08.	P16	vic. of Sychevka vill.(S.V. Titov)
2009	15.05.–16.05.	Z8	vic. of Pyateryzhsk vill. (S.A. Lorents)
	09.06.–17.06.	B29	Bayanaul Mts., vic. of. Birzhankol lake
	29.06.–30.06	E47	vic. of Karazhar vill. (S.V. Titov)
	17.07.–18.07.	E46	Zhartas natural landmark (S.V. Titov)
	25.07.–26.07.	A45	vic. of the old road bridge over Irtysh river
	25.07.–26.07.	Z8	vic. of Pyateryzhsk vill. (S.A. Lorents)
	01.08.–02.08.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	05.08.–07.08.	Z8	vic. of Pyateryzhsk vill. (S.V. Titov)
	16.09.–17.09.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	28.09.–31.09.	A45	vic. of the old road bridge over Irtysh river

Table 1., continued.

Year	Date	Locality code	Locality and the author of the material collection
2010	29.04.–30.04.	P13	vic. of Rozovka vill.(L.N. Ivan'ko)
	01.05.–02.05.	P13	vic. of Rozovka vill.(L.N. Ivan'ko)
	01.05.–05.05.	P14	vic. of Kenzhekol vill. (S.V. Titov)
	06.05.–09.05.	A44	Kishi Kalkaman lake (S.V. Titov)
	09.05.–10.05.	P11	Pavlodar city (A.O. Orazbayev)
	18.05.2010	E52	Bozshakol' lake, (V.K. Merts)
	20.05.–21.05.	M41	the former Semipalatinsk nuclear test site (S.V. Titov)
	21.05.–22.05.	M38	vic. of Zhamantuz lake (S.V. Titov)
	22.05.–23.05.	M37	vic. of Karasor lake (S.V. Titov)
	23.05.–24.05.	M39	vic. of Koktobe vill. (S.V. Titov)
	26.05.–29.05.	P11	Pavlodar city (S.V. Titov)
	30.05.–31.05.	A44	Kishi Kalkaman lake (S.V. Titov)
	04.06.–05.06.	P13	vic. of Rozovka vill.(L.N. Ivan'ko)
	11.06.–16.06.	E48	Shiderty reservoir, water pump №7
	06.06.–07.06.	P13	vic. of Rozovka vill.(L.N. Ivan'ko)
	07.06.–08.06.	P13	vic. of Rozovka vill.(L.N. Ivan'ko)
	01.07.–02.07.	P13	vic. of Rozovka vill.(L.N. Ivan'ko)
	04.07.–06.07.	P13	vic. of Rozovka vill.(L.N. Ivan'ko)
2010	16.07.–18.07.	P13	vic. of Rozovka vill.(L.N. Ivan'ko)
	18.07.–19.07.	Z3	vic. of Zhelezinka vill. (S.V. Titov)
	19.07.–20.07.	P11	Pavlodar city (S.V. Titov)
	21.07.–22.07.	M38	vic. of Zhamantuz lake (S.V. Titov)
	22.07.–23.07.	M37	vic. of Karasor lake (S.V. Titov)
	25.07.–26.07.	A44	Kishi Kalkaman lake (O.V. Lyakhov)
	17.08.–18.08.	P13	vic. of Rozovka vill.(L.N. Ivan'ko)
	11.09.–12.09.	P15	vic. of Efremovka vill.(L.N. Ivan'ko)
	09.10.–10.10.	Z1	vic. of Mikhailovka vill. (M.YU. Volkov)
2011	10.04.–11.04.	P16	vic. of Sychevka vill. (S.V. Titov)
	07.05.–08.05.	L24	Tuz lake (S.V. Titov)
	13.05.–14.05.	Z3	vic. of Zhelezinka vill. (S.V. Titov)
	16.05.–17.05.	P16	vic. of Sychevka vill. (S.V. Titov)
	18.05.–19.05.	Z2	vic. of Krasnovka vill. (V.S. Bychkov)
	20.05.–21.05.	P11	Pavlodar city (S.V. Titov)
	21.05.–22.05.	P17	vic. of NE shore of Koryakovka lake
	21.05.–22.05.	Z4	vic. of Moiseevka vill. (S.A. & YU. P. Lorents)
	24.05.–27.05.	Z2	vic. of Krasnovka vill. (V.S. Bychkov & M.YU. M. YU. Volkov)
	04.07.–05.07.	P11	Pavlodar city (N.E. Tarasovskaya)
	04.07.–05.07.	Z1	vic. of Mikhailovka vill. (M.YU. Volkov)
	08.07.–09.07.	Z2	vic. of Krasnovka vill. (S.V. Titov)
	18.07.–19.07.	B37	Bayanaul Mts., Zhasybai lake (N.E. Tarasovskaya)
	23.07.–24.07.	P11	Pavlodar city (N.E. Tarasovskaya)
	11.08.–12.08.	P11	Pavlodar city (N.E. Tarasovskaya)

Table 1., continued.

Year	Date	Locality code	Locality and the author of the material collection
2011	17.08.–18.08.	P11	Pavlodar city (N.E. Tarasovskaya)
	17.08.–19.08.	Z3	vic. of Zhelezinka vill. (S.A. Lorents)
	27.08.–28.08.	Z4	vic. of Moiseevka vill. (S. A. & YU. P. Lorents)
	07.09.–08.09.	E47	vic. of Karazhar vill. (S.V. Titov)
	16.09.–17.09.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	19.09.–20.09.	L24	vic. of Tuz lake (S.V. Titov)
	23.09.–24.09.	K10	vic. of Terenkol vill.(L.N. Ivan'ko)
	01.10.–02.10.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	02.10.–03.10.	P11	Pavlodar city (S.V. Titov)
	03.10.–04.10.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
2012	11.04.–12.04.	P23	vic. of Zhetekshi vill. (S.V. Titov)
	11.04.–12.04.	Z2	vic. of Krasnovka vill. (V.S. Bychkov & M.YU. Volkov)
	12.04.–13.04.	Z1	vic. of Mikhailovka vill. (V.S. Bychkov & M. YU. Volkov)
2012	13.04.–14.04.	Z2	vic. of Krasnovka vill. (V.S. Bychkov & M.YU. Volkov)
	12.04.–18.04.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	19.04.–26.04.	E53	West shore of Shiderty reservoir (S.V. Titov)
	01.05.–02.05.	B30	Bayanaul Mts., Kurkeli natural landmark (S.V. Titov)
	02.05.–03.05.	M40	Kalmykyrgan Mts., vic. of Old Akshiman vill. (S.V. Titov)
	03.05.–08.05.	M39	vic. of Koktobe vill. (S.V. Titov)
	11.05.–12.05.	B30	Bayanaul Mts., Kurkeli natural landmark (S.V. Titov)
	12.05.–17.05.	P11	Pavlodar city (S.V. Titov)
	18.05.–19.05.	Z1	vic. of Mikhailovka vill. (V.S. Bychkov & M.YU. Volkov)
	01.06.–05.06.	Z2	Vic. of Krasnovka vill. (S.V. Titov)
	08.06.–09.06.	P11	Pavlodar city (L.N. Ivan'ko)
	05.06.–09.06.	Z1	vic. of Mikhailovka vill. (V.S. Bychkov & M.YU. Volkov)
	09.06.–11.06.	Z5	vic. of Slavyanovka vill. (S.V. Titov)
	11.06.–12.06.	E48	Shiderty reservoir, water pump №7 (S.V. Titov)
	12.06.–17.06.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	15.06.–19.06.	K10	vic. of Terenkol vill.(L.N. Ivan'ko)
	19.06.–20.06.	S18	Maraldy lake (S.V. Titov)
	23.06.–28.06.	E48	Shiderty reservoir, water pump №7 (S.V. Titov)
	01.07.–02.07.	P11	Pavlodar city (N.E. Tarasovskaya)
	01.07.–02.07.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	03.07.–31.07.	P11	Pavlodar city (N.E. Tarasovskaya)
	19.07.–20.07.	P14	vic. of Kenzhekol vill. (S.V. Titov)
	22.07.–23.07.	S18	vic. of Maraldy lake (S.V. Titov)
	20.07.–21.07.	Z1	vic. of Mikhailovka vill. (V.S. Bychkov & M. YU. Volkov)
	01.08.–02.08.	P11	Pavlodar city (N.E. Tarasovskaya)
	04.08.–12.08.	S20	vic. of Shaldai vill. (S.V. Titov)
	05.08.–06.08.	P11	Pavlodar city (N.E. Tarasovskaya)
	07.08.–12.08.	E46	Zhartas natural landmark (S.V. Titov)
	13.08.–14.08.	Z2	vic. of Krasnovka vill. (V.S. Bychkov)

Table 1., continued.

Year	Date	Locality code	Locality and the author of the material collection
2012	11.08.–31.08.	P11	Pavlodar city (N.E. Tarasovskaya)
2012	05.09.–10.09.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	11.09.–15.09.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	17.09.–18.09.	S18	vic. of Maraldy lake (S.V. Titov)
2013	09.04.–10.04.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	07.05.–08.05.	E53	West shore of Shiderty reservoir (S.V. Titov)
	15.05.–16.05.	P11	Pavlodar city (N.E. Tarasovskaya)
	05.05.–06.05.	E49	Shiderty reservoir, water pump №11 (S.V. Titov)
	01.06.–02.06.	L25	Administrative border between Pavlodar region and East Kazakhstan region (M. Černila, S.V. Titov, A.V. Volynkin)
	03.06.–04.06.	E50	Olenty river valley (T.K. Aylybayev)
	04.06.–05.06.	E49	Shiderty reservoir, water pump №11 (T.K. Aylybayev)
	08.06.–09.06.	Z2	vic. of Krasnovka vill. (V.S. Bychkov)
	09.06.–11.06.	B33	Bayanaul Mts., vic. of Toraighyr lake (S.V. Titov)
	12.06.14.06.	B30	Bayanaul Mts., Kurkeli natural landmark (M. Černila, S.V. Titov, A.V. Volynkin)
2013	12.06.–13.06.	B32	Bayanaul Mts., vic. of Kempirtas Mt. (M. Černila, (S.V. Titov, A.V.Volynkin)
	20.06.–22.06.	Z7	vic. of Kyzyl-tuz lake (S.V. Titov)
	23.06.–25.06.	L27	vic. of Borly lake
	27.06.–28.06.	B32	Bayanaul Mts., vic. of Kempirtas Mt. (S.V. Titov)
	28.06.–29.06.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	29.06.–30.06.	B34	Bayanaul Mts., Kirgichi natural landmark (S.V. Titov)
	30.06.–01.07.	B30	Bayanaul Mts., Kurkeli natural landmark (S.V. Titov)
	02.07.–03.07.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	03.07.–04.07.	B37	Bayanaul Mts., Zhasybai lake (S.V. Titov)
	07.07.–08.07.	Z1	vic. of Mikhailovka vill. (V.S. Bychkov)
	07.07.–09.07.	K11	vic. of Baykonys vill. (S.V. Titov)
	09.07.–10.07.	K10	vic. of Terenkol vill. (S.V. Titov)
	12.07.–13.07.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	20.07.–21.07.	Z6	vic. of Novokuzminka vill. (V.S. Bychkov)
	24.07.–25.07.	Z4	vic. of Moiseevka vill. (S.V. Titov)
	28.07.–29.07.	L27	Vic. of Borly lake (S.V. Titov)
	29.07.–30.07.	B32	Bayanaul Mts., vic. of Kempirtas (S.M. Reznichenko)
	01.08.–02.08.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	03.08.–04.08.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	04.08.–05.08.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	06.07.–07.07.	Z7	Vic. of Kyzyl-tuz lake (S.V. Titov)
	08.08.–09.08.	B31	Bayanaul Mts., vic. of Shonai vill. (S.V. Titov)
	10.08.–11.08.	L26	vic. of Sharbakty vill. (S.V. Titov)
	13.08.–14.08.	B31	Bayanaul Mts., vic. of Shonai vill. (S.V. Titov)
	14.08.–15.08.	B31	Bayanaul Mts., vic. of Shonai vill. (S.V. Titov)
	16.08.–17.08.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)

Table 1., continued.

Year	Date	Locality code	Locality and the author of the material collection
2013	17.08.–18.08.	B31	Bayanaul Mts., vic. of Shonai vill. (S.V. Titov)
2013	17.08.–18.08.	Z1	vic. of Mikhailovka vill. (V.S. Bychkov)
	21.08.–22.08.	E50	Olenty river valley (S.V. Titov)
	25.08.–26.08.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	25.08.–27.08.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	03.09.–04.09.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	09.09.–10.09.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	14.09.–15.09.	P12	Vic. of Pavlodarskoe vill. (S.V. Titov)
	20.09.–24.09	B31	Bayanaul Mts., vic. of Shonai vill. (S.V. Titov & A.V. Volynkin)
	24.09.–25.09.	B32	Bayanaul Mts., vic. of Kempirtas Mt. (S.V. Titov & A.V. Volynkin)
2014	03.04.–04.04.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	04.05.–05.05.	B31	Bayanaul Mts., vic. of Shonai vill. (S.V. Titov)
	16.05.–17.05.	B32	Bayanaul Mts., vic. of Kempirtas Mt. (S.V. Titov)
	31.05.–01.06.	S22	SW vic. of May Karagay vill., the Borskaya dacha natural landmark (S.V. Titov)
	10.06.–11.06.	B33	Bayanaul Mts., vic. of Toraighyr lake (S.V. Titov & A.V. Volynkin)
	11.06.–12.06.	L26	vic. of Sharbakty vill. (S.V. Titov)
2014	12.06.–13.06.	B32	Bayanaul Mts., vic. of Kempirtas Mt. (S.V. Titov)
	14.06.–15.06.	B36	Kyzyltau Mts., vic. of Dulga Tas Mt. (S.V. Titov)
	10.07.–11.07.	S22	SW vic. of May Karagay vill., the Borskaya dacha natural landmark (S.V. Titov)
	21.07.–22.07.	E50	Olenty river valley (S.V. Titov)
	22.07.–23.07.	E51	Ulken Ak-Zhar cretaceous slope (S.V. Titov)
	23.07.–25.07.	B35	Kyzyltau Mts., vic. of Zhana Zhosaly vill. (S.V. Titov)
	25.07.–26.07.	B36	Kyzyltau Mts., vic. of Dulga Tas Mt. (S.V. Titov)
	26.07.–27.07.	M40	Kalmykyrgan Mts., vic. of Old Akshiman vill. (S.V. Titov)
	27.07.–28.07.	M39	vic. of Koktobe vill. (S.V. Titov)
	28.07.–29.07.	M41	The former Semipalatinsk nuclear test site (S.V. Titov)
	02.08.–03.08.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	10.08.–11.08.	S23	vic. of Sharbakty vill. (S.M. Reznichenko)
	16.08.–17.08.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	22.08.–23.08.	P11	Pavlodar city (S.V. Titov)
	05.09.–06.09.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	10.09.–11.09.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	24.09.–25.09.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	26.09.–03.10.	E51	Ulken Ak-Zhar cretaceous slope (M. Černila & S.V. Titov)
	10.04.–11.04.	L28	vic. of Akku vill. (S.V. Titov)
	19.04.–20.04.	E51	Ulken Ak-Zhar cretaceous slope (S.V. Titov)
	27.04.–28.04.	E51	Ulken Ak-Zhar cretaceous slope (S.V. Titov)
	11.05.–12.05.	L24	vic. of Tuz lake (S.V. Titov)
	16.05.–17.05.	E46	Zhartas natural landmark (S.V. Titov)

Table 1., continued.

Year	Date	Locality code	Locality and the author of the material collection
2014	25.05.–26.05.	E46	Zhartas natural landmark (M. Černila, S.V. Titov, M. Kučinić)
2015	26.05.–27.05.	B32	Bayanaul Mts., vic. of Kempirtas Mt.(M. Černila, S.V. Titov, M. Kučinić)
	27.05.–28.05.	B35	Kyzyltau Mts., vic. of Zhana Zhosaly vill.(M. Černila, S.V. Titov, M. Kučinić)
	28.05.–29.05.	A45	vic. of the old road bridge over Irtysh river (M. Černila, S.V. Titov, M. Kučinić)
	17.06.–18.06.	L28	vic. of Akku vill. (S.V. Titov)
	18.06.–19.06.	S23	vic. of Sharbakty vill. (S.M. Reznichenko)
	17.07.–18.07.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	20.07.–21.07.	L24	Tuz lake (S.V. Titov)
	01.08.–04.08.	P23	vic. of Zhetekshi vill. (S.V. Titov)
	05.08.–06.08.	L24	Tuz lake (S.V. Titov)
	10.08.–11.08.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	11.08.–13.08.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	18.08.–19.08.	B39	Bayanaul Mts., Moldybulak natural landmark
	23.08.–24.08.	L28	vic. of Akku vill. (S.V. Titov)
	07.09.–08.09.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	11.09.–12.09.	E47	vic. of Karazhar vill. (S.V. Titov)
	17.09.–21.09.	E47	vic. of Karazhar vill. (S.V. Titov)
	12.10.–13.10.	P11	Pavlodar city (S.V. Titov)
	10.04.–11.04.	E51	Ulken Ak-Zhar cretaceous slope (M. Černila & S.V. Titov)
	11.04.–12.04.	E46	Zhartas natural landmark (M. Černila & S.V. Titov)
	12.04.–13.04.	B31	Bayanaul Mts., vic. of Shonai vill. (S.M. Reznichenko)
	13.04.–14.04.	B38	Bayanaul Mts., Zhumbak natural landmark (S.V. Titov)
	14.04.–15.04.	B32	Bayanaul Mts., vic. of Kempirtas Mt. (S.V. Titov)
	15.04.–16.04.	B30	Bayanaul Mts., Kurkeli natural landmark (S.V. Titov)
	16.04.–17.04.	B38	B38 Bayanaul Mts., Zhumbak natural landmark (S.V. Titov)
	17.08.–18.04.	A42	Zholpak river duct (S.V. Titov)
	18.04.–19.04.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	10.06.–11.06.	P19	vic. of. Zhertumsyk vill. (S.V. Titov)
	12.06.–13.06.	P22	vic. of Baydala vill. (S.V. Titov)
	15.06.–16.06.	L24	vic. of Tuz lake (S.V. Titov)
	21.06.–27.06.	A46	vic. of Kurkol vill. (S.V. Titov)
	28.06.–29.06.	U52	vic. of Lozovoye vill. (S.V. Titov)
2016	29.06.–30.06	U53	Borly lake (S.V. Titov)
	30.06.–01.07.	U54	vic. of Big Azhbulat lake (S.V. Titov)
	01.07.–02.07.	U56	1.5 km. east of the Steklyannoe lake (S.V. Titov)
	02.07.–03.07.	U57	ruins of uninhabited village Vesely Klin (S.V. Titov)
	03.07.–04.07.	B35	Kyzyltau Mts., vic. of Zhana Zhosaly vill. (S.V. Titov)
	02.07.–03.07.	P11	Pavlodar city (V.I. Blokhin)

Table 1., continued.

Year	Date	Locality code	Locality and the author of the material collection
2016	07.07.–08.07.	B30	Bayanaul Mts., Kurkeli natural landmark (S.V. Titov)
	08.07.–09.07.	B33	Bayanaul Mts., vic. of Toraighyr lake (S.V. Titov)
	10.07.–11.07.	A47	vic. of Kalkaman vill. (S.V. Titov)
	11.07.–12.07.	B30	Bayanaul Mts., Kurkeli natural landmark (S.V. Titov)
	12.07.–15.07.	B33	Bayanaul Mts., vic. of Toraighyr lake (S.V. Titov)
	15.07.–16.07.	B35	Kyzyltau Mts., vic. of Zhana Zhosaly vill. (S.V. Titov)
	23.07.–24.07.	P23	vic. of Zhetekshi vill. (S.V. Titov)
	24.07.–25.07.	A46	vic. of Kurkol vill. (S.V. Titov)
	25.07.–26.07.	P23	vic. of Zhetekshi vill. (S.V. Titov)
	26.07.–27.07.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	27.07.–28.07.	B33	Bayanaul Mts., vic. of Toraighyr lake (S.V. Titov)
	28.07.–29.07.	A48	Western shore of the lake Kudaykol (S.V. Titov)
	29.07.–30.07.	P23	vic. of Zhetekshi vill. (S.V. Titov)
	15.08.–16.08.	B30	Bayanaul Mts., Kurkeli natural landmark (S.V. Titov)
	16.08.–17.08.	E54	Ulken-Koyandy mountain (S.V. Titov)
	11.04–12.04.	Z4	vic. of Moiseevka vill. (S.S. & YU. P. Lorents)
	15.04.–16.04.	E46	Zhartas natural landmark (S.V. Titov)
	16.04.–17.04.	E53	West shore of Shiderty reservoir (S.V. Titov)
	17.04.–18.04.	E51	Ulken Ak-Zhar cretaceous slope (S.V. Titov)
	18.04.–19.04.	E46	Zhartas natural landmark (S.V. Titov)
	19.04.–20.04.	E53	West shore of Shiderty reservoir (S.V. Titov)
	21.04.–22.04.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	24.04.–25.04.	E48	Shiderty reservoir, water pump №7 (S.V. Titov)
	06.05.–07.05.	E53	West shore of Shiderty reservoir (S.V. Titov)
	14.05.–17.05.	B33	Bayanaul Mts., vic. of Toraighyr lake (S.V. Titov, A.V. Volynkin, M.S. Ivanova)
	20.05.–21.05.	P17	vic. of NE shore of Koryakovka lake (S.V. Titov)
	15.06.–16.06.	B33	Bayanaul Mts., vic. of Toraighyr lake (S.V. Titov)
	19.07.–20.07.	L28	vic. of Akku vill. (A.S. Karim)
	25.07.–26.07.	Z4	vic. of Moiseevka vill. (S.S. & YU.P. Lorents)
2017	30.07.–01.08.	B37	Bayanaul Mts., Zhasybai lake (T.K. Aylybayev)
	01.08.–02.08.	P11	Pavlodar city (S.V. Titov)
	02.08.–03.08.	B33	Bayanaul Mts., vic. of Toraighyr lake (S.V. Titov)
	03.08.–04.08.	B35	Kyzyltau Mts., vic. of Zhana Zhosaly vill. (S.V. Titov)
	05.08–06.08.	E48	Shiderty reservoir, water pump №7 (S.V. Titov)
	05.08–06.08.	E51	Ulken Ak-Zhar cretaceous slope (S.V. Titov)
	06.08.–07.08.	A42	Zholpak river duct (S.V. Titov)
	07.08.–09.08.	B33	Bayanaul Mts., vic. of Toraighyr lake (S.V. Titov)
	09.08.–10.08.	B29	Bayanaul Mts., Birzhankol lake (S.V. Titov)
	13.08.–15.08.	Z4	vic. of Moiseevka vill. (S.V. Titov)
	15.08.–16.08.	P11	Pavlodar city (K.S. Titov)
	16.08.–19.08.	Z1	vic. of Mikhailovka vill. (S.V. Titov)
	20.08.–21.08	P11	Pavlodar city (S.V. Titov)
2017	21.08.–22.08.	A46	vic. of Kurkol vill. (S.V. Titov)

Table 1., continued.

Year	Date	Locality code	Locality and the author of the material collection
2017	23.08.–24.08.	P24	vic. of Dolgoye vill. (S.V. Titov)
	24.08.–25.08.	P19	vic. of. Zhertumsyk vill. (S.V. Titov)
	31.08.–01.09.	P24	vic. of Dolgoye vill. (S.V. Titov)
	17.09.–18.09.	P11	Pavlodar city (S.V. Titov)
	18.09.–19.09.	P12	vic. of Pavlodarskoe vill. (S.V. Titov)
	22.09.–23.09.	B40	Bayanaul Mts., vicinity of the Konyr Auliye cave (S.V. Titov)
	17.10.–19.10.	B41	Bayanaul Mts., Konyr Auliye cave (S.V. Titov)

Detailed list of the locations of the collections is shown in Appendix I. In the description of the localities, the administrative name of the district, a toponymic name, a code consisting of the capital letter of the administrative district and a localiy number. The total number of localities of this study is 73. In the description of each locality, the chronological information of the conducted studies in the format year, month, GPS coordinates and a brief description of the landscape botanical structure is indicated. Detailed dates of collections in each locality are given in the format day, month, year, the initials of the names and surnames of the collectors are indicated.

4.2. Methods for collecting material

The main Noctuoidea collections were obtained using light traps of different types, Osram HWL (MBFT) 250 W and Osram HWL (MBFT) 160 W mixed-light lamps, Sylvania HSL-BW 125W ultraviolet lamps, Sylvania F15w / 350bl Blacklight and Philips TL 8W / 05. For the power supply of 220 V voltage lamps, the four-stroke generators Kipor IG1000 and Firman SP-S2000i were used, the lamps in the Yalas traps were powered by lead acid batteries 12V, 20Ah. For the collection of insects several different types of traps based on tissue screens and Yalas traps have been used. In addition to the light traps, a method of fragrant wine and fruit baits was used. In the floodplain forests of the Irtysh river Noctuoidea specimens were collected feeding on aphid colonies. Some Noctuoidea species were obtained by breeding from eggs or caterpillars. Specimens of *Autophila chamaephanes* and *Hypena rostralis*, were collected in a state of hibernation in the mountain caves of Bayanaul. Specimes were fixed in the killing jars (Koch, 1972; Zolotarenko, 1970) containing the fumes of ethyl acetate (CH3-COO-CH2-CH3). The chloroform (CHCl3) was used in the Yalas traps.

4.3. Laboratory processing

For the laboratory processing, classical methods were used. After killing the insects, they were stacked on the cotton layers or pinned on the entomological pins in the entomological boxes. Dry specimens of Noctuoidea were moistened in desiccator and spread on balsa wood spreading boards.

For photographing living insects in nature and dry specimens in the collection a digital SLR camera Canon EOS 5D Mark II with Photolenses Canon EF 100 mm f / 2.8L Macro USM, SIGMA 24-70MM F / 2.8 IF EX DG HS, flash Canon Speedlite 600EX- RT was used. To study external and internal morphological characteristics, a stereoscopic microscope MBS-10 was used.

Over the period of the study, more than 70,000 specimens of Noctuoidea were studied, more than 100 permanent preparations of genitals were prepared by the method of maceration of genetal structures in alkali (Kononenko, 2003). This method is described in detail by other authors (Hardwick, 1950; McCabe, 1980; Lafontaine, 1981; Lafontaine & Mikkola, 1987; Fibiger, 1997). I did not carry out the method of maceration of the genitals myself.

4.4. Accepted systems and classifications

For the main system of classification of distribution areas of Noctuoidea species in the territory of Northeastern Kazakhstan, with a slight change in the longitude classification, a classification by (Kononenko, 2005) and (Volynkin, 2012), compiled on the basis of the method (Gorodkov, 1984) was used.

The distribution analyze of Noctuoide in the geobotanical areas of the Pavlodar region, was based on the geobotanical regionalization map of the USSR (1947).

For determination of the material and conducting faunistic and taxonomic analysis, the literature was used: Kozhanchikov (1937, 1950), Kononenko (2003, 2010, 2016), Matov et al. (2008), Suvortsev (1894), Fibiger (1990, 1993, 1997, 2007, 2008), Fibiger & Lafontaine (2005), Fibiger & Hacker (2007), Goater et al. (2003), Hacker (1992, 1996, 1998, 2004), Hacker et al. (2002, 2008), Iohn (1910), Nupponen & Fibiger (2002, 2006), Ronkay & Ronkay (1994, 1995, 2009), Ronkay et al. (2011, 2008), Ronkay (1989, 2005), Ronkay et al. (2001, 1997), Witt & Ronkay (2011), Volynkin (2012b), Speidel & Witt (2011) and Shovkoon & Trofimova (2016).

To collect useful information and identify some species, the following Internet resources was used: http://www.lepiforum.de; http://noctuidae.de; http://www.

dissectiongroup.co.uk;http://szmn.eco.nsc.ru; http://www.nsc.ru/win/elbib/atlas/list.dhtml? Arctiidae.

The following museum collections were studied: SZMN – Siberian Zoological Museum of the Institute of Systematics and Ecology of Animals, Siberian Branch of RAS (Novosibirsk, Russia), ZIN – collections of Zoological Institute of the Russian Academy of Sciences, Russia), ZMK – Zoological Museum of Kiev Taras Shevchenko National University, KSRIPPQ – Kazakh scientific research institute of plant protection and quarantine (Almaty, Kazakhstan).

Specimens of Noctuoidea from the territory of Pavlodar region of Kazakhstan are stored in the following collections: SZMN – Siberian Zoological Museum of the Institute of Systematics and Ecology of Animals, Siberian Branch of RAS (Novosibirsk, Russia), ZIN – collections of Zoological Institute of the Russian Academy of Sciences (St. Petersburg, Russia), ZMK – Zoological Museum of Kiev Taras Shevchenko National University, KSRIPPQ – Kazakh Institute of Plant Protection and Quarantine (Almaty, Kazakhstan), CST – collection of Sergey Titov (Pavlodar, Kazakhstan), CAV – collection of Anton Volynkin (Barnaul, Russia), MCK – Matjaž Černila (Kamnik, Slovenia).

4.5. Statistical analysis

To analyze the similarities between the faunas of geobotanical districts and the similarity of the fauna of landscape biotope groups, the Jacquard similarity coefficient was calculated using the formula:

$$K_J = \frac{C}{A+B-C}$$

where C is the number of species common to both faunas; A, B – the number of species in the compared groups.

Cluster analysis of the similarity of the compared groups was carried out using the statistical program Biodeversity Pro Version 2.

4.6. Characteristics of Pavlodar region (Kazakhstan)

4.6.1. Geographical position of Pavlodar region

Under the term "North-East Kazakhstan" is meant the Pavlodar region of Kazakhstan. The borders of the Pavlodar region are accepted according to the administrative borders from 2018. Pavlodar region is located in the North-Eastern part of the Republic of Kazakhstan, in the

basin of the middle reaches of the river Irtysh between 54°27.5'–49°55'N, and from 73°22' to almost 80° E. Its area is 127.5 thousand $km^{2.}$ (Insebayev, 2017). In the north and northeast the Pavlodar region borders the Russian Federation, the Omsk and Novosibirsk regions, in the east is the Altai Territory, in the south are the Karaganda and East Kazakhstan regions, in the west are the North Kazakhstan and Akmola regions (Insebayev, 2017). The territory of the Pavlodar region is located in the steppe zone, characterized by 4 natural subzones. The surface of the Pavlodar region is divided into two geomorphological parts: a flat, large area, which includes the southeastern part of the West Siberian lowland (with absolute altitudes predominantly within 100–200 m), and the smaller mountain and hilly, occupying about a third of the region in the south and representing the north-eastern outskirts of the Kazakh Upland (Melkosopochnik – Saryarka) with a peculiarly dissected relief and absolute heights from 150 to 1055 m. The relief of the Kazakh Upland is dismembered and consists of numerous hills with rocky outcrops and three small mountain massifs: Bayanaul, Akshiman and Kyzyltau mountains, which represent the highest point of the Pavlodar region (Mount Aulie, 1055 m) (Insebayev, 2017).

4.6.2. Geological features of Pavlodar region

The Pavlodar region is geomorphologically located on the Kazakh shield of the Ural-Siberian platform, partially represented by the outskirts of the Turan and West Siberian plates (Sidorenko, 1967). The Ural-Siberian young Epihercin platform is located in the western part of Siberia between two Precambrian platforms: the East European and the Siberian. The platform includes a number of geotectonic areas, differing in geological structure and development history: the Urals, South Taimyr, East Kazakhstan, Altai and West Siberian plate. Common to them is the Late Paleozoic time for the completion of the geosynclinal regime. A feature of the Ural-Siberian platform is the extensive development of the outcrops of the Paleozoic basement along the abundant stocks of high-quality fracture waters. The main massifs of granites are covered by relic pine forests. Among the most ancient formations of the region are the Camrosiluria, represented mainly by metamorphic schists, marble limestones, jasper, porphyrites

and tuffs. Significant outputs of these are found in the interfluve of Olenta and Shiderty rivers (Insebaev, 2017). At the end of the Devonian there is an accumulation of marine strata, represented mainly by limestones, which contain powerful reserves of groundwater. In the Carboniferous period, there is a significant accumulation of lagoon formations – limestones, mudstones – with interlayers of coals. (Insebaev, 2017).

Cenozoic deposits are widespread in the region. Their capacity increases in the direction to the northeast: from 10 meters to the left bank near the lake Seleteniz to hundreds of meters on the right bank of the Pavlodar region (Insebaev, 2017). Marine Paleogene clays, marls and sandstones are developed on a large area of the left bank of the Priirtysh plain and in some places are exposed in the Irtysh valley. The continental deposits of the Neogene overlie the marine Paleogene deposits: they represent an alternation of variegated clays, marls and sand (Insebaev, 2017). In connection with the close occurrence of saline tertiary clays, the groundwater of the flat territory of the region is highly mineralized. This phenomenon to some extent affects the salinity of surface waters and the formation of solonchak sites. Friable deposits of Quaternary time occupy most of the territory of the Priirtysh plain; insignificant accumulations of them are also found within the Kazakh Upland (Insebaev, 2017).

4.6.3. Climatic features of Pavlodar region

The area is open to the influence of air masses from the arctic, temperate and southern latitudes, under the influence of which the type of continental climate is formed here, which is characterized by aridity of the spring-summer period, a long and cold winter (5–5.5 months), hot and short summer (3 months). Insufficient and unstable amount of the precipitation year by year, with the summer maximum and significant wind activity throughout the year (Kamkin, 2009). The average annual precipitation varies from 200 mm (in the south in the subzone of desert steppes) to 310 mm (in the north in the subzone of arid steppes). The average annual air temperature throughout the region is positive and regularly increases southward. The duration of a warm period with an air temperature above 0 º is an average of 180–200 days. The duration of

the period with an average temperature above 10º is 135–145 days with the sum of temperatures during this time of 2200–2600º, with an increase to the south (Kamkin, 2009). The first autumn frosts are observed in most cases in the middle and in the end of September, and the last spring frosts in the middle and in the end of May. The frost-free period lasts an average of 110 days in the north and 135 days in the south – from May to September inclusive (Insebaev, 2007). In some very severe winters the air temperature drops to minus 45–49ºC (absolute minimum), the summer absolute maximum is 40–43º of heat (Insebaev, 2007). Directly in the floodplain of the Irtysh river the climate is somewhat milder, in comparison with the adjacent terrain, due to the influence of a whole complex of intrazonal factors.

4.6.4. Floristic features of Pavlodar region

On the territory of the Pavlodar region, according to the literature data, there are more than 1000 species of higher vascular plants and 11 species of algae (Kamkin 2009, 2013). According to the research (Kamkin, 2013) 992 species of higher vascular plants belonging to 96 families were identified. Systematic analysis of flora species by taxonomic rank: Polypodyophyta – 16 species; Equisetophyta – 6 species; Gymnospermae – 4 species; Angeospermae – 966 species. Within the angiosperms group, the following distribution is observed for classes: Monocotyledones – 215 species; Dicotyledones – 751 species. Thus, the basis of the vegetation of the Pavlodar region is made up of benthic angiosperms (Kamkin, 2013). The main families of the flora are such characteristic families as Asteraceae (145 species), Poaceae (90 species), Fabaceae (64 species), Caryophyllaceae (57 species), Brassicaceae (56 species), Rosaceae (49 species), Cyperaceae (45 species), Ranunculaceae (38 species), Chenopodiaceae (37 species), Lamiaceae (36 species), Scrophulariaceae (33 species), Apiaceae (23 species). The remaining 84 families include 673 species (Kamkin, 2013). The flora of the Pavlodar region is characterized by a sufficient variety of life forms of plants. Trees – 17 species, shrubs – 45 species, small shrubs – 5 species, semi-shrubs – 14 species, semi-small shrubs – 10

species, grasses – 898 species, perennial grasses – 665 species, biennial grasses – 54 species, annual grasses – 179 species, 2 species (Kamkin, 2013).

5. RESULTS

5.1. Diversity of the Noctuoidea fauna of the Pavlodar region

During this study 3 Families, 27 Subfamilies, 45 Tribes, 25 Subtribes, 221 Genuses, 68 Subgenuses and 485 Species from the superfamily Noctuoidea were found for the territory of the Pavlodar region (Tab. 2).

Table 2. Diversity of the Noctuoidea fauna of the Pavlodar region

Superfamily **Noctuoidea**

Family	Subfamily	Tribe	Subtribe	Genus	Subgenus	Species
Erebidae	Lymantriinae	3	0	6	3	8
	Arctiinae	3	7	27	0	39
	Herminiinae	0	0	6	0	7
	Hypeninae	0	0	2	0	4
	Rivulinae	0	0	1	0	1
	Scoliopteryginae	1	0	1	0	1
	Calpinae	1	0	1	0	1
	Boletobiinae	3	0	4	0	12
	Phytometrinae	1	0	1	0	1
	Toxocampinae	0	0	2	2	8
	Erebinae	4	0	6	0	19
Nolidae	Nolinae	1	0	1	0	3
	Chloephorinae	3	3	3	0	5
Noctuidae	Plusiinae	3	3	13	0	22
	Eustrotiinae	0	0	2	2	5
	Acontiinae	2	0	2	2	3
	Pantheinae	0	0	1	0	1
	Acronictinae	0	12	2	4	12
	Metoponiinae	0	0	2	0	2
	Cuculliinae	0	0	1	0	30
	Amphipyrinae	2	1	2	0	7
	Oncocnemidinae	0	0	5	1	10
	Condicinae	2	0	2	0	3
	Heliothinae	0	0	5	0	8
	Bryophilinae	0	0	4	3	4
	Noctuinae	10	11	91	31	187
	Hadeninae	5	0	28	19	82

Below is a taxonomic list of the Noctuoidea fauna of the Pavlodar region of Kazakhstan.

In the check-list presented below, we generally accept the classification of Noctuoidea proposed by Lafontaine & Schmidt (2010), with some changes published later (Lafontaine & Schmidt (2011, 2013), Rota et al. (2015), Kononenko (2016).

The classification of the subfamily Lymantriinae is still not well-established, and here we accept the tribal classification by Holloway (1999) and Lafontaine & Schmidt (2010, 2013).

Taxa treated as subgenera of *Orgyia* Ochsenheimer, 1810 by Speidel & Witt (2011) I consider here as separate genera due significant differences in their male genitalia structures. The subgeneric structure of *Lymantria* Hübner, [1819] and *Gynaephora* Hübner, [1819] are accepted here after Speidel & Witt (2011).

Witt et al. (2011) synonymized the arctiine genera *Eucharia* Hübner, [1819] and *Epicallia* Hübner, [1819] with *Arctia* Schrank, 1802 and downgraded them to the subgeneric level, but here I follow Dubatolov (2010) and Lafontaine & Schmidt (2013) and treat *Eucharia* and *Epicallia* as distinct genera. The generic classification of the subtribe Lithosiina (Erebidae: Arctiinae) is accepted here according to Dubatolov & Zolotuhin (2011).

Goater et al. (2003) and Yela et al. (2011) treated *Callistege* Hübner, [1823] and *Gonospileia* Hübner, [1823] as subgenera of *Euclidia* Ochsenheimer, 1816, but after Kononenko (2010) I consider them as different genera.

The tribal classification of the subfamily Chloephorinae (Nolidae) is accepted after Zahiri et al. (2012). The list contains the following sequence of taxon ranks: superfamily, family, subfamily, tribe, subtribe, genus, subgenus and species. In the name of the species are indicated the name of the genus, subgenus, species, author and the year of the description of the species.

Superfamily NOCTUOIDEA

Family EREBIDAE Leach, [1815]

Subfamily LYMANTRIINAE Hampson, [1893]

Tribe Lymantriini Hampson, [1893]

Genus *Lymantria* Hübner, [1819]

Subgenus *Porthetria* Hübner, [1819]

Lymantria (*Porthetria*) *dispar* (Linnaeus, 1758)

Tribe Orgyiini Wallengren, 1861

Genus *Gynaephora* Hübner, [1819]

Subgenus *Dicallomera* Butler, 1881

Gynaephora (*Dicallomera*) *fascelina* (Linnaeus, 1758

Gynaephora (Dicallomera) pumila (Staudinger, 1881)

Genus *Clethrogyna* Rambur, [1866]

Clethrogyna dubia (Tauscher, 1806)

Genus *Thylacigyna* Rambur, [1866]

Thylacigyna antiquoides (Hübner, [1822])

Tribe Leucomini Grote, 1895

Genus *Leucoma* Hubner, 1822

Leucoma salicis (Linnaeus, 1758)

Tribe Nygmiini Holloway, 1999

Genus *Euproctis* Hübner, [1819]

Euproctis kargalika (Moore, 1878)

Genus *Sphrageidus* Maes, 1984

Sphrageidus similis (Fuessly, 1775)

Subfamily ARCTIINAE Leach, [1815]

Tribe Lithosiini Billberg, 1820

Subtribe Lithosiina Billberg, 1820

Genus *Cybosia* Hübner, [1819] 1816

Cybosia mesomella (Linnaeus, 1758)

Genus *Manulea* Wallengren, 1863

Manulea palliatella (Scopoli, 1763)

Manulea complana (Linnaeus, 1758)

Manulea pygmaeola (Doubleday, 1847)

Manulea lutarella (Linnaeus, 1758)

Manulea lurideola ([Zincken], 1817)

Genus *Wittia* de Freina, 1980

Wittia sororcula (Hufnagel, 1766)

Genus *Collita* Moore, 1878

Collita griseola (Hübner, [1803])

Genus *Atolmis* Hübner, [1819] 1816

Atolmis rubricollis (Linnaeus, 1758)

Genus *Pelosia* Hübner, [1819] 1816

Pelosia muscerda (Hufnagel, 1766)

Pelosia obtusa (Herrich-Schäffer, 1847)

Subtribe Endrosina Börner, 1932

Genus *Stigmatophora* Staudinger, 1881

Stigmatophora flava (Bremer & Grey, 1852)

Stigmatophora micans (Bremer & Grey, 1852*)*

Genus *Setina* Schrank, 1802

Setina irrorella (Linnaeus, 1758)

Setina roscida ([Denis & Schiffermüller], 1775)

Subtribe Nudariina Walker, [1865] 1864

Genus *Thumatha* Walker, 1866

Thumatha senex (Hübner, [1808])

Genus *Miltochrista* Hübner, [1819] 1816

Miltochrista miniata (J.R. Forster, 1771)

Tribe Arctiini Leach, [1815]

Subtribe Callimorphina Walker, 1865

Genus *Tyria* Hübner, [1819] 1816

Tyria jacobaeae (Linnaeus, 1758)

Genus *Lacydes* Walker, 1855

Lacydes spectabilis (Tauscher, 1806)

Genus *Spiris* Hübner, [1819] 1816

Spiris striata (Linnaeus, 1758)

Genus *Coscinia* Hübner, [1819] 1816

Coscinia cribraria (Linnaeus, 1758)

Subtribe Arctiina Leach, [1815]

Genus *Hyphoraia* Hübner, [1820] 1816

Hyphoraia aulica (Linnaeus, 1758)

Genus *Arctia* Schrank, 1802

Arctia caja (Linnaeus, 1758)

Arctia flavia (Fuessly, 1779)

Genus *Epicallia* Hübner, [1820] 1816

Epicallia villica (Linnaeus, 1758)

Genus *Eucharia* Hübner, [1820] 1816

Eucharia festiva (Hufnagel, 1766)

Subtribe Micrarctiina Seitz, 1910

Genus *Chelis* Rambur, 1866

Chelis maculosa (Gerning, 1780)

Chelis caecilia (Kindermann in Lederer, 1853)

Chelis dahurica (Boisduval, 1832)

Genus *Diacrisia* Hübner, [1819] 1816

Diacrisia sannio (Linnaeus, 1758)

Genus *Rhyparia* Hübner, [1820] 1816

Rhyparia purpurata (Linnaeus, 1758)

Subtribe Spilosomina Seitz, 1910

Genus *Watsonarctia* de Freina & Witt, 1984

Watsonarctia deserta (Bartel, 1902)

Genus *Spilosoma* Curtis, 1825

Spilosoma lubricipeda (Linnaeus, 1758)

Spilosoma urticae (Esper, 1789)

Genus *Spilarctia* Butler, 1875

Spilarctia lutea (Hufnagel, 1766)

Genus *Phragmatobia* Stephens, 1828,

Phragmatobia fuliginosa (Linnaeus, 1758)

Genus *Eudiaphora* Dubatolov, 1990

Eudiaphora turensis (Erschoff, 1874)

Tribe Syntomini Herrich-Schäffer, [1846]

Genus *Amata* Fabricius, 1807

Amata transcaspica Obraztsov, 1941

Amata caspia (Staudinger, 1877)

Subfamily HERMINIINAE Leach, [1815]

Genus *Simplicia* Guenée, 1854

Simplicia rectalis (Eversmann, 1842)

Genus *Paracolax* Hübner, [1825] 1816

Paracolax tristalis (Fabricius, 1794)

Genus *Herminia* Latreille, 1802

Herminia tenuialis (Rebel, 1896)

Herminia tristriga W. Kozhantschikov, 1929

Genus *Polypogon* Schrank, 1802

Polypogon tentacularia (Linnaeus, 1758)

Genus *Pechipogo* Hübner, 1825] 1816

Pechipogo strigilata (Linnaeus, 1758)

Genus *Zanclognatha* Lederer, 1857

Zanclognatha lunalis (Scopoli, 1763)

Subfamily HYPENINAE Herrich-Schäffer, [1851]

Genus *Zekelita* Walker, 1863

Zekelita ravulalis (Staudinger, 1879)

Genus *Hypena* Schrank, 1802

Hypena rostralis (Linnaeus, 1758)

Hypena obesalis (Treitschke, 1829)

Hypena tristalis Lederer, 1853

Subfamily RIVULINAE Grote, 1895

Genus *Rivula* Guenée, [1845] 1844

Rivula sericealis (Scopoli, 1763)

Subfamily SCOLIOPTERYGINAE Herrich-Schäffer, [1852]

Tribe Scoliopterygini Herrich-Schäffer, [1852]

Genus *Scoliopteryx* Germar, 1810

Scoliopteryx libatrix (Linnaeus, 1758)

Subfamily CALPINAE Boisduval, 1840

Tribe Calpini Boisduval, 1840

Genus *Calyptra* Ochsenheimer, 1816

Calyptra thalictri (Borkhausen, 1790)

Subfamily BOLETOBIINAE Guenée, [1858]

Tribe Boletobiini Guenée, [1858]

Genus *Parascotia* Hübner, [1825]1816

Parascotia fuliginaria (Linnaeus, 1761)

Tribe Aventiini Tutt, 1896

Genus *Paragona* Staudinger, 1892

Paragona cognata (Staudinger, 1892)

Tribe Eublemmini Forbes, 1954

Genus *Odice* Hübner, [1823]

Odice arcuinna (Hübner, 1790)

Genus *Eublemma* Hübner, [1821] 1816

Eublemma minutata (Fabricius, 1794)

Eublemma ostrina (Hübner, [1808])

Eublemma porphyrinia (Freyer, 1845)

Eublemma panonica (Freyer, 1840)

Eublemma amasina (Eversmann, 1842)

Eublemma purpurina ([Denis & Schiffermüller], 1775)

Eublemma pallidula (Herrich-Schäffer, 1856)

Eublemma pusilla (Eversmann, 1834)

Eublemma polygramma (Duponchel, 1842)

Subfamily PHYTOMETRINAE Hampson, 1913

Tribe Phytometrini Hampson, 1913

Genus *Phytometra* Haworth, 1809

Phytometra viridaria (Clerck, 1759)

Subfamily TOXOCAMPINAE Guenée, 1852

Genus *Lygephila* Billberg, 1820

Lygephila lubrica (Freyer, 1842)

Lygephila ludicra (Hübner, 1790)

Lygephila pastinum (Treitschke, 1826)

Lygephila viciae (Hübner, [1822])

Lygephila craccae ([Denis & Schiffermüller], 1775)

Lygephila asiatica Pekarsky, 2016

Genus *Autophila* Hübner, [1823] 1816

Subgenus *Cheirophanes* Boursin, 1955

Autophila (*Cheirophanes*) *chamaephanes* Boursin, 1940

Subgenus *Autophila* Hübner, [1823]

Autophila (*Autophila*) *vespertalis* (Staudinger, 1896)

Subfamily EREBINAE Leach, [1815]

Tribe Acantholipini Fibiger & Lafontaine, 2005

Genus *Acantholipes* Lederer, 1857

Acantholipes regularis (Hübner, 1813)

Tribe Catocalini Boisduval, [1828]

Genus *Catocala* Schrank, 1802

Catocala fulminea (Scopoli, 1763)

Catocala neonympha (Esper, 1805)

Catocala fraxini (Linnaeus, 1758)

Catocala nupta (Linnaeus, 1767)

Catocala adultera Ménétriès, 1856

Catocala deducta Eversmann 1843

Catocala puerpera (Giorna, 1791)

Catocala lupina Herrich-Schäffer, 1851

Catocala pacta (Linnaeus, 1758)

Tribe Melipotini Grote, 1895

Genus *Drasteria* Hübner, 1818

Drasteria cailino (Lefebvre, 1827)

Drasteria rada (Boisduval, 1848)

Drasteria christophi (Alphéraky, 1895)

Drasteria obscurata (Staudinger, 1882)

Tribe Euclidiini Guenée, 1852

Genus *Euclidia* Ochsenheimer, 1816

Euclidia glyphica (Linnaeus, 1758)

Genus *Callistege* Hübner, [1823]1816

Callistege mi (Clerck, 1759)

Callistege fortalitium (Tauscher, 1809)

Genus *Gonospileia* Hübner, [1823] 1816

Gonospileia triquetra ([Denis & Schiffermüller], 1775)

Gonospileia munita (Hübner, [1818])

Family NOLIDAE Bruand, 1846

Subfamily NOLINAE Bruand, 1846

Tribe Nolini Bruand, 1846

Genus *Nola* Leach, 1815

Nola aerugula (Hübner, 1793)

Nola crambiformis Rebel, 1902

Nola confusalis (Herrich-Schäffer, 1847)

Subfamily CHLOEPHORINAE Stainton, 1859

Tribe Eariadini Hampson, 1912

Subtribe Eariadina Hampson, 1912

Genus *Earias* Hübner, [1825] 1816

Earias clorana (Linnaeus, 1761)

Tribe Chloephorini Stainton, 1859

Subtribe Chloephorina Stainton, 1859

Genus *Pseudoips* Hübner, 1822

Pseudoips prasinana (Linnaeus, 1758)

Tribe Sarrothripini Hampson, 1894

Subtribe Sarrothripina Hampson, 1894

Genus *Nycteola* Hübner, 1822

Nycteola eremostola Dufay, 1961

Nycteola degenerana (Hübner, 1799)

Nycteola asiatica (Krulikovsky, 1904)

Family NOCTUIDAE Latreille, 1809

Subfamily PLUSIINAE Boisduval, [1828]

Tribe Abrostolini Eichlin & Cunningham, 1978

Genus *Abrostola* Ochsenheimer, 1816

Abrostola triplasia (Linnaeus, 1758)

Abrostola tripartita (Hufnagel, 1766)

Tribe Argyrogrammatini Eichlin & Cunningham, 1978

Genus *Trichoplusia* McDunnough, 1944

Trichoplusia ni (Hübner, [1803])

Tribe Plusiini Boisduval, [1828]

Subtribe Autoplusiina Kitching, 1987

Genus *Macdunnoughia* Kostrowicki, 1961

Macdunnoughia confusa (Stephens, 1850)

Genus *Diachrysia* Hübner, [1821] 1816

Diachrysia chryson (Esper, 1789)

Diachrysia chrysitis (Linnaeus, 1758)

Diachrysia stenochrysis (Warren, 1913)

Diachrysia zosimi (Hübner, [1822])

Subtribe Euchalciina Chou & Lu, 1979

Genus *Euchalcia* Hübner, [1821] 1816

Euchalcia consona (Fabricius, 1787)

Genus *Polychrysia* Hübner, [1823] 1816

Polychrysia esmeralda (Oberthür, 1880)

Genus *Panchrysia* Hübner, [1821] 1816

Panchrysia deaurata (Esper, 1787)

Genus *Lamprotes* Reichenbach, Leiptzig, 1817

Lamprotes c-aureum (Knoch, 1781)

Genus *Plusidia* Butler, 1879

Plusidia cheiranthi (Tauscher, 1809)

Subtribe Plusiina Boisdival, [1828]

Genus *Autographa* Hübner, [1821] 1816

Autographa gamma (Linnaeus, 1758)

Autographa buraetica (Staudinger, 1892)

Autographa mandarina (Freyer, 1845)

Autographa bractea ([Denis & Schiffermüller], 1775)

Autographa excelsa (Kretschmar, 1862)

Genus *Cornutiplusia* Kostrowicki, 1961

Cornutiplusia circumflexa (Linnaeus, 1767)

Genus *Syngrapha* Hübner, [18213] 1816

Syngrapha interrogationis (Linnaeus, 1758)

Genus *Plusia* Ochsenheimer, 1816

Plusia festucae (Linnaeus, 1758)

Plusia putnami (Grote, 1873)

Subfamily EUSTROTIINAE Grote, 1882

Genus *Phyllophila* Guenee, 1852

Phyllophyla obliterata (Rambur, 1833)

Genus *Deltote* Reichenbach, 1817

Subgenus *Protodeltote* Ueda, 1984

Deltote (*Protodeltote*) *pygarga* (Hufnagel, 1766)

Subgenus *Deltote* Reichenbach, 1817

Deltote (*Deltote*) *deceptoria* (Scopoli, 1763)

Deltote (*Deltote*) *uncula* (Clerck, 1759)

Deltote (*Deltote*) *bankiana* (Fabricius, 1775)

Subfamily ACONTIINAE Guenée, 1841

Tribe Acontiini Guenée, 1841

Genus *Acontia* Ochsenheimer, 1816

Subgenus *Acontia* Ochsenheimer, 1816

Acontia (*Acontia*) *lucida* (Hufnagel, 1766)

Subgenus *Emmelia* Hübner, [1821]

Acontia (*Emmelia*) *trabealis* (Scopoli, 1763)

Tribe Aediini Beck, 1960

Genus *Aedia* Hübner, [1823] 1816

Aedia funesta (Esper, 1786)

Subfamily PANTHEINAE Smith, 1898

Genus *Colocasia* Ochsenheimer, 1816

Colocasia coryli (Linnaeus, 1758)

Subfamily ACRONICTINAE Heinemann, 1859

Genus *Leiometopon* Staudinger, 1888

Leiometopon simyrides Staudinger, 1888

Genus *Acronicta* Ochsenheimer, 1816

Subgenus *Jocheaera* Hübner, [1820] 1816

Acronicta (*Johaera*) *alni* (Linnaeus, 1767)

Subgenus *Triaena* Hübner, 1818

Acronicta (*Triaena*) *cuspis* (Hübner, [1813])

Acronicta (*Triaena*) *tridens* ([Denis & Schiffermüller], 1775)

Acronicta (*Triaena*) *psi* (Linnaeus, 1758)

Subgenus *Viminia* Chapman, 1890

Acronicta (*Viminia*) *auricoma* ([Denis & Schiffermüller], 1775)

Acronicta (*Viminia*) *rumicis* (Linnaeus, 1758)

Acronicta (*Viminia*) *cinerea* (Hufnagel, 1766)

Subgenus *Simyra* Ochsenheimer, 1816

Acronicta (*Simyra*) *nervosa* ([Denis & Schiffermüller], 1775)

Acronicta (*Simyra*) *albovenosa* (Goeze, 1781)

Acronicta (*Simyra*) *dentinosa* Freyer, 1838

Subgenus *Subacronicta* I. Kozhanchikov, 1950

Acronicta (*Subacronicta*) *megacephala* ([Denis & Schiffermüller], 1775)

Subfamily METOPONIINAE Herrich-Schäffer, [1851]

Genus *Mycteroplus* Herrich-Schäffer, 1850

Mycteroplus puniceago (Boisduval, 1840)

Genus *Tyta* Billberg, 1820

Tyta luctuosa ([Denis & Schiffermüller], 1775)

Subfamily CUCULLIINAE Herrich-Schäffer, [1850]

Genus *Cucullia* Schrank, 1802

Cucullia tiefi Tshetverikov, 1956

Cucullia praecana Eversmann, 1843

Cucullia propinqua Eversmann, 1842

Cucullia scopariae Dorfmeister, 1853

Cucullia fraudatrix Eversmann, 1837

Cucullia absinthii (Linnaeus, 1761)

Cucullia argentea (Hufnagel, 1766)

Cucullia infuscata Tshetverikov, 1925

Cucullia artemisiae (Hufnagel, 1766)

Cucullia humilis Boursin, 1941

Cucullia splendida (Stoll, 1782)

Cucullia gnaphalii (Hübner, 1813)

Cucullia magnifica (Freyer, 1839)

Cucullia argentina (Fabricius, 1787)

Cucullia biradiata W. Kozhantshikov, 1925

Cucullia pustulata Eversmann, 1842

Cucullia lucifuga ([Denis & Schiffermüller], 1775)

Cucullia umbratica (Linnaeus, 1758)

Cucullia biornata Fischer von Waldheim, 1840

Cucullia balsamitae (Boisduval, 1840)

Cucullia inderiensis Herrich-Schäffer, 1856

Cucullia duplicata Staudinger, 1882

Cucullia santonici (Hübner, [1813])

Cucullia lactea (Fabricius, 1787)

Cucullia mixta Freyer, 1841

Cucullia xeranthemi (Boisduval, 1840)

Cucullia virgaureae Boisduval, 1840

Cucullia amota Alphéraky, 1887

Cucullia asteris ([Denis & Schiffermüller], 1775)

Cucullia tanaceti ([Denis & Schiffermüller], 1775)

Subfamily AMPHIPYRINAE Guenée, 1837

Tribe Amphipyrini Guenée, 1837

Genus *Amphipyra* Ochsenheimer, 1816

Amphipyra pyramidea (Linnaeus, 1758)

Amphipyra perflua (Fabricius, 1787)

Amphipyra livida ([Denis & Schiffermüller], 1775)

Amphipyra tragopoginis (Clerck, 1759)

Amphipyra tetra (Fabricius, 1787)

Amphipyra sergei Staudinger, 1888

Tribe Psaphidini Grote, 1895

Subtribe Psaphidina Grote, 1895

Genus *Brachionycha* Hübner, [1819] 1816

Brachionycha nubeculosa (Esper, 1785)

Subfamily ONCOCNEMIDINAE Forbes & Franclemont, 1954

Genus *Calophasia* Stephens, 1829

Calophasia lunula (Hufnagel, 1766)

Calophasia opalina (Esper, [1794])

Genus *Sympistis* Hübner, [1823] 1816

Sympistis strioligera (Lederer, 1853)

Sympistis campicola (Lederer, 1853)

Sympistis exacta (Christoph, 1887)

Sympistis nigricula (Eversmann, 1856)

Sympistis senica (Eversmann, 1856)

Genus *Lophoterges* Hampson, 1906

Subgenus *Variterge* Ronkay, 2005

Lophoterges (*Variterges*) *centralasiae* (Staudinger, 1901)

Genus *Epimecia* Guenée, 1839

Epimecia ustula (Freyer, 1835)

Genus *Phidrimana* Kononenko, 1989

Phidrimana amurensis (Staudinger, 1892)

Subfamily CONDICINAE Poole, 1995

Tribe Condicini Poole, 1995

Genus *Acosmetia* Stephens, 1829

Acosmetia caliginosa (Hübner, [1813])

Tribe Leuconyctini Poole, 1995

Genus *Eucarta* Lederer, 1857

Eucarta virgo (Treitschke, 1835)

Eucarta amethystina (Hübner, [1803])

Subfamily HELIOTHINAE Boisduval, [1828]

Genus *Pyrrhia* Hübner, [1821] 1816

Pyrrhia umbra (Hufnagel, 1766)

Pyrrhia exprimens (Walker, 1857)

Genus *Schinia* Hübner, [1818] 1823

Schinia cognata (Freyer, 1833)

Genus *Protoschinia* Hardwick, 1970

Protoschinia scutosa ([Denis & Schiffermüller], 1775)

Genus *Heliothis* Ochsenheimer, 1816

Heliothis peltigera ([Denis & Schiffermüller], 1775)

Heliothis viriplaca (Hufnagel, 1766)

Heliothis adaucta Butler, 1878

Genus *Helicoverpa* Hardwick, 1965

Helicoverpa armigera (Hübner, [1808])

Subfamily BRYOPHILINAE Guenée, 1852

Genus *Cryphia* Hübner, 1818

Subgenus *Cryphia* Hübner, 1818

Cryphia (*Cryphia*) *fraudatricula* (Hübner, [1803])

Genus *Bryophila* Treitschke, 1825

Subgenus *Bryoleuca* Hampson, 1908

Bryophila (*Bryoleuca*) *orthogramma* (Boursin, 1954)

Genus *Victrix* Staudinger, 1879

Subgenus *Poliobria* Hampson, 1908

Victrix (*P*) *akbet* Volynkin, Titov & Černila, in press

Genus *Athaumasta* Hampson, 1906

Athaumasta expressa (Lederer, 1855)

Subfamily NOCTUINAE Latreille, 1809

Tribe Pseudeustrotiini Beck, 1996

Genus *Pseudeustrotia* Warren, 1913

Pseudeustrotia candidula ([Denis & Schiffermüller], 1775)

Tribe Prodeniini Forbes, 1954

Genus *Spodoptera* Guenée, 1852

Spodoptera exigua (Hübner, 1808)

Tribe Elaphriini Beck, 1996

Genus *Elaphria* Hübner, 1818

Elaphria venustula (Hübner, 1790)

Tribe Caradrinini Boisduval, 1840

Subtribe Caradrinina Boisduval, 1840

Genus *Caradrina* Ochsenheimer, 1816

Subgenus *Caradrina* Ochsenheimer, 1816

Caradrina (*Caradrina*) *morpheus* (Hufnagel, 1766)

Subgenus *Platyperigea* Smith, 1894

Caradrina (*Platyperigea*) *terrea* Freyer, 1840

Caradrina (*Platyperigea*) *montana* Bremer, 1861

Caradrina (*Platyperigea*) *albina* (Eversmann, 1848)

Caradrina (*Platyperigea*) *petraea* Tengström, 1869

Caradrina (*Eremodrina*) *monssacralis* (Varga & L. Ronkay, 1991)

Subgenus *Paradrina* Boursin, 1937

Caradrina (*Paradrina*) *wullschlegeli* Püngeler, 1903

Caradrina (*Paradrina*) *clavipalpis* (Scopoli, 1763)

Genus *Hoplodrina* Boursin, 1937

Hoplodrina octogenaria (Goeze, 1781)

Hoplodrina blanda ([Denis & Schiffermüller], 1775)

Genus *Chilodes* Herrich-Schäffer, 1845

Chilodes maritima (Tauscher, 1806)

Chilodes distracta (Eversmann, 1848)

Genus *Charanyca* Billberg, 1820

Subgenus *Rusina* Stephens, 1829

Charanyca (*Rusina*) *ferruginea* (Esper, [1787])

Subtribe Athetiina Fibiger & Lafontaine, 2005

Genus *Athetis* Hübner, [1821] 1816

Subgenus *Athetis* Hübner, [1821] 1816

Athetis (*Athetis*) *furvula* (Hübner, [1808])

Subgenus *Hydrillula* Tams, 1938

Athetis (*Hydrillula*) *pallustris* (Hübner, [1808])

Subgenus *Proxenus* Herrich-Schäffer, 1845

Athetis (*Proxenus*) *lepigone* (Möschler, 1860)

Athetis (*Proxenus*) *correpta* (Püngeler, 1906)

Tribe Dypterygiini Forbes, 1954

Genus *Dypterygia* Stephens, 1829

Dypterygia scabriuscula (Linnaeus, 1758)

Genus *Trachea* Ochsenheimer, 1816

Trachea atriplicis (Linnaeus, 1758)

Tribe Actinotiini Beck, 1996

Genus *Actinotia* Hübner, [1823] 1816

Actinotia polyodon (Clerck, 1759)

Tribe Apameini Guenée, 1852

Subtribe Oxytripiina Gozmany, 1970

Genus *Oxytrypia* Staudinger, 1871

Oxytripia orbiculosa (Esper, 1799)

Subtribe Apameina Guenée, 1852

Genus *Sidemia* Staudinger, 1892

Sidemia spilogramma (Rambur, 1871)

Genus *Calamia* Hübner, [1821] 1816

Calamia tridens (Hufnagel, 1766)

Genus *Staurophora* Reichenbach, Leipzig, 1817

Staurophora celsia (Linnaeus, 1758)

Genus *Helotropha* Lederer, 1857

Helotropha leucostigma (Hübner, [1808])

Genus *Celaena* Stephens, 1829

Celaena haworthii (Curtis, 1829)

Genus *Hydraecia* Guenée, 1841

Hydraecia micacea (Esper, 1789)

Hydraecia ultima Holst, 1965

Hydraecia mongoliensis Urbahn, 1967

Hydraecia osseola (Staudinger, 1882)

Genus *Amphipoea* Billberg, 1820

Amphipoea fucosa (Freyer, 1830)

Amphipoea ochreola (Staudinger, 1882)

Amphipoea asiatica (Burrows, 1911)

Genus *Fabula* Fibiger, Zilli & Ronkay, 2005

Fabula zollikoferi (Freyer, 1836)

Genus *Rhizedra* Warren, 1911

Rhizedra lutosa (Hübner, [1803])

Genus *Nonagria* Ochsenheimer, 1816

Nonagria typhae (Thunberg, 1784)

Genus *Longaletedes* Beck 1999

Longalatedes elymi (Treitschke, 1825)

Genus *Archanara* Walker, 1866

Archanara dissoluta (Treitschke, 1825)

Genus *Denticucullus* Rakosy, 1996

Denticucullus pygmina (Haworth, 1809)

Genus *Hypocoena* Hampson, 1908

Hypocoena stigmatica (Eversmann, 1855)

Genus *Photedes* Lederer, 1857

Photedes fluxa (Hübner, 1809)

Photedes extrema (Hübner, [1809])

Genus *Ogilia* Kononenko, 2017

Ogilia leuconephra (Hampson, 1908)

Genus *Protarchanara* Beck, 1996

Protarchanara brevilinea (Fenn, 1864)

Genus *Globia* Fibiger, Zilli, Ronkay & Goldstein, 2009

Globia sparganii (Esper, 1790)

Globia algae (Esper, 1789)

Genus *Pabulatrix* Sugi, 1982

Pabulatrix pabulatricula (Brahm, 1791)

Genus *Apamea* Ochsenheimer, 1816

Subgenus *Apamea* Ochsenheimer, 1816

Apamea (*Apamea*) *monoglypha* (Hufnagel, 1766)

Apamea (*Apamea*) *ferrago* (Eversmann, 1837)

Apamea (*Apamea*) *furva* ([Denis & Schiffermüller], 1775)

Apamea (*Apamea*) *lateritia* (Hufnagel, 1766)

Apamea (*Apamea*) *oblonga* (Haworth, 1809)

Apamea (*Apamea*) *sordens* (Hufnagel, 1766)

Apamea (*Apamea*) *anceps* ([Denis & Schiffermüller], 1775)

Apamea (*Apamea*) *leucodon* (Eversmann, 1837)

Apamea (*Apamea*) *remissa* (Hübner, [1809])

Apamea (*Apamea*) *crenata* (Hufnagel, 1766)

Apamea (*Apamea*) *unanimis* (Hübner, [1813])

Apamea (*Apamea*) *illyria* Freyer, 1846

Genus *Oligia* Hübner, [1821] 1816

Oligia latruncula ([Denis & Schiffermüller], 1775)

Genus *Mesoligia* Boursin, 1965

Mesoligia furuncula ([Denis & Schiffermüller], 1775)

Genus *Litoligia* Beck, 1999

Litoligia literosa (Haworth, 1809)

Genus *Mesapamea* Heinicke, 1959

Mesapamea secalis (Linnaeus, 1758)

Mesapamea moderata (Eversmann, 1843)

Genus *Resapamea* Varga & Ronkay, 1992

Resapamea hedeni (Graeser, [1889])

Genus *Xylomoia* Staudinger, 1892

Xylomoia graminea (Graeser, [1889])

Tribe Episemini Guenée, 1852

Genus *Episema* Ochsenheimer, 1816

Episema tersa ([Denis & Schiffermüller], 1775)

Genus *Leucochlaena* Hampson, 1906

Leucochlaena (*Furcochlaena*) *fallax* (Staudinger, 1870)

Tribe Xylenini Guenée, 1837

Subtribe Xylenina Guenée, 1837

Genus *Hyppa* Duponchel, 1844

Hyppa rectilinea (Esper, 1788)

Genus *Parastichtis* Hübner, [1821] 1816

Parastichtis suspecta (Hübner, [1817])

Genus *Apterogenum* Berio, 2002

Apterogenum ypsillon ([Denis & Schiffermüller], 1775)

Genus *Xanthia* Ochsenheimer, 1816

Xanthia togata (Esper, 1788)

Genus *Cirrhia* Hübner, [1821] 1816

Cirrhia icteritia (Hufnagel, 1766).

Cirrhia ocellaris (Borkhausen, 1792)

Cirrhia tunicata (Graeser, 1890)

Genus *Mesogona* Boisduval, 1840

Mesogona acetosellae ([Denis & Schiffermüller], 1775)

Mesogona oxalina (Hübner, [1803])

Genus *Sunira* Franclemont, 1950

Sunira circellaris (Hufnagel, 1766)

Genus *Agrochola* Hübner, [1821] 1816

Subgenus *Agrochola* Hübner, 1816

Agrochola (*Agrochola*) *vulpecula* (Lederer, 1853)

Subgenus *Anchoscelis* Guenée, 1839

Agrochola (*Anchoscelis*) *helvola* (Linnaeus, 1758)

Subgenus *Leptologia* Prout, 1901

Agrochola (*Leptologia*) *lota* (Clerck, 1759)

Genus *Conistra* Hübner, [1821] 1816

Subgenus *Conistra* Hübner, 1816

Conistra (*Conistra*) *vaccinii* (Linnaeus, 1761)

Subgenus *Dasycampa* Guenée, 1837

Conistra (*Dasycampa*) *rubiginea* ([Denis & Schiffermüller], 1775)

Genus *Lithophane* Hübner, [1821] 1816

Lithophane (*Lithophane*) *socia* (Hufnagel, 1766)

Lithophane (*Lithophane*) *furcifera* (Hufnagel, 1766)

Genus *Xylena* Ochsenheimer, 1816

Subgenus *Xylena* Ochsenheimer, 1816

Xylena (*Xylena*) *exsoleta* (Linnaeus, 1758)

Xylena (*Xylena*) *vetusta* (Hübner, [1813])

Subgenus *Lithomoia* Hübner, [1821] 1816

Xylena (*Lithomoia*) *solidaginis* (Hübner, 1803)

Genus *Orbona* Hübner, [1821] 1816

Orbona fragariae (Vieweg, 1790)

Genus *Eupsilia* Hübner, [1821] 1816

Eupsilia transversa (Hufnagel, 1766)

Subtribe Cosmiina Guenée, 1852

Genus *Enargia* Hübner, [1821] 1816

Enargia paleacea (Esper, 1788)

Enargia abluta (Hübner, 1808)

Genus *Ipimorpha* Hübner, [1821] 1816

Ipimorpha retusa ([Denis & Schiffermüller], 1775)

Ipimorpha subtusa ([Denis & Schiffermüller], 1775)

Genus *Cosmia* Ochsenheimer, 1816

Subgenus *Ulmia* Fibiger & Hacker, 2007

Cosmia (*Ulmia*) *affinis* (Linnaeus, 1767)

Genus *Brachyxanthia* Butler, 1878

Brachyxanthia zelotypa (Lederer, 1853)

Subtribe Pseudohadenina L. Ronkay & Fibiger, 2007

Genus *Pseudohadena* Alphéraky, 1889

Subgenus *Pseudohadena* Alphéraky, 1889

Pseudohadena argyllostigma (Varga & L. Ronkay, 1991)

Genus *Eremohadena* Ronkay, Varga & Fabian, 1995

Eremohadena immunda (Eversmann, 1842)

Subtribe Antitypina Forbes & Franclemont, 1954

Genus *Antitype* Hübner, [1821] 1816

Antitype chi (Linnaeus, 1758)

Genus *Ammoconia* Lederer, 1857

Ammoconia caecimacula ([Denis & Schiffermüller], 1775)

Genus *Dasypolia* Guenée, 1852

Subgenus *Dasypolia* Guenée, 1852

Dasypolia (*Dasypolia*) *templi* (Thunberg, 1792)

Dasypolia (*Dasypolia*) *timoi* Fibiger & Nupponen, 2006

Subgenus *Cteipolia* Staudinger, 1896

Dasypolia (*Cteipolia*) *murina* (Ménétriés, 1848)

Subgenus *Myxinia* Berio, 1985

Genus *Blepharita* Hampson, 1907

Blepharita amica (Treitschke, 1825)

Genus *Mniotype* Franclemont, 1941

Mniotype adusta (Esper, 1790)

Mniotype satura ([Denis & Schiffermüller], 1775)

Tribe Noctuini Latreille, 1809

Subtribe Agrotina Rambur, 1848

Genus *Actebia* Stephens, 1829

Subgenus *Actebia* Stephens, 1829

Actebia (*Actebia*) *praecox* (Linnaeus, 1758)

Subgenus *Protexarnis* McDunnough, [1929]

Actebia (*Protexarnis*) *squalida* (Guenée, 1852)

Genus *Dichagyris* Lederer, 1857

Subgenus *Albocosta* Fibiger & Lafontaine, 1997

Dichagyris (*Albocosta*) *musiva* (Hübner, [1803])

Dichagyris (*Albocosta*) *flammatra* ([Denis & Schiffermüller], 1775)

Subgenus *Dichagyris* Lederer, 1857

Dichagyris (*Dichagyris*) *vallesiaca* (Boisduval, 1837)

Dichagyris (*Dichagyris*) *lutescens* (Eversmann, 1844)

Dichagyris (*Dichagyris*) *truculenta* (Lederer, 1853)

Dichagyris (*Dichagyris*) *signifera* ([Denis & Schiffermüller], 1775)

Dichagyris (*Dichagyris*) *orientis* (Alphéraky, 1882)

Dichagyris (*Dichagyris*) *latipennis* (Püngeler, 1909)

Genus *Euxoa* Hübner, [1821] 1816

Subgenus *Chorizagrotis* Smith, 1890

Euxoa (*Chorizagrotis*) *adumbrata* (Eversmann, 1842)

Subgenus *Euxoa* Hübner, [1821] 1816

Euxoa (*Euxoa*) *conspicua* (Hübner, 1827)

Euxoa (*Euxoa*) *temera* (Hübner, [1808])

Euxoa (*Euxoa*) *ochrogaster* (Guenée, 1853)

Euxoa (*Euxoa*) *phantoma* (I. Kozhantschikov, 1928)

Euxoa (*Euxoa*) *cursoria* (Hufnagel, 1766)

Euxoa (*Euxoa*) *distinguenda* (Lederer, 1857)

Euxoa (*Euxoa*) *obelisca* ([Denis & Schiffermüller], 1775)

Euxoa (*Euxoa*) *segnilis* (Duponchel, 1836)

Euxoa (*Euxoa*) *nigrofusca* (Esper, [1788])

Euxoa (*Euxoa*) *eruta* (Hübner, [1817])

Euxoa (*Euxoa*) *nigricans* (Linnaeus, 1761)

Euxoa (*Euxoa*) *aquilina* ([Denis & Schiffermüller], 1775)

Euxoa (*Euxoa*) *basigramma* (Staudinger, 1870)

Euxoa (*Euxoa*) *fallax* (Eversmann, 1854)

Euxoa (*Euxoa*) *deserta* (Staudinger, 1870)

Euxoa (*Euxoa*) *recussa* (Hübner, [1817])

Subgenus *Orosagrotis* Hampson, 1903

Euxoa (*Orosagrotis*) *tristis* (Staudinger, 1897)

Euxoa (*Orosagrotis*) *deficiens* (Wagner, 1913)

Genus *Agrotis* Ochsenheimer, 1816

Agrotis characteristica (Alphéraky, 1892)

Agrotis trifurca (Eversmann, 1837)

Agrotis cinerea ([Denis & Schiffermüller], 1775)

Agrotis exclamationis (Linnaeus, 1758)

Agrotis segetum ([Denis & Schiffermüller], 1775)

Agrotis clavis (Hufnagel, 1766)

Agrotis vestigialis (Hufnagel, 1766)

Agrotis ripae (Hübner, [1823])

Agrotis desertorum Boisduval, 1840

Agrotis ipsilon (Hufnagel, 1766)

Subtribe Axyliina Fibiger & Lafontaine, 2005

Genus *Axylia* Hübner, [1821] 1816

Axylia putris (Linnaeus, 1761)

Genus *Ochropleura* Hübner, [1821] 1816

Ochropleura plecta (Linnaeus, 1761)

Subtribe Noctuina Latreille, 1809

Genus *Diarsia* Hübner, [1821] 1816

Diarsia dahlii (Hübner, [1813])

Diarsia brunnea ([Denis & Schiffermüller], 1775)

Diarsia mendica (Fabricius, 1775)

Genus *Sineugraphe* Boursin, 1954

Sineugraphe exusta (Butler, 1878)

Genus *Cerastis* Ochsenheimer, 1816

Cerastis rubricosa ([Denis & Schiffermüller], 1775)

Cerastis leucographa ([Denis & Schiffermüller], 1775)

Genus *Paradiarsia* McDunnough, [1829]

Paradiarsia punicea (Hübner, [1803])

Genus *Netrocerocora* Bartel, 1902

Netrocerocora quadrangula (Eversmann, 1844)

Genus *Rhyacia* Hübner, [1821] 1816

Rhyacia caradrinoides (Staudinger, 1897)

Rhyacia simulans (Hufnagel, 1766)

Rhyacia arenacea (Hampson, 1907)

Genus *Chersotis* Boisduval, 1840

Chersotis transiens (Staudinger, 1896)

Chersotis elegans (Eversmann, 1837)

Chersotis margaritacea (de Villers, 1789)

Genus *Noctua* Linnaeus, 1758

Noctua interposita (Hübner, 1790)

Genus *Spaelotis* Boisduval, 1840

Spaelotis ravida ([Denis & Schiffermüller], 1775)

Spaelotis deplorata (Staudinger, 1896)

Spaelotis senna (Freyer, 1829)

Genus *Opigena* Boisduval, 1840

Opigena polygona ([Denis & Schiffermüller], 1775)

Genus *Eurois* Hübner, [1821] 1816

Eurois occulta (Linnaeus, 1758)

Genus *Graphiphora* Ochsenheimer, 1816

Graphiphora augur (Fabricius, 1775)

Genus *Anaplectoides* McDunnough, [1929]

Anaplectoides prasina ([Denis & Schiffermüller], 1775)

Genus *Pseudohermonassa* Varga, 1990

Pseudohermonassa melancholica (Lederer, 1853)

Genus *Xestia* Hübner, [1818]

Subgenus *Xestia* Hübner, [1818]

Xestia (*Xestia*) *baja* ([Denis & Schiffermüller], 1775)

Subgenus *Megasema* Hübner, [1821] 1816

Xestia (*Megasema*) *c-nigrum* (Linnaeus, 1758)

Xestia (*Megasema*) *ditrapezium* ([Denis & Schiffermüller], 1775)

Xestia (*Megasema*) *triangulum* (Hufnagel, 1766)

Xestia (*Megasema*) *kollari* (Lederer, 1853)

Xestia (*Megasema*) *ashworthii* (Doubleday, 1855)

Genus *Eugraphe* Hübner, [1821] 1816

Eugraphe sigma ([Denis & Schiffermüller], 1775)

Genus *Coenophila* Stephens, 1850

Coenophila subrosea (Stephens, 1829)

Genus *Eugnorisma* Boursin, 1946

Subgenus *Eugnorisma* Boursin, 1946

Eugnorisma (*Eugnorisma*) *ignoratum* Varga & L. Ronkay, 1994

Eugnorisma (*Eugnorisma*) *insignata* (Lederer, 1853)

Eugnorisma (*Eugnorisma*) *eminens* (Lederer, 1855)

Genus *Miniphila* Beck, 1996

Miniphila miniago (Freyer, 1839)

Genus *Protolampra* McDunnough, 1928

Protolampra sobrina (Duponchel, 1843)

Genus *Nyssocnemis* Lederer, 1857

Nyssocnemis eversmanni (Lederer, 1853)

Subfamily HADENINAE Guenée, 1852

Tribe Orthosiini Guenée, 1837

Genus *Panolis* Hübner, [1821]

Panolis flammea ([Denis & Schiffermüller], 1775)

Genus *Orthosia* Ochsenhiemer, 1816

Subgenus *Orthosia* Ochsenhiemer, 1816

Orthosia (*Orthosia*) *incerta* (Hufnagel, 1766)

Orthosia (*Orthosia*) *ronkayorum* Volynkin & Titov, 2014

Subgenus *Poporthosia* Beck, 1996

Orthosia (*Poporthosia*) *populeti* (Fabricius, 1775)

Subgenus *Cororthosia* Berio, 1980

Orthosia (*Cororthosia*) *gracilis* ([Denis & Schiffermüller], 1775)

Orthosia (*Cororthosia*) *opima* (Hübner, [1809])

Subgenus *Semiophora* Stephens, 1829

Orthosia (*Semiophora*) *gothica* (Linnaeus, 1758)

Genus *Anorthoa* Berio, 1908

Anorthoa munda ([Denis & Schiffermüller], 1775)

Genus *Perigrapha* Lederer, 1857

Subenus *Perigrapha* Lederer, 1857

Perigrapha (*Perigrapha*) *circumducta* (Lederer, 1855)

Genus *Egira* Duponchel, 1845

Egira anatolica (Hering, 1933)

Tribe Tholerini Beck, 1996

Genus *Tholera* Hübner, [1821]

Tholera cespitis ([Denis & Schiffermüller], 1775)

Tholera decimalis (Poda, 1761)

Tholera hilaris (Staudinger, 1901)

Genus *Cerapteryx* Curtis, 1833

Cerapteryx graminis (Linnaeus, 1758)

Tribe Hadenini Guenée, 1837

Genus *Anarta* Ochsenheimer, 1816

Subgenus *Cardiestra* (Boursin, 1963)

Anarta (*Cardiestra*) *vaciva* (Püngeler, 1906)

Subgenus *Calocestra* Beck, [1992]

Anarta (*Calocestra*) *dianthi* (Tauscher, 1809)

Anarta (*Calocestra*) *trifolii* (Hufnagel, 1766)

Anarta (*Calocestra*) *stigmosa* (Christoph, 1887)

Genus *Polia* Ochsenheimer, 1816

Polia bombycina (Hufnagel, 1766)

Polia hepatica (Clerck, 1759)

Polia nebulosa (Hufnagel, 1766)

Polia serratilinea (Treitschke, 1825)

Polia altaica (Lederer, 1853)

Genus *Pachetra* Guenée, 1841

Pachetra sagittigera (Hufnagel, 1766)

Genus *Lacanobia* Billberg, 1820

Subgenus *Lacanobia* Billberg, 1820

Lacanobia (*Lacanobia*) *w-latinum* (Hufnagel, 1766)

Subgenus *Dianobia* Behounek, 1992

Lacanobia (*Dianobia*) *thalassina* (Hufnagel, 1766)

Lacanobia (*Dianobia*) *suasa* ([Denis & Schiffermüller], 1775)

Lacanobia (*Dianobia*) *contigua* ([Denis & Schiffermüller], 1775)

Subgenus *Diataraxia* Hübner, [1821]

Lacanobia (*Diataraxia*) *oleracea* (Linnaeus, 1758)

Lacanobia (*Diataraxia*) *splendens* (Hübner, [1803–1808])

Lacanobia (*Diataraxia*) *aliena* (Hübner, [1808])

Lacanobia (*Diataraxia*) *blenna* (Hübner, [1824])

Genus *Melanchra* Hübner, [1820]

Melanchra persicariae (Linnaeus, 1761)

Genus *Ceramica* Guenée, 1852

Ceramica pisi (Linnaeus, 1758)

Genus *Hada* Billberg, 1820

Hada plebeja (Linnaeus, 1761)

Genus *Hyssia* Guenée, 1852

Hyssia cavernosa (Eversmann, 1842)

Genus *Mamestra* Ochsenheimer, 1816

Mamestra brassicae (Linnaeus, 1758)

Genus *Sideridis* Hübner, [1821]

Subgenus *Sideridis* Hübner, [1821]

Sideridis (*Sideridis*) *lampra* (Schawerda, 1913)

Sideridis (*Sideridis*) *turbida* (Esper, 1790)

Sideridis (*Sideridis*) *egena* (Lederer, 1853)

Subgenus *Aneda* Sukhareva, 1973

Sideridis (*Aneda*) *rivularis* (Fabricius, 1775)

Genus *Heliophobus* Boisduval, 1829

Heliophobus unicolor (Alphéraky, 1889)

Heliophobus mongoliensis Simonyi, 2015

Genus *Saragossa* Staudinger, 1900

Saragossa siccanorum (Staudinger, 1870)

Saragossa porosa (Eversmann, 1854)

Genus *Conisania* Hampson, 1905

Subgenus *Conisania* Hampson, 1905

Conisania (*Conisania*) *leineri* (Freyer, 1836)

Subgenus *Luteohadena* Beck, [1992]

Conisania (*Luteohadena*) *luteago* ([Denis & Schiffermüller], 1775)

Conisania (*Luteohadena*) *literata* (Fischer von Waldheim, 1840)

Genus *Hecatera* Guenée, 1852

Hecatera bicolorata (Hufnagel, 1766)

Hecatera dysodea ([Denis & Schiffermüller], 1775)

Genus *Enterpia* Guenée, 1850

Enterpia picturata (Alphéraky, 1882)

Genus *Hadena* Schrank, 1802

Subgenus *Hadena* Schrank, 1802

Hadena (*Hadena*) *capsincola* ([Denis & Schiffermüller], 1775)

Hadena (*Hadena*) *magnolii* (Boisduval, 1829)

Hadena (*Hadena*) *compta* ([Denis & Schiffermüller], 1775)

Hadena (*Hadena*) *variolata* (Smith, 1888)

Hadena (*Hadena*) *albimacula* (Borkhausen, 1792)

Hadena (*Hadena*) *dsungarica* Hacker, 1996

Hadena (*Hadena*) *persimilis* Hacker, 1996

Hadena (*Hadena*) *filograna* (Esper, [1788])

Subgenus *Anepia* Hampson, 1918

Hadena (*Anepia*) *perplexa* ([Denis & Schiffermüller], 1775)

Hadena (*Anepia*) *christophi* (Möschler, 1862)

Hadena (*Anepia*) *irregularis* (Hufnagel, 1766)

Tribe Leucaniini Guenée, 1837

Genus *Mythimna* Ochsenheimer, 1816

Subgenus *Mythimna* Ochsenheimer, 1816

Mythimna (*Mythimna*) *turca* (Linnaeus, 1761)

Mythimna (*Mythimna*) *velutina* (Eversmann, 1846)

Mythimna (*Mythimna*) *pudorina* ([Denis & Schiffermüller], 1775)

Mythimna (*Mythimna*) *conigera* ([Denis & Schiffermüller], 1775)

Mythimna (*Mythimna*) *pallens* (Linnaeus, 1758)

Mythimna (*Mythimna*) *deserticola* (Bartel, 1902)

Mythimna (*Mythimna*) *impura* (Hübner, [1808])

Mythimna (*Mythimna*) *straminea* (Treitschke, 1825)

Mythimna (*Mythimna*) *vitellina* (Hübner, [1808])

Subgenus *Sablia* Sukhareva, 1973

Mythimna (*Sablia*) *anderreggi* (Boisduval, 1840)

Mythimna (*Sablia*) *albiradiosa* (Eversmann, 1852)

Mythimna (*Sablia*) *opaca* (Staudinger, 1900)

Subgenus *Hyphilare* Hübner, [1821]

Mythimna (*Hyphilare*) *ferrago* (Fabricius, 1787)

Mythimna (*Hyphilare*) *l-album* (Linnaeus, 1767)

Genus *Leucania* Ochsenheimer, 1816

Subgenus *Leucania* Ochsenheimer, 1816

Leucania (*Leucania*) *comma* (Linnaeus, 1761)

Leucania (*Leucania*) *obsoleta* (Hübner, 1803)

Genus *Senta* Stephens, 1834

Senta flammea (Curtis, 1828)

Tribe Eriopygini Fibiger & Lafontaine, 2005

Genus *Lasionhada* Berio, 1980

Lasionhada proxima (Hübner, [1808])

Genus *Eriopygodes* Hampson, 1905

Eriopygodes imbecilla (Fabricius, 1794)

Eriopygodes impar (Staudinger, 1870)

5.2. Fauna features of the Noctuoidea of the Pavlodar region

In the course of this study, more than 70,000 specimens of Noctuoidea were examined from the territory of the Pavlodar region of Kazakhstan. The following collections of Noctuoidea, stored in museums: SZMN – Siberian Zoological Museum of the Institute of Systematics and Ecology of Animals, Siberian Branch of RAS (Novosibirsk, Russia), ZIN – collections of Zoological Institute of the Russian Academy of Sciences (St. Petersburg, Russia), ZMK – Zoological Museum of Kiev Taras Shevchenko National University, KSRIPPQ – Kazakh scientific research institute of plant protection and quarantine (Almaty, Kazakhstan).

Below is an annotated list of the Noctuoidea fauna of the Pavlodar region, in which, in addition to the taxonomic order, a detailed characterization is provided for each species. In the name of the species, the name of the genus, subgenus, species, author and year of the species description is indicated. The * symbol after specifying the author of the original description is indicating that species is published for the first time for the Pavlodar region of Kazakhstan. Next for all species a season of imago occurrence (FP :) is indicated, the codes of the collecting sites, a reference to the authors of previously published data, a reference to the appendix with a species distribution map within the Pavlodar region, the type of distribution area, biogeographic distribution, bionomy, studied material (number of specimens and sex composition), toponyms of material collection localities, collection dates (day, month, year), initials and surnames of material collectors. The default method of collecting was the light trapping and is not specifically mentioned in text. The text specifies methods of collecting by wine lures, capturing by the net, obtaining the imago by breeding from caterpillars, and collecting the specimens in a state of hibernation. The text indicates the acronyms for the storage location of material in other scientific organizations and private collections. Most of the material is stored in the collection of the author of this work. The storage location for material stored in the authors collection (CST – collection of Sergey Titov (Pavlodar, Kazakhstan)) is not indicated.

Superfamily NOCTUOIDEA Latreille, 1809

Family EREBIDAE Leach, [1815]

Subfamily LYMANTRIINAE Hampson, [1893]

Tribe Lymantriini Hampson, [1893]

Genus *Lymantria* Hübner, [1819]

Subgenus *Porthetria* Hübner, [1819]

Lymantria (*Porthetria*) *dispar* (Linnaeus, 1758) – FP: VII–IX; localities: Z1, Z2, Z3, Z4, Z6, Z8, K10, K11, P11, P12, P13, P14, P16, S18, S20, S22, S23, L24, L26, L27, L28, B29, B30, B31, B32, B33, B34, B35, B36, B37, B38, M40, A42, A43, E46, E47, E48, E50. Reference: Kozhantschikov (1950). (Appendix 1, Map 1)

Biogeographical feature. Holarctic, temperate. N Africa, Europe, Caucasus, Asia Minor, Ural, NE Kazakhstan, Siberia, Middle Asia, Far East of Russia, N and C. China, Korea, N America (introduced) (Speidel & Witt, 2011; Titov et al., 2017 b).

Bionomics. Eurytopic species.

Material: Z1, vic. of Mikhailovka vill., 5♀, 05.07.2011, M.Yu. Volkov 8♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 2♂, 3♀, 08.07.2013, V.S. Bychkov; Z2, vic. of Krasnovka vill., 8♀, 14.08.2012, V.S. Bychkov; Z3, vic. of Zhelezinka vill., 5♀, 19.08.2011, S.A.&Yu.P. Lorents; Z4, vic. of Moiseevka vill., 1♀, 28.08.2012, S.A.&Yu.P. Lorents, 4♀, 25.07.2013, S.V. Titov; Z6, vic. of Novokuz'minka vill., 3♂, 5♀, 21.07.2013, V.S. Bychkov; Z8, vic. of Pyateryzhsk vill., 2♀, 07.08.2009, S.V. Titov; K10, vic. of Terenkol' vill., 6♀, 24.09.2011, L.N. Ivan'ko; K11, vic. of Baykonys vill., 1♂, 3♀, 09.07.2013, S.V. Titov; P11, Pavlodar city, 2♀, 11.09.2003, 1♂, 30.07.2008, N.E. Tarasovskaya, 4♂ In the day time, 7♀ on the walls of houses, 03.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 4♀, 17.09.2011, 1♀, 05.08.2013, 3♀, 26.08.2013, 4♀, 03.08.2014, 4♀, 18.07.2015, 1♀, 27.07.2016, 1♂, 02.08.2017, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 18.08.2010, L.N. Ivan'ko; P14, vic. of Kenzhekol' vill., 25♀, 20.07.2012, S.V. Titov; P16, vic.of Sychevka, 1♀, 23.08.2008, S.V. Titov; S18, east shore of Maraldy lake, 3♀, 23.07.2012, S.V. Titov; S20, vic. of Shalday vill., 3♀, 22.07.2007, 1♀, 12.08.2012, S.V. Titov; S22, vic. of May Karagay vill., 2♀, 11.07.2014, S.V. Titov; S23, vic. of Sharbakty vill., 2♀, 30.07.2007, 8♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 5♀, 20.09.2011, S.V. Titov; L26, vic. of Sharbakty vill., 9♀, 11.08.2013, S.V. Titov; L27, Borly lake, 1♀, 29.07.2013, S.V. Titov; L28, vic. of Akku vill., 2♂, 9♀, 24.08.2015, S.V. Titov; B29, Birzhankol' lake, 7♀, 21.07.2008, S.V. Titov; B30, Kurkeli natural landmark, 2♀, 12.07.2016, S.V. Titov; B31, vic. of Shonai vill., 2♀, 15.09.2012, S.V. Titov; B32, rock area Kempirtas, 1♀, 30.07.2013, S.M. Reznichenko; B33, Toraygyr lake, 6♀, 09.07.2016, S.V. Titov; B34, natural landmark Kirigichi, 5♀, 30.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 3♀, 25.07.2014, S.V. Titov; B36, Dulga tas rock, 1♀, 26.07.2014, S.V. Titov; B37, Zhasybay lake, 6♀, 18.08.1999, S.V. Titov, 2♀, 19.07.2011, N.E. Tarasovskaya; B38, natural landmark Zhumbak, 2♀, 14.08.1999, S.V. Titov; M40, Kalmakyrgan Mts.,1♀, 27.07.2014, S.V. Titov;

A42, Irtysh river, Zholpak natural landmark, 1♀, 07.07.2008, S.V. Titov; A43, vic. of Rebrovka vill., 15♀, 12.07.2008, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 4♀, 08.08.2008, S.V. Titov; E47, vic. of Karazhar vill., 2♂ day, a net, 13.06.2007, S.V. Titov; E48, Shiderty reservoir, water pump №7, day, a net, 1♂, 28.06.2012, S.V. Titov; E50, Olenty river, 3♀, 22.08.2013, S.V. Titov.

Tribe Orgyiini Wallengren, 1861

Genus *Gynaephora* Hübner, [1819]

Subgenus *Dicallomera* Butler, 1881

Gynaephora (*Dicallomera*) *fascelina* (Linnaeus, 1758)* – FP: V–VII; localities Z1, Z2, Z3, Z4, Z6, Z8, K10, K11, P11, P12, P13, P14, P16, P17, S18, S20, S22, S23, L24, L26, L27, L28, B29, B30, B31, B32, B33, B34, B35, B36, B37, M40, A42, A43, A44, E46, E47, E48, E50. (Appendix 1, Map 2)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Ural, Siberia, Transbaikalia, Far East of Russia, Mongolia, W and C China, Korea (Speidel & Witt, 2011).

Bionomics. Meso-xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 09.06.2012, S.V. Titov 4♂, 2♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 1♂, 1♀, 08.07.2013, V.S. Bychkov; Z2, vic. of Krasnovka vill., 1♂, 09.06.2012, V.S. Bychkov; B33, Toraygyr lake, 4♂, 1♀, 11.06.2013, S.V. Titov; Z3, vic. of Zhelezinka vill., 5♀, 14.05.2011, S.A.&Yu.P. Lorents; Z4, vic. of Moiseevka vill., 4♀, 25.07.2013, S.A.&Yu.P. Lorents; Z6, vic. of Novokuz'minka vill., 5♂, 1♀, 21.07.2013, V.S. Bychkov; Z8, vic. of Pyateryzhsk vill., 26.07.2009, 5♂, 1♀, S.A.&Yu.P. Lorents; K10, vic. of Terenkol' vill., 4♂, 2♀, 10.07.2013, S.V. Titov; K11, vic. of Baykonys vill., 2♂, 09.07.2013, S.V. Titov; P11, Pavlodar city, 2♀, 03.07.2016, V.I. Blokhin; P12, vic. of Pavlodarskoye vill., 4♂, 1♀, 27.07.2016, 1♂, 17.06.2012, S.V. Titov; P13, vic. of Rozovka vill., 5♂, 02.07.2010, L.N. Ivan'ko; P14, vic. of Kenzhekol' vill., 2♂, 2♀, 20.07.2012, S.V. Titov; P16, vic. of Sychevka vill., 1♀, 23.07.2008, S.V. Titov; P17, vic. of Koryakovka, 7♂, 5♀, 22.05.2011, S.V. Titov; S18, east shore of Maraldy lake, 5♂, 3♀, 20.06.2012, S.V. Titov; S20, vic. of Shalday vill., 1♂, 4♀, 18.07.2007, S.V. Titov; S22, vic. of May Karagay vill., 11♂, 11.07.2014, S.V. Titov; S23, vic. of Sharbakty vill., 8♂, 4♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 8♂, 4♀, 08.05.2011, S.V. Titov; L26, vic. of Sharbakty vill., 1♀, 12.06.2014, S.V. Titov; L27, Borly

lake, 5♀, 4♀, 25.06.2013, S.V. Titov; L28, vic. of Akku vill., 3♂, 2♀, 18.06.2015, S.V. Titov; B29, Birzhankol' lake, 3♂, 2♀, 17.06.2008, 1♀, 21.07.2008, 8♂, 5♀, 17.06.2009, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 1♀, 14.06.2013, 2♂, 08.07.2016, S.V. Titov; B31, vic. of Shonai vill., 3♂, 5♀, 29.06.2013, S.V. Titov; B32, rock area Kempirtas, 1♀, 17.05.2007, 12♂, 3♀, 13.06.2013, S.V. Titov, 8♂, 7♀, 30.07.2013, S.M. Reznichenko; B33, Toraygyr lake, 15♂, 4♀, 28.07.2016, S.V. Titov; B34, natural landmark Kirigichi, 2♂, 30.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 5♂, 2♀, 25.07.2014, 6♂, 16.07.2016, S.V. Titov; B36, Dulga tas rock, 1♀, 2♀, 26.07.2014, S.V. Titov; B37, Zhasybay lake, 1♀, 19.07.2011, N.E. Tarasovskaya; M40, Kalmakyrgan Mts.,1♀, 27.07.2014, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 1♂, 3♀, 30.06.2007, S.V. Titov; A43, vic. of Rebrovka vill., 1♀, 12.07.2008, S.V. Titov; A44, Kishi Kalkaman lake, 3♂, 1♀, 31.05.2010, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♀, 24.07.2007, S.V. Titov; E47, vic. of Karazhar vill., 4♂, 1♀, 13.06.2007, S.V. Titov; E48, Shiderty reservoir, water pump №7, 6♀, 12.06.2012, S.V. Titov; E50, Olenty river, 1♂, 1♀, 22.07.2014, S.V. Titov.

Gynaephora (Dicallomera) pumila (Staudinger, 1881)* – FP: VIII; locality: B31, B33.

Biogeographical feature. Central Asian, subboreal. Russia (S Ural), N, NE and E Kazakhstan, (Trofimova, 2009; Titov et al., 2017 b). (Appendix 1, Map 3)

Bionomics. Xeromontane species.

Material. B31, vic. of Shonai vill., 1♂, 14.08.2013, S.V. Titov, S.A.Knyazev; B33, Toraygyr lake, 1♂, 03.08.2017, S.V. Titov.

Genus *Clethrogyna* Rambur, [1866]

Clethrogyna dubia (Tauscher, 1806) – FP: V, VIII–IX; localities: Z8, I9, P11, P12, S18, B29, A44, A47, E46, E47, E50, E51. Reference: Ivonin et al. (2013). (Appendix 1, Map 4)

Biogeographical feature. West Palaearctic, subboreal. N Aafrica, SW Europe, SW Asia, Turkmenistan, Asia Minor, W and NE Kazakhstan (Speidel & Witt, 2011; Gorbunov, 2011; Titov et al, 2017 b).

Bionomics. Xero-halophilous species.

Material: 25 km. N of Pavlodar, 1♂, 06.1984, O.V. Lyakhov (coll. SZMN); Z8, vic. of Pyateryzhsk vill., 2♂, 07.08.2009, day, net, S.V. Titov; I9, Seletyteniz lake, 3♂, underground at the cocoons of females, 2♀, underground, 15.09.2006, day, net, S.V. Titov; P11, Pavlodar city,

1♂, 03.07.2016, on the ground, 45 caterpillar-L3, 17.09.2009, S.V. Titov; S18, East shore of Maraldy lake, 1♂, 18.09.2012, day, net, S.V. Titov; B29, Birzhankol' lake, 1♂, day, net, cocoons on plants 3♀, 21.08.2008, S.V. Titov; A44, Kishi Kalkaman lake, 3♂, 09.05.2010, day, net, S.V. Titov; E47, vic. of Karazhar vill., 180 ex. caterpillar, 13.06.2007, on the bush of *Nitraria sibirica*, S.V. Titov; A46, vic. of Kurkol', 250 ex. caterpillar, 21.06.2016, S.V. Titov; A47, vic. of Kalkaman vill., 18 ex. caterpillar; 1♂, 11.07.2016, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, day, net, 1♀, cocoon under the stone, 18.07.2008, S.V. Titov; E50, Olenty river, 32 ex. caterpillar, 22.08.2013, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 1♂, 03.10.2014, day, net, S.V. Titov.

Subgenus *Thylacigyna* Rambur, [1866]

Thylacigyna antiquoides (Hübner, [1822])* – FP: VIII; localities: S20, B31, U56. (Appendix 1, Map 5)

Biogeographical feature. Trans-Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, S Ural, W and NE Kazakhstan, S Siberia, Transbaikalia, Far East of Russia, Middle Asia, N China (Speidel & Witt, 2011; Gorbunov, 2011; Titov et al, 2017 b).

Bionomics. Xero-halophilous species.

Material: S20, vic. of Shalday vill., 1♂, 12.08.2012, S.V. Titov; B31, vic. of Shonai vill., 2♂, 15.08.2013, S.V. Titov; U56, 1.5 km. east of the Steklyannoye lake, 1♂, caterpillar, 02.07.2016, S.V. Titov (ex. pupa coll. CST).

Tribe Leucomini Grote, 1895

Genus *Leucoma* Hubner, 1822

Leucoma salicis (Linnaeus, 1758)* – FP: VI–VII; localities: Z1, Z2, Z5, Z6, I9, K10, P11, P12, P13, P14, S18, S20, S23, L24, L26, L27, B29, B31, B32, B34, B35, M37, M38, M39, A44, E46, E47, E48, E49, E50, E51. (Appendix 1, Map 6)

Biogeographical feature. Transpalaearctic, temperate. N and W Africa, Europe, Asia Minor, Caucasus and Transcaucasia, Turkmenistan, Kazakhstan, Siberia, Russian Far East, Mongolia, N and E China, N Korea, Japan, N America (Dubatolov, 2014).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 2♂, 05.07.2011, S.V. Titov, 1♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov; Z2, vic. of Krasnovka vill., 2♂, 09.06.2013, V.S. Bychkov; Z5, vic. of

Slavyanovka vill., 1♂, 11.06.2012, S.V. Titov & V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 3♂, 1♀, 21.07.2013, V.S. Bychkov; I9, Seletyteniz lake, 2♂, 15.07.2007, S.V. Titov; K10, vic. of Terenkol' vill., 6♂, 3♀, 10.07.2013, S.V. Titov; P11, Pavlodar city, 1♂, 27.06.2006, 1♂, 06.07.2008, 2♂, 03.07.2016, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 02.07.2012, 3♂, 3♀, 13.07.2013, 4♂,1♀, 18.07.2015, S.V. Titov; P13, vic. of Rozovka vill., 1♂, 18.07.2010, L.N. Ivan'ko; P14, vic. of Kenzhekol' vill., 2♀, 1♂, 20.07.2012, S.V. Titov; S18, east shore of Maraldy lake, 2♂, 3♀, 20.06.2012, 3♂, 5♀, 23.07.2012, S.V. Titov; S20, vic. of Shalday vill., 7♂, 3♀, 18.07.2007, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 1♀, 30.07.2008, S.V. Titov; L24, Tuz lake, 4♂, 4♀, 21.07.2015, S.V. Titov; L26, vic. of Sharbakty vill., 4♂, 1♀, 12.06.2014, S.V. Titov; L27, Borly lake, 5♂, 1♀, 25.06.2013, S.V. Titov; B29, Birzhankol' lake, 2♂, 21.07.2008, S.V. Titov; B29, Birzhankol' lake, 1♂, 17.06.2009, S.V. Titov; B31, vic. of Shonai vill., 2♂, 6♀, 29.06.2013, S.V. Titov; B32, rock area Kempirtas, 2♂, 1♀, 13.06.2013, 1♂, 1♀, 30.07.2013, S.M. Reznichenko; B34, natural landmark Kirigichi, 2♂, 1♀, 30.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 4♀, 25.07.2014, S.V. Titov; M37, Karasor lake, 1♂, 23.07.2010, S.V. Titov; M38, Karasor lake, 2♂, 28.07.2014, S.V. Titov; M39, vic. of Koktobe vill., 2♂, 24.05.2010, S.V. Titov; A44, Kishi Kalkaman lake, 3♂, 1♀, 26.07.2010, O.V. Lyakhov; E46, Shiderty river Zhartas natural landmark, 1♂, 2♀, 15.07.2003, S.V. Titov; E47, vic. Karazhar vill., 8♂, 30.06.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 5♂, 1♀, 12.06.2012, S.V. Titov; E49, Shiderty reservoir, water pump №11, 1♂, 05.06.2013, S.V. Titov; E50, Olenty river, 1♂, 2♀, 22.07.2014, S.V. Titov; E51, Cretaceous slope of Ulken Ak-Zhar, 1♂, 3♀, 23.07.2014, S.V. Titov.

Tribe Nygmiini Holloway, 1999

Genus *Euproctis* Hübner, [1819]

Euproctis kargalika (Moore, 1878)* – FP: VI–VII; localities: Z1, Z2, Z3, Z4, Z6, Z8, K10, K11, P11, P12, P13, P14, P16, P17, P20, P23, S18, S20, S22, S23, L24, L26, L27, L28, B29, B30, B31, B32, B33, B34, B35, B36, B37, M40, A42, A43, A44, E46, E47, E48, E50. (Appendix 1, Map 7)

Biogeographical feature. Central Asian, subboreal. N Iran, Turkmenistan, Afghanistan, Middle Asia, Kazakhstan, W Siberia, W Mongolia, NW China (Speidel & Witt, 2011; Gorbunov, 2011; Ivonin et al., 2013; Titov et al., 2017 b).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 3♂, 05.07.2011, 5♂, 09.06.2012, 4♂, 21.07.2012, S.V. Titov; Z2, vic. of Krasnovka vill., 2♂, 05.06.2013, S.V. Titov; Z3, vic. of Zhelezinka vill., 2♂, 19.07.2010, S.A.&Yu.P. Lorents; Z4, vic. of Moiseevka vill., 6♀, 25.07.2013, S.A.&Yu.P. Lorents; Z6, vic. of Novokuz'minka vill., 6♂, 21.07.2013, V.S. Bychkov; Z8, vic. of Pyateryzhsk vill., 8♂, 26.07.2009, S.A.&Yu.P. Lorents; K10, vic. of Terenkol' vill., 7♂, 10.07.2013, S.V. Titov; K11, vic. of Baykonys vill., 4♂, 09.07.2013, S.V. Titov; 1♀, P11, Pavlodar city, 7♂, 03.07.2016, V.I. Blokhin; P12, vic. of Pavlodarskoye, 4♂, 02.07.2012, 3♂, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 1♂, 02.07.2010, L.N. Ivan'ko; P14, vic. of Kenzhekol' vill., 9♂, 20.07.2012, S.V. Titov; P16, vic. of Sychevka vill., 8♂, 2♀, 23.07.2008, S.V. Titov; P17, vic. of Koryakovka, 11♂, 2♀, 22.05.2011, S.V. Titov; P20, vic. of Leninskiy vill., 1♂, 23.06.2008, A. Kulakhmetova; P23, vic. of Zhetekshi vill., 5♂, 1♀, 30.07.2016, S.V. Titov; S18, Maraldy lake, 9♂, 20.06.2012, S.V. Titov; S20, vic. of Shalday vill., 2♂, 18.07.2007, S.V. Titov; S22, vic. of May Karagay vill., 5♂, 11.07.2014, S.V. Titov; S23, vic. of Sharbakty vill., on *Spiraea hypericifolia* (on laying eggs), 30.07.2008, S.V. Titov; L24, Tuz lake, 7♂, 21.07.2015, S.V. Titov; L26, vic. of Sharbakty vill., 8♂, 2♀, 12.06.2014, S.V. Titov; L27, Borly lake, 15♂, 1♀, 25.06.2013, S.V. Titov; 1♂, L28, vic. of Akku vill., 18.06.2015, S.V. Titov; B29, Birzhankol' lake, 8♂, 21.07.2008, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 1♀, 12.07.2016, S.V. Titov; B31, vic. of Shonai vill., on the bush, *Caragana pumila*, 2♀, 09.08.2013, S.V. Titov; B32, rock area Kempirtas, 5♂, 13.06.2013, M. Černila, S.V. Titov, A.V. Volynkin; B33, Toraygyr lake, 2♂, 28.07.2016, S.V. Titov; B34, natural landmark Kirigichi, 1♂, 30.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 3♂, 1♀, 25.07.2014, S.V. Titov; B36, Dulga tas rock, 1♂, 26.07.2014, S.V. Titov; B37, Zhasybay lake, 2♂, 25.07.1999, S.V. Titov; M40, Kalmakyrgan Mts., 2♂, 27.07.2014, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 4♂, 30.06.2007, S.V. Titov; A43, vic. of Rebrovka vill., 1♂, 12.07.2008, S.V. Titov; A44, Kishi Kalkaman lake, 3♂, 26.07.2010, 1♀ on the bush *Spiraea hypericifolia* (on laying eggs), O.V. Lyakhov; E46, Shiderty river, Zhartas natural landmark, 3♂, 24.07.2007, S.V. Titov; E47, vic. Karazhar vill., 9♂, 13.06.2007, S.V. Titov; E48, Shiderty reservoir, water pump №7, 6♂, 16.06.2010, S.V. Titov; E50, Olenty river, 1♂, 22.07.2014, S.V. Titov.

Genus *Sphrageidus* Maes, 1984

Sphrageidus similis (Fuessly, 1775)* – FP: V–VI; localities: P12, P20, B30, B33, B36. (Appendix 1, Map 8)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, S and C Ural, W S Siberia, Far East of Russia, N China, Korea, Japan (Speidel & Witt, 2011).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 25.06.2007, S.V. Titov; P20, vic. of Leninskiy vill., 2♂, 23.06.2008, A. Kulakhmetova; B30, Kurkeli natural landmark, 1♂, 2♀, 14.06.2013, S.V. Titov; B36, Dulga tas rock, 2♂, 1♀, 26.07.2014, S.V. Titov.

Subfamily ARCTIINAE Leach, [1815]

Tribe Lithosiini Billberg, 1820

Subtribe Lithosiina Billberg, 1820

Genus *Cybosia* Hübner, [1819] 1816

Cybosia mesomella (Linnaeus, 1758) – FP: VI; localities: B29, B32, B37. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 9)

Biogeographical feature. European-Central Asian, subboreal. Europe, N Asia, Russia (S Siberia), NE Kazakhstan, Mongolia (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; de Jong, 2011; Kučinić et al., 2014, Dubatolov, Titov, 2015).

Bionomics. Mesophilous species.

Material: B29, Birzhankol' lake, 1♀, 10.06.2011, N.E. Tarasovskaya; B32, rock area Kempirtas, 12.06.2013, 2♂, M. Černila, S.V. Titov, A.V. Volynkin; B37, Zhasybay lake, 1♂, 12.06.1988, I.B. Kamskov (coll. SZMN).

Genus *Manulea* Wallengren, 1863

Manulea palliatella (Scopoli, 1763)* – FP: VIII; localities: L24, L26, B31. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 10)

Biogeographical feature. European-Central Asian, subboreal. S Russia (S European part, Ural), W, N, C and E Europe, N Caucasus, S and W Siberia, Transcaucasia, Middle Asia; E and NE Kazakhstan, Iraq, N Iran, Afghanistan, NW China (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011, Kučinić et al., 2014, Dubatolov, Titov, 2015).

Bionomics. Xerophilous species.

Material: L24, Tuz lake, 1♂, 21.07.2015, S.V. Titov; L26, vic. of Sharbakty vill., 3♂, 11.08.2013, S.V. Titov; B31, vic. of Shonai vill., 10♂, 3♀, 03.08.2013, 10.08.2013, 18.08.2013, S.V. Titov, S.M. Reznichenko.

Manulea complana (Linnaeus, 1758)* – FP: VI–IX; localities: P12, S20, B30, B32, B34, B31, B35. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 11)

Biogeographical feature. Euro-Siberian, temperate. W, C and E Europe, Russia (S European part), Caucasus and Transcaucasia, Middle Asia, N Iran, N, C, NE and E Kazakhstan (ssp. *dzhungarica*), SW Siberia, N Korea. (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015; Titov et al., 2017 b).

Bionomics. Meso-xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 17.07.2007, S.V. Titov; S20, vic. of Shalday vill., 1♂, 1♀, 21.07.2012, S.V. Titov; B30, Kurkeli natural landmark, 3♂, 16.08.2016, S.V. Titov; B32, rock area Kempirtas, 6♂, 12.06.2013, M. Černila, S.V. Titov, A.V. Volynkin, S.M. Reznichenko; B34, natural landmark Kirigichi, 2♂, 1♀, 30.06.2013, S.V. Titov (coll. SZMN); B31, vic. of Shonai vill., 9♂, 1♀, 18.08.2013, S.V. Titov; S.M. Reznichenko (coll. SZMN); B35, vic. of Zhana Zhosaly vill., 6♂, 26.07.2014, S.V. Titov.

Manulea pygmaeola (Doubleday, 1847)* – FP: VII–VIII; localities: P11, P12, L24, M40, B35. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 12)

Biogeographical feature. Trans-Palaearctic, subboreal. NW Africa, W, C and E Europe, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), N Iran, Altai Mts., Middle Asia, W, N, NE and E Kazakhstan (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015; Titov et al., 2017 b).

Bionomics. Xero-thermophilous species.

Material: P11, Pavlodar city, 1♀, 11.07.2011, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 04.08.2013, 7♂, 2♀, 17.07.2015, S.V. Titov; L24, Tuz lake, 5♀, 13.08.2014, S.V. Titov; M40, Kalmakyrgan Mts.,1♀, 27.07.2014, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 4♂, 26.07.2014, S.V. Titov.

Manulea lutarella (Linnaeus, 1758)* – FP: VI–VIII; localities: P12, S23, B31, E46, E48. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 13)

Biogeographical feature. Trans-Palaearctic, subboreal. W, C, and E Europe, Caucasus and Transcaucasia, Asia Minor, Russia (S European part, Ural, W and S Siberia), Kazakhstan, Kyrgyzstan, Mongolia, Russian Far East,China (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015; Titov et al., 2017 b).

Bionomics. Meso-xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 17.07.2015, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 09.08.2014, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 12.06.2012, S.V. Titov; B31, vic. of Shonai vill., 6♂, 10.08.2013, S.V. Titov; S.M. Reznichenko (coll. SZMN); E46, Shiderty river Zhartas natural landmark, 1♂, 4♀, 12.06.2012, S.V. Titov; E48, Shiderty reservoir, water pump №7, 3♂, 2♀, 12.06.2012, S.V. Titov.

Manulea lurideola ([Zincken], 1817)* – FP: VI; localities: B30, B31. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 14)

Biogeographical feature. Trans-Palaearctic, subboreal. W, C and E Europe, Caucasus and Transcaucasia, NW Iran, Asia Minor, S Russia (S European part, Ural, S Siberia), W N NE Kazakhstan, Mongolia, N China (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015; Titov et al., 2017 b).

Bionomics. Meso-xerophilous species.

Material: B30, Kurkeli natural landmark, 1♂, 10.06.2011, S.V. Titov; B31, vic. of Shonai vill., 3♂, 29.06.2013, S.V. Titov; S.M. Reznichenko (coll. SZMN).

Genus *Wittia* de Freina, 1980

Wittia sororcula (Hufnagel, 1766)* – FP: V–VI; localities: Z2, B30. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 15)

Biogeographical feature. Trans-Palaearctic, subboreal. W, C and E Europe, Caucasus and Transcaucasia, NW Iran, Asia Minor, S Russia (S European part, Ural, S Siberia), W, N and NE Kazakhstan, Mongolia, China (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 03.06.2012, S.V. Titov, V.S. Bychkov; B30, Kurkeli natural landmark, 2♂, 12.05.2012, S.V. Titov.

Genus *Collita* Moore, 1878

Collita griseola (Hübner, [1803])* – FP: VIII; locality: S23. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 16)

Biogeographical feature. Trans-Palaearctic, subboreal. W, C and E Europe, S Russia (S European part, Ural, S Siberia), W, N and NE Kazakhstan, NE China, Russian Far East, Korea, Japan (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015; Titov et al., 2017 b).

Bionomics. Xerophilous species.

Material: S23, vic. of Sharbakty vill., 1♂, 18.08.2014, S.M. Reznichenko.

Genus *Atolmis* Hübner, [1819] 1816

Atolmis rubricollis (Linnaeus, 1758)* – FP: VI; localities: E48, A46. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 17)

Biogeographical feature. Trans-Palaearctic, subboreal. W and C Europe, Caucasus, S Russia (S European part, Ural, S Siberia), NE Kazakhstan, China, Korea (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: E46, Shiderty river Zhartas natural landmark, 1♂, 12.06.2012, S.V. Titov; A46, vic. of Kurkol' vill., 1♂, 21.06.2016, S.V. Titov.

Genus *Pelosia* Hübner, [1819] 1816

Pelosia muscerda (Hufnagel, 1766)* – FP: VI–VII; locality: L27, B30. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 18)

Biogeographical feature. Trans-Palaearctic, subboreal. W, C and E Europe, S Russia (S European part, Ural, S Siberia), Asia Minor, Caucasus, NE Kazakhsta, N China, Taiwan, Korea, Japan (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015); B30, Kurkeli natural landmark, 6♂, 2♀, 08.07.2016, S. V. Titov (coll.CST).

Bionomics. Mesophilous species.

Material: L27, Borly lake, 2♀, 22.06.2013, S.V. Titov;

Pelosia obtusa (Herrich-Schäffer, 1847)* – FP: VI; localities: Z4, Z6, L27. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 19)

Biogeographical feature. Trans-Palaearctic, subboreal. W, C and E Europe, S Russia (S European part, Ural, S Siberia), Asia Minor, N Iran, Caucasus, NE Kazakhstan, W Tajikistan, China, Japan (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015).

Bionomics. Mesophilous species.

Material: Z6, vic. of Novokuz'minka vill., 1♂, 21.07.2013, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♂, 25.07.2013, S.A.&Yu.P. Lorents; L27, Borly lake, 22.06.2013, S.V. Titov.

Subtribe Endrosina Börner, 1932

Genus *Stigmatophora* Staudinger, 1881

Stigmatophora flava (Bremer & Grey, 1852) – FP: VI–VII; localities: B29, B31, B32, B33, B34, B37. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 20)

Biogeographical feature. Manchurian - Middle Asian - Siberian, subboreal. NE Kazakhstan, Russia (S Siberia), Korea, Japan (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015).

Bionomics. Xeromontane species.

Material: B29, Birzhankol' lake, 3♂, 22.06.2008, S.V. Titov; B31, vic. of Shonai vill., 2♂, 18.08.2013, S.V. Titov; B32, rock area Kempirtas, 10♂, 12.06.2013, M. Černila, S.V. Titov, A.V. Volynkin; B33, Toraygyr lake, 3♀, 09.07.2016, S.V. Titov; B34, natural landmark Kirigichi, 2♂, 24.06.2013, S.V. Titov; B37, Zhasybay lake, 1♂, 15.07.1988, I.B. Kamskov (coll. SZMN).

Stigmatophora micans (Bremer & Grey, 1852*)* – FP: VI–VIII; localities: B29, B32, B33, B37. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 21)

Biogeographical feature. Manchurian - Middle Asian - Siberian, subboreal. NE Kazakhstan, Russia (S Siberia), Mongolia, China, Korea (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015).

Bionomics. Xeromontane species.

Material: B37, Zhasybay lake, 1♀, 12.06.1988, I.B. Kamskov (coll. SZMN); B29, Birzhankol' lake, 3♂, 2♀, 22.06.2011, S.V. Titov; B32, rock area Kempirtas, 25♂, 15♀, 12.06.2013, M. Černila, S.V. Titov, A.V. Volynkin, 1♀, 25.09.2013, S.V. Titov, A.V. Volynkin; B33, Toraygyr lake, 3♀, 09.07.2016, S.V. Titov.

Genus *Setina* Schrank, 1802

Setina irrorella (Linnaeus, 1758)* – FP: VI; localities: B31, B32, B34. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 22)

Biogeographical feature. European-Central Asian, subboreal. W, C and E Europe, S Russia (S European part, Ural, S Siberia), NE Kazakhstan, N Mongolia (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015).

Bionomics. Meso-xerophilous species.

Material: B31, vic. of Shonai vill., 2♂, 29.06.2013, S.V. Titov; B32, rock area Kempirtas, 1♂, 12.06.2013, M. Černila, S.V. Titov, A.V. Volynkin; B34, natural landmark Kirigichi, 1♂, 27.06.2013, S.V. Titov.

Setina roscida ([Denis & Schiffermüller], 1775)* – FP: VI–VII; localities: Z1, Z6. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 23)

Biogeographical feature. European-Central Asian, subboreal. W, C and E Europe, Belarus (ssp. *kuhlweini*), N Caucasus, S Russia (S European part, Ural, S Siberia), NE Kazakhstan, Mongolia, China (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015; Titov et al., 2017 b).

Bionomics. Xerophilous species.

Material: Z6, vic. of Novokuz'minka vill., Unlukkol lake, 1♂, 22.06.1994, I.I. Lyubichanskiy (coll. SZMN); Z1, vic. of Mikhailovka vill., 1♂, 09.07.2013, V.S. Bychkov.

Subtribe Nudariina Walker, [1865] 1864

Genus *Thumatha* Walker, 1866

Thumatha senex (Hübner, [1808])* – FP: VI–VII; localities: B30, B33, B35, A46. Reference: Titov et al. (2017). (Appendix 1, Map 24)

Biogeographical feature. West Palaearctic-Central Asian subboreal. W, C and E Europe, N and Asia Minor, S Russia (S European part, Ural, S Siberia), E and NE Kazakhstan (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015; Titov et al., 2017 a, b).

Bionomics. Mesophilous species.

Material: A46, vic. of Kurkol', 1♂, 27.06.2016, S.V. Titov; B30, Kurkeli natural landmark, 12♂, 13.07.2016, S.V. Titov; B33, Toraygyr lake, 15♂, 09.07.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 16.07.2016, S.V. Titov.

Genus *Miltochrista* Hübner, [1819] 1816

Miltochrista miniata (J.R. Forster, 1771)* – FP: VII–VIII; locality: A48. Reference: Dubatolov & Titov (2015). (Appendix 1, Map 25)

Biogeographical feature. Trans-Palaearctic, subboreal. W, C and E Europe, S Russia (S European part, Ural, S Siberia), N Asia Minor, NE Kazakhstan, China, Korea, Japan (Dubatolov et al., 1993; Dubatolov, Zolotuhin, 2011; Kučinić et al., 2014; Dubatolov, Titov, 2015; Titov et al., 2017 b).

Bionomics. Xerophilous species.

Material: A48, Kudaykol' lake, 1♂, 29.07.2016, in the web of a spider, S.V. Titov.

Tribe Arctiini Leach, [1815]

Subtribe Callimorphina Walker, 1865

Genus *Tyria* Hübner, [1819] 1816

Tyria jacobaeae (Linnaeus, 1758)* – FP: V–VI; localities: Z2, Z4, P11, E47, E48, E50, U53, U54, U56, U57. (Appendix 1, Map 26)

Biogeographical feature. European-Central Asian, subboreal. Europe, S Russia (S European part, Ural, S Siberia), Caucasus and Transcaucasia, Asia Minor, Kazakhstan, Uzbekistan, Kyrgyzstan, N Tajikistan, W Siberia, NW China, (Introduced to N America, New Zealand, Tasmania) (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Kučinić et al., 2014; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: 30.05.1980, 25 km N of the city of Pavlodar, the agrobiostation of the Pedagogical Institute (does not exist), Zakirova, (coll. SZMN); 1♀, 29.04.2009, 8 km south of the Maykayyn village, 1♀, V. K. Zinchenko (coll. SZMN); Z2, vic. of Krasnovka vill., 11♂, 1♀, 15.05.2011, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♀, 26.05.2011, S.A.&Yu.P. Lorents; P11, Pavlodar city, 1♀, 15.06.2008, N.E. Tarasovskaya; E47, vic. Karazhar vill., 1♂, 30.06.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 1♀, 10.06.2010, S.V. Titov; E50, Olenty river, 1♂, 04.06.2013, T.K. Aylybayev; U53, vic. Borly lake, 15 larva,

30.06.2016, S.V. Titov; U54, vic. Big Azhbulat lake, 8 larva, 01.07.2016, S.V. Titov; U56, 1.5 km. east of the Steklyannoye lake, 9 larva, 02.07.2016, S.V. Titov; U57, vic.Vesely Klin, 25 larva, 03.07.2016, S.V. Titov.

Genus *Lacydes* Walker, 1855

Lacydes spectabilis (Tauscher, 1806) – FP: VIII–IX; localities: Z3, P11, P12, P13, S23, B31, A44, E48. Reference: Aybasov & Zhdanko (*1982 as Arctia*). (Appendix 1, Map 27)

Biogeographical feature. European-Central Asian, subboreal. E Europe, S. Transcaucasia, Afghanistan, Iran, N Iraq, E Turkey, S Russia (S European part, Ural, S Siberia), W Siberia, Middle Asia, Kazakhstan, S Mongolia, NW China (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: 19.08.1906, stanitsa (cossack village) Zhelezinskaya, Irtysh river, A.G. Yakobson (ZISP); Z3, vic. of Zhelezinka vill., 1♂, 19.08.2011, S.A.&Yu.P. Lorents; P11, Pavlodar city, 1♂, 2♀, 11.09.2003, S.V. Titov; P12, vic. of Pavlodarskoye vill., 18♂, 4♀, 17.09.2011, S.V. Titov; P13, vic. of Rozovka vill., 10♂, 2♀, 16.08.2010, 4♀, 12.09.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 2♀, 11.08.2014, S.M. Reznichenko; B31, vic. of Shonai vill., 3♂, 17.08.2013, S.V. Titov; B31, vic. of Shonai vill., S.M. Reznichenko, 3♂, 2♀, 15.09.2013, S.V. Titov (coll. SZMN); A44, Kishi Kalkaman lake, 09.05.2010, 35 larva on *Spiraea hypericifolia*, S.V. Titov; E48, Shiderty reservoir, water pump №7, caterpillar in the state of estivation, 12.06.2012, S.V. Titov.

Genus *Spiris* Hübner, [1819] 1816

Spiris striata (Linnaeus, 1758)* – FP: VII–VIII; localities: S20, S24. (Appendix 1, Map 28)

Biogeographical feature. European-Central Asian, subboreal. W, C and E Europe, S Russia (S European part, Ural, S Siberia), Caucasus and Transcaucasia, Turkey, Syria, N, E and NE Kazakhstan, NW China, W, C. Mongolia. (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Kučinić et al., 2014; Titov et al, 2017 b).

Bionomics. Xero-mesophilous species

Material: Z6, vic. of Novokuz'minka vill., Unlukkol lake, 1♂, 22.06.1994, I.I. Lyubichanskiy (coll. SZMN); S20, vic. of Shalday vill., 1♂, 4♀, 04.08.2012, in the afternoon, with a net, S.V. Titov; S24, vic. of Georgievka vill., 1♂, 19.07.2007, with a net, S.V. Titov.

Genus *Coscinia* Hübner, [1819] 1816

Coscinia cribraria (Linnaeus, 1758)* – FP: VI–VII; localities: P12, P13, P23, B32, L24, S23, B34. (Appendix 1, Map 29)

Trans-Palaearctic, temperate. NW Africa, Europe, S Russia (S European part, Ural, S Siberia), N and NE Kazakhstan, Siberia, N Mongolia, China (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Xero-mesophilous species

Material: P12, vic. of Pavlodarskoye vill., 1♂, 2♀, 25.07.2007, 2♂, 1♀, 04.08.2013, S.V. Titov (coll. SZMN); P13, vic. of Rozovka vill., 1♀, 05.06.2012, 4♀, 07.06.2010, L.N. Ivan'ko; P23, vic. of Zhetekshi vill., 4♀, 26.07.2016, S.V. Titov; B32, rock area Kempirtas, 1♀, 13.06.2013, S.M. Reznichenko; L24, Tuz lake, 1♂, 19.08.2014, S.V. Titov (coll. SZMN); L24, Tuz lake, 2♂, 21.07.2015, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 11.08.2013, S.V. Titov (coll. SZMN); 3♂, 2♀, 19.06.2015, S.M. Reznichenko; B32, rock area Kempirtas, 6♂, 12.06.2013, M. Černila, S.V. Titov, A.V. Volynkin, (coll. CST, SZMN); B34, natural landmark Kirigichi, 1♂, 24.06.2013, S.V. Titov.

Subtribe Arctiina Leach, [1815]

Genus *Hyphoraia* Hübner, [1820] 1816

Hyphoraia aulica (Linnaeus, 1758)* – FP: V; locality: B38. (Appendix 1, Map 30)

Biogeographical feature. Trans-Palaearctic, temperate. Europe, S Russia (S European part, Ural, S Siberia), Caucasus and Transcaucasia, Asia Minor, N and NE Kazakhstan, S Siberia, China, Korea, Japan (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Xero-mesophilous species

Material: B38, natural landmark Zhumbak, 1♀, ex larva, 14.04.2016, M. Černila (coll. MCK).

Genus *Arctia* Schrank, 1802

Arctia caja (Linnaeus, 1758) – FP: VI–VIII; localities: Z1, Z2, Z3, Z4, Z5, Z6, Z7, Z8, K10, K11, P11, P12, P13, P14, P15, P16, P17, S18, S20, S21, S22, S23, L24, L25, L26, L27, L28, B29, B30, B31, B32, B33, B34, B35, B36, B37, B39, M39, M40, A42, A43, A45, E46, E47, E48, E50. Reference: Dubatolov & Zolotarenko (1990). (Appendix 1, Map 31)

Biogeographical feature. Holarctic, boreal-subtropical. W. Europe, S Russia (S European part, Ural, S Siberia), Caucasus and Transcaucasia, Turkey, NW Iran, Afghanistan, Pakistan, Central Asia, N, E and NE Kazakhstan, Siberia, Mongolia, Russian Far East, China (Inner Mongolia), Korea, Japan, N America (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Meso-xerophilous.

Material: Z1, vic. of Mikhailovka vill., 1♂, 05.07.2011, M.Yu. Volkov, 1♂, 09.06.2012, S.V. Titov, 6♂, 1♀, 21.07.2012, 9♂, 2♀, 08.07.2013, V.S. Bychkov; Z2, vic. of Krasnovka vill., 1♂, 05.06.2012, S.V. Titov, V.S. Bychkov, 21♂, 3♀, 14.08.2012, 1♂, 09.06.2013, V.S. Bychkov; Z3, vic. of Zhelezinka vill., 29♂, 2♀, 19.07.2010, 15♂, 1♀, 19.08.2011, S.A.&Yu.P. Lorents; Z4, vic. of Moiseevka vill., 9♂, 3♀, 28.08.2011, 42♂, 1♀, 25.07.2013, S.A.&Yu.P. Lorents; Z5, vic. of Slavyanovka vill., 1♂, 11.06.2012, S.V. Titov & V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 15♂, 3♀, 21.07.2013, V.S. Bychkov; Z7, Kyzyltuz lake, 12♂, 22.06.2013, S.V. Titov; Z8, vic. of Pyateryzhsk vill., 19♂, 5♀, 26.07.2009, S.A.&Yu.P. Lorents, 7♂, 07.08.2009, day, net, S.V. Titov; K5, Kachiry district, vic.of Matogul, 1♂, 1977, V. Parm (coll. SZMN); K10, vic. of Terenkol' vill., 9♂, 19.06.2012, 16♂, 1♀, 10.07.2013, S.V. Titov; K11, vic. of Baykonys vill., 5♂, 2♀, 09.07.2013, S.V. Titov; P11, Pavlodar city, 2♀, 03.07.2016, V.I. Blokhin, 1♀, 12.06.2008, S.V. Titov, 1♂, 30.07.2008, N.E. Tarasovskaya, 2♀, 07.07.2008, S.V. Titov, 1♀, Pavlodar city, environmental school, 25.07.2008, N.Ya. Zhukova, 2♂, 28.07.2008, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 25.06.2007, 1♂, 02.08.2009, 1♂, 01.08.2009, 1♂, 02.08.2009, 3♂, 2♀, 17.06.2012, 5♂, 02.07.2012, 8♂, 03.07.2013, 12♂, 3♀, 13.07.2013, 11♂, 1♀, 05.08.2013, 1♀, 03.08.2014, 25♂, 4♀, 18.07.2015, 16♂, 5♀, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 1♂, 08.08.2010, L.N. Ivan'ko; P14, vic. of Kenzhekol' vill., 2♀, 20.07.2012, S.V. Titov; P15, vic. of Efremovka vill., 1♂ caterpillar, 12.09.2010, L.N. Ivan'ko (imago coll. CST); P16, vic. of Sychevka vill., 7♂, 23.07.2008, S.V. Titov; P17, vic. of Koryakovka, 1♀ cocoon in the soil, 22.05.2011, S. V.Titov (imago coll. CST); S18, east shore of Maraldy lake, 3♂, 1♀, 23.07.2012, S.V. Titov; S20, vic. of Shalday vill., 1♀, 16.06.2007, 8♂,

1♀, 18.07.2007, 3♂, 12.08.2012, S.V. Titov; S21 vic. of Galkino vill., 1♀, 25.06.1990, S.V. Titov; S22, vic. of May Karagay vill., 8♂, 2♀, 11.07.2014, S.V. Titov; S23, vic. of Sharbakty vill., 5♂, 3♀, 30.07.2007, S.M. Reznichenko; L24, Tuz lake, 2♂, 1♀, 21.07.2015, S.V. Titov; L25, highway M-38 near the border of Pavlodar and east Kazakhstan regions, 1♂ cocoon in the soil, 02.06.2013, S.V. Titov (imago coll. CST); L26, vic. of Sharbakty vill., 1♀, 11.08.2013, 2♂, 12.06.2014, S.V. Titov; L27, Borly lake, 28♂, 5♀, 29.07.2013, S.V. Titov; L28, vic. of Akku vill., 4♂, 24.08.2015, S.V. Titov; B29, Birzhankol' lake, 3♂, 17.06.2008, 12♂, 2♀, 21.07.2008, 1♂, 17.06.2009, S.V. Titov; B30, Kurkeli natural landmark, 2♂, 14.06.2013, 10♂, 1♀, 01.07.2013, 18♂, 5♀, 08.07.2016, 2♂, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 5♂, 1♀, 29.06.2013, 2♂, 4♀, 02.08.2013, S.M. Reznichenko, 4♂, 3♀, 14.08.2013, S.V. Titov; B32, rock area Kempirtas, 1♂, 1♀, 13.08.2008, 1♂, 16.06.2013, 31♂, 8♀, 28.06.2013, S.V. Titov; B33, Toraygyr lake, 1♂, 11.06.2013, 24♂, 9♀, 28.07.2016, S.V. Titov; B34, natural landmark Kirigichi, 4♂, 1♀, 30.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♀, 25.07.2014, 8♂, 25.07.2014, S.V. Titov; 16♂, 2♀, 04.07.2016, 23♂, 9♀, 16.07.2016, S.V. Titov; B36, Dulga tas rock, 10♂, 26.07.2014, S.V. Titov; B37, Zhasybay lake, 6♀, 18.08.1999, 2♂, 3♀, 04.07.2013, S.V. Titov; B39, Moldybulak natural landmark, 1♂, 1♀, 19.08.2015, S.V. Titov; M39, vic. of Koktobe vill., 3♂, 28.07.2014, S.V. Titov; M40, Kalmakyrgan Mts.,5♂, 27.07.2014, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 1♂, 07.07.2008, S.V. Titov; A43, vic. of Rebrovka vill., 2♂, 12.07.2008, S.V. Titov; A45, old road bridge, the Irtysh river, 3♂, 26.07.2009, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 15.07.2003, 3♂, 1♀, 20.07.2007, 1♂, 1♀, 18.07.2008, 4♂, 04.08.2008, 1♂, 08.08.2008, 5♂, 12.08.2012, S.V. Titov; E47, vic. of Karazhar vill., 5♂, 1♀, 11.08.2008, 3♂, 30.06.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 28.06.2012, S.V. Titov; E50, Olenty river, 1♂, 04.06.2013, 7♂, 1♀, 22.08.2013, 17♂, 6♀, 22.07.2014, S.V. Titov.

Arctia flavia (Fuessly, 1779) – FP: VI–VIII; localities: Z1, Z4, K10, P11, P12, P13, P23, B29, B31, A42, E46. Reference: Dubatolov & Zolotarenko (1990). (Appendix 1, Map 32)

Biogeographical feature. S Siberian – Mediterranean, temperate. C. Europe, S Russia (S European part, Ural, S Siberia), N and NE Kazakhstan, Siberia, Mongolia, Russian Far East, China (Inner Mongolia) (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Meso-xerophilous.

Material: Z1, vic. of Mikhailovka vill., 1♀, 11.07.2008, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♀, 28.08.2011, S.A.&Yu.P. Lorents; K10, vic. of Terenkol' vill., 1♂, 03.07.1972, (coll. SZMN); 11♂, 19.06.2012, L.N. Ivan'ko; P11, Pavlodar city, 1♂, 09.07.2008, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 2♀, 25.06.2007, 1♂, 02.08.2009, 1♂, 17.06.2012, 1♂, 2♀, 25.06.2007, 2♂, 2♀, 02.07.2012, 3♂, 1♀, 03.07.2013, 4♂, 1♀, 13.07.2013, 1♂, 2♀, 05.08.2013, 3♂, 1♀, 26.08.2013, 1♂, 03.08.2014, 5♂, 3♀, 18.07.2015, 1♂, 13.08.2015, 6♂, 2♀, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 8♂, 4♀, 06.07.2010, L.N. Ivan'ko; P23, vic. of Zhetekshi vill., 3♂, 1♀, 30.07.2016, S.V. Titov; B29, Birzhankol' lake, 1♀, 08.07.2008, S.V. Titov; B31, vic. of Shonai vill., 1♂, 18.08.2013, S.V. Titov, S.M. Reznichenko; A42, Irtysh river, Zholpak natural landmark, 1♀, 07.07.2008, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 08.08.2008, S.V. Titov.

Genus *Epicallia* Hübner, [1820] 1816

Epicallia villica (Linnaeus, 1758)* – FP: VI–VII; localities: Z1, P11, P12, P13, P23, B29, A46. (Appendix 1, Map 33)

Biogeographical feature. West Palaearctic-Central Asian, subboreal. NW Africa, Europe, Caucasus and Transcaucasia, Ural, NE Kazakhstan, W Siberia, (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 3♂, 04.06.2012, V.S. Bychkov; P11, Pavlodar city, 11♂, 6.05.2013, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye, 2♂, 3.07.2013, S.V. Titov (coll. SZMN); P13, vic. of Rozovka vill., 2♂, 06.06.2010, L.N. Ivan'ko; P23, vic. of Zhetekshi vill., 3♂, 26.07.2016, S.V. Titov; A46, vic. of Kurkol' vill., 2♂, 21.06.2016, S.V. Titov; B29, Birzhankol' lake, 1♂, 10.06.2010, A. Ploshchanskaya.

Genus *Eucharia* Hübner, [1820] 1816

Eucharia festiva (Hufnagel, 1766) – FP: IV–VI; localities: Z1, Z2, Z3, Z4, Z5, Z7, Z8, P11, P12, P14, P17, P21, S18, S20, L24, L28, B30, B31, B32, B33, B35, B36, M37, M38, M39, M40, A44, E46, E48, E49, E52. Reference: Dubatolov & Zolotarenko (1990). (Appendix 1, Map 34)

Biogeographical feature. Trans-Palaearctic, subboreal. C., S., E Europe, Caucasus and Transcaucasia, Asia Minor, Middle and S Ural, Middle Asia, NE Kazakhstan, S Siberia, Transbaikalia, NE China (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 2♀, 13.04.2012, V.S. Bychkov, M.Yu. Volkov; Z2, vic. of Krasnovka vill., 19.05.2011, 1♂, V.S. Bychkov; Z3, vic. of Zhelezinka vill., 8♂, 14.05.2011, S.A.&Yu.P. Lorents; Z4, vic. of Moiseevka vill., 19♂, 22.05.2011, S.A.&Yu.P. Lorents; Z5, vic. of Slavyanovka vill., 1♂, 11.06.2012, S.V. Titov & V.S. Bychkov; Z7, Kyzyltuz lake, 1♂, 22.06.2013, S.V. Titov; Z8, vic. of Pyateryzhsk vill., 25♂, 16.05.2009, S.A.&Yu.P. Lorents; K12, vic. of Kyzyltan vill., 1♂, 05.06.2013, fees of the pedagogical institute (coll. SZMN); P11, Pavlodar city, 3♂, 29.05.2010, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 18.04.2012, on the ground, S.V. Titov; P14, vic. of Kenzhekol' vill., 1♂, 05.05.2010, S.V. Titov; P17, vic. of Koryakovka, 17♂, 22.05.2011, S.V. Titov; P21, Krasnoarmeyka vill., regional experimental station, 1♀, 19.06.1956, K. A. Slivkina (coll. KSRIPPQ); S18, East Shore of Maraldy Lake, 1♂ caterpillar, 18.09.2012, S.V. Titov; S20, Forestry Chaldayskiy, 1♀, 14.05.1967, (coll. SZMN); L24, Tuz lake, 1♂, 08.05.2011, S.V. Titov; L28, vic. of Akku vill., 6♂, 18.06.2015, S.V. Titov; B30, Kurkeli natural landmark, 7♂, 02.05.2012, S.V. Titov; B31, vic. of Shonai vill., 12♂, 05.05.2014, S.V. Titov; B32, rock area Kempirtas, 1♀, 17.05.2007, on the ground, S.V. Titov; B33, Toraygyr lake, 1♂,17.05.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 16.05.2006, S.V. Titov; B36, Dulga tas rock, 8♂, 15.06.2014, S.V. Titov; M37, Karasor lake, 3♂, 24.05.2010, S.V. Titov; M38, Karasor lake, 1♂, 22.05.2010, S.V. Titov; M39, vic. of Koktobe vill., 2♂, 24.05.2010, S.V. Titov; M40, Kalmakyrgan Mts.,1♂, 03.05.2012, S.V. Titov; A44, Kishi Kalkaman lake, 2♀, 31.05.2010, on the ground,S.V. Titov; 15♂, E46, Shiderty river, Zhartas natural landmark, 17.05.2015, S.V. Titov; E48, Shiderty reservoir, water pump №7, 38♂, 16.06.2010, S.V. Titov; E49, Shiderty reservoir, water pump №11, 36♂, 05.06.2013, S.V. Titov; E52, Bozshakol' lake, 1♀, 18.05.2010, on the ground, V. K. Merts.

Subtribe Micrarctiina Seitz, 1910

Genus *Chelis* Rambur, 1866

Chelis maculosa (Gerning, 1780)* – FP: VI–VII; localities: E47, E48, E50, U53. (Appendix 1, Map 35)

Biogeographical feature. West Palaearctic-Central Asian, subboreal. Europe, W Turkey, S Russia (S European part, Ural, S Siberia), N, C and NE Kazakhstan (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: E47, vic. Karazhar vill., 1♂, 30.06.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 12.06.2012, S.V. Titov; E50, Olenty river, 1♂, 22.07.2014, S.V. Titov; U53, vic. Borly lake, 1♂, 30.06.2016, S.V. Titov.

Chelis caecilia (Kindermann in Lederer, 1853)* – FP: VI; locality: B31. (Appendix 1, Map 36)

Biogeographical feature. West Palaearctic-Central Asian, subboreal. SE Europe, S Russia (S European part, Ural, S Siberia), E and NE Kazakhstan, Mongolia (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Xeromontane

Material: B31, vic. of Shonai vill., 6♂, 27.06.2013, S.V. Titov.

Chelis dahurica (Boisduval, 1832) – FP: VI–VII; localities: Z1, Z6. (Appendix 1, Map 37)

Biogeographical feature. S Siberian - Central Asian, subboreal. S Russia (S European part, Ural, S Siberia), Transbaikalia, NE and E Kazakhstan (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Meso-xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 25.06.2013, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 1♂, 21.07.2013, V.S. Bychkov.

Genus *Diacrisia* Hübner, [1819] 1816

Diacrisia sannio (Linnaeus, 1758)* – FP: V–VI; localities: Z1, Z2, Z6, Z8, P11, P12, P13, P16, P17, S18, S20, L26, B29, B30, B34, A42, A45, E46, E48, E50. (Appendix 1, Map 38)

Biogeographical feature. European-Siberian, temperate. Europe, S Russia (S European part, Ural, S Siberia), N Caucasus and Transcaucasia, NE Turkey, N, NE and E Kazakhstan, NW

China, Transbaikalia, Russian Far East, Mongolia (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Hygrophilous species

Material: Z2, vic. of Krasnovka vill., 3♂, 27.05.2011, day, net, V.S. Bychkov, M.Yu. Volkov, 2♂, 05.06.2013, day, net, S.V. Titov; Z6, vic. of Novokuz'minka, 1♂ caterpillar, 21.07.2013, V.S. Bychkov; Z8, vic. of Pyateryzhsk vill., 1♂, 1♀, 16.05.2009, day, net, S.A.&Yu.P. Lorents; P11, Pavlodar city, 1♂, 29.05.2010, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 17.06.2012, day, net, S.V. Titov; P13, vic. of Rozovka vill., 2♂, 07.06.2010, L.N. Ivan'ko; P16, окр.с.Sychevka, 2♂, 17.05.2011, day, net, S.V. Titov; P17, vic. of Koryakovka, 1♂, 22.05.2011, day, net, S.V. Titov; S18, East shore of Maraldy lake, 1♂, 20.06.2012, S.V. Titov; S20, vic. of Shalday vill., 1♂, 16.06.2007, day, net, S.V. Titov; L26, vic. of Sharbakty vill., 3♂, 1♀, 12.06.2014, day, net, S.V. Titov; B29, Birzhankol' lake, 1♂, 11.06.2008, 1♂, 13.06.2008, day, net, S.V. Titov, 1♂, 10.06.2008, day, net, A. Ploshchanskaya; B30, Kurkeli natural landmark, 2♂, 12.05.2012, S.V. Titov; B34, natural landmark Kirigichi, 2♂, 1♀, 30.06.2013, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 2♂, 1♀, 30.06.2007, S.V. Titov; A45, old road bridge, the Irtysh river, 1♀, 29.05.2015, S.V. Titov & M. Černila, M. Kučinić; E46, Shiderty river, Zhartas natural landmark natural landmark, 1♂, 17.05.2015, S.V. Titov; E48, Shiderty reservoir, water pump №7, 8♂, 1♀, 16.06.2010, S.V. Titov; E50, Olenty river, 1♂, 04.06.2013, T.K. Aylybayev.

Genus *Rhyparia* Hübner, [1820] 1816

Rhyparia purpurata (Linnaeus, 1758)* – FP: VI–VIII; localities: Z1, Z2, K10, K11, P11, P13, P12, P23, P16, S18, S20, S22, B29, B30, B31, B32, B33, B34, B35, M39, M40, A42, E46, E47, E48. (Appendix 1, Map 39)

Biogeographical feature. Trans-Palaearctic, subboreal. W, N and E Europe, S Russia (S European part, Ural, S Siberia), N Caucasus and Transcaucasia, Asia minor, N and E Kazakhstan, Kyrghyzstan, Transbaikalia, Mongolia, Russian Far East, China, Korea, Japan (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♂, 14.08.2012, V.S. Bychkov; K10, vic. of Terenkol' vill., 1♂, 1♀, 10.07.2013, S.V. Titov; K11, vic. of Baykonys vill., 2♂, 09.07.2013, S.V. Titov; P11, Pavlodar city, 1♂, 27.06.2006, S.V. Titov; P13, vic. of Rozovka vill., 3♂,

02.07.2010, L.N. Ivan'ko; P12, vic. of Pavlodarskoye vill., 1♂, 2♀, 17.06.2012, S.V. Titov; P23, vic. of Zhetekshi vill., 1♀, 27.06.2016, S.V. Titov; P16, vic. of Sychevka vill., 1♀, 23.07.2008, S.V. Titov; S18, East shore of Maraldy lake, 1♂, 1♀, 23.07.2012, S.V. Titov; S20, vic. of Shalday vill., 2♂, 12.08.2012, S.V. Titov; S22, vic. of May Karagay vill., 1♂, 11.07.2014, S.V. Titov; B29, Birzhankol' lake, 8♂, 10.06.2010, S.V. Titov; B30, Kurkeli natural landmark, 1 caterpillar, 05.05.2017, S.V. Titov; B31, vic. of Shonai vill., 1♀, 17.08.2014, S.M. Reznichenko; B32, rock area Kempirtas, 5♂, 13.06.2013, M. Černila, S.V. Titov, A.V. Volynkin; B33, Toraygyr lake,1♂, 3♀, 09.07.2016, S.V. Titov; B34, natural landmark Kirigichi, 1♂, 30.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♀, 25.07.2014, S.V. Titov; M39, vic. of Koktobe vill., 2♂, 28.07.2014, S.V. Titov; M40, Kalmakyrgan Mts., 2♂, 3♀, 27.07.2014, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 3♂, 30.06.2007, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, ♂, 11.08.2008, S.V. Titov; E47, vic. Karazhar vill., 1♂, 13.06.2007, S.V. Titov; E48, Shiderty reservoir, water pump №7, 3♂, 28.06.2012, S.V. Titov.

Subtribe Spilosomina Seitz, 1910

Genus *Watsonarctia* de Freina & Witt, 1984

Watsonarctia deserta (Bartel, 1902) – FP: V–VI; localities: Z5, B30, B31, B32, B33, B35, B36, B37, M39. (Appendix 1, Map 40)

Biogeographical feature. European-Central Asian, subboreal. C, S and E Europe, S Russia (S European part, Ural, S Siberia), N Caucasus and Transcaucasia, Turkey, N Iran; N, E, SE and NE Kazakhstan, W Siberia, Kyrghyzstan, China, Russian Far East, N Mongolia (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Xero-thermophilous.

Material: Z5, vic. of Slavyanovka 1♂, 03.06.2012, S.V. Titov & V.S. Bychkov; B30, Kurkeli natural landmark, 1♂, 01.05.2012, 16 ♂, 12.05.2012, S.V. Titov (coll. CST, SZMN); B31, vic. of Shonai vill., 19♂, 05.05.2014, S.V. Titov; B32, rock area Kempirtas, 25♂, 13.06.2013, M. Černila, S.V. Titov, A.V. Volynkin, 15♂, 13.06.2014, S.V. Titov, 3♂, 27.05.2015, S.V. Titov & M. Černila, M. Kučinić; B35, vic. of Zhana Zhosaly vill., 2♂, 28.05.2015, S.V. Titov & M. Černila, M. Kučinić; B36, Dulga tas rock, 2♂, 15.06.2014, S.V. Titov; B37, Zhasybay lake, 2♂, 10.05.2003, S.V. Titov; M39, vic. of Koktobe vill., 3♂, 24.05.2010, S.V. Titov.

Genus *Spilosoma* Curtis, 1825

Spilosoma lubricipeda (Linnaeus, 1758)* – FP: VI–VII; localities: K10, P12, S20, B29. (Appendix 1, Map 41)

Biogeographical feature. Trans-Palaearctic, subboreal. Europe, S Russia (S European part, Ural, S Siberia), N Caucasus; Transcaucasia, N Turkey, N and NE Kazakhsatn, S Siberia, Transbaikalia, N Mongolia; Far Eastern Russia, China, Korea, Japan (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Mesophilous species.

Material: K10, vic. of Terenkol' vill., 1♂, 2♀, 19.06.2012, 5♂, 2♀, 10.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 15♂, 3♀, 17.06.2012, 10♂, 6♀, 13.07.2013, S.V. Titov; S20, vic. of Shalday vill., 4♂, 1♀, 18.07.2007, S.V. Titov; B29, Birzhankol' lake, 1♂, 10.06.2008, 7♂, 2♀, 17.06.2008, S.V. Titov; B32, rock area Kempirtas, 1♂, 13.06.2013, M. Černila, S.V. Titov, A.V. Volynkin, (coll. CST, SZMN); S20, vic. of Shalday vill., 1♀, 18.07.2007, S.V. Titov.

Spilosoma urticae (Esper, 1789)* – FP: VI; localities: P12, K10, B29, A42. (Appendix 1, Map 42)

Biogeographical feature. Trans-Palaearctic, subboreal. Europe, S Russia (S European part, Ural, S Siberia), N Caucasus and Transcaucasia, N Iran, Uzbekistan, Kazakhstan, W Siberia, Transbaikalia, China (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Mesophilous species.

Material: K10, vic. of Terenkol' vill., 2♂, 19.06.2012, S.V. Titov; P12, vic. of Pavlodarskoye, 1♂, 1♀, 13.07.2013, S.V. Titov; B29, Birzhankol' lake, 1♂, 1♀, 17.06.2008, S.V. Titov; A42, Irtysh river, natural landmark Zholpak, 1♂, 30.06.2007, S.V. Titov.

Genus *Spilarctia* Butler, 1875

Spilarctia lutea (Hufnagel, 1766)* – FP: VI; locality: Z6. (Appendix 1, Map 43)

Biogeographical feature. Trans-Palaearctic, subboreal. E Europe, S Russia (S European part, Ural, S Siberia), W Caucasus, N Turkey, N and NE Kazakhstan, China, Korea, Japan (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Eurytopic species.

Material: Z6, vic. of Novokuz'minka vill., 1♂, 21.07.2013, V.S. Bychkov.

Genus *Phragmatobia* Stephens, 1828,

Phragmatobia fuliginosa (Linnaeus, 1758)* – FP: IV, VII–IX; localities: Z1, Z2, Z3, Z5, Z6, Z7, Z8, K10, K11, P11, P12, P14, P17, S18, S20, S23, L24, L25, L27, L28, B29, B30, B31, B32, B33, B34, B35, B37, B38, M38, M39, A42, A43, A45, E46, E47, E48, E50, E51. (Appendix 1, Map 44)

Biogeographical feature. Holarctic, boreal-subtropical. NW Africa, E Europe, S Russia (S European part, Ural, S Siberia), N Caucasus and Transcaucasia, Turkey, Near East, N Iraq, Iran, Afghanistan, Central Asia, Kazakhstan, Siberia, Russian Far East, Mongolia, China, N America (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b).

Bionomics. Eurytopic species.

Material: Z1, vic. of Mikhailovka vill., 2♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; Z2, vic. of Krasnovka vill., 2♂, 1♀, 09.06.2013, V.S. Bychkov; Z3, vic. of Zhelezinka vill., 1♂, 19.07.2010, S.A.&Yu.P. Lorents; Z5, vic. of Slavyanovka vill., 1♂, 3♀, 11.06.2012, S.V. Titov & V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 1♀, 21.07.2013, V.S. Bychkov; Z7, Kyzyltuz lake, 7♂, 1♀, 22.06.2013, S.V. Titov; Z8, vic. of Pyateryzhsk vill., 2♂, 16.05.2009, day, net, S.A.&Yu.P. Lorents; K10, vic. of Terenkol' vill., 1♀, 24.09.2011, L.N. Ivan'ko; K11, vic. of Baykonys vill., 2♂, 1♀, 09.07.2013, S.V. Titov; P11, Pavlodar city, 4♂, 23.08.2014, S.V. Titov; P12, vic. of Pavlodarskoye, 2♂, 4.08.2013, 1♀, 01.08.2009, S.V. Titov (coll. SZMN); P14, vic. of Kenzhekol' vill., 1♂, 3♀, 20.07.2012, S.V. Titov; P17, vic. of Koryakovka, 7♂, 1♀, 22.05.2011, S.V. Titov; S18, East shore of Maraldy lake, 4♂, 20.06.2012, S.V. Titov; S20, vic. of Shalday vill., 1♂, 04.08.2012, S.V. Titov; S23, vic. of Sharbakty vill., 2♂, 6♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 2♂, 5♀, 08.05.2011, S.V. Titov; L25, administrative border between Pavlodar Region and East Kazakhstan region, 1♂, 1♀, 02.06.2013, M. Černila, S.V. Titov, A.V. Volynkin; L27, Borly lake, 7♂, 2♀, 25.06.2013, S.V. Titov; L28, vic. of Akku vill., 15♂, 3♀, 24.08.2015, S.V. Titov; B29, Birzhankol' lake, 1♀, 13.06.2008, S.V. Titov; B30, Kurkeli natural landmark, 2♂, 02.05.2012, S.V. Titov; B31, vic. of Shonai vill., 3♂, 2♀, 15.09.2012, S.M. Reznichenko; B32, rock area Kempirtas, 1♀, 13.06.2013, M. Černila, S.V. Titov, A.V. Volynkin; B33, Toraygyr lake, 9♂, 09.07.2016, S.V. Titov; B34, natural landmark Kirigichi, 2♂, 4♀, 30.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 3♂, 3♀, 25.07.2014, S.V. Titov; B37, Zhasybay lake, 1♂, 25.07.1999, S.V. Titov; B38, natural landmark Zhumbak,

3♂, 14.04.2016, S.V. Titov, M. Černila; M38, Karasor lake, 1♂, 22.05.2011, S. V., Titov; M39, vic. of Koktobe vill., 1♀, 04.05.2012, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 1♂, 07.07.2008, S.V. Titov; A43, vic. of Rebrovka vill., 5♂, 1♀, 12.07.2008, S.V. Titov; A45, old road bridge, the Irtysh river, 8♂, 3♀, 29.05.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 18.07.2009, S.V. Titov; E47, vic. Karazhar vill., 3♂, 1♀, 30.06.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 3♂, 3♀, 16.06.2010, S.V. Titov; E50, Olenty river, 3♂, 1♀, 22.07.2014, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 1♀, 23.07.2014, S.V. Titov.

Genus *Eudiaphora* Dubatolov, 1990

Eudiaphora turensis (Erschoff, 1874)* – FP: V; locality: B29. (Appendix 1, Map 44)

Biogeographical feature. Central Asian, subboreal. NE Iran, S. Turkmenistan, W, NE and SE Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Afghanistan, SW Mongolia, China (Dubatolov, 2006, 2010; Gorbunov, 2011; Titov et al, 2017 b).

Bionomics. Xeromontane species.

Material: B29, Birzhankol' lake, 2♂, 05.05.2014, S.M. Reznichenko.

Tribe Syntomini Herrich-Schäffer, [1846]

Genus *Amata* Fabricius, 1807

Amata transcaspica Obraztsov, 1941* – FP: VI–VII; localities: Z1, Z4, P12, P19, P22, S18, S23, L27, B29, B33, A44, A48, E46, E48, U57. (Appendix 1, Map 46)

Biogeographical feature. Central Asian, subboreal. S Russia (S European part, Ural, S Siberia), Turkmenistan, Asia Minor (subsp. *jasoni*), W and NE Kazakhstan, SW Siberia (Speidel & Witt, 2011; Gorbunov, 2011; Titov et al, 2017 b).

Bionomics. Xeromontane species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 1♀, in copula, 09.06.2012, day, a net, V.S. Bychkov, M.Yu. Volkov; Z4, vic. of Moiseevka vill., 1♂, 25.07.2013, day, a net, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 17.09.2011, 1♂, 2♀, 25.06.2007, 5♂, 3♀, 17.06.2012, 5♂, 6♀, 02.07.2012, 8♂, 2♀, 13.07.2013, 11♂, 5♀, 18.07.2015, 3♂, 4♀, 27.07.2016, day, a net, S.V. Titov; P19, vic. of Zhertumsyk vill., 1♂, 1♀, 11.06.2016, day, a net, S.V. Titov; P22, vic. of Baydala vill., 1♂, 13.06.2016, day, a net, S.V. Titov; S18, east shore of Maraldy lake, 1♀,

23.07.2012, S.V. Titov; S23, vic. of Sharbakty vill., 2♀, 19.06.2015, day, a net, S.M. Reznichenko; L27, Borly lake, 2♀, 29.07.2013, day, a net, S.V. Titov; B29, Birzhankol' lake, day, 1♂, 1♀, 21.07.2008, a net, S.V. Titov; B33, Toraygyr lake, 2♂, 1♀, 09.07.2016, day, a net, S.V. Titov; A44, Kishi Kalkaman lake, 1♂, 1♀, 26.07.2010, O.V. Lyakhov; E48, Shiderty reservoir, water pump №7, 5♂, 2♀, 12.06.2012, day, a net, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 2♀, 15.07.2003, day, a net, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 1♀, 20.07.2007, day, a net, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 18.07.2008, day, a net, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 1♀, 20.07.2007, 1♂, 18.07.2009, day, a net, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 16.06.2010, day, a net, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 2♀, 12.06.2012, day, a net, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 28.06.2012, day, a net, S.V. Titov; U57, vic.Vesely Klin, 1♂, 03.07.2016, day, a net, S.V. Titov.

Amata caspia (Staudinger, 1877)* – FP: VI–VII; localities: Z4, Z7, P11, P12, P17, P22, P23, S18, S20, S22, L27, B29, B30, B31, B32, B34, B35, B37, M39, M40, A44, A46, A48, E46, E48, U56. (Appendix 1, Map 47)

Biogeographical feature. Central Asian, subboreal. S Russia (S European part, Ural, S Siberia), Caucasus and Transcaucasia, SW Mongolia (subsp. *martinierici*) (Speidel & Witt, 2011; Gorbunov, 2011; Titov et al, 2017 b).

Bionomics. Xeromontane species.

Material: Z4, vic. of Moiseevka vill., 1♀, 28.08.2012, day, a net, S.A.&Yu.P. Lorents; Z7, Kyzyltuz lake, 1♂, 1♀, 22.06.2013, day, a net, S.V. Titov; P11, Pavlodar city, 1♂, 2♀, 27.06.2006, 1♂, 28.07.2008, N.E. Tarasovskaya, 1♂, 20.07.2010, 1♂, 17.09.2011, 1♂,1♀, 25.06.2007, 2♂, 13.07.2013, 1♀, 18.07.2015, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 27.07.2016, day, a net, S.V. Titov; P17, vic. of Koryakovka, 1♀ cocoon in the soil, 22.05.2011, S.V. Titov; P22, vic. of Baydala vill., 2♂, 13.06.2016, day, a net, S.V. Titov; P23, vic. of Zhetekshi vill., 1♀, 30.07.2016, day, a net, S.V. Titov; S18, East shore of Maraldy lake, 1♂, 2♀, 20.06.2012, day, a net, S.V. Titov; S20, vic. of Shalday vill., 1♂, 3♀, 22.07.2007, day, a net, S.V. Titov; S22, vic. of May Karagay vill., 1♀, 11.07.2014, day, a net, S.V. Titov; L27, Borly lake, 1♀, 29.07.2013, day, a net, S.V. Titov; B29, Birzhankol' lake, 7♀, 17.06.2008, 5♂, 1♀, 21.07.2008, 2♂, 1♀, 17.06.2009, day, a net, S.V. Titov; L27, Borly lake, 1♀, 29.07.2013, day, a

net, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 1♀, 14.06.2013, day, a net, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 08.07.2013, 2♂, 3♀, 12.07.2013, day, a net, S.V. Titov; B31, vic. of Shonai vill., 1♂, 29.06.2013, day, a net, S.V. Titov; B32, rock area Kempirtas, 3♀, 28.06.2013, 2♂, 30.07.2013, day, a net, S.M. Reznichenko; B34, natural landmark Kirigichi, 1♂, 8♀, 30.06.2013, day, a net, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 8♂, 4♀, 25.07.2014, day, a net, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 8♂, 4♀, 25.07.2014, day, a net, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 4♂, 2♀, 16.07.2016, day, a net, S.V. Titov; B37, Zhasybay lake, 9♂, 2♀, 25.07.2014, day, a net, S.V. Titov; B37, Zhasybay lake, 5♀, 19.07.2011, day, a net, S.V. Titov; B37, Zhasybay lake, 7♂, 3♀, 16.07.2016, day, a net, S.V. Titov; M39, vic. of Koktobe vill., 1♂, 28.07.2014, day, a net, S.V. Titov; M40, Kalmakyrgan Mts.,4♂, 27.07.2014, day, a net, S.V. Titov; A44, Kishi Kalkaman lake, 2♂, 1♀, 26.07.2010, day, a net, O.V. Lyakhov; A46, vic. of Kurkol', 2♂, 1♀, 21.06.2016, day, a net, S.V. Titov; A48, Kudaykol' lake, 5♂, 29.07.2016, day, a net, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 3♀, 10.07.1995, day, a net, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♂, 1♀, 12.06.2012, day, a net, S.V. Titov; U56 1.5 km. east of the Steklyannoe lake, 3♂, 02.07.2016, day, a net, S.V. Titov.

Subfamily HERMINIINAE Leach, [1815]

Genus *Simplicia* Guenée, 1854

Simplicia rectalis (Eversmann, 1842)* – FP: VI–VIII; localities: Z1, P12, P13, B30, B31. (Appendix 1, Map 48)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. C, S and E Europe, Caucasus, S Russia (S European part, Ural, S Siberia), W and S Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 05.07.2011, M.Yu. Volkov; P12, vic. of Pavlodarskoye vill., 1♂, 2♀, 25.06.2007, 2♀, 02.08.2009, 3♂, 1♀, 02.07.2012, 4♀, 13.07.2013, 1♂, 5♀, 26.08.2013, 1♂, 1♀, 25.06.2007, 3♀, 03.08.2014, 1♂, 18.07.2015, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 18.08.2010, L.N. Ivan'ko; B30, Kurkeli natural landmark, 1♀, 12.07.2016, S.V. Titov; B31, vic. of Shonai vill., 3♂, 1♀, 29.06.2013, S.V. Titov.

Genus *Paracolax* Hübner, [1825] 1816

Paracolax tristalis (Fabricius, 1794)*– FP: VI–VII; localities: Z2, K10, B34. (Appendix 1, Map 49)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus and Transcaucasia, Asia Minor, N Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, NE China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 3♂, 09.06.2012, V.S. Bychkov; K10, vic. of Terenkol' vill., 2♂, 10.07.2013, S.V. Titov; B34, natural landmark Kirigichi, 2♀, 30.06.2013, S.V. Titov.

Genus *Herminia* Latreille, 1802

Herminia tenuialis (Rebel, 1896)* – FP: VI; localities: Z1, B29. (Appendix 1, Map 50)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. S Europe, Caucasus, W and S Siberia, Russian Far East, Korea (Volynkin, 2012).

Bionomics. Mesophilous species species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 1♀, 05.07.2011, M.Yu. Volkov; B29, Birzhankol' lake, 3♂, 2♀, 17.06.2009, S.V. Titov.

Herminia tristriga W Kozhantschikov, 1929* – FP: VI–VII; locality: A46. (Appendix 1, Map 51)

Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. W and S Siberia, Russian Far East (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: A46, vic. of Kurkol' vill., 8♂, 5♀, 21.06.2016, S.V. Titov.

Genus *Polypogon* Schrank, 1802

Polypogon tentacularia (Linnaeus, 1758)* – FP: VII; localities: Z2, P12, B30. (Appendix 1, Map 52)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus and Transcaucasia, Near East, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 09.07.2011, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 3♀, 13.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 27.07.2016, S.V. Titov.

Genus *Pechipogo* Hübner, 1825] 1816

Pechipogo strigilata (Linnaeus, 1758)* – FP: VI–VII; localities: P23, A46. (Appendix 1, Map 53)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus, Near East, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P23, vic. of Zhetekshi vill., 2♂, 1♀, 26.07.2016, S.V. Titov; A46, vic. of Kurkol' vill., 3♂, 27.06.2016, S.V. Titov.

Genus *Zanclognatha* Lederer, 1857

Zanclognatha lunalis (Scopoli, 1763)* – FP: VI–VII; localities: Z1, P11, P12, B30. (Appendix 1, Map 54)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 2♂, 05.07.2011, M.Yu. Volkov; P11, Pavlodar city, 1♀, 29.06.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 02.07.2012, 2♀, 13.07.2013, 1♂, 2♀, 18.07.2015, 1♂, 2♀, 18.07.2015, S.V. Titov; B30, Kurkeli natural landmark, 2♂, 3♀, 27.07.2016, S.V. Titov.

Subfamily HYPENINAE Herrich-Schäffer, [1851]

Genus *Zekelita* Walker, 1863

Zekelita ravulalis (Staudinger, 1879)* – FP: IV–VI, VII–IX; localities: Z1, Z2, Z7, P11, P12, P13, P19, P22, P23, S23, S18, S20, S23, L24, L27, L26, L27, L28, B31, B35, M39, E46, E47, E48, E50, E51. (Appendix 1, Map 55)

Biogeographical feature. Central Asian, subboreal. Russia (S European part, Ural), Middle East, Iraq. Iran, Tajikistan, Kazakhstan, Turkmenistanm, Uzbekistan (Hacker 1990–2001; Schacht 2005, 2010).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 1♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 1♂, 14.08.2012, V.S. Bychkov, 1♂, 09.06.2012, V.S. Bychkov; Z7, Kyzyltuz lake, 1♂, 1♀, 22.06.2013, S.V. Titov; P11, Pavlodar city, 1♂, 3♀, 17.05.2012, 4♂, 27.06.2006, 3♂, 2♀, 28.05.2008, S.V. Titov, 3♂, 1♀, 12.06.2008, N.E. Tarasovskaya, 2♂, 29.05.2010, S.V. Titov, 3♂, 2♀, 12.08.2011, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 4♂, 1♀, 25.06.2007, 5♂, 2♀, 17.06.2012, 4♂, 05.08.2013, 1♂, 03.08.2014, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 18.10.2010, 3♂, 07.06.2013, L.N. Ivan'ko; P19, vic. of Zhertumsyk vill., 2♂, 1♀, 11.06.2016, S.V. Titov; P22, vic. of Baydala vill., 1♂, 13.06.2016, S.V. Titov; P23, vic. of Zhetekshi vill., 8♀, 04.08.2015, 3♂, 1♀, 27.06.2016, S.V. Titov; S23, vic. of Sharbakty vill., 1♀, 11.08.2014, 1♀, 19.06.2015, S.M. Reznichenko; S18, East shore of Maraldy lake, 1♂, 2♀, 20.06.2012, S.V. Titov; S20, vic. of Shalday vill., 1♂, 18.07.2007, 1♀, 12.08.2012, S.V. Titov (coll. CST), L24, Tuz lake, 3♂, 08.05.2011,S.V. Titov; L26, vic. of Sharbakty vill., 6♀, 11.08.2013, S.V. Titov; L27, Borly lake, 2♂, 5♀, 25.06.2013, 7♂, 25.06.2013, S.V. Titov; L28, vic. of Akku vill., 2♂, 18.06.2015, S.V. Titov; B31, vic. of Shonai vill., 3♂, 1♀, 29.06.2013, S.V. Titov, 2♂, 5♀, 02.08.2013, S.M. Reznichenko; B35, vic. of Zhana Zhosaly vill., 28.05.2015, 6♂, 1♀, S.V. Titov & M. Černila, M. Kučinić; M39, vic. of Koktobe vill., 4♂, 24.05.2010, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 1♀, 12.08.2012, S.V. Titov; E47, vic. Karazhar vill., 1♂, 6♀, 13.06.2007, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♀, 12.06.2012, S.V. Titov; E50, Olenty river, 5♂, 2♀, 22.08.2013, S.V. Titov; E51, Cretaceous slope of Ulken Ak-Zhar, 1♂, 23.07.2014, S.V. Titov.

Genus *Hypena* Schrank, 1802

Hypena rostralis (Linnaeus, 1758)* – FP: IV–VI, X; localities: B30, B32, M39, E48, B41. (Appendix 1, Map 56)

Biogeographical feature. European - West Asian, boreal. Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 18.04.2012, S.V. Titov; B30, Kurkeli natural landmark, 1♀, 17.04.2016, S.V. Titov, M. Černila; B32, rock area Kempirtas, 1♀, 17.05.2007, S.V. Titov; B33, Toraygyr lake, 1♂, 16.05.2017, S.V. Titov; M39, vic. of Koktobe vill., 2♂, 24.05.2010, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♀, 12.06.2012, S.V. Titov; B41, in hibernation inside the cave Konyr Auliye, 37♀, 17–19.10.2017, S.V. Titov.

Hypena obesalis (Treitschke, 1829)* – FP: VI; localities: Z1, P12, S20. (Appendix 1, Map 57)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♀, 17.06.2012, S.V. Titov.

Hypena tristalis Lederer, 1853* – FP: VIII; localities: L24, B31. (Appendix 1, Map 58)

Biogeographical feature. Manchurian - Central Asian - Siberian, boreal. W and S Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 1♂, 1♀, 09.08.2013, S.V. Titov.

Subfamily RIVULINAE Grote, 1895

Genus *Rivula* Guenée, [1845] 1844

Rivula sericealis (Scopoli, 1763)* – FP: VI–VII; localities: Z1, Z2, A46, B30. (Appendix 1, Map 59)

Biogeographical feature. Manchurian - Central Asian - Siberian, boreal. W and S Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: vic. of Krasnovka vill., 1♀, Z2, 27.05.2011, S.V. Titov, V.S. Bychkov; B30, Kurkeli natural landmark, 3♀, 08.07.2016, S.V. Titov.

Subfamily SCOLIOPTERYGINAE Herrich-Schäffer, [1852]

Tribe Scoliopterygini Herrich-Schäffer, [1852]

Genus *Scoliopteryx* Germar, 1810

Scoliopteryx libatrix (Linnaeus, 1758)* – FP: IV–VII, IX–XI; localities: Z1, P11, P12, K11, S20, S23, L27, B30, B31, B32, B33, B35, B37, B38, A42, A45, E46, E47. (Appendix 1, Map 60)

Biogeographical feature. Holarctic, temperate. N America, N Africa, Europe, Caucasus, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 10.10.2010, V.S. Bychkov, M.Yu. Volkov, 1♂, 09.06.2012, M.Yu. Volkov; Z2, vic. of Krasnovka vill., 1♀, 19.05.2011, V.S. Bychkov, 1♀, 27.05.2011, 1♀, 13.04.2012, 1♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; P11, Pavlodar city, 1♂, 1♀, 11.09.2007, 1♀, 28.05.2008, S.V. Titov, 1♂, out of the cocoon, 30.05.2008, N.E. Tarasovskaya, 1♀, 10.05.2010, A.O. Orazbayev, 1♀, 21.05.2011, S.V. Titov, 1♂, 18.08.2011, N.E. Tarasovskaya, 1♂, 17.09.2011, 1♀, 13.09.2015, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 02.08.2009, 3♀, 18.04.2012, 1♂, 1♀, 10.09.2012, 2♀, 04.09.2013, 1♀, 19.04.2016, S.V. Titov; K11, vic. of Baykonys vill., 1♂, 09.07.2013, S.V. Titov; S20, vic. of Shalday vill., 1♂, 18.07.2007, 1♂, 12.08.2012, S.V. Titov; S23, vic. of Sharbakty vill., 1♀, 30.07.2008, S.V. Titov, 2♀, 11.08.2014, S.M. Reznichenko; L27, Borly lake, 1♀, 25.06.2013, S.V. Titov; B30, Kurkeli natural landmark, 1♀, 17.04.2016, S.V. Titov, M. Černila; B30, Kurkeli natural landmark, 2♀, 12.07.2016, S.V. Titov; B31, vic. of Shonai vill., 1♀, 15.09.2012, 1♂, 29.06.2013, S.V. Titov, 1♂, 1♀, 02.08.2013, S.M. Reznichenko, 14.08.2013, 1♀, 13.04.2016, S.V. Titov, M. Černila; B32, rock area Kempirtas, 2♀, 17.05.2007, S.V. Titov, 1♀, 13.06.2013, M. Černila, S.V. Titov, A.V. Volynkin; 1♂, B32, rock area Kempirtas, 27.05.2015, S.V. Titov; B33, Toraygyr lake, 1♂, 11.06.2013, M. Černila, S.V. Titov, A.V. Volynkin, 1♂, 09.07.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 25.07.2014, S.V. Titov, 2♀, 28.05.2015, S.V. Titov & M. Černila, M. Kučinić; B37, Zhasybay lake, 3♂, at wine, 10.05.2003, 1♂, 04.07.2015, S.V. Titov; B38, natural landmark Zhumbak, 2♀, 14.04.2016, at wine, S.V. Titov, M. Černila; A42, Irtysh river, Zholpak natural landmark, 1♂, 30.06.2007, 1♀, 18.04.2016, S.V. Titov; A45, old road bridge, the Irtysh river, 1♂, 26.07.2009, 1♀, 29.05.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 23.08.1994, 2♀, 08.08.2008, S.V. Titov; E47, vic. Karazhar vill., 1♂, 13.06.2007, 1♀, 08.09.2011, 1♀, 21.09.2015, S.V. Titov.

Subfamily CALPINAE Boisduval, 1840

Tribe Calpini Boisduval, 1840

Genus *Calyptra* Ochsenheimer, 1816

Calyptra thalictri (Borkhausen, 1790)* – FP: VI–VIII; localities: P12, K10, L24, B31, B35, M39, A45, A46, E47, E50. (Appendix 1, Map 61)

Biogeographical feature. Transpalaearctic, temperate. N Africa, S Europe, Caucasus, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 02.08.2009, 1♂, 2♀, 02.07.2012, S.V. Titov; 3♂, 03.07.2013, 2♂, 4♀, 13.07.2013, 4♂, 2♀, 18.07.2015, S.V. Titov; K10, vic. of Terenkol' vill., 2♀, 10.07.2013, L.N. Ivan'ko; L24, Tuz lake, 1♀, 21.07.2015, S.V. Titov; B31, vic. of Shonai vill., 2♂, 29.06.2013, S.V. Titov, 4♂, 1♀, 02.08.2013, S.M. Reznichenko, 1♂, 09.08.2013, S.V. Titov, 4♂, 2♀, 15.08.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 25.07.2014, 1♂, 16.07.2016, S.V. Titov; M39, vic. of Koktobe vill., 3♂, 28.07.2014, S.V. Titov; A45, old road bridge, the Irtysh river, 2♀, 26.07.2009, S.V. Titov; A46, vic. of Kurkol', 4♂, 2♀, 27.06.2016, S.V. Titov; E47, vic. Karazhar vill., 3♂, 13.06.2007, S.V. Titov; E50, Olenty river, 1♂, 3♀, 22.08.2013, S.V. Titov.

Subfamily BOLETOBIINAE Guenée, [1858]

Tribe Boletobiini Guenée, [1858]

Genus *Parascotia* Hübner, [1825]1816

Parascotia fuliginaria (Linnaeus, 1761)* – FP: VI–VIII; localities: Z2, P12, P23, L24, L27, A46. (Appendix 1, Map 62)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Near East, N Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♀, 14.08.2012, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 3♂, 1♀, 13.07.2013, S.V. Titov; P23, vic. of Zhetekshi vill., 2♂, 30.07.2016, S.V. Titov; L24, Tuz lake, 2♀, 21.07.2016, S.V. Titov; L27, Borly lake, 1♀, 29.07.2013, S.V. Titov; A46, vic. of Kurkol' vill., 9♂, 21.06.2016, S.V. Titov.

Tribe Aventiini Tutt, 1896

Genus *Paragona* Staudinger, 1892

Paragona cognata (Staudinger, 1892)* – FP: VII; locality: B30. (Appendix 1, Map 63)

Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. W and S Siberia, Transbaikalia, N Mongolia, Russian Far East, N China, Korea (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: B30, Kurkeli natural landmark, 25♂, 12♀, 12.07.2016, S.V. Titov.

Tribe Eublemmini Forbes, 1954

Genus *Odice* Hübner, [1823]

Odice arcuinna (Hübner, 1790)* – FP: VII–VIII; localities: L26, B31, B35, A46. (Appendix 1, Map 64)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. C and S Europe, Turkey, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), NE Kazakhstan, Middle Asia, Mongolia, N China, Korea (Kononenko, 2010; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: L26, vic. of Sharbakty vill., 3♀, 11.08.2013, S.V. Titov; B31, vic. of Shonai vill., 1♂, 2♀, 11.08.2015, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 2♀, 25.07.2014, S.V. Titov; A46, vic. of Kurkol' vill., 2♂, 25.07.2016, S.V. Titov.

Genus *Eublemma* Hübner, [1821] 1816

Eublemma minutata (Fabricius, 1794)* – FP: VI–VIII; localities: Z4, P12, L26, E48. (Appendix 1, Map 65)

Biogeographical feature. European-West Asian, subboreal. S Russia (S European part, Ural, S Siberia), Near East, Kazakhstan (Kononenko, 2010).

Bionomics. Xero-thermophilous species.

Material: Z4, vic. of Moiseevka vill., 5♂, 2♀, 25.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 3♀, 13.07.2013, S.V. Titov; L26, vic. of Sharbakty vill., 9♀, 11.08.2013, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 4♀, 12.06.2012, S.V. Titov.

Eublemma ostrina (Hübner, [1808])* – FP: VIII; localities: L26, L24. (Appendix 1, Map 66)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, Altai (Volynkin, 2012).

Bionomics. Xero-thermophilous species.

Material: L26, vic. of Sharbakty vill., 2♀, 11.08.2013, S.V. Titov; L24, Tuz lake, 1♂, 21.07.2015, S.V. Titov.

Eublemma porphyrinia (Freyer, 1845)* – FP: VI; localities: L24, B32, B33. (Appendix 1, Map 67)

Biogeographical feature. Siberian – Mediterranean, subboreal. Turkmenistan, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, Russian Altai, W Mongolia (Volynkin, 2012).

Bionomics. Xero-thermophilous species.

Material: L24, Tuz lake, 1♂, 21.07.2015, S.V. Titov; B32, rock area Kempirtas, 15♂, 8♀, 13.06.2013, M. Černila, S.V. Titov, A.V. Volynkin; B33, Toraygyr lake, 11♂, 5♀, 11.06.2013, M. Černila, S.V. Titov, A.V. Volynkin; B33, Toraygyr lake, 1♂, 19.06.2017, S.V. Titov.

Eublemma panonica (Freyer, 1840)* – FP: VII; locality: L24. (Appendix 1, Map 68)

Biogeographical feature. Western Palaearctic, subboreal. S Russia (S European part, Ural, S Siberia), N Africa, Near East, S and C Europe, Kazakhstan.

Bionomics. Xerophilous species (Kononenko, 2010).

Material: L24, Tuz lake, 5♀, 21.07.2015, S.V. Titov.

Eublemma amasina (Eversmann, 1842)* – FP: VI; locality: Z5. (Appendix 1, Map 69)

Biogeographical feature. East Palaearctic, subboreal. S Russia (S European part, Ural, S Siberia), Transbaikalia, Russian Far East, Middle Asia, N China, Korea, Japan (Kononenko, 2010).

Bionomics. Meso-xerophilous species.

Material: Z5, vic. of Slavyanovka vill., 1♂, 11.06.2012, S.V. Titov & V.S. Bychkov.

Eublemma purpurina ([Denis & Schiffermüller], 1775)* – FP: VI–VIII; localities: P12, P19, S20, B30, B31, B33, B34, B35, A46, A47, M39, E46, U57. (Appendix 1, Map 70)

Biogeographical feature. Western Palaearctic, subboreal. S Russia (S European part, Ural, S Siberia), Transbaikalia. – N Africa, Near East, C and S Europe, Caucasus and Transcaucasia, Middle Asia, Kazakhstan (Kononenko, 2010).

Bionomics. Xero-thermophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 25.06.2007, 2♂, 02.08.2009, 2♂, 1♀, 17.06.2012, 2♀, 02.07.2012, 1♂,13.07.2013, 1♂, 1♀, 27.07.2016, S.V. Titov; P19, vic. of Zhertumsyk vill., 1♂, 3♀, 11.06.2016, S.V. Titov; S20, vic. of Shalday vill., 1♀, 22.07.2007, 1♂, 1♀, 12.08.2012, S.V. Titov; B30, Kurkeli natural landmark, 1♀, 14.06.2013, 4♂, 1♀, 08.07.2016, S.V. Titov; B31, vic. of Shonai vill., 1♂, 29.06.2013, 3♂, 17.08.2013, S.V. Titov; B33, Toraygyr lake, 2♀, 09.07.2016, 1♀, 28.07.2016, S.V. Titov; B34, natural landmark Kirigichi, 1♂, 30.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 3♂, 1♀, 25.07.2014, 1♂, 04.07.2016, S.V. Titov; A46, vic. of Kurkol', 5♂, 27.06.2016, S.V. Titov; A47, vic. of Kalkaman vill., 1♂, 11.07.2016, S.V. Titov; M39, vic. of Koktobe vill., 1♂, 28.07.2014, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 2♀, 20.07.2007, 1♂, 1♀, 08.08.2008, 2♀, 12.08.2012, S.V. Titov; U57, vic.Vesely Klin, 1♂, 03.07.2016, S.V. Titov.

Eublemma pallidula (Herrich-Schäffer, 1856)* – FP: VI; localities: P22, L27. (Appendix 1, Map 71)

Biogeographical feature. European-Central Asian, subboreal. S and E Europe, Near East, S Russia (S European part, Ural, S Siberia), Caucasus and Transcaucasia, Middle Asia, Kazakhstan (Kononenko, 2010).

Bionomics. Xerophilous species.

Material: P22, vic. of Baydala vill., 3♂, 1♀, 13.06.2016, S.V. Titov; L27, Borly lake, 6♂, 2♀, 25.06.2013, S.V. Titov.

Eublemma pusilla (Eversmann, 1834)* – FP: VI–VII; localities: Z2, Z4, P12, S18, P22, S20, L27, B31, B33, A46, A48, E48. (Appendix 1, Map 72)

Biogeographical feature. European-Central Asian, subboreal. E Europe, S Russia (S European part, Ural, S Siberia), Near East, Caucasus and Transcaucasia, NE and E Kazakhstan, Mongolia (Kononenko, 2010).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 7♂, 1♀, 09.07.2011, 2♂, 8♀, 05.06.2012, S.V. Titov, 1♀, 09.06.2013, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♀, 25.07.2013, S.A.&Yu.P. Lorents; P12, vic. of Pavlodarskoye vill., 3♂, 1♀, 25.06.2007, 1♀, 17.06.2012, 4♂, 13.07.2013, 1♂, 18.07.2015, S.V. Titov; S18, East shore of Maraldy lake, 8♂, 1♀, 20.06.2012, S.V. Titov; P22, vic. of Baydala vill., 12♂, 3♀, 13.06.2016, S.V. Titov; S20, vic. of Shalday vill., 4♂, 1♀, 16.06.2007, S.V. Titov; L27, Borly lake, 6♂, 2♀, 25.06.2013, S.V. Titov; B31, vic. of Shonai vill., 2♂, 1♀, 29.06.2013, S.V. Titov; B33, Toraygyr lake, 25♂, 16♀, 19.06.2017, S.V. Titov; A46, vic. of Kurkol', 16♂, 5♀, 27.06.2016, S.V. Titov; A48, Kudaykol' lake, 1♂, 29.07.2016, S.V. Titov; E48, Shiderty reservoir, water pump №7, 12♂, 6♀, 16.06.2011, 1♂, 1♀, 12.06.2012, S.V. Titov.

Eublemma polygramma (Duponchel, 1842)* – FP: VI; locality: L24. (Appendix 1, Map 73)

Biogeographical feature. Western Palaearctic, subboreal. N Africa, Near East, C and S Europe,Caucasus and Transcaucasia, Russia (S European part, Ural), Kazakhstan, Middle Asia (Kononenko, 2010).

Bionomics. Xero-thermophilous species.

Material: L24, Tuz lake, 1♂, 16.06.2016, S.V. Titov.

Subfamily PHYTOMETRINAE Hampson, 1913

Tribe Phytometrini Hampson, 1913

Genus *Phytometra* Haworth, 1809

Phytometra viridaria (Clerck, 1759)* – FP: V–VI; VIII; localities: Z1, K10, P12, P13, P19, P22, L26, B29, B31, B33, B35, M39, E46, U53. (Appendix 1, Map 74)

Biogeographical feature. Transpalaearctic, boreal. N Africa, Europe, Caucasus and Transcaucasia, Near East, Afghanistan, Himalaya, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East (Primorye) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 19.05.2012, M.Yu. Volkov; K10, vic. of Terenkol' vill., 1♂, 19.06.2012, L.N. Ivan'ko; P12, vic. of Pavlodarskoye vill., 1♂, 25.06.2007,

S.V. Titov; P13, vic. of Rozovka vill., 1♂, 07.06.2010, L.N. Ivan'ko; P19, vic. of Zhertumsyk vill., 2♂, 11.06.2016, S.V. Titov; P22, vic. of Baydala vill., 3♂, 13.06.2016, S.V. Titov; L26, vic. of Sharbakty vill., 3♂, 12.06.2014, S.V. Titov; B29, Birzhankol' lake, 1♀, 17.06.2009, S.V. Titov; B31, vic. of Shonai vill., 1♀, 27.08.2013, 2♀, 11.08.2015, S.V. Titov; 2♂, 1♀, B33, Toraygyr lake, 1♂, 11.06.2013, 1♀, 17.05.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 28.05.2015, S.V. Titov; M39, vic. of Koktobe vill., 1♂, 24.05.2010, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 10.05.2007, 1♀, 08.08.2008, 1♀, 12.08.2012, 2♀, 1♀, 17.05.2015, S.V. Titov; U53, vic. Borly lake, 2♂, 30.06.2016, S.V. Titov.

Subfamily TOXOCAMPINAE Guenée, 1852

Genus *Lygephila* Billberg, 1820

Lygephila lubrica (Freyer, 1842)* – FP: VII–VIII; localities: Z1, Z7, P12, S23, L24, B33, B35, M40, E46, E50. (Appendix 1, Map 75)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Caucasus, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, Mongolia, China (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 3♀, 05.07.2011, 1♂, 3♀, 21.07.2012, M.Yu. Volkov, 1♂, 1♀, 08.07.2013, V.S. Bychkov; 6♂, Z7, Kyzyltuz lake, 07.07.2013, S.V. Titov; 1♂, 1♀, P12, vic. of Pavlodarskoye vill., 8♂, 12♀, 02.08.2009, 5♂, 02.07.2012, 7♂, 4♀, 03.07.2013, 5♂, 6♀, 13.07.2013, 8♂, 11♀, 26.08.2013, 3♂, 12♀, 18.07.2015, 24♂, 14♀, 27.07.2016, S.V. Titov; S23, vic. of Sharbakty vill., 9♂, 11♀, 30.07.2007, S.V. Titov, 18♂, 15♀, 30.07.2009, 12♂, 4♀, 11.08.2014, S.M. Reznichenko; 4♀, L24, Tuz lake, 21.07.2015, S.V. Titov; B33, Toraygyr lake, 5♂, 7♀, 09.07.2016, 3♂, 8♀, 15.07.2016, 10♂, 8♀,28.07.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 4♀, 25.07.2014, 2♀, 04.07.2016, 6♂, 3♀, 16.07.2016, S.V. Titov; 4♂, 12♀, M40, Kalmakyrgan Mts.,at light, 27.07.2014, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 8♀, 15.07.2013, 13♂, 11♀, 20.07.2007, 18♂, 8♀, 18.07.2008, 1♂, 08.08.2008, 2♂, 9♀, 18.07.2009, 7♂, 5♀, 12.08.2012, S.V. Titov; E50, Olenty river, 4♂, 3♀, 22.08.2013, 5♂, 7♀, 22.07.2014, S.V. Titov.

Lygephila ludicra (Hübner, 1790) – FP: VI,–VII–VIII; localities: P13, S23, A42, E46, E47, B32, B33, B35, M40, E50. References: Pospelov (1960, as *Eccrita*), Shek (1975, as *Eccrita*). (Appendix 1, Map 76)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. E Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Xero-thermophilous species.

Material: P13, vic. of Rozovka vill., 2♂, 8♀, 07.06.2010, 5♂, 9♀, 18.07.2010, 6♂, 11♀, 18.08.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 1♂, 5♀, 11.08.2014, 9♂, 4♀, 19.06.2015, S.V. Titov; 3♂,1♀, A42, Irtysh river, Zholpak natural landmark, 30.06.2007, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 2♀, 08.08.2007, 3♂, 2♀, 12.08.2012, S.V. Titov; E47, vic. Karazhar vill., 3♂, 1♀, 13.06.2007, 3♂, 4♀, 11.08.2008, 2♂,6♀, 30.06.2009, S.V. Titov; B, 9 ex. 24.06 -10.07.1960, S.M. Pospelov; B32, rock area Kempirtas, 2♂,4♀, 13.08.2008, 12♂, 5♀, 13.06.2013, 3♀, 28.06.2013, 1♂, 13.06.2014, S.M. Reznichenko; B33, Toraygyr lake, 8♂, 1♀, 11.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 17♂, 8♀, 25.07.2014, S.V. Titov; M40, Kalmakyrgan Mts.,9♂, 3♀, 27.07.2014, S.V. Titov; E50, Olenty river, 1♂,1♀, 04.06.2013, 6♂,2♀, 22.08.2013, S.V. Titov.

Lygephila pastinum (Treitschke, 1826) – FP: VII; localities: P11, P12, B30, A46. Reference: Pospelov (1962). (Appendix 1, Map 77)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 2ex., 23–24.06.1960, S.M. Pospelov, 12♂, 4♀, 09.07.2008, 1♂, 1♀, 28.07.2008, N.E. Tarasovskaya, 3♂, 1♀, 20.07.2010, S.V. Titov, 2♂, 03.07.2016, V.I. Blokhin; P12, vic. of Pavlodarskoye vill., 1♂, 1♀, 03.07.2012, 6♂, 4♀, 13.07.2012, 2♀, 18.07.2015, 3♀, 27.07.2016, S.V. Titov; B30, Kurkeli natural landmark, 2♂, 4♀, 01.07.2013, 16♂, 9♀, 08.07.2016, 11♂, 3♀, 12.07.2016, S.V. Titov; A46, vic. of Kurkol' vill., 14♂, 6♀, 25.07.2016, S.V. Titov.

Lygephila viciae (Hübner, [1822])* – FP: VII; localities: P12, P23, B32, A46. (Appendix 1, Map 78)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China (W China – ssp. *violaceogrisea*), Korea, Japan (ssp. *viciae*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 5♂, 3♀, 03.07.2012, 3♂, 13.07.2012, 1♂, 2♀, 27.07.2016, S.V. Titov; P23, vic. of Zhetekshi vill., 3♂, 4♀, 26.07.2016, 1♂, 8♀, 30.07.2016, S.V. Titov; B32, rock area Kempirtas, 1♂, 2♀, 30.07.2013, S.V. Titov; A46, vic. of Kurkol' vill., 2♀, 25.07.2016, S.V. Titov.

Lygephila craccae ([Denis & Schiffermüller], 1775)* – FP: VIII; localities: L24, B31. (Appendix 1, Map 79)

Biogeographical feature. Transpalaearctic, subboreal. N Africa (ssp. *riata*), Europe, Caucasus and Transcaucasia, Asia Minor, Near East, S Russia (S European part, Ural, S Siberia), W and S Siberia, Mongolia, Russian Far East, Korea (ssp. *craccae*), Middle Asia, Afghanistan, Kazakhstan (ssp. *centralasiae*) (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: L24, Tuz lake, 1♂, 21.07.2015, S.V. Titov; B31, vic. of Shonai vill., 1♂, 1♀, 04.08.2013, S.M. Reznichenko 1♂, 3♀, 27.08.2013, S.V. Titov.

Lygephila asiatica Pekarsky, 2016* – FP: VII; locality: E50. (Appendix 1, Map 80)

Biogeographical feature. Central Asian, subboreal. S. SE NE Kazakhstan (Pekarsky, 2016, Titov et al, 2017 b).

Bionomics. Meso-thermophilous species.

Material: E50, Olenty river, 1♂, 22.07.2014, S.V. Titov.

Genus *Autophila* Hübner, [1823] 1816

Subgenus *Cheirophanes* Boursin, 1955

Autophila (*Cheirophanes*) *chamaephanes* Boursin, 1940* – FP: IV, IX–X; locality: B32, B41. Reference: Titov et al. (2017). (Appendix 1, Map 81)

Biogeographical feature. European-Central Asian, subboreal. S Russia (S European part, Ural, S Siberia), Caucasus, Turkey, Kazakhstan, Middle Asia, S Siberia (Kononenko, 2010).

Bionomics. Xero-thermophilous species.

Material: B32, rock area Kempirtas, 1♂, 25.09.2013, S.V. Titov, A.V. Volynkin, 1♂, 15.04.2016, M. Černila, S.V. Titov; B41, in hibernation inside the cave Konyr Auliye, 5♂, 15♀, 17–19.10.2017, S.V. Titov.

Subgenus *Autophila* Hübner, [1823]

Autophila (*Autophila*) *vespertalis* (Staudinger, 1896)* – FP: VII; locality: B33. (Appendix 1, Map 82)

Biogeographical feature. Central Asian, subboreal. Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, Russian Altai, C and W Mongolia, Afghanistan, Pakistan, S Turkey, NW China (Boursin, 1940; Volynkin, 2012).

Bionomics. Xeromontane species.

Material: B33, Toraygyr lake, 1♂, 16.06.2017, S.V. Titov.

Subfamily EREBINAE Leach, [1815]

Tribe Acantholipini Fibiger & Lafontaine, 2005

Tribe Acantholipini Fibiger & Lafontaine, 2005

Genus *Acantholipes* Lederer, 1857

Acantholipes regularis (Hübner, 1813)* – FP: VI; locality: P22. (Appendix 1, Map 83)

Biogeographical feature. European-Central Asian, subtemperate. S Russia (S European part, Ural, S Siberia), Near East, S Europe, Middle Asia, Pakistan, Nepal (Kononenko, 2010).

Bionomics. Xerophilous species.

Material: P22, vic. of Baydala vill., 1♂, 13.06.2016, S.V. Titov.

Tribe Catocalini Boisduval, [1828]

Genus *Catocala* Schrank, 1802

Catocala fulminea (Scopoli, 1763)* – FP: VII; localities: P12, B30, B33. (Appendix 1, Map 84)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp.

fulminea), Russian Far East, NE China, Korea, Japan (ssp. *xarippe*), C China (ssp. *chekiangensis*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♀, 13.07.2013, S.V. Titov, V.I. Blokhin; B30, Kurkeli natural landmark, 2♀, 12.07.2016, S.V. Titov; B33, Toraygyr lake, 15♂, 8♀, 15.07.2016, 35♂, 24♀, 28.07.2016, S.V. Titov.

Catocala neonympha (Esper, 1805)* – FP: VII–VIII; localities: Z1, P11, P12, P14, S20, S23, L24, B29, B30, B31, B32, B33, B34, B35, B36, B37, B38, B39, A42, A45, A46, E46, E47, E50, E54. (Appendix 1, Map 85)

Biogeographical feature. European-Central Asian, temperate. Asia Minor, Near East (ssp. *osthelderensis*), Caucasus and Transcaucasia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, W Altai (ssp. *neonympha*), Middle Asia, Afghanistan (ssp. *variegata*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 2♂, 3♀, 05.07.2012, 3♂, 21.07.2012, M.Yu. Volkov, 2♀, 08.07.2013, V.S. Bychkov; P11, Pavlodar city, 1♂, 30.07.2008, 1♀, 20.07.2010, 2♂, 1♀, 24.07.2011, 1♂, 18.08.2011, 1♂, 31.07.2012, 2♂, 06.08.2012, 1♂, 23.08.2014, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 02.08.2009, 1♂, 1♀, 02.07.2012, 2♂, 13.07.2013, 1♂, 3♀, 03.08.2014, 2♂, 1♀, 18.07.2015, 2♂, 27.07.2016, S.V. Titov; P14, vic. of Kenzhekol' vill., 5♀, 20.07.2012, S.V. Titov; S20, vic. of Shalday vill., 1♀, 18.07.2007, 6♂, 2♀, 22.07.2007, 1♀, 12.08.2012, S.V. Titov; S23, vic. of Sharbakty vill., 2♂, 2♀, 30.07.2007, 1♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 1♂, 4♀, 21.07.2015, S.V. Titov; B29, Birzhankol' lake, 2♀, 21.07.2008, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 3♀, 12.07.2016, 5♂, 1♀, 16.08.2016, S.V. Titov; B32, rock area Kempirtas, 6♂, 3♀, 13.08.2008, S.V. Titov, 12♂, 5♀, 30.07.2013, S.M. Reznichenko; B33, Toraygyr lake, 9♂, 3♀, 09.07.2016, 8♂, 6♀, 15.07.2016, 13♂, 4♀, 28.07.2016, S.V. Titov; B34, natural landmark Kirigichi, 1♂, 5♂, 30.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 3♂, 25.07.2014, 1♂, 1♀, 04.07.2016, 18♂, 2♀, 16.07.2016, S.V. Titov; B36, Dulga tas rock, 21♂, 3♀, 26.07.2014, S.V. Titov; B37, Zhasybay lake, 5♂, 25.07.1999, 3♂, 18.08.199, S.V. Titov, 1♂, 19.07.2011, N.E. Tarasovskaya, 15♂, 7♀, 04.07.2013, S.V. Titov; B38, natural landmark Zhumbak, 1♀, 14.08.1999, S.V. Titov; B39, Moldybulak natural landmark, 3♂, 19.08.2015, S.V. Titov; A42, Irtysh river, Zholpak natural

landmark, 1♀, 07.07.2008, S.V. Titov; 5♂, 8♀, A45, old road bridge, the Irtysh river, 26.07.2009, S.V. Titov; A46, vic. of Kurkol' vill., 3♂, 1♀, 27.06.2016, 17♂, 9♀, 25.07.2016, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 10.07.1995, 14♂, 2♀, 15.07.2003, 2♂, 1♀, 20.07.2007, 3♂, 1♀, 18.07.2008, 15♂, 14♀, 18.07.2009, 1♂, 4♀, 12.08.2012, S.V. Titov; E47, vic. of Karazhar vill., 6♂, 11.08.2008, S.V. Titov; E50, Olenty river, 3♀, 22.08.2013, 2♂, 8♀, 22.07.2014, S.V. Titov; E54 Ulken-Koyandy Mt., 5♀, 17.08.2016, S.V. Titov.

Catocala fraxini (Linnaeus, 1758) – FP: VIII–XI–X; localities: Z1, Z2, Z4, Z8, K10, P11, P12, L24, L28, S23, B31, B33, E46, E47, U48, U52. References: Pospelov (1962), Shek (1975). (Appendix 1, Map 86)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, Korea (ssp. *fraxini*), China (ssp. *yuennanesis*), Japan (ssp. *jezoensis*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 3♀, 12.08.2010, 1♀, 10.10.2010, M.Yu. Volkov; Z2, vic. of Krasnovka vill., 2♂, 2♀, 13.08.2010, V.S. Bychkov; Z4, vic. of Moiseevka vill., 3♀, 28.08.2012, S.A.&Yu.P. Lorents; Z8, vic. of Pyateryzhsk vill., 4♀, 07.08.2009, S.V. Titov; K10, vic. of Terenkol' vill., 1♀, 24.09.2011, L.N. Ivan'ko; P11, Pavlodar city, 1♀, 11.09.2003, 1♂, 12.08.2011, 1♂, 1♀, 18.08.2011, 2♀, 03.10.2011, in wine, 1♂, 02.08.2012, 3♂, 1♀, 06.08.2012, 1♂, 31.08.2012, 4♂, 6♀, 23.08.2014, in wine, 1♀, 13.10.2015, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 02.08.2009, 1♂, 3♀, 17.09.2009, 1♀, 02.10.2011, 2♀, 10.09.2012, 5♂, 4♀, 26.08.2012, 2♂, 04.09.2013, 1♂, 15.09.2013, 6♂, 2♀, 03.08.2014, 2♂, 06.09.2015, 1♀, 11.09.2015, 5♂, 13.08.2015, 2♀, 08.09.2015, S.V. Titov; L24, Tuz lake, 1♀, 20.09.2011, S.V. Titov; L28, vic. of Akku vill., 2♂, 24.08.2015, S.V. Titov; S23, vic. of Sharbakty vill., 1♀, 11.08.2014, S.M. Reznichenko; B31, vic. of Shonai vill., 2♀, 02.08.2013, S.M. Reznichenko, 1♂, 1♀, 15.08.2013, 3♂, 1♀, 18.08.2013, 1♀, 24.09.2013, 1♀, 25.09.2014, S.V. Titov, 2♂, 1♀, 11.08.2015, S.M. Reznichenko; B33, Toraygyr lake, 2♀, 15.08.2016, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♀, 08.08.2008, 1♀, 12.08.2012, S.V. Titov; E47, vic. of Karazhar vill., 2♂, 11.08.2008, 1♀, 08.09.2011, 2♀, 12.09.2015, 3♂, 2♀,

21.09.2015, S.V. Titov; U48, vic. of Uspenka vill., 1 ex. 08.1958, S.M. Pospelov; U52 vic. of Lozovoye vill., 29.06.2016, 1 caterpillar on *Salix sp.*, S.V. Titov.

Catocala nupta (Linnaeus, 1767)* – FP: VII–IX; localities: Z1, P11, P12, P16, S23, L24, B33, B39. (Appendix 1, Map 87)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Asia Minor, Near East (ssp. *clara*), Europe, Caucasus and Transcaucasia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia Russian Far East, Korea (ssp. *nupta*), Middle Asia (ssp. *centralasiae*), Himalaya (ssp. *concubia*), Japan (ssp. *nozawae*), W China (ssp. *kansuensis*), China: N Yunnan (ssp. *likiangensis*), China: W Sichuan (ssp. *alticola*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 28♂, 10♀, 05.07.2011, M.Yu. Volkov 8♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 15♂, 12♀, 08.07.2013, V.S. Bychkov; P11, Pavlodar city, 9♂, 6♀, 11.09.2003, 1♂, 09.07.2008, S.V. Titov, 1♀, 30.07.2008, N.E. Tarasovskaya, 5♂, 10♀, 20.07.2010, S.V. Titov, 25♂, 13♀, 24.07.2011, 1♀, 18.08.2011, 11♂, 5♀, 31.07.2012, 8♂, 06.08.2012, 4♂, 1♀, 31.08.2012, N.E. Tarasovskaya, 23♂, 9♀, 23.08.2014, S.V. Titov, 3♂, 15♀, 03.07.2016, V.I. Blokhin; P12, vic. of Pavlodarskoye vill., 3♂, 4♀, 02.08.2009, 1♂, 17.09.2009, 2♂, 3♀, 10.09.2012, 4♂, 6♀, 13.07.2013, 2♂, 3♀, 05.08.2013, 3♂, 1♀, 26.08.2013, 2♂, 04.09.2013, 1♀, 06.09.2014, 1♀, 11.09.2014, 12♂, 8♀, 18.07.2015, 11♂, 4♀, 13.08.2015, 1♂, 3♀, 08.09.2015, 18♂, 5♀, 27.07.2016, S.V. Titov; P16, vic. of Sychevka vill., 8♂, 3♀, 23.07.2008, 5♂, 7♀, 23.08.2008, S.V. Titov; L24, Tuz lake, 3♀, 20.09.2011, 15♂, 3♀, 21.07.2015, S.V. Titov; B33, Toraygyr lake, 15♂, 8♀, 09.07.2016, 8♂, 4♀, 15.07.2016, 9♂, 1♀, 28.07.2016, S.V. Titov; B39, Moldybulak natural landmark, 1♂, 19.08.2015, S.V. Titov.

Catocala adultera Ménétriès, 1856* – FP: VII–VIII–IX; localities: Z2, P12, L24. (Appendix 1, Map 88)

Biogeographical feature. Eurasiatic Palaearctic, temperate. N Europe, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, Korea (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 3♂, 4♀, 21.07.2012, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 1♂, 18.07.2015, S.V. Titov; L24, Tuz lake, 1♀, 20.09.2011, S.V. Titov.

Catocala deducta Eversmann 1843* – FP: VIII–IX; localities: P12, L24. (Appendix 1, Map 89)

Biogeographical feature. European-Central Asian, subboreal. Russia (S Ural), E the NE Kazakhstan (Zaisan lake, Irtish river).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 2♀, in wine, 03.09.2013, ♂, 2♀, in wine, 13.08.2015, S.V. Titov; L24, Tuz lake, 1♀, 20.09.2011, S.V. Titov.

Catocala puerpera (Giorna, 1791) – FP: VI–X; localities: Z1, Z4 P11, P12, P23, S23, L24, L27, B29, B31, B39, A46, E46, E47, E50. References: Shek (1975), KlYuchko & Matov (2006, as *Catocala orientalis*). (Appendix 1, Map 90)

Biogeographical feature. West Palaearctic, subboreal. N Africa, S Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Afghanistan, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, W Altai (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 05.07.2011, M.Yu. Volkov 1♂, 1♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 1♂, 08.07.2013, V.S. Bychkov; Z4, vic. of Moiseevka vill., 2♂, 1♀, 28.08.2012, 1♂, 3♀, 25.07.2013, S.A.&Yu.P. Lorents; P11, Pavlodar city, 1♂, 14.08.1923, S.D. Lavrov (coll. L.A. Shelyuzhko, Zoological museum of Kiev Taras Shevchenko national university; 1♂, 11.09.2003, 1♀, 30.07.2008, N.E. Tarasovskaya, 1♂, 1♀, 20.07.2010, S.V. Titov, 1♀, 24.07.2011, 1♂, 18.08.2011, 1♀, 06.08.2012, N.E. Tarasovskaya, 2♀, 23.08.2014, S.V. Titov, 1♂, 03.07.2016, V.I. Blokhin; P12, vic. of Pavlodarskoye vill., 1♂, 25.06.2007, 2♀, 02.08.2009, 1♀, 17.09.2009, 3♀, 17.09.2011, 1♀, 02.10.2011, 2♂, 1♀, 02.07.2012, 3♂, 1♀, 03.07.2013, 4♀, 13.07.2013, 3♂, 2♀, 05.08.2013, 1♀, 26.08.2013, 2♀, 04.09.2013, 1♀, 5.09.2013, 5♂, 03.08.2014, 1♀, 06.09.2014, 6♀, 11.09.2014, 4♂, 1♀, 18.07.2015, 1♂, 13.08.2015, 2♀, 08.09.2015, 6♂, 1♀, 27.07.2016, S.V. Titov; P23, vic. of Zhetekshi vill., 3♂, 1♀, 26.07.2016, 2♂, 1♀, 30.07.2008; S23, vic. of Sharbakty vill., 2♀, 30.07.2007, 4♂, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 1♀, 20.09.2011, 3♂, 21.07.2015, S.V. Titov; L27, Borly lake, 2♀, 29.07.2013, S.V. Titov; B29, Birzhankol' lake, 4♂, 7♀, 21.07.2008, S.V. Titov; B31, vic. of Shonai vill., 1♀, 15.09.2012, 1♀, 02.08.2013, 1♂, 2♀, 09.08.2013, S.M. Reznichenko, 14.08.2013, 15.08.2013, 17.08.2013, S.M. Reznichenko, 5♂, 2♀, 18.08.2013, S.V. Titov, 1♂, 27.08.2013, 1♀, 10.09.2013, S.M. Reznichenko, 1♀,

24.09.2013, S.V. Titov, 3♂, 4♀, 17.08.2014, S.M. Reznichenko, 1♀, 25.09.2014, S.V. Titov, 11.08.2015, S.M. Reznichenko; B39, Moldybulak natural landmark, 1♀, 19.08.2015, S.V. Titov; A46, vic. of Kurkol' vill., 3♂, 25.07.2016, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 10.07.1995, 1♂, 3♀, 15.07.2003, 1♀, 20.07.2007, 5♂, 1♀, 18.07.2008, 1♂, 4♀, 08.08.2008, 1♂, 2♀, 18.07.2009, 4♀, 12.08.2012, S.V. Titov; E47, vic. of Karazhar vill., 2♀, 11.08.2008, 3♀, 08.09.2011, 4♀, 12.09.2015, 1♀, 21.09.2015, S.V. Titov; E50, Olenty river, 2♀, 22.08.2013, 3♂, 1♀, 22.07.2014, S.V. Titov.

Catocala lupina Herrich-Schäffer, 1851* – FP: VIII–IX; localities: L24, E46, E54. (Appendix 1, Map 91)

Biogeographical feature. European-Central Asian, subboreal. Russia (S Ural), Near East, Transcaucasia, E and NE Kazakhstan (Kononenko, 2010).

Bionomics. Mesophilous species.

Material: L24, Tuz lake, 1♀, 20.09.2011, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 5♀, 16.08.1994, on the rock, 3♂, 5♀, 08.08.2008, 12.08.2012, S.V. Titov, A.V. Volynkin; E54 Ulken-Koyandy Mt., 2♂, 5♀, 17.08.2016, S.V. Titov.

Catocala pacta (Linnaeus, 1758)* – FP: VII–VIII; localities: Z2, P11, P12, P14, P16, B31, B33, B35, B39, M39, A42, E46. (Appendix 1, Map 92)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♀, 09.07.2011, V.S. Bychkov; P11, Pavlodar city, 2♂, 1♀, 09.07.2008, 5♂, 3♀, 20.07.2010, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 02.08.2009, 2♂, 1♀, 02.07.2012, 3♂, 5♀, 13.07.2013, 1♂, 3♀, 26.08.2013, 2♀, 03.08.2014, 1♂, 2♀, 18.07.2015, 1♀, 13.08.2015, 6♂, 2♀, 27.07.2016, S.V. Titov; P14, vic. of Kenzhekol' vill., 2♀, 20.07.2012, 1♀, 23.07.2008, S.V. Titov; P16, vic.of Sychevka, 2♀, 23.07.2008, 1♀, 23.08.2008, S.V. Titov; B31, vic. of Shonai vill., 1♂, 2♀, 14.08.2013, 3♂, 4♀, 17.08.2014, 1♂, 1♀, 11.08.2015, S.V. Titov; B33, Toraygyr lake, 5♀, 09.07.2016, 2♂, 4♀, 15.07.2016, 1♀, 28.07.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 5♀, 25.07.2014, 6♂, 1♀, 16.07.2016, S.V. Titov; B39, Moldybulak natural landmark, 1♂, 19.08.2015, S.V. Titov; M39,

vic. of Koktobe vill., 3♂, 28.07.2014, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 3♀, 07.07.2008, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 1♀, 15.07.2003, 5♂, 2♀, 20.07.2007, 3♂, 4♀, 18.07.2008, 1♂, 1♀, 08.08.2008, 3♂, 3♀, 18.07.2009, 9♂, 5♀, 12.08.2012, S.V. Titov.

Tribe Melipotini Grote, 1895

Genus *Drasteria* Hübner, 1818

Drasteria cailino (Lefebvre, 1827)* – FP: V–VI, VIII; localities: P12, L24, B29, B30, B32, B33, B34, E46. (Appendix 1, Map 93)

Biogeographical feature. European-Central Asian, subtemperate. S Siberia, Russia (S European part, Ural, S Europe, Near East, Caucasus and Transcaucasia, Kazakhstan, Middle Asia (Kononenko, 2010).

Bionomics. Xero-thermophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 17.06.2012, S.V. Titov; L24, Tuz lake, 2♀, 16.06.2016, S.V. Titov; B29, Birzhankol' lake, 5♂, 3♀, 17.06.2008, 13♂, 4♀, 28.06.2008, 18♂, 9♀, 17.06.2009, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 3♀, 02.05.2012, 4♂, 2♀, 12.05.2012, 1♀, 16.08.2016, S.V. Titov; B32, rock area Kempirtas, 1♂, 1♀, 13.06.2013, 2♂, 28.06.2013, 1♀, 17.05.2014, 2♂, 1♀, 27.05.2015, S.V. Titov; B33, Toraygyr lake, 1♀, 17.05.2017, 2♂, 2♀, 16.06.2017, S.V. Titov; B34, natural landmark Kirigichi, 5♂, 3♀, 30.06.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 6.08.1994, 4♂, 1♀, 10.05.2007, 3♂, 08.08.2008, 1♂, 12.08.2012, 4♂, 3♀, 26.05.2015, S.V. Titov.

Drasteria rada (Boisduval, 1848)* – FP: V–VI, VIII; localities: L24, B29, B30, B32, B33, B34, M37, E46. (Appendix 1, Map 94)

Biogeographical feature. European-Central Asian, subboreal. E Europe, S Russia (S European part, Ural, S Siberia), Near East, Caucasus and Transcaucasia, Mongolia, Middle Asia, W China (Kononenko, 2010).

Bionomics. Xero-thermophilous species.

Material: Tuz lake, 1♀, 08.05.2011, 3♂, 1♀, 16.06.2016, S.V. Titov; B29, Birzhankol' lake, 5♂, 2♀, 17.06.2008, 1♂, 28.06.2008, 4♂, 3♀, 17.06.2009, S.V. Titov; B30, Kurkeli natural landmark, 3♂, 02.05.2012, 2♂, 2♀, 12.05.2012, 6♂, 2♀, 14.06.2013, 1♀, 16.08.2016, S.V. Titov; B32, rock area Kempirtas, 2♂, 17.05.2007, 2♀, 13.08.2008, 8♂, 1♀, 13.06.2013, 5♂, 4♀,

28.06.2013, S.M. Reznichenko; B33, Toraygyr lake, 8♂, 2♀, 11.06.2013, 3♂, 4♀, 17.05.2017, 3♂, 1♀, 16.06.2017, S.V. Titov; B34, natural landmark Kirigichi, 1♀, 30.06.2013, S.V. Titov; M37, Karasor lake, 1♂, 22.05.2010, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 10.05.2007, 3♀, 08.08.2008, 2♂, 2♀, 12.08. 2012, S.V. Titov.

Drasteria christophi (Alphéraky, 1895)* – FP: V; locality: M41. (Appendix 1, Map 95)

Biogeographical feature. West Palaearctic-Central Asian, subboreal. Turkmenistan, W and NE Kazakhstan (Gorbunov, 2011; Titov et al., 2017 a., b).

Bionomics. Xero-thermophilous species.

Material: M41, the former Semipalatinsk nuclear test site, 1♀, 21.05.2010, on the ground, S.V. Titov.

Drasteria obscurata (Staudinger, 1882)* – FP: IV–VI; localities: B31, B32, B33, B34. (Appendix 1, Map 96)

Biogeographical feature. West Palaearctic-Central Asian, subboreal. Iran, Afghanistan, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, (Lehmann & Bergmann, 2005; Titov et al., 2017; Behounek, perss. comm).

Bionomics. Xeromontane species.

Material: B31, vic. of Shonai vill., 15♂, 3♀, 29.06.2013, 2♂, 05.05.2014, 1♂, 13.04.2016, S.V. Titov; B32, rock area Kempirtas, 3♀, 17.05.2007, 3♂, 1♀, 13.06.2013, 2♂, 2♀, 28.06.2013, 29♂, 12♀, 13.06.2014, 3♀, 27.05.2015, 1♂, 15.04.2016, S.M. Reznichenko; B33, Toraygyr lake, 28♂, 19♀, 11.06.2013, 4♂, 8♀, 17.05.2017, 35♂, 25♀, 16.06.2017, S.V. Titov; B34, natural landmark Kirigichi, 2♂, 1♀, 30.06.2013, S.V. Titov.

Tribe Euclidiini Guenée, 1852

Genus *Euclidia* Ochsenheimer, 1816

Euclidia glyphica (Linnaeus, 1758)* – FP: V–VII; localities: Z2, P11, P12, P16, B29, B30, B33, A46. (Appendix 1, Map 97)

Biogeographical feature. Transpalaearctic, temperate. N Africa (Morocco), Europe, Caucasus, Trancsaucasia, Near East, Middle Asia, Kazakhstan, Russia (S European part, Ural, W and S Siberia), Mongolia, Russian Far East (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♂, 19.05.2011, 3♂, 27.05.2011, 1♂, 09.07.2011, 5♂, 2♀, 05.06.2013, V.S. Bychkov; P11, Pavlodar city, 2♀,11.09.2003, 1♀, 27.06.2006, 3♀, 28.05.2007, S.V. Titov 3♂, 3♀, 30.05.2008, 1♂, 2♀, 12.06.08, N.E. Tarasovskaya, 2♂, 1♀, 09.07.2008, S.V. Titov, 4♂, 2♀, 10.05.2010, A.O. Orazbayev, 3♂, 2♀, 29.05.2010, 5♂, 2♀, 21.05.2011, 6♂, 3♀, 05.07.2011, 1♂, 1♀, 17.05.2012, S.V. Titov, 1♀, 09.06.2012, L.N. Ivan'ko, 1♀, 03.07.2016, V.I. Blokhin, at light; P12, vic. of Pavlodarskoye vill., 3♂, 25.06.2007, 1♂, 1♀, 02.07.2012, 2♂, 03.07.2013, 2♂, 3♀, 13.07.2013, 1♀, 18.07.2015, S.V. Titov; P16, vic.of Sychevka, 2♀, 23.07.2009, 1♂, 3♀, 17.05.2011, S.V. Titov; B29, Birzhankol' lake, 1♀, 17.06.2008, 3♂, 1♀, 28.06.2008, 2♂, 1♀, 21.07.2008, 8♂, 3♀, 17.06.2009, S.V. Titov; B30, Kurkeli natural landmark, 1♀, 02.05.2012, 1♂, 12.05.2012, 5♂, 4♀, 14.06.2013, 1♂, 4♀, 01.07.2013, 1♂, 3♀, 12.07.2016, S.V. Titov; B33, Toraygyr lake, 1♂, 2♀, 11.06.2013, 5♂, 3♀, 09.07.2016, 4♀, 15.07.2016, 1♀, 17.05.2017, S.V. Titov; A46, vic. of Kurkol' vill., 6♂, 4♀, 27.06.2016, 1♀, 25.07.2016, S.V. Titov.

Genus *Callistege* Hübner, [1823]1816

Callistege mi (Clerck, 1759)* – FP: V–VI, locality: Z2. (Appendix 1, Map 98)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Near East, Middle Asia, Kazakhstan, Russia (S European part, Ural, W, E and S Siberia), Mongolia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 6♂, 5♀, 09.06.2013, day, a net, S.V. Titov.

Callistege fortalitium (Tauscher, 1809)* – FP: V–VIII; localities: Z2, Z4, P11, B29, B36, A46, E46. (Appendix 1, Map 99)

Biogeographical feature. Siberian – Mediterranean, subboreal. Caucasus, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia (Volynkin, 2012).

Bionomics. Xero-thermophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 19.05.2011, V.S. Bychkov, 3♂, 27.09.2011, V.S. Bychkov, M.Yu. Volkov, 2♂, 2♀, 09.07.2011, V.S. Bychkov, 1♂, 05.06.2012, S.V. Titov, 1♀, 14.08.2012, 4♂, 2♀, 09.06.2013, V.S. Bychkov; Z4, vic. of Moiseevka vill., 3♂,

22.05.2011, 2♀, 25.07.2013, S.A.&Yu.P. Lorents; P11, Pavlodar city, 1♂, 27.06.2006, 1♂, 30.05.2008, 3♂, 1♀, 12.06.2008, 1♂, 1♀, 29.05.2010, 3♀, 20.07.2010, 8♂, 3♀, 21.05.2011, S.V. Titov, 1♀, 05.07.2011, 1♂, 4♀, 24.07.2011, 1♀, 12.08.2011, N.E. Tarasovskaya, 3♀, 23.08.2015, S.V. Titov, 2♂, 03.07.2016, V.I. Blokhin; B29, Birzhankol' lake, 1♂, 4♀, 17.06.2008, 6♂, 2♀, 28.06.2008, 3♂, 1♀, 21.07.2008, 5♂, 1♀, 17.06.2009, S.V. Titov; B36, Dulga tas rock, 5♂, 3♀, 15.06.2014, 3♂, 1♀, 26.07.2014, S.V. Titov; A46, vic. of Kurkol' vill., 1♂, 23.06.2016, 3♂, 2♀, 25.07.2016, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 18.07.2008, 12♂, 5♀, 08.08.2008, 2♀, 18.07.2009, 1♂, 12.08.2012, 1♂, 17.05.2015, 4♂, 1♀, 26.05.2015, S.V. Titov.

Genus *Gonospileia* Hübner, [1823] 1816

Gonospileia triquetra ([Denis & Schiffermüller], 1775)* – FP: V–VI, VIII; localities: Z2, P11, P12, P19, S23, B29, B33, A46, A47, A48, E46. (Appendix 1, Map 100)

Biogeographical feature. European-Central Asian, subboreal. C and SE Europe, Caucasus, Asia Minor, Kazakhstan, Russia (S European part, Ural, W and S Siberia) (Volynkin, 2012).

Bionomics. Xero-thermophilous species.

Material: Z2, vic. of Krasnovka vill., 1♀, 19.05.2011, V.S. Bychkov, 2♂, 1♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 1♂, 1♀, 14.08.2012, V.S. Bychkov, 1♂, 09.06.2013, V.S. Bychkov; P11, Pavlodar city, 2♂, 21.05.2011, 3♀, 12.08.2011, 2♂, 1♀, 18.08.2011, 3♂, 17.05.2012, 2♂, 1♀, 06.08.12, N.E. Tarasovskaya, 5♂, 2♀, 23.08.2015, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 5♀, 25.06.2007, 1♂, 4♀, 02.08.2009, 1♂, 17.06.2012, 1♀, 05.08.2013, 1♂, 3♀, 03.08.2014, S.V. Titov; P19, vic. of Zhertumsyk vill., 2♂, 11.06.2016, S.V. Titov; S23, vic. of Sharbakty vill., 1♀, 11.08.2014, 5♂, 2♀, 19.06.2015, S.M. Reznichenko; B29, Birzhankol' lake, 3♂, 4♀, 17.06.2008, 2♂, 1♀, 28.06.2008, 1♂, 17.06.2009, S.V. Titov; B33, Toraygyr lake, 5♂, 2♀, 11.06.2013, 4♂,2♀, 16.06.2017, S.V. Titov; A46, vic. of Kurkol' vill., 1♀, 27.06.2016, S.V. Titov; A47, vic. of Kalkaman vill., 2♂, 11.07.2016, S.V. Titov; A48, Kudaykol' lake, 2♂, 16.08.1995, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 10.05.2007, 2♀, 08.08.2008, 1♂, 1♀, 12.08.2012, 3♂, 17.05.2015, 1♂, 26.05.2015, S.V. Titov.

Gonospileia munita (Hübner, [1818])* – FP: VI; localities: P23, S18, L27, B32, A46, E47. (Appendix 1, Map 101)

Biogeographical feature. European-Central Asian, subtemperate. Russia (S European part, Ural, W and S Siberia), Middle Asia, Kazakhstan, Mongolia (Kononenko, 2010).

Bionomics. Xero-thermophilous species.

Material: P23, vic. of Zhetekshi vill., 4♂, 2♀, 30.07.2016, S.V. Titov; S18, Maraldy lake, 3♂, 20.06.2012, S.V. Titov; L27, Borly lake, 3♂, 4♀, 25.06.2013, S.V. Titov; B32, rock area Kempirtas, 2♂, 13.06.2013, 1♂, 2♀, 28.06.2013, 1♂, 1♀, 13.06.2014, M. Černila, S.V. Titov, A.V. Volynkin; A46, vic. of Kurkol' vill., 1♂, 27.06.2016, S.V. Titov; A47, vic. of Kalkaman vill., 2♂, 3♀, 11.07.2016, S.V. Titov.

Family Nolidae Bruand, 1846

Subfamily NOLINAE Bruand, 1846

Tribe Nolini Bruand, 1846

Genus *Nola* Leach, 1815

Nola aerugula (Hübner, 1793)* – FP: VI–VII; localities: B31; P12, P23. (Appendix 1, Map 102)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Kazakhstan, Russia (S European part, Ural, W and S Siberia), Mongolia (ssp. *aerugula*), Russian Far East, E China, Korea, Japan (ssp. *atomosa*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 1♂, 2♀, 29.06.2013, S.V. Titov; P12, vic. of Pavlodarskoye, 3♂, 03.07.2013, 1♂, 1♀, 13.07.2013, 1♂, 18.07.2015, 2♂, 1♀, 27.07.2015, S.V. Titov; P23, vic. of Zhetekshi vill., 1♂, 26.06.2016, S.V. Titov.

Nola crambiformis Rebel, 1902* – FP: VI–VII; localities: B30, B33, A46. (Appendix 1, Map 103)

Biogeographical feature. Central Asian, subboreal. Russia (S European part, S Ural), Kazakhstan, Uzbekistan (Kononenko, 2010).

Bionomics. Meso-xerophilous species.

Material: A46, vic. of Kurkol' vill., 1♂, 21.06.2016, S.V. Titov; B30, Kurkeli natural landmark, 9♂, 08.07.2016, S.V. Titov; B33, окр. оз. Toraygyr, 28♀, 13.07.2016, S.V. Titov; B35, Kyzyltau Mts., vic. of Zhana Zhosaly, 3♂, 16.07.2016, S.V. Titov.

Nola confusalis (Herrich-Schäffer, 1847)* – FP: V; locality: B33. (Appendix 1, Map 104)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Kazakhstan, S Russia (S European part, Ural, S Siberia), Transbaikalia, Mongolia, Russian Far East (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B33, Toraygyr lake, 1♀, 15.05.2017, S.V. Titov, A.V. Volynkin, M. S. Ivanova.

Subfamily CHLOEPHORINAE Stainton, 1859

Tribe Eariadini Hampson, 1912

Subtribe Eariadina Hampson, 1912

Genus *Earias* Hübner, [1825] 1816

Earias clorana (Linnaeus, 1761) – FP: V–VII; localities: Z2, Z4, P11, P12, S18, B33, B37. References: Pospelov (1962, *as chlorana*); Shek (1975). (Appendix 1, Map 105)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, Russia (S European part, Ural, W and S Siberia) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 3♀, 19.05.2011, V.S. Bychkov; 1♂, 1♀, 05.06.2012, S.V. Titov, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♀, 22.05.2011, S.A.&Yu.P. Lorents; P11, Pavlodar city, 2 ex., 27.06.1960, S.M. Pospelov, 1♀, 05.07.2011, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye, 1♂, 1♀, 12.06.2012, S.V. Titov; S18, east shore of Maraldy lake, 1♂, 20.06.2012, S.V. Titov; B33, Toraygyr lake, 5♂, 2♀, 11.06.2013, 1♂, 2♀, 16.06.2017, S.V. Titov; B37, Zhasybay lake, 1♀, 04.07.2013, S.V. Titov; A46, окр. с.Kurkol', 1♀, 27.06.2016, S.V. Titov; B35, Kyzyltau Mts., vic. of Zhana Zhosaly, 1♂, 16.07. 2016, S.V. Titov; P22, vic. of Baydala vill., 2♂, 1♀, 13.06.2016, S.V. Titov.

Tribe Chloephorini Stainton, 1859

Subtribe Chloephorina Stainton, 1859

Genus *Pseudoips* Hübner, 1822

Pseudoips prasinana (Linnaeus, 1758)* – FP: VI–VII; locality: B31, B33, B34, B35. (Appendix 1, Map 106)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus and Transcaucasia, Kazakhstan, Russia (S European part, Ural, W and S Siberia), N Mongolia, Russian Far East, NE China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 5♂, 3♀, 29.06.2013, S.V. Titov; B33, Toraygyr lake, 1♂, 1♀, 16.06.2017, S.V. Titov; B34, natural landmark Kirigichi, 1♂, 2♀, 30.06.2013, S.V. Titov; B35, Kyzyltau Mts., vic. of Zhana Zhosaly, 16.07.2016, 5♂, 3♀, S.V. Titov.

Tribe Sarrothripini Hampson, 1894

Subtribe Sarrothripina Hampson, 1894

Genus *Nycteola* Hübner, 1822

Nycteola eremostola Dufay, 1961* – FP: VI; locality: E48. (Appendix 1, Map 107)

Biogeographical feature. Euro-Siberian, subboreal. E Europe, Russia (S European part, Ural), Transbakialia, Near East (Turkey), W, NE and E Kazakhstan (Kononenko, 2010; Titov et al., 2017 b).

Bionomics. Hygro-thermophilous species.

Material: E48, Shiderty reservoir, water pump №7, 1♀, 12.06.2012, S.V. Titov.

Nycteola degenerana (Hübner, 1799)* – FP: IV–V, VIII–IX; localities: P12, P16, E46, B31. (Appendix 1, Map 108)

Biogeographical feature. Eurasiatic Palaearctic, boreal. N Africa, Europe, Asia Minor, Near East, Middle Asia, N Kazakhstan, Russia (S European part, Ural, W and S Siberia), Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye, 1♂, 1♀, 10.09.2012, 1♂, 2♀, 05.08.2013, 1♀, 26.08.2013, S.V. Titov; P16, vic. of Sychevka vill., 1♀, 11.04.2011, S.V. Titov; E46, Shiderty river Zhartas natural landmark, 1♂, 2♀, 12.08.2012, 1♀, 26.05.2015, 1♀, 12.04.2016, 2♀, 16.04.2017, S.V. Titov; B31, 3♂, 2♀, vic. of Shonai, 15.09.2012, S.V. Titov, 1♀, 02.08.2013, S.M. Reznichenko, 1♀, 09.08.2013, 1♂,14.08.2013, 2♀, 24.09.2013, S.V. Titov.

Nycteola asiatica (Krulikovsky, 1904)* – FP: IV–V; VIII; localities: P16, E46. (Appendix 1, Map 109)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus, Near East, Middle Asia, Ural, Kazakhstan, S Siberia, Mongolia, Russian Far East, Korea, Japan, China, N India, Nepal (Kononenko, 2010).

Bionomics. Hygro-mesophilous species.

Material: P16, vic. of Sychevka vill., 1♀, 11.04.2011, S.V. Titov; E46, Shiderty river Zhartas natural landmark, 1♂, 1♀, 12.08.2012, 1♀, 26.05.2015, 2♀, 16.04.2017, S.V. Titov.

Family NOCTUIDAE Latreille, 1809

Subfamily PLUSIINAE Boisduval, [1828]

Tribe Abrostolini Eichlin & Cunningham, 1978

Genus *Abrostola* Ochsenheimer, 1816

Abrostola triplasia (Linnaeus, 1758)* – FP: VIII; locality: B31. (Appendix 1, Map 110)

Biogeographical feature. Transpalaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, S Russia (S European part, Ural, S Siberia), Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 1♂, 02.08.2013, S.M. Reznichenko, 2♀, 09.08.2013, S.V. Titov.

Abrostola tripartita (Hufnagel, 1766)* – FP: VII; localities: Z4, B33, A46. (Appendix 1, Map 111)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Asia Minor, Caucasus, Russia (S European part, Ural, W and S Siberia), Russian Far East, NE China, Korea (Volynkin, 2012).

Bionomics. Xero-mesophilous species

Material: Z4, vic. of Moiseevka vill., 1♂, 25.07.2013, S.V. Titov; B33, Toraygyr lake, 1♂, 11.06.2013, 4♂,2♀, 16.06.2017, S.V. Titov; A46, vic. of Kurkol' vill., 1♂, 25.07.2016, S.V. Titov.

Tribe Argyrogrammatini Eichlin & Cunningham, 1978

Genus *Trichoplusia* McDunnough, 1944

Trichoplusia ni (Hübner, [1803])* – FP: VIII; locality: B30. (Appendix 1, Map 112)

Biogeographical feature. Subcosmopolitan, migrating. N and C America, Madagascar, Africa, Near East, Asia Minor, C and S Europe, Caucasus and Transcaucasia, Middle Asia, Russia (S European part, Ural, S and W Siberia), Russian Far East, Pakistan, Nepal, India, Indonesia, Indochina, Taiwan, China, Korea, Japan (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: B30, Kurkeli natural landmark, 1♀, 16.08.2016, S.V. Titov.

Tribe Plusiini Boisduval, [1828]

Subtribe Autoplusiina Kitching, 1987

Genus *Macdunnoughia* Kostrowicki, 1961

Macdunnoughia confusa (Stephens, 1850) – FP: VI–X; localities: Z6, K10, P11, P12, S23, L24, L27, L28, B32, B35, A42, A45, E46, E48. Reference: Pospelov (*1962, as Autographa*). (Appendix 1, Map 113)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z6, vic. of Novokuz'minka vill., 1♂, 2♀, 21.07.2013, V.S. Bychkov; K10, vic. of Terenkol' vill., 1♀, 24.09.2011, 1♂, 1♀, 19.06.2012, L.N. Ivan'ko, 10.07.2013, S.V. Titov; P11, Pavlodar city, 2 ex., 08–09.06.1960, S.M. Pospelov, 4♀, 11.09.2003, 2♂, 27.06.2006, S.V. Titov, 5♀, 12.06.2008, 09.07.2008, 12♂, 3♀, 28.07.2008, N.E. Tarasovskaya, 15♂, 3♀, 20.07.2010, S.V. Titov, 2♂, 2♀, 24.07.2011, 8♂, 2♀, 12.08.2011, N.E. Tarasovskaya, 3♀, 03.10.2011, S.V. Titov, 5♂, 2♀, 31.07.2012, N.E. Tarasovskaya, 9♂, 5♀, 23.08.2014, 1♀, 13.10.2015, S.V. Titov, 15♂, 11♀, 03.07.2016, V.I. Blokhin; P12, vic. of Pavlodarskoye vill., 7♂, 2♀, 25.06.2007, 3♂, 5♀, 02.08.2009, 5♀, 17.09.2009, 2♀, 04.10.2011, 15♂, 8♀, 02.07.2012, 4♂, 2♀, 10.09.2012, 32♂, 5♀, 03.07.2013, 1♂, 1♀, 13.07.2013, 8♂, 3♀, 05.08.2013, 17♂, 11♀, 26.08.2013, 15♂, 10♀, 04.09.2013, 8♂, 4♀, 15.09.2013, 2♂, 10♀, 03.08.2014, 1♂, 16.09.2014, 3♂, 2♀, 18.07.2015, 5♂, 2♀, 13.08.2015, 9♀, 08.09.2015, 5♂, 6♀, 27.07.2016, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 30.07.2007, S.V. Titov, 2♂, 12♀, 11.08.2014, 6♂, 1♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 1♂, 5♀, 20.09.2011, 21♂,

6♀, 21.07.2015, 7♂, 16.06.2016, S.V. Titov; L27, Borly lake, 8♂, 25.06.2013, 15♂, 2♀, 29.07.2013, S.V. Titov; L28, vic. of Akku vill., 8♂, 3♀, 18.06.2015, 1♂, 9♀, 24.08.2015, S.V. Titov; B32, rock area Kempirtas, 5♂, 14♀, 13.08.2008, 5♂, 1♀, 13.06.2013, 15♂, 6♀, 28.06.2013, 7♂, 3♀, 30.07.2013, 19♂, 2♀, 13.06.2014, S.M. Reznichenko; B35, vic. of Zhana Zhosaly vill., 5♂, 3♀, 25.07.2014, 2♂, 10♀, 04.07.2016, 8♂, 1♀, 16.07.2016, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 8♂, 1♀, 30.06.07,10♂, 2♀, 07.07.2008, S.V. Titov; A45, old road bridge, the Irtysh river, 3♂, 26.07.2009, 5♂, 6♀, 31.09.2009, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 3♀, 16.08.1994, 5♂, 10.07.1995, 8♂, 3♀, 15.07.2003, 6♂, 2♀, 20.07.2007, 7♂, 3♀, 18.07.2008, 2♂, 1♀, 08.08.08, 9♂, 18.07.2009, 8♂, 2♀, 12.08.2012, S.V. Titov; E48, Shiderty reservoir, water pump №7, 7♂, 2♀, 16.06.2010, 5♂, 3♀, 12.06.2012, 8♂, 1♀, 28.06.2012, S.V. Titov.

Genus *Diachrysia* Hübner, [1821] 1816

Diachrysia chryson (Esper, 1789)* – FP: VIII; locality: S23. (Appendix 1, Map 114)

Biogeographical feature. Eurasiatic Palaearctic, temperate. SE Europe (ssp. *deltaica*), C Europe, Caucasus, Kazakhstan, Russia (S European part, Ural, W and S Siberia), Russian Far East, China, Korea, Japan (ssp. *chryson*) (Volynkin, 2012).

Bionomics. Hygrophilous species

Material: S23, vic. of Sharbakty vill., 1♀, 11.08.2014, S.M. Reznichenko.

Diachrysia chrysitis (Linnaeus, 1758)* – FP: VII; localities: P11, P12, B30, E46. (Appendix 1, Map 115)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Near East, Kazakhstan, Russia (S European part, Ural, W and S Siberia), N Mongolia, Russian far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 1♂, 1♀, 09.07.2008, S.V. Titov, 1♂, 1♀, 28.07.2008, 3♂, 30.07.2008, N.E. Tarasovskaya, 2♂, 1♀, 20.07.2010, 5♂, 2♀, 05.07.2011, 1♀, 24.07.2011, 1♂, 02.07.2012, N.E. Tarasovskaya, 1♀, 03.07.2016, V.I. Blokhin; P12, vic. of Pavlodarskoye vill., 5♂, 1♀, 02.07.2012, 1♂, 03.07.2013, 2♂, 2♀, 13.07.2013, 6♂, 1♀, 18.07.2015, 5♂, 7♀, 27.07.2016, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 08.07.2016, 8♂, 3♀, 12.07.2016,

S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 15.07.2003, 3♂, 20.07.2007, 18.07.2008, 3♀, 18.07.2009, S.V. Titov.

Diachrysia stenochrysis (Warren, 1913)* – FP: VII; localities: Z2, Z3, Z8, K11, P12, P23, S20, S23, L24, B31, B35, A42, A46, E50. (Appendix 1, Map 116)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 3♂, 1♀, 09.07.201, V.S. Bychkov; Z3, vic. of Zhelezinka vill., 2♀, 19.07.2010, S.A.&Yu.P. Lorents; Z8, vic. of Pyateryzhsk vill., 1♀, 26.07.2009, S.V. Titov; K11, vic. of Baykonys vill., 1♂, 2♀, 09.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 1♀, 02.07.2012, 8♂, 1♀, 13.07.2015, 1♂, 18.07.2015, 1♀, 27.07.2016, S.V. Titov; P23, vic. of Zhetekshi vill., 1♂, 3♀, 26.07.2016, 4♂, 3♀, 30.07.2016, S.V. Titov; S20, vic. of Shalday vill., 3♀, 18.07.2007, 2♂, 1♀, 22.07.2007, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 30.07.2008, S.V. Titov; L24, Tuz lake, 6♂, 21.07.2015, S.V. Titov; B31, vic. of Shonai vill., 1♀, 29.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 4♂, 25.07.2014, 1♀, 04.07.2016, 2♂, 2♀, 16.07.2016, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 6♂, 2♀, 07.07.2008, S.V. Titov; A46, vic. of Kurkol' vill., 3♂, 25.07.2016, S.V. Titov; E50, Olenty river, 1♀, 22.07.2014, S.V. Titov.

Diachrysia zosimi (Hübner, [1822])* – FP: VI–VII; localities: P11, P12, A42. (Appendix 1, Map 117)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 1♂, 1♀, 27.06.2006, S.V. Titov, 2♂, 12.06.2008, N.E. Tarasovskaya, 1♀, 09.07.2011, In the evening in flight, S.V. Titov, 2♀, 05.07.2011, 1♂, 24.07.2011, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 3♂, 6♀, 17.06.2012, 2♂, 1♀, 02.07.2012, 1♂, 1♀, 03.07.2013, 3♂, 13.07.2013, 1♂, 18.07.2015, 5♂, 1♀, 27.07.2016, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 8♂, 2♀, 30.06.07, 7♂, 2♀, 07.07.2008, S.V. Titov.

Subtribe Euchalciina Chou & Lu, 1979

Genus *Euchalcia* Hübner, [1821] 1816

Euchalcia consona (Fabricius, 1787)* – FP: VIII; localities: P16, P23, S23. (Appendix 1, Map 118)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P16, vic.of Sychevka, 1♀, 23.08.2008, S.V. Titov; P23, vic. of Zhetekshi vill., 1♂, 30.07.2016, S.V. Titov; S23, vic. of Sharbakty vill., 2♀, 11.08.2014, S.V. Titov.

Genus *Polychrysia* Hübner, [1823] 1816

Polychrysia esmeralda (Oberthür, 1880)* – FP: VII; localities: P12, P16, P23, B35. (Appendix 1, Map 119)

Biogeographical feature. Holarctic, boreal. Kyrgyzstan, Kazakhstan, S Ural, S Siberia, N Mongolia, Russian Far East, NE China, Korea (ssp. *esmeralda*), Kuril islands (ssp. *marusiki*), N America (ssp. *trabea*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 5♂, 1♀, 02.07.212, 2♀, 13.07.2013, 3♂, 18.07.2015, 2♂, 27.07.2016, S.V. Titov; P16, vic.of Sychevka, 1♂, 23.07.2008, S.V. Titov; P23, vic. of Zhetekshi vill., 58♂, 22♀, 26.07.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 1♀, 25.07.2014, 1♂, 04.07.2016, 4♂, 2♀, 16.07.2016, S.V. Titov.

Genus *Panchrysia* Hübner, [1821] 1816

Panchrysia deaurata (Esper, 1787)* – FP: VI–VII; localities: B32, B33, B35. (Appendix 1, Map 120)

Biogeographical feature. Siberian - Mediterranean, subboreal. S Europe, Caucasus, Middle Asia, Himalaya, S Russia (S European part, Ural, S Siberia), NE Kazakhstan (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Meso-xerophilous species.

Material: B32, Bayanaul Mts., rock area Kempirtas, 1♂, 1♀, 13.06.2014, S.V. Titov, A.V. Volynkin; B33, Toraygyr lake, 1♂, 11.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 16.07.2016, S.V. Titov.

Genus *Lamprotes* Reichenbach, Leiptzig, 1817

Lamprotes c-aureum (Knoch, 1781)* – FP: VIII; locality: P12. (Appendix 1, Map 121)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Near East, Caucasus and Transcaucasia, Middle Asia, S Russia (S European part, Ural, S Siberia), Kazakhstan, Russian Far East (Kononenko, 2010).

Bionomics. Hygro-mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 02.08.2009, S.V. Titov.

Genus *Plusidia* Butler, 1879

Plusidia cheiranthi (Tauscher, 1809)* – FP: VI–VII; localities: Z2, Z4, P12, B30, B31, A42. (Appendix 1, Map 122)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. N and E Europe, Caucasus and Transcaucasia, Asia Minor, Near East (N Iran), Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (ssp. *cheiranthi*), N and E Mongolia, Russian Far East, NE China, Korea, Japan (ssp. *abrostoloides*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 2♀, 09.07.2011, 1♀, 05.06.2012, 2♂, 1♀, 09.06.2013, S.V. Titov; Z4, vic. of Moiseevka vill., 1♀, 25.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 1♀, 17.06.2012, 1♀, 02.07.2013, 2♀, 03.07.2013, 1♂, 13.07.2013, 5♂, 1♀, 18.07.2015, 3♀, 27.07.2016, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 01.07.2013, 4♂, 08.07.2016, S.V. Titov; B31, vic. of Shonai vill., 3♂, 29.06.2013, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 1♂, 30.06.2009, 1♀, 07.07.2008, S.V. Titov.

Subtribe Plusiina Boisdival, [1828]

Genus *Autographa* Hübner, [1821] 1816

Autographa gamma (Linnaeus, 1758)* – FP: VI, VIII–IX–X; localities: Z1, P11, P12, P13, I9, K11, S17, S20, S23, L27, B30, B31, B32, B33, B35, B37, B38, A42, A45, E46, E47, E48, E51. (Appendix 1, Map 123)

Biogeographical feature. Subcosmopolitan, temperate, migrating. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Himalaya, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 10.10.2010, M.Yu. Volkov, 1♂, 5♀, 09.06.2012, S.V. Titov; P11, Pavlodar city, 3♂, 1♀, 11.09.2003, 8♂, 2♀, 27.06.2006, 1♂, 5♀, 12.06.2008, 1♀, 03.10.2011, 3♀, 13.10.2015, S.V. Titov; P12, vic. of Pavlodarskoye, 12♂, 2♀, 25.06.2007, 2♂, 10♀, 17.09.2009, 8♂, 6♀, 17.09.2011, 5♀, 02.10.2011, 1♂, 1♀, 04.10.2011, 12♂, 15♀, 17.06.2012, 7♂, 3♀, 10.09.2012, 21♂, 18♀, 04.09.2013, 5♂, 6♀, 15.09.2013, 1♂, 8♀, 11.09.2014, 13♂, 7♀, 08.09.2015, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 1♀, 05.06.2010, 1♂, 07.06.2010, L.N. Ivan'ko; I9, Seletyteniz lake, 2♂, 1♀, 15.09.2006, S.V. Titov; K11, vic. of Baykonys vill., 3♂, 1♀, 09.07.2013, S.V. Titov; S17 vic. of Sofiyevka vill., 2 ex., 09.08.1958, S.M. Pospelov; S20, vic. of Shalday vill., 11♂, 3♀, 16.06.2007, S.V. Titov; S23, vic. of Sharbakty vill., 19.06.2015, 1♂, 1♀, S.M. Reznichenko; L27, Borly lake, 8♂, 25.06.2013, S.V. Titov; B30, Kurkeli natural landmark, 7♂, 3♀, 14.06.2013, S.V. Titov; B31, vic. of Shonai vill., 1♂, 1♀, 15.09.2012, 1♂, 1♀, 29.06.2013, 1♂, 10.09.2013, 2♂, 24.09.2013, 3♂, 1♀, 25.09.2014, S.V. Titov; B32, rock area Kempirtas, 2♂, 7♀, 13.06.2013, 4♂, 2♀, 28.06.2013, 5♂, 3♀, 13.06.2014, S.V. Titov; B33, Toraygyr lake, 1♀, 11.06.2013, 2♂, 16.06.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♀, 18.05.2006, S.V. Titov; B37, Zhasybay lake, 1♀, 18.08.1999, S.V. Titov; B38, natural landmark Zhumbak, 1♂, 3♀, 14.08.1999, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 9♂, 2♀, 30.06.2007, S.V. Titov; A45, old road bridge, the Irtysh river, 2♂, 31.09.2009, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 1♀, 08.08.2007, 1♀, 12.08.2012, S.V. Titov; E47, vic. of Karazhar vill., 3♂, 13.06.2007, 6♂, 1♀, 30.06.2009, 1♂, 2♀, 08.09.2011, 1♂, 4♀, 12.09.2015, 1♀, 21.09.2015, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♂, 2♀, 16.06.2010, 1♂, 12.06.2012, 7♂, 1♀, 28.06.2012, S.V. Titov; E51, Cretaceous slope of Ulken Ak-Zhar, 1♀, 03.10.2014, S.V. Titov & M. Černila.

Autographa buraetica (Staudinger, 1892)* – FP: VI, VIII; localities: S20, B29. (Appendix 1, Map 124)

Biogeographical feature. Holarctic, boreal. Europe, S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, Mongolia, Russian Far East, N and NE China, N Korea, Japan (Volynkin, 2012).

Bionomics. Hygro-mesophilous species.

Material: S20, vic. of Shalday vill., 1♂, 3♀, 12.08.2012, S.V. Titov; B29, Birzhankol' lake, 1♂, 17.06.2008, 1♂, 2♀, 17.06.2009, S.V. Titov.

Autographa mandarina (Freyer, 1845)* – FP: VIII; localities: S20, S23. (Appendix 1, Map 125)

Biogeographical feature. Eurasiatic Palaearctic, temperate. N Europe, N and E S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, N Mongolia, Russian Far East, N and NE China (east to E Tibet), Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: S20, vic. of Shalday vill., 1♂, 2♀, 12.08.2012, S.V. Titov; S23, vic. of Sharbakty vill., 1♀, 11.08.2013, S.M. Reznichenko.

Autographa bractea ([Denis & Schiffermüller], 1775)* – FP: VIII; locality: Z2. (Appendix 1, Map 126)

Biogeographical feature. Euro-Siberian, temperate. Europe, Caucasus, Asia Minor, (N Turkey), Near East (N Iran), S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, W Siberia, Altai (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♂, 14.08.2012, V.S. Bychkov.

Autographa excelsa (Kretschmar, 1862)* – FP: VIII; locality: Z2. (Appendix 1, Map 127)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, NE China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 2♀, 14.08.2012, V.S. Bychkov.

Genus *Cornutiplusia* Kostrowicki, 1961

Cornutiplusia circumflexa (Linnaeus, 1767)* – FP: VIII; locality: B31. (Appendix 1, Map 128)

Biogeographical feature. Subcosmopolitan, subboreal, migratory. Canarian islands (ssp. *clarescens*), Africa, S Europe, Caucasus and Transcaucasia, Near East, Nepal, India, Sri Lanka, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, China, SE Asia (ssp. *circumflexa*) (Volynkin, 2012).

Bionomics. Xerophilous migratory species.

Material: B31, vic. of Shonai vill., 1♂, 09.08.2013, S.V. Titov.

Genus *Syngrapha* Hübner, [18213] 1816

Syngrapha interrogationis (Linnaeus, 1758)* – FP: VII–VIII; localities: Z1, B31. (Appendix 1, Map 129)

Biogeographical feature. Holarctic, boreomontanE Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural (ssp. *interrogationis*), E Kazakhstan, S Siberia, N Mongolia, Russian far East, NE China, N Korea, Japan (ssp. *transbaikalensis*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 21.07.2012, V.S. Bychkov; B31, vic. of Shonai vill., 1♂, 04.08.2013, S.M. Reznichenko.

Genus *Plusia* Ochsenheimer, 1816

Plusia festucae (Linnaeus, 1758)* – FP: VI–IX; localities: Z1, Z2, Z4, Z5, Z6, Z7, Z8, K11, P11, P12, P13, P19, P22, P23, S18, S20, S23, L27, L28, B29, B31, B35, B39, M40, A42, A46, A47, A48, E46, E47, E48, E50, E51, E54, U56. (Appendix 1, Map 130)

Biogeographical feature. Transpalaearctic, temperate. NW Africa, Europe, Caucasus, S Russia (S European part, Ural, S Siberia), Middle Asia, Kazakhstan, Ural, W, S and E Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 1♀, 05.07.2011, M.Yu. Volkov, 4♂, 3♀, 09.06.2012, S.V. Titov, 2♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 6♂, 2♀, 08.07.2013, V.S. Bychkov; Z2, vic. of Krasnovka vill., 2♂, 3♀, 09.07.2011, 5♂, 1♀, 05.06.2012, 8♂, 2♀, 14.08.2012, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♀, 28.08.2011, 1♂, 3♀, 25.07.2013, S.A.&Yu.P. Lorents, 25.07.2013, S.V. Titov; Z5, vic. of Slavyanovka vill., 2♂, 11.06.2012, S.V. Titov, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 3♀, 21.07.2013, V.S. Bychkov; Z8, vic. of Pyateryzhsk vill., 5♀, 07.08.2009, S.V. Titov; K11, vic. of Baykonys vill., 6♂, 2♀, 09.07.2013, S.V. Titov; P11, Pavlodar city 1♂, 1♀, 27.06.2006, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 8♀, 02.08.2009, 2♂, 1♀, 17.06.2012, 6♂, 2♀, 14.08.2012, 1♀, 15.09.2013, 4♂, 1♀, 06.09.2014, 4♂, 2♀, 18.07.2015, 1♂, 5♀, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 2♀, 18.07.2010, L.N. Ivan'ko; P19, vic. of Zhertumsyk vill., 4♂, 1♀,

11.06.2016, S.V. Titov; P22, vic. of Baydala vill., 2♂, 1♀, 13.06.2016, S.V. Titov; P23, vic. of Zhetekshi vill., 1♂, 26.07.2016, S.V. Titov; S18, east shore of Maraldy lake, 1♀, 20.06.2012, 2♂, 2♀, 23.07.2012, 1♀, 18.09.2012, S.V. Titov; S20, vic. of Shalday vill., 1♀, 16.06.2007, 2♂, 1♀, 12.08.2012, S.V. Titov; S23, vic. of Sharbakty vill., 30.07.2007, S.V. Titov, 11.08.2014, 19.06.2015, S.M. Reznichenko; L27, Borly lake, 3♂, 1♀, 25.06.2013, 6♂, 2♀, 29.07.2013, S.V. Titov; L28, vic. of Akku vill., 5♂, 1♀, 18.06.2015, 1♂, 24.08.2015, S.V. Titov; B29, Birzhankol' lake, 3♂, 2♀, 17.06.2008, S.V. Titov; B31, vic. of Shonai vill., 1♂, 6♀, 14.08.2013, 2♀, 25.09.2014, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 8♂, 1♀, 16.07.2016, S.V. Titov; B39, Moldybulak natural landmark, 1♂, 19.08.2015, S.V. Titov; M40, Kalmakyrgan Mts., 2♀, 27.07.2014, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 2♂, 1♀, 07.07.2008, S.V. Titov; A46, vic. of Kurkol' vill., 3♂, 1♀, 27.06.2016, 2♂, 1♀, 25.07.2016, S.V. Titov; A46, vic. of Kurkol', 4♂, 1♀, 27.06.2016, 3♀, 25.07.2016, S.V. Titov; A47, vic. of Kalkaman vill., 1♂, 4♀, 11.07.2016, S.V. Titov; A48, Kudaykol' lake, 2♂, 16.08.1995, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 6♂, 1♀, 20.07.2007, 3♂, 08.08.2008, 2♂, 18.07.2009, 3♂, 1♀, 12.08.2012, S.V. Titov; E47, vic. of Karazhar vill., 5♂, 13.06.2007, 2♂, 1♀, 11.08.2008, 2♂, 7♀, 08.09.2011, 16♂, 22♀, 21.09.2015, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♂, 3♀, 16.06.2010, 1♂, 12.06.2012, 2♀, 28.06.2012, S.V. Titov; E50, Olenty river, 6♂, 2♀, 22.08.2013, 3♂, 2♀, 22.07.2014, S.V. Titov; E51, Cretaceous slope of Ulken Ak-Zhar, 4♀, 23.07.2014, S.V. Titov & M. Černila; E54 Ulken-Koyandy Mt., 1♂, 3♀, 17.08.2016, S.V. Titov; U56 1.5 km. east of the Steklyannoe lake, 2♂, 1♀, 02.07.2016, S.V. Titov.

Plusia putnami (Grote, 1873)* – FP: VII; localities: Z1, E47. (Appendix 1, Map 131)

Biogeographical feature. Holarctic, temperate. N America (ssp. *putnami*), N Africa (Morocco) (ssp. *barbara*), Europe (ssp. *gracilis*), Ural, W and S Siberia, N Mongolia, Russian Far East, N Korea, Japan (ssp. *festata*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 2♀, 05.07.2011, M.Yu. Volkov 1♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 2♀, 08.07.2013, V.S. Bychkov; E47, vic. of Karazhar vill., 6♂ 30.06.2009, S.V. Titov.

Subfamily EUSTROTIINAE Grote, 1882

Genus *Phyllophila* Guenee, 1852

Phyllophyla obliterata (Rambur, 1833)* – FP: VII; localities: Z4, P11, P12, P23, A46. (Appendix 1, Map 132)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. C and S Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: Z4, vic. of Moiseevka vill., 1♀, 25.07.2013, 3♂, 2♀, 28.07.2017, Yu. P. & S. Lorents; P11, Pavlodar city, 1♂, 09.07.2008, S.V. Titov, 1♂, 2♀, 28.07.2008, N.E. Tarasovskaya, 1♂, 2♀, 20.07.2010, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 2♀, 02.07.2012, 3♂, 13.07.2013, S.V. Titov; P23, vic. of Zhetekshi vill., 2♂, 1♀, 25.07.2016, S.V. Titov.

Genus *Deltote* Reichenbach, 1817

Subgenus *Protodeltote* Ueda, 1984

Deltote (*Protodeltote*) *pygarga* (Hufnagel, 1766)* – FP: VI; localities: K10, P12. (Appendix 1, Map 133)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, N China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: K10, vic. of Terenkol' vill., 1♂, 4♀, 19.06.2012, L.N. Ivan'ko; P12, vic. of Pavlodarskoye vill., 2♂, 25.06.2007, 1♂, 2♀, 17.06.2012, S.V. Titov.

Subgenus *Deltote* Reichenbach, 1817

Deltote (*Deltote*) *deceptoria* (Scopoli, 1763)* – FP: V–VI; localities: Z2, K10, P12, P19. (Appendix 1, Map 134)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, N China (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 1♀, 19.05.2011, 5♂, 3♀, 27.05.2011, V.S. Bychkov; K10, vic. of Terenkol' vill., 1♂, 3♀, 19.06.2012, L.N. Ivan'ko; P12, vic. of Pavlodarskoye vill., 7♂, 2♀, 25.06.2007, 2♂, 4♀, 17.06.2012, S.V. Titov; P19, vic. of Zhertumsyk vill., 4♂, 6♀, 11.06.2016, S.V. Titov.

Deltote (*Deltote*) *uncula* (Clerck, 1759) – FP: VI–VII; localities: P11, P12, B30, A46. Reference: Pospelov (*1962, as Unca*). (Appendix 1, Map 135)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, N China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 4 ex., 23–27.06.1960, S.M. Pospelov, 1♂, 12.06.2008, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 3♂, 1♀, 17.06.2012, 1♀, 02.07.2012, 2♂, 2♀, 03.07.2013. 1♂, 1♀, 18.07.2015, S.V. Titov; B30, Bayanaul Mts., Kurkeli natural landmark, 1♀, 08.07.2016, S.V. Titov; A46, vic. of Kurkol', 2♂, 2♀, 27.06.2016, S.V. Titov.

Deltote (*Deltote*) *bankiana* (Fabricius, 1775) – FP: VI–VII; localities: Z4, P11, P12, L27, E47, E48. References: Pospelov (*1962, as Unca olivana*), Shek (*1975, as Eustrotia olivana*). (Appendix 1, Map 136)

Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. S Siberia, Mongolia, N China, S Korea (Volynkin, 2012).

Bionomics. Xero-thermophilous species.

Material: Z4, vic. of Moiseevka vill., 1♀, 25.07.2013, S.V. Titov; P11, Pavlodar city, 7 ex., 22.06–04.07.1960, S.M. Pospelov, 3♂, 1♀, 27.06.2006, S.V. Titov, 1♂, 12.06.2008, N.E. Tarasovskaya, 1♀, 09.07.2008, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 1♀, 25.06.2007, 1♂, 17.06.2012, 1♀, 02.07.2012, 4♀, 03.07.2013, 1♂, 3♀, 13.07.2013, S.V. Titov; L27, Borly lake, 2♂, 4♀, 25.06.2013, S.V. Titov; E47, vic. of Karazhar vill., 8♂, 13.06.2007, 1♂, 2♀, 30.06.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 2♀, 11.06.2010, 1♂, 1♀, 12.06.2012, S.V. Titov.

Subfamily ACONTIINAE Guenée, 1841

Tribe Acontiini Guenée, 1841

Genus *Acontia* Ochsenheimer, 1816

Subgenus *Acontia* Ochsenheimer, 1816

Acontia (*Acontia*) *lucida* (Hufnagel, 1766) – FP: VI–VIII; localities: P11, P13, S23, E46. Reference: Pospelov (*1962, as Tarache*). (Appendix 1, Map 137)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai, Himalaya (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P11, Pavlodar city, 1 ex., 23.06.1960, S.M. Pospelov, 2♀, 09.07.2008, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 18.08.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 1♂, 4♀, 30.07.2007, 2♂, 1♀, 11.08.2014, S.M. Reznichenko; E46, Shiderty river, Zhartas natural landmark, 1♂, 1♀, 08.08.2008, 1♂, 12.08.2012, S.V. Titov.

Subgenus *Emmelia* Hübner, [1821]

Acontia (*Emmelia*) *trabealis* (Scopoli, 1763) – FP: V–IX; localities: Z2, I, K10, P11, P12, P13, P19, S17, S23, L27, L28, A42, E47. Reference: Pospelov (*1960, as Emmelia*). (Appendix 1, Map 138)

Biogeographical feature. Transpalaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka, 1♂, 2♀, 09.06.2013, S.V. Titov, 2♀, 19.05.2011, V.S. Bychkov, 3♂, 10♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 6♂, 2♀, 09.07.2011, V.S. Bychkov, 21♂, 6♀, 05.06.2012, S.V. Titov, 4♂, 1♀, 14.08.2012, 1♂, 09.06.2013, V.S. Bychkov, at light; I, 1♂, 27.06.1955, Aleksandrov, (Coll. KSRIPPQ); K10, vic. of Terenkol' vill., 1♀, 24.09.2011, 19.06.2012, L.N. Ivan'ko, 10.07.2013, S.V. Titov; P11, Pavlodar city, 22.06–15.07.1960, S.M. Pospelov, 2♀,11.09.2003, 3♀, 11.09.2003, 1♂, 1♀, 27.06.2006, 2♂, 09.07.2008, S.V. Titov, 1♂, 05.07.2011, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 3♀, 25.06.2007, 6♂, 3♀, 02.08.2009, 5♀, 17.09.2011, 8♂, 4♀, 17.06.2012, 18♂, 9♀, 02.07.2012, 8♂, 1♀, 03.07.2013, 1♂, 6♀, 05.08.2013, 2♀, 15.09.2013, 1♀, 03.08.2014, 3♂, 2♀, 06.09.2014, 1♂, 1♀, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 1♂, 3♀, 02.05.2010, 4♂, 2♀, 18.07.2010, L.N. Ivan'ko; P19, vic. of Zhertumsyk vill., 1♂, 1♀, 11.06.2016, S.V. Titov;

S17 vic. of Sofiyevka vill., 10ex., 22.06–15.07.1958, S.M. Pospelov; S23, vic. of Sharbakty vill., 2♀, 30.07.2007, S.V. Titov 8♀, 11.08.2014, 19.06.2015, S.M. Reznichenko; L27, Borly lake, 3♂, 1♀, 25.06.2013, 1♂, 3♀, 29.07.2013, S.V. Titov; L28, vic. of Akku vill., 2♂, 9♀, 25.06.2013, 3♂, 5♀, 29.07.2013, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 5♂, 3♀, 30.06.2007, 6♂, 9♀, 07.07.2008, S.V. Titov; E47, vic. of Karazhar vill., 2♂ 11.08.2008, 2♂, 30.06.2009, 1♀, 08.09.2011, 3♀, 12.09.2015, S.V. Titov.

Tribe Aediini Beck, 1960

Genus: *Aedia* Hübner, [1823] 1816

Aedia funesta (Esper, 1786)* – FP: VI–VIII; localities: Z1, K10, P12, P13, S23, E46. (Appendix 1, Map 139)

Biogeographical feature. European - West Asian subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂ 09.06.2012, S.V. Titov; K10, vic. of Terenkol' vill., 2♂, 3♀, 19.06.2012, L.N. Ivan'ko, 1♂, 5♀, 10.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 25.06.2007, 2♀, 02.08.2009, 1♂, 17.06.2012, 4♀, 02.07.2012, 6♂, 1♀, 03.07.2013, 2♂, 8♀, 03.08.2013, 4♂, 1♀, 18.07.2015, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 08.06.2010, 7♂, 18.07.2010, 2♂, 3♀, 18.08.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 3♀, 30.07.2007, 1♀, 19.06.2015, S.M. Reznichenko; E46, Shiderty river, Zhartas natural landmark, 6♂, 1♀, 20.07.2007, 2♂, 2♀, 18.07.2008, 1♂, 12.08.2012, S.V. Titov.

Subfamily PANTHEINAE Smith, 1898

Genus *Colocasia* Ochsenheimer, 1816

Colocasia coryli (Linnaeus, 1758)* – FP: V–VI, VIII; localities: P19, L24, L27, B30. (Appendix 1, Map 140)

Biogeographical feature. Euro-Siberian, temperate. Europe, Caucasus and Transcaucasia, Near East, N Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P19, vic. of Zhertumsyk vill., 2♂, 11.06.2016, S.V. Titov; L24, Tuz lake, 2♂, 1♀, 08.05.2011, 1♂, 16.06.2016, S.V. Titov; L27, Borly lake, 1♂, 1♀, 25.06.2013, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 02.05.2012, 2♂, 1♀, 12.05.2012, 4♂, 2♀, 14.06.2013, 1♂, 4♀, 16.08.2016, S.V. Titov.

Subfamily ACRONICTINAE Heinemann, 1859

Genus *Leiometopon* Staudinger, 1888

Leiometopon simyrides Staudinger, 1888* – FP: VI; locality: E47. Reference: Titov et al. (2017). (Appendix 1, Map 141)

Biogeographical feature. Central-Asian, subboreal.

Bionomics. Xero-halophilous species.

Material: E47, vic. of Karazhar vill., 2♀, 30.06.2009, S.V. Titov.

Genus *Acronicta* Ochsenheimer, 1816

Subgenus *Jocheaera* Hübner, [1820] 1816

Acronicta (*Johaera*) *alni* (Linnaeus, 1767)* – FP: V–VIII; localities: K10, S23, B30, B31, B33. (Appendix 1, Map 142)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, N Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: K10, vic. of Terenkol' vill., 1♂, 2♀, 19.06.2012, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 1♀, 30.07.2007, 3♀, 11.08.2014, S.V. Titov; B30, Kurkeli natural landmark, 3♂, 2♀, 29.06.2013, 1♀, 09.08.2013, S.V. Titov; B31, vic. of Shonai vill., 1♂, 29.06.2013, 1♀, 09.08.2013, S.V. Titov; B33, Toraygyr lake, 1♀, 17.05.2017, S.V. Titov.

Subgenus *Triaena* Hübner, 1818

Acronicta (*Triaena*) *cuspis* (Hübner, [1813])* – FP: VI; locality: P11. (Appendix 1, Map 143)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, N Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 1♀, 12.06.2008, N.E. Tarasovskaya.

Acronicta (*Triaena*) *tridens* ([Denis & Schiffermüller], 1775)* – FP: VII; locality: Z1. (Appendix 1, Map 144)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, N Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, N Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 2♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov.

Acronicta (*Triaena*) *psi* (Linnaeus, 1758) – FP: VIII; localities: Z1, P11, P12, S20, S23, L27, B30, B31, B32, B33, B331, B35, B37, B38, A42, A45. Reference: Pospelov (*1962, as Apatele*). (Appendix 1, Map 145)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 2♂, 5♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov; P11, Pavlodar city, 1 ex., 27.06.1960, at light; S.M. Pospelov, 6♂, 12.08.2011, 2♂, 4♀, 02.08.2012, 1♂, 2♀, 31.08.2012, N.E. Tarasovskaya, 7♂, 2♀, 23.08.2014, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 02.08.2009, 6♂, 1♀, 05.08.2013, 3♂, 26.08.2013, 4♂, 03.08.2014, 8♂, 1♀, 13.08.2015, S.V. Titov; S20, vic. of Shalday vill., 1♀, 22.07.2007, 1♀, 12.08.2012, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 2♀, 30.07.2007, 1♀, 11.08.2014, S.M. Reznichenko; L27, Borly lake, 3♀, 29.07.2013, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 2♀, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 1♂, 04.08.2013, 5♂, 1♀, 15.08.2013, 1♀, 17.08.2014, 2♂, 11.08.2015, S.M. Reznichenko; B32, rock area Kempirtas, 2♂, 13.08.2008, S.M. Reznichenko; B33, Toraygyr lake, 3♀, 03.08.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 04.08.2017, S.V. Titov; B37, Zhasybay lake, 2♂, 18.08.1999, S.V. Titov, 2♀, 19.07.2011, N.E. Tarasovskaya; B38, natural landmark Zhumbak, 1♂, 14.08.1999, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 6♂, 1♀, 07.08.2017, S.V. Titov; A45, old road bridge, the Irtysh river, 3♂, 5♀, 07.08.2017, S.V. Titov.

Subgenus *Viminia* Chapman, 1890

Acronicta (*Viminia*) *auricoma* ([Denis & Schiffermüller], 1775)* – FP: IV–V, VII–VIII; localities: B30, B31, B33. (Appendix 1, Map 146)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B30, Kurkeli natural landmark, 1♂, 1♀, 12.05.2012, 1♀, 17.04.2016, 3♂, 6♀, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 2♀, 09.08.2013, S.M. Reznichenko, 1♂, 1♀, 14.08.2013, 1♂, 1♀, 05.05.2014, S.V. Titov, 8♂, 1♀, 11.08.2015, S.M. Reznichenko, 4♂, 1♀, 13.04.2016, S.V. Titov; B33, Toraygyr lake, 9♂, 6♀, 15.07.2016, 1♀, 28.07.2016, 6♂, 1♀, 17.05.2017, S.V. Titov.

Acronicta (*Viminia*) *rumicis* (Linnaeus, 1758) – FP: V–VI, VIII; localities: Z3, AK2, P12, P19, B30, B33. Reference: Shek (1975); Aibasov, & Zhdanko, (1982). (Appendix 1, Map 147)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Asia Minor, Near East (ssp. *pallida*), Middle Asia, S and SE Kazakhstan (ssp. *turanica*), Europe, Caucasus and Transcaucasia, N and E Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, Himalaya, China, Korea, Japan (ssp. *rumicis*) (Volynkin, 2012).

Bionomics. Mesophilous, eurytopic species.

Material: Z3, vic. of Zhelezinka vill., 3♂, 3♀, 14.05.2011, S.V. Titov 2♀, 19.08.2011, S. A. Lorents; AK2 vic. of Razumovka vill., (1973–1976), Kh.A.Aibasov & A.B.Zhdanko; P12, vic. of Pavlodarskoye vill., 3♂, 1♀, 05.08.2013, 8♂, 3♀, 26.08.2013, 1♂, 03.08.2014, S.V. Titov; P19, vic. of Zhertumsyk vill., 6♂, 7♀, 11.06.2016, S.V. Titov; B30, Kurkeli natural landmark, 2♀, 02.05.2012, 1♂, 4♀, 12.05.2012, 2♂, 8♀, 14.06.2013, 6♂, 1♀, 16.08.2016, S.V. Titov; B33, Toraygyr lake, 3♂, 7♀, 17.05.2017, 2♂, 3♀, 16.06.2017, 1♂, 1♀, 03.08.2017, S.V. Titov.

Acronicta (*Viminia*) *cinerea* (Hufnagel, 1766)* – FP: IV–VIII; localities: P12, B30, B31, B35, B36. (Appendix 1, Map 148)

Biogeographical feature. European - West Asian, temperate. N Africa, Europe, Caucasus, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, NW and N China (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 5♂, 4♀, 25.06.2007, 1♀, 18.04.2012, 3♀, 17.06.2012, 1♂, 05.08.2013, 3♀, 03.08.2014, 1♂, 13.08.2015, 1♂, 2♀, 19.04.2016, S.V. Titov; B30, Kurkeli natural landmark, 1♀, 02.05.2012, 2♂, 1♀, 14.06.2013, 4♂, 2♀, 17.04.2016, 3♂, 2♀, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 1♂, 14.08.2013, 1♂, 05.05.2014, 1♀, 13.04.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 8♂, 2♀, 18.05.2006, 6♂, 5♀, 28.05.2015, 1♂, 04.07.2016, 1♀, 04.08.2017, S.V. Titov; B36, Dulga tas rock, 1♂, 15.06.2014, S.V. Titov.

Subgenus *Simyra* Ochsenheimer, 1816.

Acronicta (*Simyra*) *nervosa* ([Denis & Schiffermüller], 1775)* – FP: IV–V, VII–VIII; localities: Z4, S18, B31, B35, E46, E47, E48, E50. (Appendix 1, Map 149)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. C and S Europe, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, NW China (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z4, vic. of Moiseevka vill., 1♂, 26.07.2017, S. & Yu. P. Lorents; S18, east shore of Maraldy lake, 1♀, 23.07.2012, S.V. Titov; B31, vic. of Shonai vill., 3♀, 09.08.2013, 4♀, 18.08.2013, 1♂, 1♀, 05.05.2014, 1♂, 1♀, 13.04.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 9♂, 28.05.2014, 4♂, 04.07.2016, 1♀, 04.08.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 5♀, 20.07.2007, 6♂, 5♀, 18.07.2009, 4♂, 12.08.2012, 1♀, 17.05.2015, 10♂, 12.04.2016, 8♂, 16.04.2017, S.V. Titov; E47, vic. of Karazhar vill., 6♀, 11.08.2008, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 06.08.2017, S.V. Titov; E50, Olenty river, 2♀, 22.08.2013, 1♂, 22.07.2014, S.V. Titov.

Acronicta (*Simyra*) *albovenosa* (Goeze, 1781)* – FP: V, VII–VIII; localities: P12, S23, M39, E49, E50. (Appendix 1, Map 150)

Biogeographical feature. European-West Asian, subtemperate. Europe, Near East, Caucasus and Transcaucasia, Russia (S Ural), Kazakhstan (Kononenko, 2010).

Bionomics. Hygro-thermophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 02.07.2012, S.V. Titov; S23, vic. of Sharbakty vill., 1♀, 30.07.2007, S.V. Titov; M39, vic. of Koktobe vill., 1♂, 3♀, 24.05.2010, 4♂, 5♀, 08.05.2012, 6♂, 8♀, 28.07.2014, S.V. Titov; E49, Shiderty reservoir, water pump №11, 2♂, 2♀, 06.05.2013, S.V. Titov; E50, Olenty river, 1♂, 22.08.2013, 3♂, 1♀, 22.07.2014, S.V. Titov.

Acronicta (*Simyra*) *dentinosa* Freyer, 1838 – FP: IV–V; localities: P13, P14, A44, E49. (Appendix 1, Map 151)

Biogeographical feature. West Palaearctic-Central Asian, subboreal. N Africa, S Europe, W Kazakhstan, Caucasus and Transcaucasia, Near East, Middle Asia, S Russia (S European part, Ural, S Siberia), Kazakhstan (Kononenko, 2010).

Bionomics. Xero-thermophilous species.

Material: P13, vic. of Rozovka vill., 1♂, 30.04.2010, L.N. Ivan'ko; P14, vic. of Kenzhekol' vill., 3♂, 1♀, 05.05.2010, S.V. Titov; A44, Kishi Kalkaman lake, 2♂, 09.05.2010, S.V. Titov; E49, Shiderty reservoir, water pump №11, 6♂, 2♀, 06.05.2013, S.V. Titov.

Subgenus *Subacronicta* I Kozhanchikov, 1950

Acronicta (*Subacronicta*) *megacephala* ([Denis & Schiffermüller], 1775) – FP: V–VIII; localities: Z1, Z2, Z3, Z4, Z5, P11, P12, P13, S23, B30, B32, A45, A46. References: Pospelov (1962), Shek (1975); Khodyrev et al. (2008); Titov et al. (2017). (Appendix 1, Map 152)

Biogeographical feature. East Palaearctic, boreal. NE and E Kazakhstan, W, S and E Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 3♂, 21.07.2011, S.V. Titov; Z2, vic. of Krasnovka vill., 2♂, 1♀, 05.06.2012, S.V. Titov, V.S. Bychkov; Z3, vic. of Zhelezinka vill., 3♂, 19.07.2010, S.A.&Yu.P. Lorents; Z4, vic. of Moiseevka vill., 2♂, 2♀, 28.08.2011, S.A.&Yu.P. Lorents; Z5, vic. of Slavyanovka vill., 2♂, 5♀, 11.06.2012, S.V. Titov, V.S. Bychkov; P11, Pavlodar city, 1 ex. 23.06.1960, 4♂, 1♀, 23.08.2014, S.V. Titov; P12, vic. of Pavlodarskoye, 1♂, 1♀, 06.09.2014, 4♂, 3♀, 13.08.2015, 5♂, 1♀, 18.07.2015, 6♂, 2♀, 13.08.2015, 7♂, 27.07.2016,

S.V. Titov; P13, vic. of Rozovka vill., 3♂, 05.06.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 30.07.2008, 2♂, 4♀, S.V. Titov; B30, Bayanaul Mts., Kurkeli natural landmark, 1♂, 02.05.2012, S.V. Titov, 1♂, 1♀, 14.06.2013, S.V. Titov, M. Černila, A.V. Volynkin; B32, Bayanaul Mts., rock area Kempirtas, 1♂, 1♀, 30.07.2013, S.M. Reznichenko; A45, old road bridge, the Irtysh river, 2♂, 29.05.2015, S.V. Titov; A46, vic. of Kurkol' vill., 2♂, 1♀, 21.06.2016, S.V. Titov.

Subfamily METOPONIINAE Herrich-Schäffer, [1851]

Genus *Mycteroplus* Herrich–Schäffer, 1850

Mycteroplus puniceago (Boisduval, 1840)* – FP: VII–VIII; localities: Z4, Z6, P14, L28, A45. (Appendix 1, Map 153)

Biogeographical feature. European - West Asian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, N Altai (Volynkin, 2012).

Bionomics. Xero-thermophilous species.

Material: Z4, vic. of Moiseevka vill., 1♀, 28.08.2012, S.A.&Yu.P. Lorents, 4♀, 25.07.2013, S.V. Titov, 1♂, 26.07.2017, S. & Yu. P. Lorents; Z6, vic. of Novokuz'minka vill., 45♂, 26♀, 21.07.2013, V.S. Bychkov; P14, vic. of Kenzhekol' vill., 8♂, 9♀, 20.07.2012, S.V. Titov; L28, vic. of Akku vill., 6♂, 2♀, 20.07.2017, A.S. Karim; A45, old road bridge, the Irtysh river, 5♂, 26.07.2009, S.V. Titov.

Genus *Tyta* Billberg, 1820

Tyta luctuosa ([Denis & Schiffermüller], 1775) – FP: V–VI, VIII; localities: Z1, Z2, Z6, K10, P11, P12, P19, S17, S23, L24, L28, A42, A45, E46. Reference: Pospelov (*1962, as Acontia*). (Appendix 1, Map 154)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 3♂, 1♀, 19.05.2012, V.S. Bychkov, M.Yu. Volkov, 5♂, 3♀, 09.06.2012, S.V. Titov, V.S. Bychkov; Z2, vic. of Krasnovka vill., 2♂,

19.05.2011, V.S. Bychkov, 1♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 1♂, 2♀, 05.06.2012, S.V. Titov, 1♂, 14.08.2012, 1♂, 2♀, 09.06.2013, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 8♂, 6♀, 21.07.2013, V.S. Bychkov; K10, vic. of Terenkol' vill., 1♀, 19.06.2012, L.N. Ivan'ko; P11, Pavlodar city, 2 ex., 23.06 – 24.06.1960, S.M. Pospelov, 2♀, 29.05.2010, 1♂, 4♀, 21.05.2011, S.V. Titov, 1♂, 06.08.2012, N.E. Tarasovskaya, 1♀, 02.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 2♀, 25.06.2007, 4♂, 02.08.2009, 1♂, 17.06.2012, 2♀, 05.08.2013, 1♀, 13.08.2015, S.V. Titov; P19, vic. of Zhertumsyk vill., 4♂, 5♀, 11.06.2016, S.V. Titov; S17 vic. of Sofiyevka vill., 10 ex., 22.06–15.07.1958, 2 ex., 09.08.1958, S.M. Pospelov; S23, vic. of Sharbakty vill., 2♂, 3♀, 11.08.2014, 1♂, 19.06.2015, S.V. Titov; L24, Tuz lake, 4♂, 2♀, 08.05,2011, 1♀, 16.06.2016, S.V. Titov; L28, vic. of Akku vill., 9♂, 3♀, 18.06.2015, 4♀, 24.08.2015, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 2♀, 18.06.2015, 1♂, 1♀, 24.08.2015, S.V. Titov; A45, old road bridge, the Irtysh river, 3♂, 29.05.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 1♀, 12.08.2012, 5♂, 17.05.2015, S.V. Titov.

Subfamily CUCULLIINAE Herrich-Schäffer, [1850]

Genus *Cucullia* Schrank, 1802

Cucullia tiefi Tshetverikov, 1956* – FP: IV; locality: E53. Reference: Titov & Volynkin (2013). (Appendix 1, Map 155)

Biogeographical feature. Uralian-Kazakhstan, subboreal. Russia (S Ural), W and NE Kazakhstan (Titov & Volykin, 2013; Kononenko, 2016).

Bionomics. Xerophilous species.

Material: E53, west shore of Shiderty reservoir, 1♂, 1♀, 19.04.2012, S.V. Titov.

Cucullia praecana Eversmann, 1843* – FP: VI–VII; localities: B30, E47. (Appendix 1, Map 156)

Biogeographical feature. Euro-Siberian, subboreal. Europe, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, N Mongolia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B30, Kurkeli natural landmark, 1♀, 12.07.2016, S.V. Titov; E47, vic. of Karazhar vill., 1♂, 13.06.2007, S.V. Titov.

Cucullia propinqua Eversmann, 1842* – FP: V–VII; localities: B35, M39. (Appendix 1, Map 157)

Biogeographical feature. Euro-Siberian, subboreal. S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, N Mongolia (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: B35, vic. of Zhana Zhosaly vill., 1♂, 4♀, 16.07.2016, S.V. Titov; M39, vic. of Koktobe vill., 2♂, 24.05.2010, S.V. Titov.

Cucullia scopariae Dorfmeister, 1853* – FP: VII; localities: P12, S20, E46. (Appendix 1, Map 158)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, N China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 13.07.2013, 2♂, 5 18.07.2015, 3♂, 1♀, 27.07.2016, S.V. Titov; S20, vic. of Shalday vill., 1♂, 2♀, 18.07.2007, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 1♀, 20.07.2007, 1♂, 18.07.2007, S.V. Titov.

Cucullia fraudatrix Eversmann, 1837* – FP: VII; locality: P12. (Appendix 1, Map 159)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. N and E Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, NE China, Korea, Japan (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♀, 18.07.2015, 1♂, 27.07.2016, S.V. Titov.

Cucullia absinthii (Linnaeus, 1761)* – FP: VIII; localities: P11, P12, P13, L28. (Appendix 1, Map 160)

Biogeographical feature. European-Central Asian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: P11, Pavlodar city, 1♂, 02.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 13.08.2015, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 18.08.2010, L.N. Ivan'ko; L28, vic. of Akku vill., 2♂, 1♀, 24.08.2015, S.V. Titov.

Cucullia argentea (Hufnagel, 1766)* – FP: VIII; localities: Z1, Z2, Z4, P12, P19, S23, B29, B35, B39, A46, A48, E46, E51, E54. (Appendix 1, Map 161)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, NE China, Korea, Japan (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 5♂, 4♀, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 2♂, 3♀, 14.08.2012, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♂, 19.08.2011, 3♂, 1♀, 28.08.2012, S. & Yu. P. Lorents, 1♂, 1♀, 15.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 02.08.2009, 15♂, 7♀, 26.08.2013, 12♂, 4♀, 03.08.2014, 8♂, 10♀, 13.08.2015, S.V. Titov; P19, vic. of Zhertumsyk vill., 1♂, 1♀, 25.08.2017, S.V. Titov; S23, vic. of Sharbakty vill., 2♀, 11.08.2014, S.M. Reznichenko; B29, Birzhankol' lake, 3♂, 4♀, 10.08.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♀, 04.08.2017, S.V. Titov; B39, Moldybulak natural landmark, 14♂, 5♀, 19.08.2015, S.V. Titov; A46, vic. of Kurkol' vill., 8♂, 2♀, 22.08.2017, S.V. Titov; A48, Kudaykol' lake, 1♂, 16.08.1995, S.V. Titov; E46, Shiderty river Zhartas natural landmark, 1♂, 4♀, 08.08.2008, 2♀, 12.08.2012, S.V. Titov; E51, Cretaceous slope of Ulken Ak-Zhar, 2♂, 3♀, 06.08.2017, S.V. Titov; E54 Ulken-Koyandy Mt., 7♂, 6♀, 17.08.2016, S.V. Titov.

Cucullia infuscata Tshetverikov, 1925* – FP: VII; localities: P12, B33, E50. (Appendix 1, Map 162)

Biogeographical feature. S Siberian - Central Asian, subboreal. W and S Siberia, Mongolia (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 13.07.2013, 1♂, 18.07.2015, S.V. Titov; B33, Toraygyr lake, 12♂, 4♀, 09.07.2016, 18♂, 7♀, 15.07.2016, S.V. Titov; E50, Olenty river, 2♂, 1♀, 22.07.2014, S.V. Titov.

Cucullia artemisiae (Hufnagel, 1766)* – FP: VI–VII; localities: Z4, K10, P11, P13, E46, E47. (Appendix 1, Map 163)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, NE China, Korea, Japan (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: Z4, vic. of Moiseevka vill., 3♂, 1♀, 25.07.2013, S.A.&Yu.P. Lorents, 26.07.2017, S.V. Titov; K10, vic. of Terenkol' vill., 1♀, 10.07.2013, L.N. Ivan'ko; P11, Pavlodar city, 3♂, 27.06.2006, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 18.07.2010, L.N. Ivan'ko; E46, Shiderty river, Zhartas natural landmark, 1♂, 15.07.2003, S.V. Titov; E47, vic. of Karazhar vill., 1♂, 5♀, 30.06.2009, S.V. Titov.

Cucullia humilis Boursin, 1941* – FP: VI–VIII; localities: B31, B33. (Appendix 1, Map 164)

Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. S Siberia, Russian Far East, NE China, Korea (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: B31, vic. of Shonai vill., 1♂, 29.06.2013, 2♂, 1♀, 13.08.2013, S.V. Titov; B33, Toraygyr lake, 15♂, 6♀, 15.07.2016, S.V. Titov.

Cucullia splendida (Stoll, 1782) – FP: VII–IX; localities: Z1, P11, P12, P13, P14, S23, L24, E46, E54. Reference: Shek (1975); Aibasov, & Zhdanko, (1982). (Appendix 1, Map 165)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Caucasus, Middle Asia, Karakorum, Himalaya, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, NE China (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B, Maykain-Bayanaul track, Kh.A.Aibasov, A.B.Zhdanko; Z1, vic. of Mikhailovka vill., 1♀, 05.07.2011, 1♀, 21.07.2012, M.Yu. Volkov at light; P11, Pavlodar city, 3♀, 20.07.2010, 5♂, 2♀, 02.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 1♀, 10.09.2012, 2♂, 4♀, 13.07.2013, 1♀, 04.09.2013, 10♂, 2♀, 04.09.2013, 3♂, 8♀, 03.08.2014, 5♂, 2♀, 18.07.2015, 3♂, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 18.07.2010,

L.N. Ivan'ko; P14, vic. of Kenzhekol' vill., 1♀, 20.07.2012, S.V. Titov; S23, vic. of Sharbakty vill., 2♂, 30.07.2007, S.M. Reznichenko; L24, Tuz lake, 21♂, 11♀, 21.07.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 15.07.2003, 2♂, 6♀, 20.07.2007, 10♂, 1♀, 18.07.2008, 5♂, 08.08.2008, 3♂, 4♀, 12.08.2012, S.V. Titov; E54 Ulken-Koyandy Mt., 9♂, 1♀, 17.08.2016, S.V. Titov.

Cucullia gnaphalii (Hübner, 1813)* – FP: VI–VIII; localities: Z2, B31, B33, B35. (Appendix 1, Map 166)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: Z2, vic. of Krasnovka vill., 1♀, 05.06.2012, 1♀, 09.06.2013, V.S. Bychkov; B31, vic. of Shonai vill., 3♂, 29.06.2013, S.V. Titov, 1♂, 3♀, 09.08.2013, S.M. Reznichenko; B33, Toraygyr lake, 4♂, 7♀, 15.07.2016, 6♂, 4♀, 28.07.2016, 3♂, 16.06.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 2♀, 16.07.2016, S.V. Titov.

Cucullia magnifica (Freyer, 1839)* – FP: VIII; locality: L24. (Appendix 1, Map 167)

Biogeographical feature. Euro-Siberian, subboreal. C and SE Europe, Russia (S European part, Ural, S Siberia); S Ural, W Siberia, Asia Minor, Caucasus, Middle Asia, Kazakhstan, Russian Far East, W China (Kononenko, 2016).

Bionomics. Xero-thermophilous species.

Material: L24, Tuz lake, 1♀, 06.08.2015, S.V. Titov.

Cucullia argentina (Fabricius, 1787) – FP: V–VI; localities: Z2, Z4, P12, U54. Reference: Aibasov, & Zhdanko, (1982). (Appendix 1, Map 168)

Biogeographical feature. European-Central Asian, subboreal. E Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B, Maykain-Bayanaul track, Kh.A.Aibasov, A.B.Zhdanko; Z2, vic. of Krasnovka vill., 1♂, 19.05.2011, V.S. Bychkov, 1♂, 1♀, 05.06.2012, S. Titov; Z4, vic. of

Moiseevka vill., 5♂, 4♀, 22.05.2011, S.A.&Yu.P. Lorents; P12, vic. of Pavlodarskoye vill., 1♀, 17.06.2012, S.V. Titov; U54, vic. Big Azhbulat lake, 1♂, 01.07.2016, S.V. Titov.

Cucullia biradiata W Kozhantshikov, 1925 – FP: VI; locality: A41, Z2. Reference: Pospelov (1962). (Appendix 1, Map 169)

Biogeographical feature. S Siberian - Central Asian, subboreal. E, N and NE Kazakhstan, S Siberia, N Mongolia (Volynkin, 2012; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: A41, soviet farm « Zhol–Kuduk», 1♂, 09.06.1960, S.M. Pospelov, (Coll. ZISP); Z2, vic. of Krasnovka vill., 1♀, 09.06.2013, V.S. Bychkov.

Cucullia pustulata Eversmann, 1842* – FP: VIII–IX; localities: P15, S23. (Appendix 1, Map 170)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (ssp. *pustulata*), Russian Far East, NE China, Korea, Japan (ssp. *fraterna*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: P15, vic. of Efremovka vill., 1♀, 12.09.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 1♂, 2♀, 11.08.2014, S.M. Reznichenko.

Cucullia lucifuga ([Denis & Schiffermüller], 1775)* – FP: VI; localities: Z2, B32. (Appendix 1, Map 171)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♀, 05.06.2012, V.S. Bychkov; B32, rock area Kempirtas, 2♂, 1♀, 13.06.2013, S.M. Reznichenko.

Cucullia umbratica (Linnaeus, 1758)* – FP: V–VIII; localities: Z2, Z4, P17, P19, B33, E46. (Appendix 1, Map 172)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, N China (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z2, vic. of Krasnovka vill., 5♂, 1♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 3♂, 4♀, 05.06.2012, S.V. Titov, 8♂,2♀, 14.08.2012, 1♂, 09.06.2013, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♀, 22.05.2011, S.V. Titov, 1♀, 28.08.2011, S.A.&Yu.P. Lorents, 2♀, 25.07.2013, S.V. Titov; P17, vic. of Koryakovka, 12♂, 3♀, 22.05.2011, 3♂, 21.05.2017, S.V. Titov; P19, vic. of Zhertumsyk vill., 1♂, 1♀, 11.06.2016, S.V. Titov; B33, Toraygyr lake, 5♂, 2♀, 09.07.2016, 1♂, 17.05.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 18.07.2008, 10♂, 3♀, 17.05.2015, S.V. Titov.

Cucullia biornata Fischer von Waldheim, 1840 – FP: V–VIII; localities: Z1, Z2, Z4, P11, S23, B29, B35, B39, E47, E50. Reference: Pospelov (1962). (Appendix 1, Map 173)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. SE Europe, Caucasus and Transcaucasia, Middle Asia, Afghanistan, Himalaya, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 05.07.2011, M.Yu. Volkov, 3♂, 1♀, 19.05.2012, 1♀, 09.06.2012, V.S. Bychkov & M.Yu. Volkov, 2♂, 2♀, 08.07.2013, V.S. Bychkov, 2♀, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 3♂, 19.05.2011, V.S. Bychkov, 2♂, 1♀, 05.06.2012, S.V. Titov, 1♀, 14.08.2012, V.S. Bychkov; Z4, vic. of Moiseevka vill., 5♂, 4♀, 22.05.2011, 2♀, 28.08.2011, S.A.&Yu.P. Lorents, 6♂, 4♀, 1♂, 1♀, 15.08.207, S.V. Titov; P11, Pavlodar city, 2ex., 11–23.06.1960, S.M. Pospelov, 1♂, 27.06.2006, 1♀, 28.05.2008, 2♂, 29.05.2011, S.V. Titov, 1♂, 12.08.2011, N.E. Tarasovskaya, 5♂, 1♀, 17.05.2012, 1♂, 09.06.2012, L.N. Ivan'ko, 1♀, 03.07.2016, V.I. Blokhin, 5♂, 1♀, 02.08.2017, S.V. Titov; S23, vic. of Sharbakty vill., 8♂, 2♀, 30.07.2007, S.V. Titov, 2♂, 7♀, 11.08.2014, 5♂, 1♀, 19.06.2015, S.M. Reznichenko; B29, Birzhankol' lake, 4♂, 3♀, 17.06.2008, N.E. Tarasovskaya, 1♂, 1♀, 28.06.2008, 17.06.2009, 1♂, 6♀, 10.08.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 9♂, 3♀, 18.05.2006, 1♂, 25.07.2014, 28.05.2015, 3♂, 16.07.2016, 3♀, 04.08.2017, S.V. Titov; B39, Moldybulak natural landmark, 1♂, 19.08.2015, S.V. Titov; E47,

vic. of Karazhar vill., 1♂, 13.06.2008, 1♂, 4♀, 11.08.2008, 1♀, 30.06.2009, S.V. Titov; E50, Olenty river, 2♂, 2♀, 04.06.2013, 1♀, 22.08.2013, 4♂, 22.07.2014, S.V. Titov.

Cucullia balsamitae (Boisduval, 1840)* – FP: VIII; localities: S20, E46. (Appendix 1, Map 174)

Biogeographical feature. European – Middle Asian, subtemperate. E Europe, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Middle Asia, Kazakhstan, (Kononenko, 2016).

Bionomics. Xerophilous species.

Material: S20, vic. of Shalday vill., 2♂, 1♀, 12.08.2012, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♀, 08.08.2008, 1♀, 12.08.2012, S.V. Titov.

Cucullia inderiensis Herrich-Schäffer, 1856* – FP: IV–V; localities: Z1, Z2, P11, P12, P16, B30, E48, E51. (Appendix 1, Map 175)

Biogeographical feature. Middle Asian, subtemperate. E Europe, Russia (S Ural), W Siberia, Kazakhstan, Kyrgyzstan (Kononenko, 2016).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill, 1♂, 3♀, 13.04.2012, 1♂, 19.05.2012, V.S. Bychkov & M.Yu. Volkov, 6♂, 2♀, 09.06.2012, S.V. Titov; Z2, vic. of Krasnovka vill., 1♂, 2♀, 19.05.2011, V.S. Bychkov, 1♂, 3♀, 27.05.2011, 4♂, 2♀, 12.04.2012, V.S. Bychkov & M.Yu. Volkov; P11, Pavlodar city, 8♂, 2♀, 17.05.2012, S.V. Titov, 2♀, 16.05.2013, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 6♂, 1♀, 22.04.2017, S.V. Titov; P16, vic.of Sychevka, 2♂, 11.04.2011, 8♂, 2♀, 17.05.2011, S.V. Titov; B30, Kurkeli natural landmark, 11♂, 3♀, 02.05.2012, 1♂, 4♀, 12.05.2012, 9♂, 2♀, 17.04.2016, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 25.04.2017, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 1♂, 20.04.2015, 2♂, 1♀, 28.04.2015, 1♂, 11.04.2016, S.V. Titov & M. Černila, 2♂, 1♀, 18.04.2017, S.V. Titov.

Cucullia duplicata Staudinger, 1882* – FP: IV–VIII; localities: Z2, Z4, Z5, P12, P17, P19, S18, B30, B32, B33, M39, E46, E50. (Appendix 1, Map 176)

Biogeographical feature. Central Asian, subboreal. Middle Asia, SE and E Kazakhstan, S Siberia (SE Altai, S Tuva), Mongolia, NW China (Xinjiang) (ssp. *duplicata*), W China (S Tibet) (ssp. *orophila*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 1♂, 19.05.2011, V.S. Bychkov, 1♂, 4♀, 27.05.2011, V.S. Bychkov & M.Yu. Volkov, 2♂, 5♀, 05.06.2012, S.V. Titov; Z4, vic. of Moiseevka vill., 1♀, 22.05.2011, S.A.&Yu.P. Lorents; Z5, vic. of Slavyanovka vill., 2♂, 11.06.2012, S.V. Titov & V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 3♂, 25.06.2007, S.V. Titov; P17, vic. of Koryakovka, 1♂, 1♀, 22.05.2011, 6♂, 1♀, 21.05.2017, S.V. Titov; P19, vic. of Zhertumsyk vill., 1♀, 11.06.2016, S.V. Titov; S18, east shore of Maraldy lake, 2♂, 2♀, 20.06.2012, 2♀, 23.07.2012, S.V. Titov; B30, Kurkeli natural landmark, 7♂, 5♀, 02.05.2012, 10♂, 4♀, 12.05.2012, 3♀, 14.06.2013, 1♂, 01.07.2013, 1♂, 17.04.2016, S.V. Titov; B32, rock area Kempirtas, 8♂, 6♀, 17.05.2007. 5♂, 2♀, 13.06.2013, 11♂, 9♀, 17.05.2014, 5♂, 13.06.2014, 1♂, 2♀, 27.05.2015, 2♀, 15.04.2016, S.V. Titov; B33, Toraygyr lake, 3♂, 11.06.2013, 1♂, 28.07.2016, 2♂, 4♀, 17.05.2017, 1♂, 3♀, 16.06.2017, 1♀, 03.08.2017, 2♀, 09.08.2017, S.V. Titov; M39, vic. of Koktobe vill., 3♂, 24.05.2010, 8♂, 3♀, 08.05.2012, 1♂, 28.07.2014, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 7♂, 6♀, 10.05.2007, 2♂, 1♀, 17.05.2015, S.V. Titov; E50, Olenty river, 2♂, 3♀, 04.06.2013, 2♂, 3♀, 22.07.2014, S.V. Titov.

Cucullia santonici (Hübner, [1813])* – FP: VI–VII; localities: B35, E46. (Appendix 1, Map 177)

Biogeographical feature. European-Central Asian, subtemperate. S and SE Europe, Caucasus and Transcaucasia, Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, Kyrgyzstan, Tajikistan, Afghanistan (Kononenko, 2016).

Bionomics. Xerophilous species.

Material: B35, vic. of Zhana Zhosaly vill., 1♀, 04.07.2016, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 26.05.2015, S.V. Titov.

Cucullia lactea (Fabricius, 1787)* – FP: V–VII; localities: M40, E46. (Appendix 1, Map 178)

Biogeographical feature. Euro-Siberian, subtemperate. Asia Minor, Transcaucasia, SE Europe, Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai, W Kazakhstan (Kononenko, 2016).

Bionomics. Xerophilous species.

Material: M40, Kalmakyrgan Mts., 1♀, 27.07.2014, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 5♂, 2♀, 26.05.2015, S.V. Titov.

Cucullia mixta Freyer, 1841* – FP: IV–VI; localities: Z1, Z2, B31, E46, E47. (Appendix 1, Map 179)

Biogeographical feature. European-Central Asian, subboreal. Carpathian Mts. (ssp. *lorica*), Asia Minor, Near East (W Iran) (ssp. *ronkayi*), E Europe, Caucasus, W Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *mixta*), Middle Asia, SE Kazakhstan, NW China (ssp. *lucida*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 13.04.2012, 2♂, 1♀, 19.05.2012, V.S. Bychkov & M.Yu. Volkov, 1♀, 09.06.2012, S.V. Titov; Z2, vic. of Krasnovka vill., 1♂, 19.05.2011, V.S. Bychkov, 2♂, 3♀, 27.05.2011, 2♂, 12.04.2012, 5♂, 2♀, 05.06.2012, S.V. Titov, 1♂, 09.06.2013, V.S. Bychkov; B31, vic. of Shonai vill., 3♀, 29.06.2013, S.M. Reznichenko; E46, Shiderty river, Zhartas natural landmark, 5♂, 1♀, 17.05.2015, 1♂, 26.05.2015, S.V. Titov; E47, vic. of Karazhar vill., 5♂, 3♀, 13.06.2007, 4♂, 7♀, 30.06.2009, S.V. Titov;

Cucullia xeranthemi (Boisduval, 1840) – FP: V–VIII; localities: Z2, P11, P12, B33, E46. References: Pospelov (1962), Shek (1975). (Appendix 1, Map 180)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 1♀, 19.05.2011, 3♂, 1♀, 09.07.2011, V.S. Bychkov, 2♂, 4♀, 05.06.2012, S.V. Titov, 1♂, 14.08.2012, 2♂, 2♀, 09.06.2013, V.S. Bychkov; P11, Pavlodar city, 1 ex., 04.08.1960, S.M. Pospelov, 1♂, 27.06.2006, 1♂, 28.05.2008, S.V. Titov, 1♂, 30.05.2008, 2♂, 12.06.2008, 2♂, 1♀, 28.07.2008, N.E. Tarasovskaya, 5♂, 2♀,

20.07.2010, S.V. Titov, 1♂, 3♀, 02.07.2012, N.E. Tarasovskaya, 1♂, 2♀, 03.07.2016, V.I. Blokhin, 1♀, 02.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 2♀, 17.06.2012, 1♂, 3♀, 02.07.2012, 6♂, 1♀, 03.07.2013, 1♀, 13.07.2013, 2♂, 2♀, 18.07.2015, 3♂, 27.07.2016, S.V. Titov; B33, Toraygyr lake, 1♂, 11.06.2013, 3♂, 09.07.2016, 15♂, 8♀, 15.07.2016, 15♂, 10♀, 28.07.2016, 11♂, 4♀, 17.06.2017, 1♀, 03.08.2017, 1♀, 09.08.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 13♂, 6♀, 18.07.2009, S.V. Titov.

Cucullia virgaureae Boisduval, 1840* – FP: VI–VIII; localities: P12, E46, E47. (Appendix 1, Map 181)

Biogeographical feature. European-Central Asian, subboreal. Middle Asia (Kyrgyzstan), SE Kazakhstan, NW China (ssp. *tianshanica*), Caucasus, S Russia (S European part, Ural, S Siberia), S Ural (ssp. *virgaureae*), S Siberia, Mongolia (ssp. *cinnamona*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 5♂, 3♀, 25.06.2007,1♂, 02.08.2009, 2♀, 17.06.2012, 1♂, 02.07.2012, 3♀, 03.07.2013, 1♀, 26.08.2013, 1♀, 03.08.2014, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 5♀, 15.07.2003, 1♂, 18.07.2008, 1♀, 08.08.2008, 1♂, 2♀, 18.07.2009, 1♂, 6♀, 18.07.2015, S.V. Titov; E47, vic. of Karazhar vill., 4♂, 6♀, 13.06.2007, 2♀, 11.08.2008, 9♂, 1♀, 30.06.2009, S.V. Titov.

Cucullia amota Alphéraky, 1887* – FP: VI–VIII; localities: P12, B31, B33, E47. (Appendix 1, Map 182)

Biogeographical feature. East Palaearctic, subboreal. Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, Mongolia, Russian Far East, China (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♀, 25.06.2007, 1♂, 2♀, 03.07.2013, 1♀, 03.08.2014, 5♂, 2♀, 18.07.2015, 2♀, 27.07.2016, S.V. Titov; B31, vic. of Shonai vill., 8♂, 3♀, 29.06.2013, S.V. Titov; B33, Toraygyr lake, 3♂, 09.07.2016, 10♂, 3♀, 16.06.2017, S.V. Titov; E47, vic. of Karazhar vill., 8♂, 1♀, 13.06.2007, 12♂, 15♀, 30.06.2009, S.V. Titov.

Cucullia asteris ([Denis & Schiffermüller], 1775)* – FP: VI–VIII; localities: Z1, K10, B35. (Appendix 1, Map 183)

Biogeographical feature. Eurasiatic Palaearctic, subboeal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, N and E Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *asteris*), Middle Asia (Uzbekistan, Kyrgyzstan), SE Kazakhstan, NW China (ssp. *heptapotamica*) (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 1♀, 09.06.2012, 1♀, 19.08.2017, V.S. Bychkov; K10, vic. of Terenkol' vill., 2♂, 19.06.2012, L.N. Ivan'ko; B35, vic. of Zhana Zhosaly vill., 1♂, 16.07.2016, S.V. Titov.

Cucullia tanaceti ([Denis & Schiffermüller], 1775)* – FP: V–VIII; localities: P19, S20. (Appendix 1, Map 184)

Biogeographical feature. West Palaearctic, subtemperate. N Africa, Europe, Asia Minor, Caucasus and Transcaucasia,Russia, S Russia (S European part, Ural, S Siberia), Kazakhstan, W Siberia, Middle Asia, Mongolia, China (Kononenko, 2016).

Bionomics. Xerophilous species.

Material: P19, vic. of Zhertumsyk vill., 1♀, 11.06.2016, S.V. Titov; S20, vic. of Shalday vill., 1♂, 12.08.2012, S.V. Titov.

Subfamily AMPHIPYRINAE Guenée, 1837

Tribe Amphipyrini Guenée, 1837

Genus *Amphipyra* Ochsenheimer, 1816

Amphipyra pyramidea (Linnaeus, 1758)* – FP: VIII; locality: P12. (Appendix 1, Map 185)

Biogeographical feature. Eurasiatic Palaearctic subboreal. Europe, S Russia (S European part, Ural, S Siberia), S Ural, N and NE Kazakhstan, W Siberia, Russian Far East, China, Korea, Japan (Kononenko, 2016; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 18.VII.2015, 1♂, for wine, 2♀, on colonies of aphids, S.V. Titov.

Amphipyra perflua (Fabricius, 1787)* – FP: VII–VIII; localities: Z1, P12, B30. (Appendix 1, Map 186)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 21.07.212, V.S. Bychkov & M.Yu. Volkov; P12, vic. of Pavlodarskoye vill., 1♀, 13.08.2015, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 13.07.2016, S.V. Titov.

Amphipyra livida ([Denis & Schiffermüller], 1775)* – FP: VII–VIII; localities: Z1, Z2, P12, E48. (Appendix 1, Map 187)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *livida*), Russian Far East, Korea, Japan (ssp. *corvina*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill, 1♂, 21.07.2013, V.S. Bychkov & M.Yu. Volkov, 2♀, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 1♀, 14.8.212, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 1♂, 02.8.2009, 3♂, 1♀, 13.07.2013, 1♂, 5♀, 26.08.213, 3♂, 1♀, 03.08.214, 3♂, 18.07.2015, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 06.08.2017, S.V. Titov.

Amphipyra tragopoginis (Clerck, 1759)* – FP: VIII; localities: Z1, Z2, P11, P12, B31. (Appendix 1, Map 188)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Afghanistan, Himalaya, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *tragopogonis*), Middle Asia (ssp. *turcomana*) (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: Z1, vic. of Mikhailovka vill, 1♂, 5♀, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 1♀, 14.08.2012, V.S. Bychkov, light; P11, Pavlodar city, 4♂, 1♀, 02.08.2012, 5♂, 06.08.2012, 1♂, 31.08.2012, N.E. Tarasovskaya, 3♀, 23.08.2014, 1♀, 02.08.2017, S.V.

Titov; P12, vic. of Pavlodarskoye vill., 4♂, 1♀, 26.08.2013, 2♂, 03.08.2014, S.V. Titov; B31, vic. of Shonai vill., 5♂, 1♀, 14.08.2013, 3♀, 17.08.2014, S.V. Titov.

Amphipyra tetra (Fabricius, 1787)* – FP: VII–VIII; localities: Z6, P11, P12, L26. (Appendix 1, Map 189)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Afghanistan, Hindukush, Karakorum, NW Himalaya, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z6, vic. of Novokuz'minka vill., 1♀, 1♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 1♀, 30.07.2008, N.E. Tarasovskaya, 6♂, 1♀, 23.08.2015, 1♂, 5♀, 02.08.2017, 1♂, 21.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 2♂, 02.082009, 1♂, 1♀, 26.08.2013, 1♂, 6♀, 03.08.2014, 5♂, 2♀, 13.08.2015, S.V. Titov; S20, vic. of Shalday vill., 2♀, 12.08.2012, S.V. Titov; L26, vic. of Sharbakty vill., 1♀, 06.08.2015, S.V. Titov.

Amphipyra sergei Staudinger, 1888* – FP: VII–VIII; localities: P11, P12, S20, L24. (Appendix 1, Map 190)

Biogeographical feature. S Siberian - Central Asian, subboreal. Middle Asia, E and SE Kazakhstan, S Siberia, NW China (Xinjiang) (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: P11, Pavlodar city, 2♀, 24.07.20011, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 6♀, 8♀, 26.08.2013, 11♀, 5♀, 18.07.2015, at wine, 2♀, 1♀, 13.08.2015, at wine, 3♀, 1♀, 27.07.2016, S.V. Titov; S20, vic. of Shalday vill., 1♀, 12.08.2012, S.V. Titov; L24, Tuz lake, 3♀, 1♀, 06.08.2015, S.V. Titov.

Tribe Psaphidini Grote, 1895

Subtribe Psaphidina Grote, 1895

Genus *Brachionycha* Hübner, [1819] 1816

Brachionycha nubeculosa (Esper, 1785)* – FP: IV; localities: Z1, Z2, Z4. (Appendix 1, Map 191)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (ssp. *nubeculosa*), Mongolia (? ssp), S Siberia (Sayan, Transbaikalia) (ssp. *kullbergi*), Russian Far East, Korea, Japan (ssp. *jezoensis*), C China (Shaanxi) (? ssp) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 18♀, 21♀, 13.04.2012, V.S. Bychkov, M.Yu. Volkov; Z2, vic. of Krasnovka vill., 11♀, 5♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; Z4, vic. of Moiseevka vill., 2♀, 1♀, 12.04.2017, S. & Yu. P. Lorents.

Subfamily ONCOCNEMIDINAE Forbes & Franclemont, 1954

Genus *Calophasia* Stephens, 1829

Calophasia lunula (Hufnagel, 1766) – FP: V–VI, VIII; localities: Z2, Z4, P11, P12, P17, P19, S15, B30, B32, M40, E46. Reference: Shek (1975). (Appendix 1, Map 192)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Asia Minor (ssp. *ocellata*), N America (introduced), Europe, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea (ssp. *lunula*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 8♂, 19.05.2011, V.S. Bychkov, 1♂, 5♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 2♂, 05.06.2012, S.V. Titov, 1♂, 14.08.212, 2♂, 6♀, 09.06.213, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♂, 22.05.2011, 1♂, 28.08.211, S.A.&Yu.P. Lorents; P11, Pavlodar city, 3♂, 28.05.2008, S.V. Titov, 1♂, 30.05.2008, 8♂, 2♀, 12.06.2008, N.E. Tarasovskaya, 7♂, 2♀, 21.05.2011, 3♂, 5♀, 17.05.2012, 1♂, 09.6.2012, S.V. Titov, L.N. Ivan'ko, 6♂, 16.05.2013, N.E. Tarasovskaya, 2♂, 3♀, 02.08.2017, S.V. Titov, at light; P12, vic. of Pavlodarskoye vill., 6♂, 2♀, 25.06.2007, 1♀, 02.08.2009, 4♂, 1♀, 17.06.2012, 10♂, 3♀, 03.08.2014, 5♂, 13.08.2015, S.V. Titov; P17, vic. of Koryakovka, 5♂, 3♀, 22.05.2011, S.V. Titov; P19, vic. of Zhertumsyk vill., 8♂, 1♀, 11.06.2016, S.V. Titov; 1♂, S15, vic. of Alekseyevka vill., 14.06.1962, G.Kh. Shek (Coll. KSRIPPQ); B30, Kurkeli natural landmark, 3♀, 02.05.2012, 7♂, 3♀, 14.06.213, 1♂, 5♀, 16.08.216, S.V. Titov; B32, rock area Kempirtas, 12♂, 3♀, 17.05.207, 5♂, 4♀, 13.08.2008, 3♂, 2♀, 13.06.213, 1♂, 17.05.214, S.M.

Reznichenko; M40, Kalmakyrgan Mts., 1♂, 03.05.212, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 8♂, 3♀, 10.05.2007, 2♂, 4♀, 17.05.2015, S.V. Titov.

Calophasia opalina (Esper, [1794])* – FP: V; locality: L25. (Appendix 1, Map 193)

Biogeographical feature. West Palaearctic, subtemperate. N Africa, S and SE Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, Mongolia, (Kononenko, 2016).

Bionomics. Xerophilous species.

Material: L25, highway M-38 near the border of Pavlodar and east Kazakhstan regions, 1♂, 02.06.2013, M. Černila, S.V. Titov, A.V. Volynkin

Genus *Sympistis* Hübner, [1823] 1816

Sympistis strioligera (Lederer, 1853)* – FP: VIII; localities: B29, B30, B31, B32, B35, B37, B39, L24. (Appendix 1, Map 194)

Biogeographical feature. Siberian - Mediterranean, subboreal. Asia Minor, Near East (ssp. *anatolica*), Afghanistan, Middle Asia, Kazakhstan, S Ural, Altai, W Mongolia, NW China (ssp. *strioligera*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B29, Birzhankol' lake, 15♂, 12♀, 10.08.2017, S.V. Titov; B30, Kurkeli natural landmark, 14♂, 8♀, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 9♂, 3♀, 02.08.2013, 1♂, 10♀, 04.08.2013, S.M. Reznichenko, 15♂, 3♀, 09.08.2013, 16♂, 11♀, 14.8.2013, 9♂, 15.08.2013, 7♂, 5♀, 17.08.2013, 3♂, 7♀, 18.08.2013, 2♂, 7♀, 22.08.2013, 10♂, 13♀, 27.08.2013, 25♂, 11♀, 17.08.2015, 1♂, 11.08.2015, S.V. Titov; B32, rock area Kempirtas, 7♂, 2♀, 13.08.2008, S.M. Reznichenko; B35, vic. of Zhana Zhosaly vill., 6♂, 3♀, 04.08.2017, S.V. Titov; B37, Zhasybay lake, 01. 1♂, 1♀, 01.08.2017, S.V. Titov, 2♀, 15♂, 12♀, 19.07.2011, N.E. Tarasovskaya; 9♂, 8♀, B39, Moldybulak natural landmark, 25♂, 13♀, 19.08.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 08.08.2008, S.V. Titov, 3♂, 1♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Sympistis campicola (Lederer, 1853)* – FP: VIII; localities: B29, B30, B31, B32, B35, B37, B39, E46. (Appendix 1, Map 195)

Biogeographical feature. East Palaearctic, subboreal. Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: B29, Birzhankol' lake, 5♂, 1♀, 10.08.2017, S.V. Titov; B30, Kurkeli natural landmark, 3♂, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 7♂, 2♀, 02.08.2013, 3♂, 3♀, 04.08.2013, S.M. Reznichenko, 1♂, 09.08.2013, 1♂, 1♀, 14.08.2013, 1♂, 1♀, 15.08.2013, 1♂, 1♀, 17.08.2013, 1♂, 1♀, 18.08.2013, 6♂, 2♀, 27.08.2013, 15♂, 3♀, 17.08.2015, 9♂, 2♀, 11.08.2015, S.V. Titov; B32, rock area Kempirtas, 7♂, 5♀, 13.08.2008, S.M. Reznichenko; B35, vic. of Zhana Zhosaly vill., 2♂, 1♀, 04.08.2017, S.V. Titov; B37, Zhasybay lake, 3♂, 1♀, 01.08.2017, T.K. Aylybayev; 11♂, 4♀, B39, Moldybulak natural landmark, 14♂, 7♀, 19.08.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 08.08.2008, S.V. Titov, 1♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Sympistis exacta (Christoph, 1887)* – FP: VI–VIII; localities: B29, B31, M40. (Appendix 1, Map 196)

Biogeographical feature. West Palaearctic-Central Asian, subboreal., Iran, SE Turkey, (ssp. *vanensis*), Turkmenistan, Tajikistan, Afghanistan, NW China (Xinjiang), S, NE and E Kazakhstan, Mongolia (Altai Mts, Khangay Mts) (ssp. *mongolica*) (Gyulai et al., 1992, Titov et al., 2017 a, b).

Bionomics. Xero-thermophilous species.

Material: B29, Birzhankol' lake, 3♂, 1♀, 17.06.08, 1♂, 10.08.2017, S.V. Titov; B31, vic. of Shonai vill., 1♂, 29.06.2013, 2♂, 1♀, 02.08.2013, 1♀, 09.08.2013, S.M. Reznichenko, 2♂, 15.08.2013, S.V. Titov; M40, Kalmakyrgan Mts., 1♂, 27.07.2014, S.V. Titov.

Sympistis nigricula (Eversmann, 1856)* – FP: VIII–IX; localities: S23, B31, E46, E54. (Appendix 1, Map 197)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe (Spain) (ssp. *eberti*), Caucasus and Transcaucasia, Asia Minor (ssp. *araratica*), S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *nigricula*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: S23, vic. of Sharbakty vill., 1♂, 11.08.2014, S.M. Reznichenko; B31, vic. of Shonai vill., 2♂, 1♀, 15.09.2012, S.M. Reznichenko, 4♂, 09.08.2013, 1♂, 2♀, 18.08.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 1♀, 08.08.2008, S.V. Titov, 4♂, 3♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E54 Ulken-Koyandy Mt., 6♂, 5♀, 17.08.2016, S.V. Titov.

Sympistis senica (Eversmann, 1856)* – FP: IX; locality: B31. (Appendix 1, Map 198)

Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. S Ural, W and S Siberia (ssp. *senica*), Kazakhstan, N Mongolia (Khngay Mts) (ssp. *mysterica*), Transbaikalia, Russian Far East, Japan (ssp. *literata*) (Volynkin, 2012).

Bionomics. Xeromontane species.

Material: B31, vic. of Shonai vill., 3♀, 12.09.2012, S.V. Titov & S.M. Reznichenko.

Genus *Lophoterges* Hampson, 1906

Subgenus *Variterge* Ronkay, 2005

Lophoterges (*Variterges*) *centralasiae* (Staudinger, 1901)* – FP:VI;VIII. localities: B29, B31, B33. Reference: Titov et al. (2017). (Appendix 1, Map 199)

Biogeographical feature. Central Asian, subboreal. Uzbekistan, Kyrgyzstan, Tajikistan, S and E Kazakhstan, NW China (Xinjiang) (Ronkay, 2005).

Bionomics. Xero-thermophilous species.

Material: B29, Birzhankol' lake, 1♂, 10.06.2008, A. Steidel, (ZSM); 1♂, 27.06.2008, S.V. Titov; B31, vic. of Shonai vill., 3♂, 1♀, 27.06.2013, S.V. Titov; B33, Toraygyr lake, 3♂, 08.06.2014, 4♂, 18.06.2017, 1♂, 1♀, 03.08.2017, S.V. Titov.

Genus *Epimecia* Guenée, 1839

Epimecia ustula (Freyer, 1835)* – FP: V; locality: B30. (Appendix 1, Map 200)

Biogeographical feature. European-West Asian, temperate. C and S Europe, N Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural, W and NE Kazakhstan, S Siberia (Kononenko, 2016; Titov et al., 2017 b).

Bionomics. Meso-xerophilous species.

Material: B30, Kurkeli natural landmark, 1♂, 01.05.2012, S.V. Titov.

Genus *Phidrimana* Kononenko, 1989

Phidrimana amurensis (Staudinger, 1892)* – FP: VII–IX; localities: Z2, Z4, K10, P11, P12, P13, P23, A48. Reference: Titov et al. (2017). (Appendix 1, Map 201)

Biogeographical feature. Euro-Siberian, subboreal. S Russia (S European part, Ural, S Siberia), S Ural, NE and SE Kazakhstan, W Siberia, Transbaikalia, Russian Far East, Mongolia, N China, N Korea (Kononenko, 2016; Titov et al., 2017a, b).

Bionomics. Xero-mesophilous species.

Material: Z2, vic. of Krasnovka, 1♀, 21.07.2012, 1♂, 1♀, 14.08.2012, V.S. Bychkov; Z4, vic. of Moiseevka, 1♀, 28.08.2011, S. A. & J. P. Lorents; K10, vic. of Terenkol', 1♀, 24.09.2011, L.N. Ivan'ko; P11, Pavlodar city, 1♂, 23.08.2014, S.V. Titov; P12, vic. of Pavlodarskoye, 1♂, 2♀, 02.09.2012, 1♂, 17.09.2011, 2♀, 10.09.2012, 3♂, 2♀, 10.09.2012, at wine, S.V. Titov; 1♂, 1♀, 26.08.2013, 2♀, 15.09.2013, on colonies of aphids, 1♂, 4♀, 03.08.2014, 3♂, 4♀, 18.07.2015, 3♂, 4♀, at wine, 4♀, on colonies of aphids, 3♂, 13.08.2015, 3♂, 2♀, 27.07.2016, 1♂, 02.08.2017, S.V. Titov, 1♂, 16.08.2017, K. S. Titov; P13, vic. of Rozovka, 3♂, 18.10.2010, 1♂, 17.08.2010, L.N. Ivan'ko (coll. CST., pr. № 0800 AVB); P23, vic. of Zhetekshi, 1♂, 30.07.2016, S.V. Titov; A48, Kudaykol' lake, 1♂, 29.07.2016, S.V. Titov.

Subfamily CONDICINAE Poole, 1995

Tribe Condicini Poole, 1995

Genus *Acosmetia* Stephens, 1829

Acosmetia caliginosa (Hübner, [1813])* – FP: VI; locality: E46. (Appendix 1, Map 202)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), N Kazakhstan, S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: E46, Shiderty river, Zhartas natural landmark, 1♂, VI.1999, S.V. Titov.

Tribe Leuconyctini Poole, 1995

Genus *Eucarta* Lederer, 1857

Eucarta virgo (Treitschke, 1835) – FP: VI–VIII; localities: Z4, P11, P12. References: Pospelov (1962, as Callogonia), Shek (1975, as Caledonia). (Appendix 1, Map 203)

Biogeographical feature. Eurasiatic Palaearctic, temperate. C and S Europe, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z4, vic. of Moiseevka vill., 1♂, 15.08.2017, S.V. Titov; P11, Pavlodar city, 1 ex., 24.06.1960, at light; S.M. Pospelov; P12, vic. of Pavlodarskoye vill., 1♀, 01.08.2009, 5♂, 3♀, 17.06.2012, S.V. Titov.

Eucarta amethystina (Hübner, [1803])* – FP: VI; locality: P12. (Appendix 1, Map 204)

Biogeographical feature. Eurasiatic Palaearctic, temperate. C and S Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 8♂, 3♀, 17.06.2012, S.V. Titov.

Subfamily HELIOTHINAE Boisduval, [1828]

Genus *Pyrrhia* Hübner, [1821] 1816

Pyrrhia umbra (Hufnagel, 1766)* – FP: V, VII; localities: P11, P17, B35, A42, E46. (Appendix 1, Map 205)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, Afghanistan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, China, Korea, Japan (ssp. umbra), Himalaya (Nepal) (ssp. *nepalina*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 1 ex. 24.06.1960, S.M. Pospelov; 1♂, 09.07.2008, S.V. Titov, at light; P17, vic. of Koryakovka, 1♂, 2♀, 22.05.2011, S.V. Titov; B35, vic. of Zhana

Zhosaly vill., 3♂, 25.07.2014, 1♀, 28.05.2015, 2♀, 04.07.2016, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 4♀, 07.07.2008, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 18.07.2008, 1♂, 17.05.2015, S.V. Titov.

Pyrrhia exprimens (Walker, 1857)* – FP: VII–VIII; localities: P11, S20. (Appendix 1, Map 206)

Biogeographical feature. Holarctic, boreal. N America, N Europe, N S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, N Russian Far East (Kamchatka), Korea, NE and E Kazakhstan (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 1♀, 23.08.2014, S.V. Titov, 1♂, 03.07.2016, V.I. Blokhin, at light; S20, vic. of Shalday vill., 1♂, 12.08.2012, S.V. Titov.

Genus *Schinia* Hübner, [1818] 1823

Schinia cognata (Freyer, 1833)* – FP: VII; locality: M41. The species is known from Pavlodar Region only by pictures taken in naturE (Appendix 1, Map 207)

Biogeographical feature. Euro-Siberian, subtemperate. S Russia (S European part, Ural, S Siberia), S Ural, C, S, and E Europe, W, NE Kazakhstan (Kononenko, 2016; Titov et al., 2017 b).

Bionomics. Xero-heliophilous, species.

Material: M41, the former Semipalatinsk nuclear test site, 1ex., 24.07.2014, photo by O.V. Lyakhov.

Genus *Protoschinia* Hardwick, 1970

Protoschinia scutosa ([Denis & Schiffermüller], 1775) – FP: V–VI–VII–VIII; localities: Z1, Z2, Z4, Z7, K10, P11, P12, P13, P19, P22, S18, S23, B30, B31, B32, B33, B35, M39, A46, E47, E50, E51, U57. Reference: Pospelov (*1962, as Heliothis*). (Appendix 1, Map 208)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Afghanistan, Himalaya, Kazakhstan, S Russia (S

European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Meso-xerophilous, migratory species.

Material: Z1, vic. of Mikhailovka vill., 3♂, 1♀, 09.06.2012, S.V. Titov; Z2, vic. of Krasnovka vill., 1♂, 19.05.2011, V.S. Bychkov, 1♂, 1♀, 05.06.2012, S.V. Titov, 3♂, 14.08.2012, 1♀, 09.06.2013, V.S. Bychkov; Z4, vic. of Moiseevka vill., 2♂, 1♀, 22.05.2011, 2♀, 28.08.2012, S.A.&Yu.P. Lorents, 1♂, 15.08.2017, S.V. Titov; Z7, Kyzyltuz lake, 3♂, 1♀, 22.06.2013, S.V. Titov; K10, vic. of Terenkol' vill., 1♂, 1♀, 19.06.2012, L.N. Ivan'ko; P11, Pavlodar city, 2 ex., 09.06.1960, S.M. Pospelov; 1♂, 1♀, 27.06.2006, 1♂, 1♀, 28.05.2008, 5♂, 2♀, 30.05.2008, N.E. Tarasovskaya, 3♀, 29.05.2010, 2♂, 1♀, 21.05.2011, S.V. Titov, 1♂, 1♀, 12.08.2011, N.E. Tarasovskaya, 1♂, 23.08.2014, 8♂, 1♀, 02.08.2017, 1♂, 2♀, 21.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 2♀, 17.06.2012, 1♀, 05.08.2013, 4♂, 03.08.2014, 7♂, 5♀, 13.08.2015, S.V. Titov; P13, vic. of Rozovka vill., 2♂, 02.05.2010, L.N. Ivan'ko; P19, vic. of Zhertumsyk vill., 6♂, 2♀, 11.06.2016, 1♀, 25.08.2017, S.V. Titov; P22, vic. of Baydala vill., 1♀, 13.06.2016, S.V. Titov; S18, east shore of Maraldy lake, 8♂, 2♀, 20.06.2012, S.V. Titov; S23, vic. of Sharbakty vill., 2♂, 11.08.2014, 1♂, 19.06.2015, S.M. Reznichenko; B30, Kurkeli natural landmark, 1♂, 1♀, 02.05.2012, 1♀, 12.07.2016, 1♂, 14.06.2013, 10♂, 2♀, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 1♂, 29.06.2013, 5♂, 2♀, 02.08.2013, 3♂, 2♀, 17.08.2014, 4♂, 11.08.2015, S.V. Titov; B32, rock area Kempirtas, 5♂, 6♀, 13.08.2008, 1♂, 13.06.2013, 1♂, 28.06.2013, 2♂, 1♀, 17.05.2014, 3♀, 27.05.2015, S.V. Titov; B33, Toraygyr lake, 1♂, 1♀, 11.06.2013, 1♂, 1♀, 17.05.2017, 1♂, 17.06.2017, 3♂, 1♀, 03.08.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 10♀, 28.05.2015, 2♂, 24.08.2017, S.V. Titov; M39, vic. of Koktobe vill., 7♂, 1♀, 24.05.2010, 11♂, 2♀, 08.05.2012, S.V. Titov; A46, vic. of Kurkol' vill., 1♂, 27.06.2016, 6♂, 3♀, 22.08.2017, S.V. Titov; E47, vic. of Karazhar vill., 1♀, 13.06.2007, 12♂, 4♀, 11.08.2008, S.V. Titov; E50, Olenty river, 1♀, 04.06.2013, 1♂, 3♀, 22.08.2013, S.V. Titov; E51, Cretaceous slope of Ulken Ak-Zhar, 2♂, 06.08.2017, S.V. Titov; U57, vic.Vesely Klin, 6♂, 1♀, 03.07.2016, S.V. Titov.

Genus *Heliothis* Ochsenheimer, 1816

Heliothis peltigera ([Denis & Schiffermüller], 1775)* – FP: V–VII; locality: E46. (Appendix 1, Map 209)

Biogeographical feature. West Palaearctic, migrant. Africa, C and N Europe, S Russia (S European part, Ural, S Siberia), Caucasus and Transcaucasia, Asia Minor, Middle East, Middle Asia, India (Kononenko, 2016).

Bionomics. Xero-thermophilous species.

Material: E46, Shiderty river, Zhartas natural landmark, 1♂, 18.07.2008, 17.05.2015, S.V. Titov.

Heliothis viriplaca (Hufnagel, 1766) – FP: VI–VIII; localities: P11, P19, S23, L24, E48. Reference: Pospelov (1962). (Appendix 1, Map 210)

Biogeographical feature. West Palaearctic, subboreal. Canarian islands, N Africa, Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: P11, Pavlodar city, 3 ex., 25.06 – 02.07.1960, S.M. Pospelov, 8♂, 2♀, 27.06.2006, 1♀, 12.06.2008, N.E. Tarasovskaya, 3♂, 2♀, 09.07.2008, S.V. Titov, 1♂, 3♀, 28.07.2008, 5♂, 2♀, 30.07.2008, N.E. Tarasovskaya, 1♂, 19.07.2010, 4♂, 05.07.2011, N.E. Tarasovskaya, 2♂, 2♀, 12.08.2011, 5♂, 6♀, 18.08.2011, N.E. Tarasovskaya, 1♂, 23.08.2014, S.V. Titov, 1♀, 03.07.2016, V.I. Blokhin 5♂, 1♀, 02.08.2017, 7♂, 2♀, 21.08.2017, S.V. Titov; P19, vic. of Zhertumsyk vill., 1♂, 6♀, 11.06.2016, 11♂, 2♀, 25.08.2017, S.V. Titov; S23, vic. of Sharbakty vill., 5♂, 3♀, 11.08.2014, 1♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 3♂, 1♀, 06.08.2015, S.V. Titov; E48, Shiderty reservoir, water pump №7, 15♂, 6♀, 12.06.2012, 1♂, 28.06. 2012, 12♂, 4♀, 06.08.2017, S.V. Titov.

Heliothis adaucta Butler, 1878* – FP: VI–VIII; localities: P12, P19, S23, L24, E46, E47, E48. (Appendix 1, Map 211)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Himalaya, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 25.06.2007, 3♂, 02.08.2009, 1♂, 2♀, 17.06.2012, 5♂, 1♀, 02.07.2012, 10♂, 2♀, 03.07.2013, 5♂, 1♀, 13.07.2013, 1♂, 1♀,

05.08.2013, 1♂, 1♀, 26.08.2013, 1♂, 1♀, 03.08.2014, 3♂, 1♀, 18.07.2015, 6♂, 7♀, 13.08.2015, 3♂, 2♀, 27.07.2016, S.V. Titov; P19, vic. of Zhertumsyk vill., 2♂, 1♀, 11.06.2016, 1♂, 25.08.2017, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 11.08.2014, 2♂, 2♀, 19.06.2015, S.M. Reznichenko; B30, Kurkeli natural landmark, 1♂, 14.06.2013, 1♂, 01.07.2014, 1♂, 1♀, 08.07.2016, 1♂, 1♀, 12.07.2016, 1♂, 1♀, 16.08.2016, S.V. Titov; L24, Tuz lake, 2♂, 3♀, 21.07.2015, 1♂, 1♀, 06.08.2015, 1♂, 1♀, 16.06.2016, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 20.07.2007, 15♂, 3♀, 18.07.2008, 10♂, 5♀, 08.08.2008, 17♂, 5♀, 12.08.2012, S.V. Titov; E47, vic. of Karazhar vill., 1♀, 13.06.2007, 1♂, 6♀, 11.08.2008, 5♂, 2♀, 30.06.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 12.06.2012, 2♂, 1♀, 28.06. 2012, 8♂, 3♀, 06.08.2017, S.V. Titov.

Genus *Helicoverpa* Hardwick, 1965

Helicoverpa armigera (Hübner, [1808])* – FP: VII, IX; localities: P11, P12, S20, E47. (Appendix 1, Map 212)

Biogeographical feature. Subcosmopolitan-subtemperate, migrant. Middle East, Caucasus and Transcaucasia, Middle Asia Europe, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, S and W Siberia, S Transbaikalia, Russian Far East, China, Korea, Japan, India, SE Asia, Indonesia, Australia, New Zealand (Kononenko, 2016).

Bionomics. A subtropical migrating synanthropic species.

Material: P11, Pavlodar city, 10♂, 4♀, 19.07.2010, S.V. Titov; P12, vic. of Pavlodarskoye vill., 8♂, 10♀, 19.09.2017, S.V. Titov; S20, vic. of Shalday vill., 5♂, 1♀, 18.07.2007, 7♂, 6♀, 22.07.2007, S.V. Titov; E47, vic. of Karazhar vill., 9♂, 12.09.2015, S.V. Titov.

Subfamily BRYOPHILINAE Guenée, 1852

Genus *Cryphia* Hübner, 1818

Subgenus *Cryphia* Hübner, 1818

Cryphia (*Cryphia*) *fraudatricula* (Hübner, [1803])* – FP: VI–VII; localities: B31, B32, B33, B35. (Appendix 1, Map 213)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 5♂, 10♀, 29.06.2013, S.M. Reznichenko; B32, rock area Kempirtas, 8♂, 11♀, 28.06.2013 14♂, 18♀, 13.06.2014, S.V. Titov; B33, Toraygyr lake, 9♂, 3♀, 11.06.2013, 1♀, 16.06.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 20♂, 8♀, 04.07.2016, S.V. Titov.

Genus *Bryophila* Treitschke, 1825

Subgenus *Bryoleuca* Hampson, 1908

Bryophila (*Bryoleuca*) *orthogramma* (Boursin, 1954)* – FP: VI–VIII; localities: B30, B34, E46, E48. (Appendix 1, Map 214)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, Korea, Japan (ssp. *orthogramma*), E China (ssp. *taishanensis*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B30, Kurkeli natural landmark, 21♂, 8♀, 14.06.2013, 5♂, 7♀, 01.07.2014, 6♂, 2♀, 08.07.2016, 3♂, 10♀, 12.07.2016, 5♂, 3♀, 16.08.2016, S.V. Titov; B34, natural landmark Kirigichi, 1♂, 30.06.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 2♀, 08.08.2008, 1♀, 18.07.2009, 27♂, 15♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E48, Shiderty reservoir, water pump №7, 3♂, 1♀, 12.06.2012, 1♂, 28.06. 2012, 1♀, 06.08.2017, S.V. Titov.

Genus *Victrix* Staudinger, 1879

Subgenus *Poliobria* Hampson, 1908

Victrix (*Poliobria*) *akbet* Volynkin, Titov & Černila, in press* – FP: V–VI; localities: B32, B33. (Appendix 1, Map 215)

Biogeographical feature. Middle Asian, subtemperate. Russia (Tuva), Transbaikalia, Mongolia (Kononenko, 2016).

Bionomics. Meso-xerophilous species.

Material: B32, rock area Kempirtas, 56♂, 29♀, 28.06.2013, M. Černila, S.V. Titov, A.V. Volynkin, 31♂, 10♀, 13.06.2014, S.V. Titov, A.V. Volynkin, 3♂, 27.05.2015, M. Černila, S.V. Titov, M. Kučinić; B33, Toraygyr lake, 10♂, 8♀, 16.06.2017, S.V. Titov.

Genus *Athaumasta* Hampson, 1906

Athaumasta expressa (Lederer, 1855)* – FP: V–VI; localities: B29, B30, B31, B32, B33, B35. (Appendix 1, Map 216)

Biogeographical feature. S Siberian - Central Asian, subboreal. E and NE Kazakhstan, S Siberia, N Mongolia (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Meso-xerophilous species.

Material: B29, Birzhankol' lake, 1♀, 17.06.2009, S.V. Titov; B30, Kurkeli natural landmark, 8♂, 2♀, 02.05.2012, 4♂, 6♀, 12.05.2012, 6♂, 11♀, 14.06.2013, M. Černila, S.V. Titov, A.V. Volynkin; B31, vic. of Shonai vill., 2♂, 29.06.2013, S.M. Reznichenko, 3♂, 7♀, 05.05.2014, S.V. Titov; B32, rock area Kempirtas, 17♂, 19♀, 13.06.2013, M. Černila, S.V. Titov, A.V. Volynkin, 2♀, 17.05.2014, 3♂, 1♀, 13.06.2014, 3♂, 6♀, 27.05.2015, S.V. Titov; B33, Toraygyr lake, 1♂, 1♀, 17.05.2017, S.V. Titov, A.V. Volynkin, 3♂, 10♀, 16.06.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 7♀, 28.05.2015, M. Černila, S.V. Titov, M. Kučinić.

Subfamily NOCTUINAE Latreille, 1809

Tribe Pseudeustrotiini Beck, 1996

Genus *Pseudeustrotia* Warren, 1913

Pseudeustrotia candidula ([Denis & Schiffermüller], 1775) – FP: VI–VII; localities: P11, P12, B29, B30, A46. References: Pospelov (1962, *as Unca*), Shek (1975, *as Eustrotia*). (Appendix 1, Map 217)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, N and NE Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, N Mongolia, Russian Far East, N China, Korea, Japan (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 1♂, 1♀, 24.06.1960, S.M. Pospelov, 2♂, 4♀, 27.06.2006, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 1♀, 1♂, 5♀, 13.07.2013, 1♂, 18.07.2015, S.V. Titov; B29, Birzhankol' lake, 1♂, 17.06.2008, 1♂, 1♀, 17.06.2009, S.V. Titov; B30, Kurkeli natural landmark, 3♂, 2♀, 14.06.2013, 4♂, 1♀, 12.07.2016, S.V. Titov; A46, vic. of Kurkol' vill., 15♂, 26♀, 27.06.2016, S.V. Titov.

Tribe Prodeniini Forbes, 1954

Genus *Spodoptera* Guenée, 1852

Spodoptera exigua (Hübner, 1808)* – FP: IX; locality: E47. (Appendix 1, Map 218)

Biogeographical feature. Migrant. Europe, Caucasus and Transcaucasia, Asia Minor, Middle East, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, Mongolia, Russian Far East, China, Korea, Japan, Vietnam, Thailand, India, Nepal, Pakistan (Kononenko, 2016).

Bionomics. Meso-xerophilous species.

Material: E47, vic. of Karazhar vill., 1♂, 12.09.2015, S.V. Titov.

Tribe Elaphriini Beck, 1996

Genus *Elaphria* Hübner, 1818

Elaphria venustula (Hübner, 1790)* – FP: VI–VII; localities: Z1, Z2, P12, B30. (Appendix 1, Map 219)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Near East, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Transbaikalia, Russian Far East, N China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 05.07.2011, M.Yu. Volkov, S.V. Titov; Z2, vic. of Krasnovka vill., 2♂, 1♀, 09.07.2011, V.S. Bychkov, 4♂, 1♀, 05.06.2012, S.V. Titov, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 8♂, 2♀, 25.06.2007, 3♂, 1♀, 17.06.2012, 4♂, 2♀, 13.07.2013, 1♂, 18.07.2015, 1♀, 27.07.2016, B30, Kurkeli natural landmark, 3♂, 1♀, 14.06.2013, 1♀, 01.07.2014, 1♂, 2♀, 12.07.2016, S.V. Titov.

Tribe Caradrinini Boisduval, 1840

Subtribe Caradrinina Boisduval, 1840

Genus *Caradrina* Ochsenheimer, 1816

Subgenus *Caradrina* Ochsenheimer, 1816

Caradrina (*Caradrina*) *morpheus* (Hufnagel, 1766)* – FP: VI–VIII; localities: Z6, P12, L24, L27, A42. (Appendix 1, Map 220)

Biogeographical feature. West Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, NW China (Xinjiang), N America (introduced) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z6, vic. of Novokuz'minka vill., 2♂, 1♀, 21.07.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 3♂, 2♀, 25.06.2007, 4♂, 6♀, 02.08.2009, 7♂, 9♀, 17.06.2012, 5♂, 5♀, 02.07.2012, 4♂, 5♀, 03.07.2013, 1♀, 13.07.2013, 1♂, 2♀, 26.08.2013, 3♀, 27.07.2016, S.V. Titov; L24, Tuz lake, 10♂, 6♀, 21.07.2015, 3♂, 7♀, 06.08.2015, 2♂, 16.06.2016, S.V. Titov; L27, Borly lake, 4♂, 6♀, 25.06.2013, 2♂, 7♀, 29.07.2013, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 9♂, 4♀, 30.06.2007, 11♂, 7♀, 07.07.2008, 6♂, 07.08.2017, S.V. Titov.

Subgenus *Platyperigea* Smith, 1894

Caradrina (*Platyperigea*) *terrea* Freyer, 1840* – FP: VIII–IX; localities: P12, P13, S23, L24, B31. (Appendix 1, Map 221)

Biogeographical feature. West Palaearctic, subboreal. N Africa (Morocco) (ssp. *altera*), Europe, N and E Kazakhstan, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (ssp. *terrea*), Transcaucasia, Asia Minor, Near East (ssp. *matrona*), Middle Asia (including SE Kazakhstan) (ssp. *albersi*), Middle Asia (S Tajikistan), China (S Tibet), Afghanistan, N Himalaya (Pakistan) (*ssp. froitzheimi*), Middle Asia (Pamir), N Pakistan (ssp. *subplumbea*) (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 3♂, 2♀, 02.08.2009, 2♂, 6♀, 17.09.2009, 4♂, 7♀, 07.09.2011, 1♀, 10.09.2012, 8♂, 1♀, 26.08.2013, 1♀, 04.09.2013, 2♂, 2♀, 15.09.2013, 12♂, 5♀, 03.08.2014, 1♂, 3♀, 06.09.2014, 13.08.2015, 9♂, 4♀, 08.09.2015, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 1♀, 18.08.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 19♂, 9♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 8♀, 20.09.2011, 7♂, 6♀, 06.08.2015, S.V. Titov; B31, vic. of Shonai vill., 5♂, 9♀, 09.08.2013, 4♂, 2♀, 14.08.2013, 1♂, 1♀, 15.08.2013, S.V. Titov 3♂, 4♀, 17.08.2013, S.M. Reznichenko 6♂, 7♀, 18.08.2013, S.V. Titov.

Caradrina (*Platyperigea*) *montana* Bremer, 1861* – FP: VIII; localities: L26, B31, E46. (Appendix 1, Map 222)

Biogeographical feature. Holarctic, temperate. N Europe, NW Kazakhstan, N and C S Russia (S European part, Ural, S Siberia), S Ural (ssp. *menetriesii*), C and S Europe, Caucasus and Transcaucasia, Asia Minor, Near East (Iran), W and SW Kazakhstan, Turkmenistan (ssp. *rougemonti*), Middle Asia (Kirgyzstan, Tajikistan), Himalaya (ssp. *weigerti*), SE and E Kazakhstan, W, S and E Siberia, Mongolia, Russian Far East, China, Korea (ssp. *montana*), N America (Canada, USA) (ssp. *extima*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: L26, vic. of Sharbakty vill., 1♂, 11.08.2013, S.V. Titov; B31, vic. of Shonai vill., 1♀, 09.08.2013, 2♂, 1♀, 18.08.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 12♂, 8♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Caradrina (*Platyperigea*) *albina* (Eversmann, 1848) – FP: V–X; localities: Z1, Z2, Z6, I6, AK2, P11, P12, P13, P19, S17, S23, L24, L27, B32, B33, E46, E47, E48, E51, E54. Reference: Pospelov (1962, as *albina f. congesta*). (Appendix 1, Map 223)

Biogeographical feature. European-Central Asian, subboreal. E and S Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Afghanistan, Pakistan, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, NW, N and C China (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 5♂, 8♀, 10.10.2010, M.Yu. Volkov, 6♂, 3♀, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 9♂, 15♀, 19.05.2011, V.S. Bychkov, 5♂, 8♀, 14.08.2012, V.S. Bychkov, 7♂, 2♀, 09.06.2013, V.S. Bychkov; Z6, vic. of Novokuz'minka

vill., 8♂, 6♀, 21.07.2013, V.S. Bychkov; I6, vic. of Koskol (old name State farm «Koskul'skiy»), 31 ex., 09.06–09.07.1958, on the wheat fields, S.M. Pospelov; AK2 vic. of Razumovka vill., (1973–1976), Kh.A.Aibasov & A.B.Zhdanko; P11, Pavlodar city, 05.08. – 23.08.1960, S.M. Pospelov, 21♂, 14♀, 11.09.2003, 2♂, 3♀, 27.05.2008, S.V. Titov, 5♂, 30.05.2008, N.E. Tarasovskaya, 2♂, 09.07.2008, S.V. Titov, 5♂, 2♀, 28.07.2008, 1♂, 30.07.2008, N.E. Tarasovskaya, 1♂, 28.05.2010, 3♂, 19.07.2010, S.V. Titov, 10♂, 18♀, 12.08.2011, N.E. Tarasovskaya, 14♂, 9♀, 18.08.2011, N.E. Tarasovskaya, 6♂, 4♀, 03.10.2011, 12♂, 8♀, 02.08.2012, 23♂, 6♀, 06.08.2012, 38♂, 28♀, 31.08.2012, 2♂, 16.05.2013, N.E. Tarasovskaya, 5♂, 7♀, 23.08.2014, 1♀, 13.10.2015, 25♂, 16♀, 21.08.2017, S.V. Titov 19♂, 10♀, 18.09.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 12♂, 11♀, 02.08.2009, 27♂, 32♀, 17.09.2009, 4♂, 2♀, 07.09.2011, 5♂, 2♀, 02.07.2012, 14♂, 8♀, 10.09.2012, 6♂, 1♀, 03.07.2013, 18♂, 7♀, 05.08.2013, 24♂, 9♀, 26.08.2013, 16♂, 5♀, 04.09.2013, 21♂, 12♀, 06.09.2014, 31♂, 21♀, 11.09.2014, 4♂, 7♀, 13.08.2015, 6♂, 2♀, 08.09.2015, 17♂, 24♀, 19.09.2017, S.V. Titov; P19, vic. of Zhertumsyk vill., 8♂, 17♀, 25.08.2017, S.V. Titov; S17 vic. of Sofiyevka vill., 09.06 – 09.07.1958, S.M. Pospelov; S23, vic. of Sharbakty vill., 3♂, 2♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 2♂, 20.09.2011, 8♂, 2♀, 06.08.2015, S.V. Titov; L27, Borly lake, 7♂, 2♀, 25.06.2013, S.V. Titov; B32, rock area Kempirtas, 13.08.2008, 4♂, 5♀, 28.06.2013, 7♂, 6♀, 27.05.2015, S.V. Titov; B34, natural landmark Kirigichi, 4♂, 1♀, 30.06.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 10♂, 7♀, 08.08.2008, 15♂, 11♀, 12.08.2012, 1♂, 26.05.2015, S.V. Titov; E47, vic. of Karazhar vill., 18♂, 6♀, 11.08.2008, 19♂, 11♀, 30.06.2009, 42♂, 28♀, 08.09.2011, 35♂, 19♀, 12.09.2015, 8♂, 3♀, 21.09.2015, S.V. Titov; E48, Shiderty reservoir, water pump №7, 9♂, 7♀, 12.06.2012, 3♂, 28.06.2012, 24♂, 5♀, 06.08.2017, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 3♀, 03.10.2014, M. Černila & S.V. Titov, 10♂, 5♀, 06.08.2017, S.V. Titov; E54 Ulken-Koyandy Mt., 16♂, 8♀, 17.08.2016, S.V. Titov.

Caradrina (*Platyperigea*) *petraea* Tengström, 1869* – FP: VI; localities: P11, P12. (Appendix 1, Map 224)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Eurasiatic Palaearctic, subboreal. C. Europe, N and E Kazakhstan, Russia (S European part, Ural, W and S Siberia), N Mongolia, Russian Far East (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P11, Pavlodar city, 7♂, 3♀, 27.06.2006, S.V. Titov, 5♂, 2♀, 12.06.2008, N.E. Tarasovskaya, S.V. Titov; P12, vic. of Pavlodarskoye vill., 6♂, 2♀, 25.06.2007, 1♀, 17.06.2012, S.V. Titov.

Subgenus *Eremodrina* (Boursin, 1937)

Caradrina (*Eremodrina*) *monssacralis* (Varga & L. Ronkay, 1991)* – FP: VIII; locality: E46. Reference: Volynkin & Titov (2016). (Appendix 1, Map 225)

Biogeographical feature. Central Asian, subboreal. Middle Asia, NE, E Kazakhstan, SW Mongolia (Volynkin & Titov, 2016 a).

Bionomics. Xeromontane species.

Material: E46, Shiderty river, Zhartas natural landmark, 1♂, 08.08.2012, S.V. Titov.

Subgenus *Paradrina* Boursin, 1937

Caradrina (*Paradrina*) *wullschlegeli* Püngeler, 1903* – FP: VI; localities: P12, B32, B33, B34. (Appendix 1, Map 226)

Biogeographical feature. West Palaearctic, subboreal. NW Spain (ssp. *hispanica*), C Spain (ssp. *callei*), C, S and E Europe, N Caucasus, Transcaucasia (ssp. *wullschlegeli*), Kazakhstan, S Ural, W Siberia, Altai, Middle Asia (Kyrgyzstan) (ssp. *scythica*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 5♂, 12♀, 25.06.2007, 6♂, 7♀, 17.06.2012, S.V. Titov; B32, rock area Kempirtas, 1♀, 13.06.2013, 10♂, 3♀, 28.06.2013, 5♂, 7♀, 13.06.2014, 2♂, 1♀, 27.05.2015, S.V. Titov; B33, Toraygyr lake, 4♂, 11.06.2013, S.V. Titov; B34, natural landmark Kirigichi, 5♂, 3♀, 30.06.2013, S.V. Titov.

Caradrina (*Paradrina*) *clavipalpis* (Scopoli, 1763)* – FP: IV–V, VII; localities: P11, B30, B31. (Appendix 1, Map 227)

Biogeographical feature. Transpalaearctic, subboreal. Cape Verde archipelago (ssp. *fogoensis*), Canarian islands, Tenerife I. (ssp. *teidevolans*), Madeira I. (ssp. *pinkeri*), Canarian islands (Gran Canaria I), N Africa, Europe, Asia Minor, Near East, Caucasus and Transcaucasia,

Kazakhstan, Middle Asia, Afghanistan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Transbaikalia, Russian Far East (Amur reg) (ssp. *clavipalpis*), Himalaya (ssp. *harappa*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 2♀, 27.05.2008, S.V. Titov, 1♂, 30.05.2008, N.E. Tarasovskaya, 5♂, 2♀, 09.07.2008, 1♀, 28.05.2010, 2♂, 3♀, 19.07.2010, 2♂, 21.05.2011, S.V. Titov, 111♂, 8♀, 05.07.2011, 10♂, 7♀, 24.07.2011, N.E. Tarasovskaya, 1♀, 15.05.2012, 6♂, 4♀, 02.07.2012, S.V. Titov, 2♂, 03.07.2016, at light, V.I. Blokhin; B30, Kurkeli natural landmark, 2♂, 02.05.2012, 7♂, 6♀, 12.05.2012, 1♂, 17.04.2016, S.V. Titov; B31, vic. of Shonai vill., 2♂, 4♀, 05.05.2014, S.V. Titov.

Genus *Hoplodrina* Boursin, 1937

Hoplodrina octogenaria (Goeze, 1781)* – FP: VII–VIII; localities: P11, S23. (Appendix 1, Map 228)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *octogenaria*), Russian Far East, China, Korea (ssp. *amurensis*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 2♂, 3♀, 28.07.2008, 5♂, 2♀, 30.07.2008, 4♂, 7♀, 05.07.2011, 2♂, 24.07.2011, 6♂, 9♀, 12.08.2011, 12♂, 4♀, 18.08.2011, 6♂, 02.07.2012, 6♂, 2♀, 31.07.2012, 1♀, 02.08.2012, 6♂, 2♀, 06.08.2012, 3♀, 31.08.2012, N.E. Tarasovskaya, 9♂, 7♀, 23.08.2014, 3♂, 2♀, 02.08. 2017, 6♂, 9♀, 16.08.2017, 1♂, 1♀, 21.08.2017, S.V. Titov; S23, vic. of Sharbakty vill., 14♂, 7♀, 30.07.2007, S.V. Titov, 5♂, 10♀, 11.08.2014, S.M. Reznichenko.

Hoplodrina blanda ([Denis & Schiffermüller], 1775)* – FP: VII–VIII; localities: S23, L28, B31, B35. (Appendix 1, Map 229)

Biogeographical feature. West Palaearctic, subboreal. Near East (Iran) (ssp. robusta), Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, Middle Asia, S Russia (S

European part, Ural, S Siberia), S Ural, W and S Siberia, N China (ssp. *blanda*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: S23, vic. of Sharbakty vill., 2♂, 6♀, 30.07.2007, S.V. Titov 1♂, 11.08.2014, S.M. Reznichenko; L28, vic. of Akku vill., 15♂, 7♀, 24.08.2015, S.V. Titov, 3♂, 8♀, 20.07.2017, A.S. Karim; B31, vic. of Shonai vill., 2♂, 7♀, 04.08.2013, S.M. Reznichenko, 6♂, 2♀, 09.08.2013, 4♂, 7♀, 14.08.2013, 9♂, 2♀, 15.08.2013, S.V. Titov, 6♂, 7♀, 17.08.2013, S.M. Reznichenko 2♂, 2♀, 18.08.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 1♀, 25.07.2014, 3♀, 04.07.2016, 5♂, 2♀, 16.07.2016, 8♂, 9♀, 04.08.2017, S.V. Titov.

Genus *Chilodes* Herrich-Schäffer, 1845

Chilodes maritima (Tauscher, 1806)* – FP: VI–VII; localities: K10, P11, P12, E48. (Appendix 1, Map 230)

Biogeographical feature. European-Central Asian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W, NE Kazakhstan, W Siberia, Transbaikalia, Kazakhstan (Gorbunov, 2011; Kononenko, 2016; Titov et al., 2017 b).

Bionomics. A hygrophilous species.

Material: K10, vic. of Terenkol' vill., 2♀, 10.07.2013, S.V. Titov; P11, Pavlodar city, 1♂, 1♀, 30.07.2008, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 1♀, 17.06.2012, S.V. Titov; E48, Shiderty reservoir, water pump №7, 3♂, 2♀, 28.06.2012, S.V. Titov.

Chilodes distracta (Eversmann, 1848)* – FP: V; localities: Z2. (Appendix 1, Map 231)

Biogeographical feature. East Palaearctic, subboreal. Middle Asia, Ural, W, S and E Siberia, Mongolia, Russian Far East, N and NW China (Volynkin, 2012).

Bionomics. Hygrophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 1♀, 19.05.2011, V.S. Bychkov.

Genus *Charanyca* Billberg, 1820

Subgenus *Rusina* Stephens, 1829

Charanyca (*Rusina*) *ferruginea* (Esper, [1787])* – FP: VI; locality: B33, B34. (Appendix 1, Map 232)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Transbaikalia, Mongolia, Russian Far East (Volynkin, 2012).

Bionomics. Mesophilous species.

Material; B33, Toraygyr lake, 2♂, 3♀, 16.06.2017, S.V. Titov; B34, natural landmark Kirigichi, 6♂, 3♀, 30.06.2013, S.V. Titov.

Subtribe Athetiina Fibiger & Lafontaine, 2005

Genus *Athetis* Hübner, [1821] 1816

Subgenus *Athetis* Hübner, [1821] 1816

Athetis (*Athetis*) *furvula* (Hübner, [1808])* – FP: VII–VIII; localities: P12, S23, L24, L26, L28, B35, B36, A45. (Appendix 1, Map 233)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, N and E China, Korea, Japan (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 3♂, 10♀, 02.08.2009, 12♂, 3♀, 02.07.2012, 1♂, 03.07.2013, 5♂, 1♀, 13.07.2013, 1♂, 1♀, 05.08.2013, 11♂, 5♀, 26.08.2013, 1♀, 18.07.2015, 2♂, 1♀, 13.08.2015, S.V. Titov; S23, vic. of Sharbakty vill., 5♂, 4♀, 30.07.2007, S.V. Titov; L24, Tuz lake, 2♂, 6♀, 21.07.2015, S.V. Titov; L26, vic. of Sharbakty vill., 9♂, 7♀, 11.08.2013, S.V. Titov; L28, vic. of Akku vill., 2♂, 4♀, 24.08.2015, S.V. Titov, 4♂, 1♀, 20.07.2017, A.S. Karim, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 9♂, 15♀, 25.07.2014, S.V. Titov; B36, Dulga tas rock, 1♀, 25.07.2014, S.V. Titov; A45, old road bridge, the Irtysh river, 2♂, 2♀, 26.07.2009, S.V. Titov.

Subgenus *Hydrillula* Tams, 1938

Athetis (*Hydrillula*) *pallustris* (Hübner, [1808])* – FP: V–VI; localities: Z2, B32, B33. (Appendix 1, Map 234)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East (Volynkin, 2012).

Bionomics. Hygro-mesophilous species.

Material: Z2, vic. of Krasnovka vill., 6♂, 1♀, 19.05.2011, V.S. Bychkov, 4♂, 8♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 2♂, 1♀, 05.06.2012, S.V. Titov, V.S. Bychkov; B32, rock area Kempirtas, 9♂, 4♀, 17.05.2007, 2♂, 13.06.2013, 1♂, 13.06.2014, S.V. Titov; B33, Toraygyr lake, 8♂, 11.06.2013, 3♀, 17.05.2017, 7♂, 2♀, 16.06.2017, S.V. Titov.

Subgenus *Proxenus* Herrich-Schäffer, 1845

Athetis (*Proxenus*) *lepigone* (Möschler, 1860)* – FP: V; locality: Z2. (Appendix 1, Map 235)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, S S Russia (S European part, Ural, S Siberia), S Ural, NE Kazakhstan, W and S Siberia (Altai, Transbaikalia), Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Xero-mesophilous species.

Material: Z2, vic. of Krasnovka vill., 6♂, 4♀, 19.05.2011, V.S. Bychkov.

Athetis (*Proxenus*) *correpta* (Püngeler, 1906)* – FP: V–VI; localities: Z2, P12, P22. (Appendix 1, Map 236)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Altai, Transbaikalia), Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z2, vic. of Krasnovka vill., 3♂, 1♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov; P12, vic. of Pavlodarskoye vill., 5♂, 1♀, 25.06.2007, S.V. Titov; P22, vic. of Baydala vill., 1♂, 4♀, 13.06.2016, S.V. Titov.

Tribe Dypterygiini Forbes, 1954

Genus *Dypterygia* Stephens, 1829

Dypterygia scabriuscula (Linnaeus, 1758)* – FP: V–VII; localities: Z6, P11, P12, P22, P23, S20, L26, L28, B30, B31, B34, B35, M39, A43, A46, E46, U56. (Appendix 1, Map 237)

Biogeographical feature. Euro-Siberian, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East (Iran), S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, NE Kazakhstan (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Xero-mesophilous species.

Material: Z6, vic. of Novokuz'minka vill., 1♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 3♂, 2♀, 27.06.2006, S.V. Titov, 1♂, 12.06.2008, N.E. Tarasovskaya, 1♂, 2♀, 09.07.2008, 2♂, 2♀, 19.07.2010, S.V. Titov, 1♀, 05.07.2011, 1♂, 24.07.2011, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 1♂, 1♀, 25.06.2007, 2♂, 2♀, 17.06.2012, 3♂, 02.07.2012, 1♂, 03.07.2013, 2♀, 13.07.2013, 4♂, 2♀, 18.07.2015, S.V. Titov; P22, vic. of Baydala vill., 7♂, 2♀, 13.06.2016, S.V. Titov; P23, vic. of Zhetekshi vill., 3♂, 24.07.2016, 2♂, 1♀, 26.07.2016, 1♂, 30.07.2016, S.V. Titov; S20, vic. of Shalday vill., 4♀, 16.06.2007, 1♂, 1♀, 18.07.2007, 1♀, 22.07.2007, S.V. Titov; L26, vic. of Sharbakty vill., 8♂, 1♀, 12.06.2014, S.V. Titov; L28, vic. of Akku vill., 1♂, 1♀, 18.06.2015, S.V. Titov; B30, Kurkeli natural landmark, 5♂, 1♀, 14.06.2013, 1♂, 1♀, 01.07.2014, S.V. Titov; B31, vic. of Shonai vill., 1♂, 29.06.2013, S.M. Reznichenko, 2♂, 05.05.2014, S.V. Titov; B34, natural landmark Kirigichi, 3♀, 30.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 6♀, 18.05.2006, 2♂, 1♀, 25.07.2014, 6♂, 3♀, 28.05.2015, 4♂, 5♀, 04.07.2016, S.V. Titov; M39, vic. of Koktobe vill., 6♂, 4♀, 26.07.2016, S.V. Titov; A43, vic. of Rebrovka vill., 8♂, 6♀, 12.07.2008, S.V. Titov; A46, vic. of Kurkol' vill., 4♂, 2♀, 27.06.2016, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 15.07.2003, 1♂, 10.05.2007, 4♂, 1♀, 17.05.2015, 1♂, 26.05.2015, S.V. Titov; U56 1.5 km. east of the Steklyannoe lake, 5♂, 3♀, 21.07.2016, S.V. Titov.

Genus *Trachea* Ochsenheimer, 1816

Trachea atriplicis (Linnaeus, 1758)* – FP: VI; locality: P11. (Appendix 1, Map 238)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 1♀, 09.06.2012, L.N. Ivan'ko.

Tribe Actinotiini Beck, 1996

Genus *Actinotia* Hübner, [1823] 1816

Actinotia polyodon (Clerck, 1759)* – FP: V–VIII; localities: P12, B30, B31. (Appendix 1, Map 239)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 25.06.2007, 1♀, 02.08.2009, 3♂, 2♀, 17.06.2012, 2♂, 02.07.2012, 3♂, 05.08.2013, 2♀, 03.08.2014, 4♂, 18.07.2015, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 6♀, 02.05.2012, 2♂, 2♀, 12.05.2012, 3♂, 7♀, 14.06.2013, 6♂, 2♀, 01.07.2014, 4♂, 1♀, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 6♂, 7♀, 09.08.2013, 5♂, 4♀, 14.08.2013, 2♂, 2♀, 15.08.2013, S.V. Titov 1♂, 17.08.2013, S.M. Reznichenko 1♀, 05.05.2014, S.V. Titov.

Tribe Apameini Guenée, 1852

Subtribe Oxytripiina Gozmany, 1970

Genus *Oxytrypia* Staudinger, 1871

Oxytripia orbiculosa (Esper, 1799)* – FP: VIII–IX–X; localities: B31, E47, E51, E54. (Appendix 1, Map 240)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Near East, Middle Asia, Kazakhstan (ssp. noctivolans), E and S Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, Altai, Transbaikalia, N Mongolia, Russian Far East, China, Korea, Japan (ssp. *orbiculosa*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B31, vic. of Shonai vill., 45♂, 15♀, 24.09.2013, S.V. Titov; E47, vic. of Karazhar vill., 08.09.2011, 55♂, 27♀, 12.09.2015, 9♂, 6♀, 21.09.2015, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 1♂, 2♀, 03.10.2014, M. Černila & S.V. Titov; E54 Ulken-Koyandy Mt., 1♂, 17.08.2016, S.V. Titov.

Subtribe Apameina Guenée, 1852

Genus *Sidemia* Staudinger, 1892

Sidemia spilogramma (Rambur, 1871)* – FP: VIII–IX–X; localities: P12, S23, B31, B39, E46, E51, E54. (Appendix 1, Map 241)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. E Europe, S Russia (S European part, Ural, S Siberia), S Ural, NE Kazakhstan, W and S Siberia, Transbaikalia, Mongolia, Russian Far East, China, Korea, Japan, (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 17.09.2009, 3♂, 2♀, 02.10.2011, 16♂, 12♀, 04.10.2011, 7♂, 3♀, 10.09.2012, 8♂, 2♀, 15.09.2013, 1♂, 3♀, 11.09.2014, 2♂, 2♀, 19.09.2017, S.V. Titov; S23, vic. of Sharbakty vill., 6♂, 7♀, 11.08.2014, S.M. Reznichenko; B31, vic. of Shonai vill., 3♂, 15.09.2012, S.M. Reznichenko, 2♂, 7♀, 14.08.2013, 2♂, 2♀, 15.08.2013, 1♂, 18.08.2013, S.V. Titov 3♂, 1♀, 27.08.2013, 1♀, 10.09.2013, S.M. Reznichenko, 5♂, 6♀, 24.09.2013, S.V. Titov; B39, Moldybulak natural landmark, 9♂, 6♀, 19.08.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 12.08.2012, S.V. Titov, A.V. Volynkin; E51, cretaceous slope of Ulken Ak-Zhar, 4♂, 2♀, 03.10.2014, M. Černila & S.V. Titov, 3♂, 1♀, 06.08.2017, S.V. Titov; E54 Ulken-Koyandy Mt., 10♂, 6♀, 17.08.2016, S.V. Titov.

Genus *Calamia* Hübner, [1821] 1816

Calamia tridens (Hufnagel, 1766)* – FP: VII–IX; localities: Z1, Z2, Z4, Z8, K10, P12, P13, P23, S18, S20, S22, S23, L24, L27, B29, B30, B31, B33, B35, B36, B37, A42, A46, A48, E46, E50, E54, M39, M40, U56. (Appendix 1, Map 242)

Biogeographical feature. Euro-Siberian, temperate. Europe, Caucasus, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, S Siberia (Altai, Khakassia) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 05.07.2011, M.Yu. Volkov, 2♂, 08.07.2013, V.S. Bychkov, 1♀, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 1♂, 2♀, 09.07.2011, 1♀, 14.08.2012, V.S. Bychkov; Z4, vic. of Moiseevka vill., 3♂, 2♀, 25.07.2013, S.V. Titov; Z8, vic.

of Pyateryzhsk vill., 4♂, 1♀, 25.07.2009, S. A. Lorents; K10, vic. of Terenkol' vill., 1♀, 10.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 1♀, 07.09.2011, 11♂, 3♀, 02.07.2012, 2♂, 7♀, 10.09.2012, 10♂, 6♀, 03.07.2013, 3♂, 1♀, 13.07.2013, 1♂, 1♀, 05.08.2013, 1♂, 26.08.2013, 7♂, 1♀, 04.09.2013, 1♂, 1♀, 15.09.2013, 2♂, 1♀, 03.08.2014, 2♀, 11.09.2014, 3♂, 1♀, 18.07.2015, 2♂, 13.08.2015, 6♂, 1♀, 08.09.2015, 2♂, 1♀, 27.07.2016, 7♂, 1♀, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 2♀, 18.08.2010, L.N. Ivan'ko; P23, vic. of Zhetekshi vill., 7♂, 04.08.2015, 1♀, 24.07.2016, 3♀, 26.07.2016, S.V. Titov; S18, Maraldy lake, 2♂, 1♀, 23.07.2012, 1♀, 18.09.2012, S.V. Titov; S20, vic. of Shalday vill., 5♂, 2♀, 18.07.2007, 6♂, 2♀, 12.08.2012, S.V. Titov; S23, vic. of Sharbakty vill., 4♂, 5♀, 30.07.2007, S.V. Titov, S.M. Reznichenko; L24, Tuz lake, 6♂, 2♀, 20.09.2011, S.V. Titov; L26, vic. of Sharbakty vill., 7♂, 4♀, 11.08.2013, S.V. Titov; L27, Borly lake, 4♂, 2♀, 29.07.2013, S.V. Titov; L28, vic. of Akku vill., 6♂, 2♀, 24.08.2015, S.V. Titov, 1♂, 1♀, 20.07.2017, A.S. Karim; B29, Birzhankol' lake, 3♂, 1♀, 21.07.2008, S.V. Titov; B30, Kurkeli natural landmark, 2♂, 2♀, 08.07.2016, 4♂, 12.07.2016, 6♂, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 4♂, 1♀, 15.09.2012, 1♂, 04.08.2013, S.M. Reznichenko, 5♂, 2♀, 09.08.2013, 4♂, 1♀, 15.08.2013, S.V. Titov; B32, rock area Kempirtas, 1♀, 30.07.2013 2♂, S.V. Titov; B33, Toraygyr lake, 1♂, 09.07.2016, 6♂, 10♀, 15.07.2016, 4♂, 1♀, 09.08.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 3♂, 2♀, 25.07.2014, 3♂, 1♀, 04.08.2017, S.V. Titov; B36, Dulga tas rock, 1♂, 26.07.2014, S.V. Titov; B37, Zhasybay lake, 1♂, 18.08.1999, S.V. Titov, 3♂, 2♀, 04.07.2013, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 1♂, 07.07.2008, 6♂, 7♀, 07.08.2017, S.V. Titov; A46, vic. of Kurkol' vill., 1♂, 2♀, 25.07.2016, 3♀, 22.08.2017, S.V. Titov; A48, Western shore of the lake Kudaykol, 1♀, 16.08.1998, 2♂, 1♀, 27.07.2007, 1♀, 29.07.2016, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 08.08.2008, 2♂, 1♀, 18.07.2009, S.V. Titov, 2♂, 4♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E50, Olenty river valley, 1♂, 2♀, 22.08.2013, S.V. Titov, 3♂, 1♀, 22.07.2014, S.V. Titov; E54 Ulken-Koyandy Mt., 5♂, 6♀, 17.08.2016, S.V. Titov; M39, vic. of Koktobe vill., 5♂, 3♀, 04.08.2015, 6♂, 1♀, 24.07.2016, 4♀, 26.07.2016, 2♂, 6♀, 30.07.2016, S.V. Titov; M40, Kalmakyrgan Mts., 2♀, 27.07.2014, S.V. Titov; U56, 1.5 km. east of the Steklyannoye lake, 5♂, 1♀, 29.06.2016, S.V. Titov.

Genus *Staurophora* Reichenbach, Leipzig, 1817

Staurophora celsia (Linnaeus, 1758)* – FP: VIII–IX; localities: L28, B31, B32. (Appendix 1, Map 243)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, N Caucasus, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: L28, vic. of Akku vill., 1♂, 24.08.2015, S.V. Titov; B31, vic. of Shonai vill., 15♂, 10♀, 09.08.2013, 1♂, 1♀, 14.08.2013, 1♀, 15.08.2013, 4♂, 1♀, 18.08.2013, S.V. Titov, 19♂, 13♀, 10.09.2013, S.M. Reznichenko, 29♂, 15♀, 24.09.2013, S.V. Titov; B32, rock area Kempirtas, 13.08.2008, 3♂, 2♀, S.V. Titov.

Genus *Helotropha* Lederer, 1857

Helotropha leucostigma (Hübner, [1808])* – FP: VII–VIII; localities: P14, E46. (Appendix 1, Map 244)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Material: P14, 1♂, 25.07.1962, K. A. Slivkina (Coll. KSRIPPQ); E46, Shiderty river, Zhartas natural landmark, 4♂, 6♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Genus *Celaena* Stephens, 1829

Celaena haworthii (Curtis, 1829)* – FP: IX; localities: P12, E47. (Appendix 1, Map 245)

Biogeographical feature. Eurasiatic Palaearctic, temperate. N, C and NE Europe, Transcaucasia, N S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East (Volynkin, 2012).

Material: P12, vic. of Pavlodarskoye vill., 1♂, 04.09.2013, S.V. Titov; E47, vic. of Karazhar vill., 1♀, 21.09.2015, S.V. Titov.

Genus *Hydraecia* Guenée, 1841

Hydraecia micacea (Esper, 1789)* – FP: VII–IX; locality: P12. (Appendix 1, Map 246)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, N Mongolia, Russian Far East, N America (introduced) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 5♀, 17.09.2011, 2♂, 3♀, 05.08.2013, 1♀, 27.07.2016, 1♀, 02.08.2017, S.V. Titov.

Hydraecia ultima Holst, 1965* – FP: VIII; locality: P11. (Appendix 1, Map 247)

Biogeographical feature. Eurasiatic Palaearctic, temperate. N and C Europe, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Russian Far East, Kazakhstan, Mongolia, N China, Japan (Kononenko, 2016).

Bionomics. Hygrophilous species.

Material: P11, Pavlodar city, 1♀, 23.08.2014, S.V. Titov.

Hydraecia mongoliensis Urbahn, 1967* – FP: VIII – IX; localities: P12, B31, E46, E47, E54. (Appendix 1, Map 248)

Biogeographical feature. Manchurian - Middle Asian - Siberian, subboreal. E Kazakhstan, S Ural, W and S Siberia, Mongolia, Russian Far East, Japan (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 4♀, 02.08.2009, 3♂, 17.09.2009, 2♂, 3♀, 07.09.2011, 5♂, 1♀, 26.08.2013, 2♂, 6♀, 08.09.2015, 2♂, 19.09.2017, S.V. Titov; B31, vic. of Shonai vill., 10♂, 4♀, 15.09.2012, S.M. Reznichenko, 2♂, 3♀, 14.08.2013, 1♂, 1♀, 18.08.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 08.08.2008, S.V. Titov, 9♂, 5♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E47, vic. of Karazhar vill., 16♂, 3♀, 21.09.2015, S.V. Titov; E54 Ulken-Koyandy Mt., 10♂, 5♀, 17.08.2016, S.V. Titov.

Hydraecia osseola (Staudinger, 1882)* – FP: IX; localities: P12, E47. (Appendix 1, Map 249)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. S and SE Europe, N Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, W Siberia, China (Tibet) (Kononenko, 2016).

Bionomics. Hygrophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 18.09.2015, S.V. Titov; E47, vic. of Karazhar vill., 15♂, 2♀, 19.09.2015, S.V. Titov.

Genus *Amphipoea* Billberg, 1820

Amphipoea fucosa (Freyer, 1830)* – FP: VII–VIII; localities: Z2, K10, P12, L24, B30, B31, B35, E46. (Appendix 1, Map 250)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♂, 09.07.2011, V.S. Bychkov, 2♂, 4♀, 14.08.2012, V.S. Bychkov; K10, vic. of Terenkol' vill., 3♂, 4♀, 10.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 02.08.2009, 6♂, 5♀, 13.08.2015, S.V. Titov; L24, Tuz lake, 7♂, 2♀, 06.08.2015, S.V. Titov; B30, Kurkeli natural landmark, 2♂, 1♀, 08.07.2016, 10♂, 1♀, 12.07.2016, 1♂,16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 12♂, 16♀, 14.08.2013, S.V. Titov, 9♂, 2♀, 15.08.2013, S.V. Titov, 5♂, 2♀, 27.08.2013, S.M. Reznichenko, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♀, 25.07.2014, 1♂, 4♀, 04.08.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 1♀, 15.07.2003, 6♂, 4♀, 20.07.2007, 16♂, 8♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Amphipoea ochreola (Staudinger, 1882)* – FP: IX–X; localities: P12, B31, E51. (Appendix 1, Map 251)

Biogeographical feature. Middle Asian, subboreal. Russia (W Siberia), Middle Asia, Kazakhstan (Kononenko, 2016; Titov et al., 2017 b).

Bionomics. Hygrophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 17.09.2009, 3♂, 2♀, 07.09.2011, 6♂, 2♀, 02.10.2011, 4♂, 1♀, 04.10.2011, 1♀, 04.09.2013, 2♂, 15.09.2013, 1♂, 06.09.2014, 1♂, 2♀,

11.09.2014, S.V. Titov; B31, vic. of Shonai vill., 7♂, 2♀, 15.09.2012, S.M. Reznichenko, 3♂, 2♀, 10.09.2013, S.M. Reznichenko, 5♂, 2♀, 24.09.2013, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 2♂, 3♀, 03.10.2014, M. Černila & S.V. Titov.

Amphipoea asiatica (Burrows, 1911)* – FP: VII–VIII; localities: Z1, S20, B31. (Appendix 1, Map 252)

Biogeographical feature. East Palaearctic, subboreal. Kazakhstan, Middle Asia, S Ural, W and S Siberia (Altai), Mongolia, Russian Far East, NE China, Korea, Japan (ssp. *asiatica*), S China (Yunnan) (ssp *magna*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 19.08.2017, S.V. Titov; S20, vic. of Shalday vill., 2♂, 1♀, 12.08.2012, S.V. Titov; B31, vic. of Shonai vill., 5♂, 2♀, 09.08.2013, 1♂, 1♀, 18.08.2013, S.V. Titov.

Genus *Fabula* Fibiger, Zilli & Ronkay, 2005

Fabula zollikoferi (Freyer, 1836)* – FP: VI, VIII–X; localities: K10, P12, P22, S23, E46, E47, E51, E54. (Appendix 1, Map 253)

Biogeographical feature. European-Central Asian, subboreal. Europe, Caucasus, Kazakhstan, Middle Asia, NW China, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: K10, vic. of Terenkol' vill., 6♂, 2♀, 24.09.2011, L.N. Ivan'ko; P12, vic. of Pavlodarskoye vill., 5♂, 1♀, 07.09.2011, 3♂, 2♀, 02.10.2011, 1♂, 2♀, 10.09.2012, 2♂, 2♀, 26.08.2013, 3♂, 1♀, 04.09.2013, 2♂, 15.09.2013, 4♂, 1♀, 03.08.2014, 1♀, 06.09.2014, 1♂, 11.09.2014, 1♀, 08.09.2015, 3♂, 1♀, 19.09.2017, S.V. Titov; P22, vic. of Baydala vill., 1♀, 13.06.2016, S.V. Titov. S23, vic. of Sharbakty vill., 1♂, 11.08.2014, S.M. Reznichenko; E46, Shiderty river, Zhartas natural landmark, 2♂, 4♀, 08.08.2008, 3♂, 1♀, 12.08.2012, S.V. Titov, A.V. Volynkin, at light; E47, vic. of Karazhar vill., 1♂, 1♀, 11.08.2008, 2♀, 08.09.2011, 4♂, 2♀, 12.09.2015, 4♂, 5♀, 21.09.2015, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 2♂, 1♀, 03.10.2014, M. Černila & S.V. Titov, 2♂, 1♀, 06.08.2017, S.V. Titov; E54 Ulken-Koyandy Mt., 1♂, 17.08.2016, S.V. Titov.

Genus *Rhizedra* Warren, 1911

Rhizedra lutosa (Hübner, [1803])* – FP: IX–X; localities: P12, E47, E51, E54. (Appendix 1, Map 254)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai, Transbaikalia, Mongolia, Russian Far East, Korea, Japan; N America (introduced) (Volynkin, 2012).

Bionomics. Hygrophilous species.

Material: P12, vic. of Pavlodarskoye vill., 11♂, 8♀, 17.09.2009, 6♂, 2♀, 07.09.2011, 1♀, 02.10.2011, 3♂, 2♀, 04.10.2011, 5♂, 2♀, 11.09.2014, 6♂, 1♀, 19.09.2017, S.V. Titov; E47, vic. of Karazhar vill., 7♂, 8♀, 08.09.2011, 3♂, 2♀, 12.09.2015, 26♂, 19♀, 21.09.2015, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 2♂, 5♀, 03.10.2014, M. Černila & S.V. Titov; E54 Ulken-Koyandy Mt., 6♂, 9♀, 17.08.2016, S.V. Titov.

Genus *Nonagria* Ochsenheimer, 1816

Nonagria typhae (Thunberg, 1784)* – FP: VIII–X; localities: P12, S23, E46, E47, E51, E54. (Appendix 1, Map 255)

Biogeographical feature. West Palaearctic, temperate. Europe, Caucasus, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia (Volynkin, 2012).

Bionomics. Hygrophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 17.09.2009, 6♂, 1♀, 07.09.2011, 3♂, 4♀, 04.10.2011, 7♂, 2♀, 10.09.2012, 9♂, 11♀, 05.08.2013, 3♂, 2♀, 26.08.2013, 5♂, 3♀, 04.09.2013, 8♂, 7♀, 15.09.2013, 6♂, 2♀, 08.09.2015, 2♂, 10♀, 19.09.2017, S.V. Titov; S23, vic. of Sharbakty vill., 8♂, 2♀, 11.08.2014, S.M. Reznichenko; E46, Shiderty river, Zhartas natural landmark, 5♂, 3♀, 08.08.2008, 2♂, 10♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E47, vic. of Karazhar vill., 1♀, 11.08.2008, 3♂, 2♀, 08.09.2011, 4♂, 9♀, 12.09.2015, 2♂, 5♀, 21.09.2015, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 5♂, 2♀, 03.10.2014, M. Černila & S.V. Titov, 1♂, 1♀, 06.08.2017, S.V. Titov; E54 Ulken-Koyandy Mt., 1♀, 17.08.2016, S.V. Titov.

Genus *Longaletedes* Beck 1999

Longalatedes elymi (Treitschke, 1825) – FP: VI–VII; localities: P12, L27, B30, A46. Reference: Shek (1975, as Arenostola). (Appendix 1, Map 256)

Biogeographical feature. Eurasiatic Palaearctic, temperate. N Europe (N Sea and Baltic Sea coasts) (ssp. *elymi*), S Europe, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), W, S and E Siberia, Mongolia, Russian Far East, China, Japan (ssp. *procera*) (Volynkin, 2012).

Bionomics. Hygrophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 25.06.2007, 1♀, 03.07.2013, S.V. Titov; L27, Borly lake, 4♂, 1♀, 25.06.2013, S.V. Titov; B30, Kurkeli natural landmark, 3♂, 1♀, 01.07.2014, 1♂, 1♀, S.V. Titov; A46, vic. of Kurkol' vill., 1♂, 27.06.2016, 1♀, 22.08.2017, S.V. Titov.

Genus *Archanara* Walker, 1866

Archanara dissoluta (Treitschke, 1825)* – FP: VIII; locality: E46. (Appendix 1, Map 257)

Biogeographical feature. Euro-Siberian, subtemperate. Russia: N Caucasus, European part; S Ural, W Siberia, Altai (Volynkin 2007). – Europe, Asia Minor, Middle Asia, Kazakhstan (Volynkin, 2012).

Bionomics. Hygrophilous species.

Material: E46, Shiderty river, Zhartas natural landmark, 1♂, 18.07.2008, S.V. Titov.

Genus *Denticucullus* Rakosy, 1996

Denticucullus pygmina (Haworth, 1809)* – FP: VIII–IX; localities: E54. (Appendix 1, Map 258)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Asia Minor, Near East, S Russia (S European part, Ural, S Siberia), W Siberia, Russian Far East, NE Kazakhstan (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Hygrophilous species.

Material: E54 Ulken-Koyandy Mt., 1♂, 17.08.2016, S.V. Titov.

Genus *Hypocoena* Hampson, 1908

Hypocoena stigmatica (Eversmann, 1855)* – FP: VI; locality: K10. (Appendix 1, Map 259)

Biogeographical feature. Holarctic, temperate. Iceland (ssp. *dispersa*), N America (Alaska), Ural, W, S and E Siberia, Mongolia, Russian Far East (ssp. *stigmatica*) (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: K10, vic. of Terenkol' vill., 1♂, 1♀, 19.06.2012, L.N. Ivan'ko, L.N. Ivan'ko.

Genus *Photedes* Lederer, 1857

Photedes fluxa (Hübner, 1809)* – FP: VII–VIII; localities: P12, B30, B31, A46, (Appendix 1, Map 260)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia (ssp. *fluxa*), Russian Far East, Japan (ssp. *rufata*) (Volynkin, 2012).

Bionomics. Hygrophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 02.08.2009, 1♀, 18.07.2015, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 1♀, 08.07.2016, 4♂, 3♀, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 2♂, 1♀, 14.08.2013, S.V. Titov; A46, vic. of Kurkol' vill., 3♂, 4♀, 25.07.2016, S.V. Titov.

Photedes extrema (Hübner, [1809])* – FP: VI; localities: B30, B34. (Appendix 1, Map 261)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *extrema*), Mongolia (ssp. *calamoxantha*) (Volynkin, 2012).

Bionomics. Hygrophilous species.

Material: B30, Kurkeli natural landmark, 5♂, 2♀, 14.06.2013, S.V. Titov; B34, natural landmark Kirigichi, 4♂, 2♀, 30.06.2013, S.V. Titov.

Genus *Ogilia* Kononenko, 2016

Ogilia leuconephra (Hampson, 1908)* – FP: VIII; locality: S23. (Appendix 1, Map 262)

Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. N Kazakhstan, S Siberia, Mongolia, Russian Far East, NE China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: S23, vic. of Sharbakty vill., 1♀, 11.08.2014, S.M. Reznichenko.

Genus *Protarchanara* Beck, 1996

Protarchanara brevilinea (Fenn, 1864)* – FP: VII; locality: P12. (Appendix 1, Map 263)

Biogeographical feature. Eurasiatic Palaearctic, subtemperate. Europe, Caucasus and Transcaucasia, Middle Asia,Russia (S European part, Ural, S Siberia); S Ural, Kazakhstan, W Siberia, Transbaikalia, Russian Far East, Mongolia, N China (Kononenko, 2016).

Bionomics. Hygrophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 18.07.2015, 2♂, 1♀, 27.07.2016, S.V. Titov;

Genus *Globia* Fibiger, Zilli, Ronkay & Goldstein, 2009

Globia sparganii (Esper, 1790)* – FP: VIII; locality: E46. (Appendix 1, Map 264)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Hygrophilous species.

Material: E46, Shiderty river, Zhartas natural landmark, 1♂, 08.08.2008, S.V. Titov.

Globia algae (Esper, 1789)* – FP: VIII–IX; localities: P12, P24, E46. (Appendix 1, Map 265)

Biogeographical feature. West Palaearctic, subboreal. Europe, Caucasus, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, NE Kazakhstan (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Hygrophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 04.09.2013, 1♂, 1♀, 13.08.2015, 3♂, 2♀, 08.09.2015, 1♂, 1♀, 19.09.2017, S.V. Titov; P24, vic. of Dolgoye vill., 2♂, 3♀, 24.08.2017, S.V. Titov, 4♂, 5♀, 01.09.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 08.08.2008, S.V. Titov.

Genus *Pabulatrix* Sugi, 1982

Pabulatrix pabulatricula (Brahm, 1791)* – FP: VII; localities: P12, B35. (Appendix 1, Map 266)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, N Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 1♀, 13.07.2013, 1♂, 18.07.2015, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 3♀, 16.07.2016, S.V. Titov.

Genus *Apamea* Ochsenheimer, 1816

Subgenus *Apamea* Ochsenheimer, 1816

Apamea (*Apamea*) *monoglypha* (Hufnagel, 1766)* – FP: VI–VIII; localities: Z1, Z4, Z6, K10, P11, P13, S23, L28, B29, B35, A45, E48. (Appendix 1, Map 267)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Afghanistan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, N China, Korea, Japan (ssp. *lateritia*), Middle Asia (ssp. *expallescens*), W Himalaya (ssp. *cinerascens*), S and E Himalaya, SE Tibet (ssp. *obfuscata*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 05.07.2011, M.Yu. Volkov, S.V. Titov; Z4, vic. of Moiseevka vill., 2♀, 28.08.2011, S.A.&Yu.P. Lorents; Z6, vic. of Novokuz'minka vill., 3♂, 2♀, 21.07.2013, V.S. Bychkov; K10, vic. of Terenkol' vill., 1♀, 10.07.2013, S.V. Titov; P11, Pavlodar city, 2♂, 1♀, 27.06.2006, S.V. Titov. P13, vic. of Rozovka vill., 1♂, 07.06.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 3♂, 30.07.2007, S.V. Titov, 2♂, 1♀, 11.08.2014, S.M. Reznichenko; L28, vic. of Akku vill., 1♀, 18.06.2015, S.V. Titov; B29, Birzhankol' lake, 2♂, 1♀, 28.06.2008, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 4♂, 3♀, 25.07.2014, S.V. Titov; A45, old road bridge, the Irtysh river, 1♀, 26.07.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♂, 2♀, 06.08.2017, S.V. Titov.

Apamea (*Apamea*) *ferrago* (Eversmann, 1837)* – FP: VII–VIII; localities: Z1, Z6, B31, A42, E46, M40. (Appendix 1, Map 268)

Biogeographical feature. Siberian - Mediterranean, subboreal. E Europe, Asia Minor, Near East, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai, W Mongolia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 4♂, 1♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 6♂, 2♀, 08.07.2013, V.S. Bychkov, 7♂, 3♀, 19.08.2017, S.V. Titov; Z6, vic. of Novokuz'minka vill., 6♂, 2♀, 21.07.2013, V.S. Bychkov; B31, vic. of Shonai vill., 2♂, 1♀, 17.08.2013, S.M. Reznichenko 2♂, 2♀, 18.08.2013, S.V. Titov, 6♂, 2♀, 27.08.2013, S.M. Reznichenko; A42, Irtysh river, Zholpak natural landmark, 4♂, 3♀, 07.07.2008, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 5♂, 2♀, 15.07.2003, 4♂, 2♀, 20.07.2007, 7♂, 4♀, 08.08.2008, S.V. Titov, 11♂, 4♀, 12.08.2012, S.V. Titov, A.V. Volynkin, S.V. Titov; M40, Kalmakyrgan Mts., 6♂, 8♀, 27.07.2014, S.V. Titov.

Apamea (*Apamea*) *furva* ([Denis & Schiffermüller], 1775)* – FP: VII–VIII; localities: Z6, P11, L24, B35. (Appendix 1, Map 269)

Biogeographical feature. West Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, NW China (Xinjiang) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z6, vic. of Novokuz'minka vill., 1♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 1♂, 09.07.2008, S.V. Titov, 3♂, 1♀, 30.07.2008, N.E. Tarasovskaya; B35, vic. of Zhana Zhosaly vill., 2♂, 1♀, 25.07.2014, 1♀, 04.08.2017, S.V. Titov.

Apamea (*Apamea*) *lateritia* (Hufnagel, 1766) – FP: VI–VIII; localities: Z1, Z4, Z6, K10, P11, P13, S17, S23, L28, B29, B35, A45, E48. U48. Reference: Pospelov (1962). (Appendix 1, Map 270)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Afghanistan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, N China, Korea, Japan (ssp. *lateritia*), Middle Asia (ssp. *expallescens*), W Himalaya (ssp. *cinerascens*), S and E Himalaya, SE Tibet (ssp. *obfuscata*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 5♂, 2♀, 05.07.2011, M.Yu. Volkov, 1♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov; Z4, vic. of Moiseevka vill., 2♂, 1♀, 28.08.2011, S.A.&Yu.P. Lorents; Z6, vic. of Novokuz'minka vill., 3♂, 7♀, 21.07.2013, V.S. Bychkov; K10, vic. of Terenkol' vill., 5♂, 2♀, 10.07.2013, S.V. Titov; P11, Pavlodar city, 02.07–25.07.1960, S.M. Pospelov, 3♂, 5♀, 24.07.2011, 2♂, 1♀, 12.08.2011, 4♂, 6♀, 18.08.2011, 7♂, 2♀, 23.08.2014, S.V. Titov; P13, vic. of Rozovka vill., 4♂, 5♀, 18.07.2010, L.N. Ivan'ko; S17 vic. of Sofiyevka vill., 02.07–25.07.1958, S.M. Pospelov; S23, vic. of Sharbakty vill., 2♂, 3♀, 30.07.2007, S.V. Titov 6♂, 2♀, 11.08.2014, S.M. Reznichenko; L28, vic. of Akku vill., 3♂, 2♀, 24.08.2015, S.V. Titov; B29, Birzhankol' lake, 3♂, 4♀, 17.06.2008, 5♂, 2♀, 21.07.2008, 7♂, 8♀, 10.08.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 3♂, 1♀, 25.07.2014, 7♂, 8♀, 04.08.2017, S.V. Titov; A45, old road bridge, the Irtysh river, 13♂, 9♀, 26.07.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♂, 3♀, 06.08.2017, S.V. Titov; U48, vic. of Uspenka vill., 13.07–14.08.1958, S.M. Pospelov.

Apamea (*Apamea*) *oblonga* (Haworth, 1809) – FP: VII–VIII; localities: I6, AK1, AK2, P14, S17, S23, A45, U48, U52. Reference: Pospelov (1962). (Appendix 1, Map 271)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Pakistan, Kazakhstan, S Russia (S European

part, Ural, S Siberia), S Ural, W and E Siberia, Russian Far East, N China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: I6, vic. of Koskol (old name State farm «Koskul'skiy»), 15–26.07.1958, on the wheat fields, S.M. Pospelov; AK1, vic. of Krasnokutskoye vill., 15–26.07.1958, S.M. Pospelov; AK2 vic. of Razumovka vill., S.M. Pospelov; S17 vic. of Sofiyevka vill., 10ex., 8.06–12.08.1958, S.M. Pospelov; S23, vic. of Sharbakty vill., 4♂, 4♀, 30.07.2007, S.V. Titov 2♂, 11.08.2014, S.M. Reznichenko; U48, vic. of Uspenka vill., 13.07–14.08.1958, S.M. Pospelov; U52 vic. of Lozovoye vill., (old name State farm «Iskra»), summer 1958, S.M. Pospelov.

Apamea (*Apamea*) *sordens* (Hufnagel, 1766)* – FP: V–VI; localities: Z2, P12, P13. (Appendix 1, Map 272)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Asia Minor, Middle Asia, Afghanistan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, N and W China, Japan (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: Z2, vic. of Krasnovka vill., 5♂, 2♀, 19.05.2011, V.S. Bychkov, 8♂, 7♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 25♂, 11♀, 05.06.2012, S.V. Titov; P12, vic. of Pavlodarskoye vill., 5♂, 9♀, 25.06.2007, 3♂, 17.06.2012, S.V. Titov; P13, vic. of Rozovka vill., 1♂, 02.05.2010, 12♂, 26♀, 05.06.2010, 8♂, 2♀, 07.06.2010, 3♂, 1♀, 08.06.2010, L.N. Ivan'ko.

Apamea (*Apamea*) *anceps* ([Denis & Schiffermüller], 1775) – FP: VI–VII; localities: Z0, Z6, I6, I7, I8, AK1, AK2, K6, K7, K8, K9, K10, P11, S16, S17, B31, E48, U49, U50, U51, U52. Reference: Pospelov (1960). (Appendix 1, Map 273)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, C and NE China, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z0, vic. of Antonovka vill. (old name State farm «Pamyat' Kirova»), 587 ex., 08.06.–12.08.1958, birch groves, S.M. Pospelov; Z6, vic. of Novokuz'minka vill., 8♂, 3♀, 21.07.2013, V.S. Bychkov; I6, vic. of Koskol (old name State farm «Koskul'skiy»), 15–26.07.1958, on the wheat fields, S.M. Pospelov; I7 vic. of Kaban vill., (old name State farm

«Kutuzovskiy»), summer 1958, S.M. Pospelov; I8 vic. of Golubovka vill. (old name State farm Golubovskiy), summer 1958, S.M. Pospelov; AK1, vic. of Krasnokutskoye vill., 15–26.07.1958, S.M. Pospelov; AK2 vic. of Razumovka vill., S.M. Pospelov; K6, vic. of Zhaksairat vill., summer 1958, S.M. Pospelov; K7 vic. of Berezovka vill., (old name State farm «Berezovskiy»), summer 1958, S.M. Pospelov; K8 vic. of Trofimovka vill., (old name State farm «Trofimovski»), summer 1958, S.M. Pospelov; K9 vic. of Zhanabet vill., (old name State farm «Bobrovskiy»), summer 1958, S.M. Pospelov; K10, vic. of Terenkol' vill., 11♂, 5♀, 19.06.2012, L.N. Ivan'ko, 3♂, 7♀, 10.07.2013, S.V. Titov; S16 place of the former village Sergeyevka, (old name State farm «named after Krupskoy»), summer 1958, S.M. Pospelov; S17 vic. of Sofiyevka vill., 10ex., 8.06–12.08.1958, S.M. Pospelov; B31, vic. of Shonai vill., 1♂, 29.06.2013, S.M. Reznichenko; U49 vic. of Il'ichevka vill., (old name State farm «Put' Il'icha» summer 1958, S.M. Pospelov; U50 vic. of Belousovka vill., (old name State farm «Krasnaya Armiya»), summer 1958, S.M. Pospelov; U51 vic. of Novopokrovka vill., summer 1958, S.M. Pospelov; U52 vic. of Lozovoye vill., (old name State farm «Iskra»), summer 1958, S.M. Pospelov.

Apamea (*Apamea*) *leucodon* (Eversmann, 1837) – FP: V–VI; localities: Z4, P11, P17, P19, L27, B32, B33, E48,. References: Pospelov (1962), Shek (1975). (Appendix 1, Map 274)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, NW China (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z4, vic. of Moiseevka vill., 15♂, 8♀, 22.05.2011, S.A.&Yu.P. Lorents; P11, Pavlodar city, 6 ex., 08–14.06.1960, S.M. Pospelov, 7♂, 2♀, 27.05.2008, S.V. Titov, 18♂, 4♀, 30.05.2008, 2♀, 12.06.2008, N.E. Tarasovskaya, 2♀, 28.05.2010, 8♂, 3♀, 21.05.2011, 15♂, 10♀, 15.05.2012, S.V. Titov; P17, vic. of Koryakovka, 1♂, 6♀, 22.05.2011, 28♂, 16♀, 21.05.2017, S.V. Titov; P19, vic. of Zhertumsyk vill., 1♂, 11.06.2016, S.V. Titov; L27, Borly lake, 1♀, 25.06.2013, S.V. Titov; B32, rock area Kempirtas, 17♂, 9♀, 17.05.2007, 7♂, 2♀, 13.06.2013, 32♂, 19♀, 17.05.2014, 4♂, 1♀, 13.06.2014, 14♂, 5♀, 27.05.2015, S.V. Titov; B33, Toraygyr lake, 7♂, 2♀, 11.06.2013, 23♂, 6♀, 17.05.2017, 5♂, 6♀, 16.06.2017, S.V. Titov; E48, Shiderty reservoir, water pump №7, 19♂, 6♀, 12.06.2012, 11♂, 8♀, 28.06.2012, S.V. Titov.

Apamea (*Apamea*) *remissa* (Hübner, [1809])* – FP: VI–VIII; localities: Z6, P12, P22, S23, E46. (Appendix 1, Map 275)

Biogeographical feature. Holarctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, N Mongolia, Russian Far East, NW and NE China, Japan, N America (Alaska) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z6, vic. of Novokuz'minka vill., 1♂, 21.07.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 1♂, 1♀, 17.06.2012, 1♀, 03.08.2014, S.V. Titov; P22, vic. of Baydala vill., 3♂, 2♀, 13.06.2016, S.V. Titov. S23, vic. of Sharbakty vill., 5♂, 2♀, 30.07.2007, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 4♂, 1♀, 08.08.2008, S.V. Titov.

Apamea (*Apamea*) *crenata* (Hufnagel, 1766)* – FP: VI–VIII; localities: P12, B31. (Appendix 1, Map 276)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, C China, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 3♂, 8♀, 25.06.2007, 1♀, 02.08.2009, 5♂, 2♀, 17.06.2012, 2♂, 1♀, 02.07.2012, 4♂, 1♀, 27.07.2016, S.V. Titov; B31, vic. of Shonai vill., 3♂, 29.06.2013, S.M. Reznichenko, 1♂, 4♀, 02.08.2013, S.M. Reznichenko, 2♀, 09.08.2013, 4♂, 5♀, 14.08.2013, 1♀, 15.08.2013, S.V. Titov.

Apamea (*Apamea*) *unanimis* (Hübner, [1813])* – FP: VI; localities: P12, B34. (Appendix 1, Map 277)

Biogeographical feature. Euro-Siberian, subboreal. Holarctic (introduced). Europe, Middle Asia, Russia (S Ural), W Siberia, Kazakhstan, NE China, N America (introduced) (Kononenko, 2016).

Bionomics. Hygrophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 17.06.2012, S.V. Titov; B34, natural landmark Kirigichi, 1♂, 30.06.2013, S.V. Titov.

Apamea (*Apamea*) *illyria* Freyer, 1846* – FP: VI, locality: P12. (Appendix 1, Map 278)

Biogeographical feature. European - West Asian, subboreal. Caucasus and Transcaucasia, Asia Minor (ssp. *contrastata*), Europe, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, S Siberia (Altai, W Sayan) (ssp. *illyria*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 25.06.2007, S.V. Titov.

Genus *Oligia* Hübner, [1821] 1816

Oligia latruncula ([Denis & Schiffermüller], 1775)* – FP: VIII; localities: P11, S23. (Appendix 1, Map 279)

Biogeographical feature. Transpalaearctic, subboreal. Near East (ssp. *grisescens*), N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East (ssp. *latruncula*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 11♂, 5♀, 12.08.2011, 8♂, 5♀, 18.08.2011, N.E. Tarasovskaya; S23, vic. of Sharbakty vill., 12♂, 7♀, 11.08.2014, S.M. Reznichenko.

Genus *Mesoligia* Boursin, 1965

Mesoligia furuncula ([Denis & Schiffermüller], 1775)* – FP: VII–VIII; localities: Z4, P11, P13, S23, L28, E46. (Appendix 1, Map 280)

Biogeographical feature. Transpalaearctic, subboreal. NW Africa, Europe, Near East, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, China, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z4, vic. of Moiseevka vill., 10♂, 6♀, 28.08.2011, S.A.&Yu.P. Lorents, 2♂, 3♀, 25.07.2013, S.V. Titov; P11, Pavlodar city, 1♀, 09.07.2008, S.V. Titov, 3♂, 1♀, 28.07.2008, 1♀, 30.07.2008, 3♂, 18.08.2011, N.E. Tarasovskaya, 2♀, 23.08.2014, 1♀, 02.08. 2017, 2♂, 4♀, 16.08.2017, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 1♀, 18.08.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 2♂, 8♀, 30.07.2007, S.V. Titov 1♂, 5♀, 11.08.2014, S.M. Reznichenko; L28,

vic. of Akku vill., 3♂, 4♀, 24.08.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 7♂, 5♀, 18.07.2008, 16♂, 5♀, 08.08.2008, S.V. Titov, A.V. Volynkin

Genus *Litoligia* Beck, 1999

Litoligia literosa (Haworth, 1809)* – FP: VIII; localities: S23, L28, B31, B35. (Appendix 1, Map 281)

Biogeographical feature. Transpalaearctic, subboreal. Near East, Middle Asia, Afghanistan (ssp. *kutchilou*), N Africa, Europe, Caucasus and Transcaucasia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia (ssp. *literosa*) (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: S23, vic. of Sharbakty vill., 3♂, 2♀, 11.08.2014, S.M. Reznichenko; L28, vic. of Akku vill., 5♂, 2♀, 24.08.2015, S.V. Titov; B31, vic. of Shonai vill., 6♂, 2♀, 14.08.2013, 7♂, 2♀, 18.08.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 4♀, 04.08.2017, S.V. Titov.

Genus *Mesapamea* Heinicke, 1959

Mesapamea secalis (Linnaeus, 1758)* – FP: VIII; locality: L24. (Appendix 1, Map 282)

Biogeographical feature. West Palaearctic, temperate. NW Africa, Europe, Caucasus, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and C Siberia (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: L24, Tuz lake, 1♀, 06.08.2015, S.V. Titov.

Mesapamea moderata (Eversmann, 1843)* – FP: VII; locality: B30. (Appendix 1, Map 283)

Biogeographical feature. European-Central Asian, subboreal. Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B30, Kurkeli natural landmark, 1♂, 12.07.2016, S.V. Titov.

Genus *Resapamea* Varga & Ronkay, 1992

Resapamea hedeni (Graeser, [1889])* – FP: VI–IX; localities: Z4, Z6, P12, S23, L24, E48. (Appendix 1, Map 284)

Biogeographical feature. Eurasiatic Palaearctic, temperate. N Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, Mongolia, NE China (ssp. *hedeni*), Asia Minor (ssp. *vargai*), Middle Asia (Uzbekistan, W Tien Shan) (ssp. *rhodochrea*), Japan (ssp. *takanensis*) (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: Z4, vic. of Moiseevka vill., 2♂, 7♀, 22.05.2011, S.A.&Yu.P. Lorents, 5♂, 28.08.2011, S.A.&Yu.P. Lorents, 2♂, 1♀, 25.07.2013, S.V. Titov, 3♂, 5♀, 12.04.2017, S. & YU. P. Lorents; Z6, vic. of Novokuz'minka vill., 3♂, 2♀, 21.07.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 3♂, 6♀, 25.06.2007, 5♂, 6♀, 02.08.2009, 2♂, 6♀, 17.09.2009, 7♂, 5♀, 07.09.2011, 6♂, 2♀, 02.10.2011, 1♂, 04.10.2011, 2♂, 18.04.2012, 3♂, 2♀, 17.06.2012, 5♂, 2♀, 02.07.2012, 5♂, 3♀, 10.09.2012, 2♂, 03.07.2013, 2♂, 7♀, 13.07.2013, 1♀, 05.08.2013, 2♂, 3♀, 26.08.2013, 7♂, 8♀, 04.09.2013, 2♂, 3♀, 15.09.2013, 5♂, 1♀, 03.08.2014, 1♂, 2♀, 06.09.2014, 4♂, 2♀, 11.09.2014, 6♂, 1♀, 18.07.2015, 1♀, 13.08.2015, 2♂, 08.09.2015, 1♀, 19.04.2016, 1♀, 27.07.2016, 2♂, 3♀, 22.04.2017, 5♂, 2♀, 19.09.2017, S.V. Titov; S23, vic. of Sharbakty vill., 5♂, 2♀, 30.07.2007, S.V. Titov 4♂, 5♀, 11.08.2014, 6♂, 7♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 3♂, 2♀, 08.05.2011, 5♂, 2♀, 20.09.2011, 5♂, 2♀, 21.07.2015, 1♂, 06.08.2015, 4♂, 16.06.2016, S.V. Titov; E48, Shiderty reservoir, water pump №7, 3♂, 2♀, 12.06.2012, 6♂, 2♀, 28.06.2012, 7♂, 2♀, 25.04.2017, 2♂, 2♀, 06.08.2017, S.V. Titov.

Genus *Xylomoia* Staudinger, 1892

Xylomoia graminea (Graeser, [1889])* – FP: VI–VII; localities: Z4, P12, E48. (Appendix 1, Map 285)

Biogeographical feature. East Palaearctic, subtemperate. E Europe, N Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, NE Kazakhstan, Russian Far East, NE China, Korea, Japan (Kononenko, 2016; Titov et al., 2017 b).

Bionomics. Hygrophilous species.

Material: *Z4*, vic. of Moiseevka vill., 1♀, 25.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 13.07.2013, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 1♀, 12.06.2012, S.V. Titov.

Tribe Episemini Guenée, 1852

Genus *Episema* Ochsenheimer, 1816

Episema tersa ([Denis & Schiffermüller], 1775)* – FP: IX–IX; locality: B31. Reference: Titov et al. (2017). (Appendix 1, Map 286)

Biogeographical feature. European-Central Asian, subtemperate. C and S Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan (Kononenko, 2016; Titov et al., 2017 a., b).

Bionomics. Xero-thermophilous species.

Material: B31, vic. of Shonai vill., 3♂, 06.09.2013, S.V. Titov.

Genus *Leucochlaena* Hampson, 1906

Leucochlaena (*Furcochlaena*) *fallax* (Staudinger, 1870)* – FP: VIII; localities: P12, B31. Reference: Titov et al. (2017). (Appendix 1, Map 287)

Biogeographical feature. Uralian-Kazakhstan, subboreal. Russia (S European part, Ural, S Siberia); S Ural, W and NE Kazakhstan (Kononenko, 2016; Titov et al., 2017 a., b).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 14.09.2013, S.V. Titov; B31, vic. of Shonai vill., 2♂, 1♀, 09.09.2013, S.V. Titov.

Tribe Xylenini Guenée, 1837

Subtribe Xylenina Guenée, 1837

Genus *Hyppa* Duponchel, 1844

Hyppa rectilinea (Esper, 1788)* – FP: VI; localities: K10, A46. (Appendix 1, Map 288)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Near East, S Russia (S European part, Ural, S Siberia), S Ural, W and E Siberia, Mongolia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: K10, vic. of Terenkol' vill., 1♀, 19.06.2012, L.N. Ivan'ko, L.N. Ivan'ko; A46, vic. of Kurkol' vill., 1♂, 27.06.2016, S.V. Titov.

Genus *Parastichtis* Hübner, [1821] 1816

Parastichtis suspecta (Hübner, [1817])* – FP: VII–VIII; localities: P11, P12, B31. (Appendix 1, Map 289)

Biogeographical feature. Holarctic, temperate. N America, Europe, Caucasus, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, N Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 2♂, 1♀, 28.07.2008, 3♂, 4♀, 30.07.2008, N.E. Tarasovskaya 5♂, 2♀, 10.05.2010, 1♀, 12.08.2011, N.E. Tarasovskaya, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 5♀, 26.08.2013, 3♂, 1♀, 03.08.2014, S.V. Titov; B31, vic. of Shonai vill., 1♂, 1♀, 02.08.2013, S.M. Reznichenko, 6♂, 3♀, 15.08.2013, S.V. Titov.

Genus *Apterogenum* Berio, 2002

Apterogenum ypsillon ([Denis & Schiffermüller], 1775)* – FP: VII; locality: P12, A46. (Appendix 1, Map 290)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Near East, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai, Russian Far East (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 3♂, 1♀, 18.07.2015, S.V. Titov; A46, vic. of Kurkol' vill., 2♂, 1♀, 27.06.2016, S.V. Titov.

Genus *Xanthia* Ochsenheimer, 1816

Xanthia togata (Esper, 1788)* – FP: IX; localities: P12, B31. (Appendix 1, Map 291)

Biogeographical feature. Holarctic, temperate. Europe, Caucasus, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan, N America (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 19♂, 23♀, 17.09.2009, 11♂, 5♀, 07.09.2011, 6♂, 16♀, 10.09.2012, 21♂, 3♀, at wine, 04.09.2013, 4♂, 8♀, 15.09.2013, 18♂, 7♀, 06.09.2014, 3♂, 7♀, 11.09.2014, 6♂, 2♀, 08.09.2015, 28♂, 7♀, 19.09.2017, S.V. Titov; B31, vic. of Shonai vill., 6♂, 8♀, 15.09.2012, 19♂, 31♀, 10.09.2013, S.M. Reznichenko, 8♂, 9♀, 24.09.2013, S.V. Titov.

Genus *Cirrhia* Hübner, [1821] 1816

Cirrhia icteritia (Hufnagel, 1766)* – FP: VIII–IX; localities: P11, S23, L24, B31. (Appendix 1, Map 292)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 36♂, 45♀, at wine, 11.09.2003, S.V. Titov, 11♂, 12♀, 18.08.2011, 7♂, 9♀, 31.08.2012, N.E. Tarasovskaya, 9♂, 2♀, 23.08.2014, 8♂, 12♀, 16.08.2017, 21♂, 35♀, 21.08.2017, 8♂, 9♀, 18.09.2017, S.V. Titov; S23, vic. of Sharbakty vill., 6♂, 2♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 8♂, 3♀, 20.09.2011, S.V. Titov; B31, vic. of Shonai vill., 7♂, 13♀, 15.09.2012, S.M. Reznichenko, 6♂, 2♀, 02.08.2013, 5♂, 9♀, 04.08.2013, S.M. Reznichenko, 9♂, 6♀, 09.08.2013, 10♂, 6♀, 14.08.2013, 2♂, 3♀, 15.08.2013, 4♂, 9♀, 18.08.2013, S.V. Titov 16♂, 19♀, 27.08.2013, 2♂, 1♀, 10.09.2013, S.M. Reznichenko, 11♂, 5♀, 24.09.2013, S.V. Titov.

Cirrhia ocellaris (Borkhausen, 1792)* – FP: VII–X; localities: P11, P12, L28, B31, B32, B39, E51. (Appendix 1, Map 293)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Near East, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, China, Korea (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 14♂, 9♀, 11.09.2003, S.V. Titov, 8♂, 7♀, 28.07.2008, 6♂, 4♀, 30.07.2008, 9♂, 2♀, 24.07.2011, 6♂, 12♀, 12.08.2011, 47♂, 8♀, 18.08.2011, 9♂, 16♀, 03.10.2011, 21♂, 32♀, 02.07.2012, 7♂, 5♀, 31.07.2012, 15♂, 11♀, 02.08.2012, 21♂, 5♀, 06.08.2012, 1♀, 31.08.2012, N.E. Tarasovskaya, 2♂, 6♀, 23.08.2014, 7♂, 20♀, 13.10.2015, 15♂, 12♀, 21.08.2017, 8♂, 7♀, 18.09.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 7♂, 8♀, 17.09.2009, 6♂, 5♀, 07.09.2011, 3♂, 5♀, 02.10.2011, 8♂, 10♀, 04.10.2011, 15♂, 17♀, 10.09.2012, 20♂, 9♀, 03.07.2013, 9♂, 4♀, 13.07.2013, 2♂, 7♀, 05.08.2013, 3♂, 8♀, 26.08.2013, 6♂, 2♀, 04.09.2013, 1♀, 15.09.2013, 7♂, 4♀, 03.08.2014, 5♂, 2♀, 06.09.2014, 6♂, 8♀, 11.09.2014, 9♂, 13♀, 18.07.2015, 8♂, 18♀, 13.08.2015, 20♂, 35♀, 08.09.2015, 7♂, 9♀, 27.07.2016, 10♂, 8♀, 19.09.2017, S.V. Titov; L28, vic. of Akku vill., 5♂, 10♀, 24.08.2015, S.V. Titov, 6♂, 9♀, 20.07.2017, A.S. Karim, S.V. Titov; B31, vic. of Shonai vill., 9♂, 7♀, 15.09.2012, 3♂, 13♀, 02.08.2013, 2♂, 8♀, 04.08.2013, S.M. Reznichenko, 8♂, 2♀, 09.08.2013, 19♂, 28♀, 14.08.2013, 15♂, 23♀, 15.08.2013, 7♂, 15♀, 18.08.2013, S.V. Titov, 7♂, 9♀, 27.08.2013, 10♂, 24♀, 10.09.2013, S.M. Reznichenko, 5♂, 9♀, 24.09.2013, S.V. Titov; B32, rock area Kempirtas, 3♂, 9♀, 13.08.2008, 9♂, 12♀, 13.06.2013, 6♂, 12♀, 30.07.2013, S.V. Titov; B39, Moldybulak natural landmark, 17♂, 9♀, 19.08.2015, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 3♂, 5♀, 23.07.2014, S.V. Titov, 2♂, 1♀, 03.10.2014, M. Černila & S.V. Titov, 2♂, 1♀, 06.08.2017, S.V. Titov.

Cirrhia tunicata (Graeser, 1890)* – FP: IX–X; localities: P12, E51. (Appendix 1, Map 294)

Biogeographical feature. East Palaearctic, subboreal. Transbaikalia, Russian Far East, Kyrgyzstan, NE Kazakhstan, Mongolia, China, Korea, Japan (Kononenko, 2016; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 3♀, 13.10.2015, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 1♀, 03.10.2014, M. Černila & S.V. Titov.

Genus *Mesogona* Boisduval, 1840

Mesogona acetosellae ([Denis & Schiffermüller], 1775)* – FP: VIII–IX; localities: P12, B31, E46, E54. (Appendix 1, Map 295)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, N Altai (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 3♂, 2♀, 15.09.2013, S.V. Titov; B31, vic. of Shonai vill., 8♂, 5♀, 15.09.2012, S.M. Reznichenko, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 6♂, 3♀, 08.08.2008, S.V. Titov; E54 Ulken-Koyandy Mt., 7♂, 5♀, 17.08.2016, S.V. Titov.

Mesogona oxalina (Hübner, [1803])* – FP: IX–X; localities: B31, E51. (Appendix 1, Map 296)

Biogeographical feature. Euro-Siberian, temperate. Europe, S Russia (S European part, Ural, S Siberia), W Siberia, Kazakhstan, China (Kononenko, 2016).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 6♂, 2♀, 15.09.2012, S.M. Reznichenko, 4♂, 3♀, 24.09.2013, S. V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 8♂, 6♀, 03.10.2014, M. Černila & S.V. Titov.

Genus *Sunira* Franclemont, 1950

Sunira circellaris (Hufnagel, 1766)* – FP: VIII–X; localities: P12, E51. (Appendix 1, Map 297)

Biogeographical feature. Euro-Siberian, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, W and S Siberia (Kononenko, 2016).

Bionomics. Hygro-mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 15.09.2013, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 1♂, 06.08.2017, S.V. Titov.

Genus *Agrochola* Hübner, [1821] 1816

Subgenus *Agrochola* Hübner, 1816

Agrochola (*Agrochola*) *vulpecula* (Lederer, 1853)* – FP: IX; locality: P12. (Appendix 1, Map 298)

Biogeographical feature. Siberian-Pacific, subboreal. E Kazakhstan, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: 1♀, 08.09.2015, S.V. Titov.

Subgenus *Anchoscelis* Guenée, 1839

Agrochola (*Anchoscelis*) *helvola* (Linnaeus, 1758)* – FP: IX; localities: B31, B40. (Appendix 1, Map 299)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural (ssp. *helvola*), Asia Minor, Near East (ssp. *pallescens*), E Kazakhstan, W and S Siberia (ssp. *sibirica*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 1♂, 1♀, 15.09.2012, S.M. Reznichenko, 1♂, 1♀, 10.09.2013, S.M. Reznichenko, 1♂, 1♀, 24.09.2013, S.V. Titov; B40, vicinity of the Konyr Auliye cave, 1♂, 1♀, 22.09.–23.09.2017, S.V. Titov.

Subgenus *Leptologia* Prout, 1901

Agrochola (*Leptologia*) *lota* (Clerck, 1759)* – FP: X; locality: E51. (Appendix 1, Map 300)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Asia Minor, Near East, Caucasus and Transcaucasia, Middle Asia (Turkmenistan), S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, NW Altai (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: E51, cretaceous slope of Ulken Ak-Zhar, 1♂, 1♀, 03.10.2014, at wine, M. Černila & S.V. Titov.

Genus *Conistra* Hübner, [1821] 1816

Subgenus *Conistra* Hübner, 1816

Conistra (*Conistra*) *vaccinii* (Linnaeus, 1761)* – FP: IV–V, IX–X; localities: Z2, P12, P13, P16, B30, B31, B38, E48, E51. (Appendix 1, Map 301)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♂, 2♀, 19.05.2011, V.S. Bychkov, 1♂, 3♀, 27.05.2011, 2♀, 12.04.2012, 2♂, 4♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; P12, vic. of Pavlodarskoye vill., 1♂, 7♀, 17.09.2009, 2♂, 2♀, at wine, 07.09.2011, 2♀, 02.10.2011, 6♂, 7♀, 04.10.2011, 8♂, 3♀, 10.09.2012, 6♂, 2♀, 15.09.2013, 1♂, 1♀, 06.09.2014, 2♀, 11.09.2014, 7♂, 1♀, 08.09.2015, 1♀, 19.09.2017, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 4♀, 02.05.2010, L.N. Ivan'ko; P16 vic. of Sychevka vill., 6♀, at wine, 11.04.2011, 3♀, 17.05.2011, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 6♀, 02.05.2012, 4♂, 4♀, 12.05.2012, S.V. Titov; B31, vic. of Shonai vill., 3♀, 15.09.2012, 1♂, 2♀, 10.09.2013, S.M. Reznichenko, 8♀, 24.09.2013, 6♀, 05.05.2014, S.V. Titov; B38, Zhumbak natural landmark, 8♀, 14.04.2016, M. Černila & S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 2♀, 25.04.2017, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 2♀, 03.10.2014, at wine, M. Černila & S.V. Titov, 4♂, 3♀, 20.04.2015, 2♀, 28.04.2015, S.V. Titov, 1♀, 11.04.2016, M. Černila & S.V. Titov, 7♀, 18.04.2017, S.V. Titov.

Subgenus *Dasycampa* Guenée, 1837

Conistra (*Dasycampa*) *rubiginea* ([Denis & Schiffermüller], 1775)* – FP: IV–V, IX; localities: B30, B31, B38. (Appendix 1, Map 302)

Biogeographical feature. European-Central Asian, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), W and NE Kazakhstan (Kononenko, 2016; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: B30, Kurkeli natural landmark, 1♂, 4♀, 02.05.2012, 2♂, 6♀, 12.05.2012, 3♂, 7♀, 17.04.2016, S.V. Titov; B31, vic. of Shonai vill., 5♀, 15.09.2012, S.M. Reznichenko, 2♀, 09.08.2013, S.V. Titov, 1♂, 3♀, 10.09.2013, S.M. Reznichenko, 2♂, 4♀, 24.09.2013, S.V. Titov, 4♀, 05.05.2014, S.V. Titov; B38, Zhumbak natural landmark, 1♂, 6♀, 14.04.2016, M. Černila & S.V. Titov.

Genus *Lithophane* Hübner, [1821] 1816

Lithophane (*Lithophane*) *socia* (Hufnagel, 1766)* – FP: IV–V, IX; localities: Z2, P16, B30, B31, B38. (Appendix 1, Map 303)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, NE Kazakhstan, Transbaikalia, N Mongolia, Russian Far East, NE China (Manchuria), Korea, Japan (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: P16 vic. of Sychevka vill., 1♂, 4♀, 11.04.2011, 2♂, 17.05.2011, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 6♀, 02.05.2012, 2♂, 3♀, 12.05.2012, 3♂, 4♀, 17.04.2016, S.V. Titov; B31, vic. of Shonai vill., 2♂, 2♀, 15.09.2012, 1♀, 10.09.2013, S.M. Reznichenko, 3♂, 1♀, 24.09.2013, 2♀, 05.05.2014, S.V. Titov; B38, Zhumbak natural landmark, 1♂, 4♀, 14.04.2016, M. Černila & S.V. Titov.

Lithophane (*Lithophane*) *furcifera* (Hufnagel, 1766)* – FP: IV–V, IX–X; localities: B30, B31, B38. Reference: Titov et al. (2016). (Appendix 1, Map 304)

Biogeographical feature. West Palaearctic, subboreal, nemoral. N Africa, Europe, Middle East, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), Kazakhstan, W Siberia, (Kononenko, 2016; Titov et al., 2016 d., 2017 b).

Bionomics. Mesophilous species.

Material: B30, Kurkeli natural landmark, 2♂, 6♀, 02.05.2012, 3♂, 15♀, 12.05.2012, 1♂, 3♀, 17.04.2016, S.V. Titov; B31, vic. of Shonai vill., 7♂, 8♀, 15.09.2012, S.M. Reznichenko, 6♂, 9♀, 09.08.2013, S.V. Titov, 16♂, 21♀, 10.09.2013, S.M. Reznichenko, 8♂, 9♀, 24.09.2013, S.V. Titov, 7♀, 05.05.2014, S.V. Titov; B38, Zhumbak natural landmark, 5♂, 25♀, 14.04.2016, at wine, M. Černila & S.V. Titov.

Genus *Xylena* Ochsenheimer, 1816

Subgenus *Xylena* Ochsenheimer, 1816

Xylena (*Xylena*) *exsoleta* (Linnaeus, 1758)* – FP: IV, X; localities: Z2, B38, E46, E47, E51. (Appendix 1, Map 305)

Biogeographical feature. Transpalaearctic, temperate. Canarian islands (ssp. canaria), N Africa, Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China (ssp. *exsoleta*). (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♂, 3♀, 12.04.2012, V.S. Bychkov, M.Yu. Volkov; B38, Zhumbak natural landmark, 1♀, 14.04.2016, M. Černila & S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 4♂, 10♀, at wine, 11.04.2016, M. Černila & S.V. Titov, 1♀, 18.04.2017, S.V. Titov; E47, vic. of Karazhar vill., 1♂, 1♀, 21.09.2015, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 1♂, 03.10.2014, M. Černila & S.V. Titov, at wine, S.V. Titov.

Xylena (*Xylena*) *vetusta* (Hübner, [1813])* – FP: IV–V, IX–X; localities: Z1, Z2, Z3, Z4, Z8, K10, P11, P12, P16, L28, B30, B38, E46, E48. (Appendix 1, Map 306)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, China (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 10.10.2010, M.Yu. Volkov, 1♂, 13.04.2012, 1♀, 19.05.2012, V.S. Bychkov, M.Yu. Volkov, S.V. Titov; Z2, vic. of Krasnovka vill., 2♂, 1♀, 19.05.2011, V.S. Bychkov, 1♂, 27.05.2011, V.S. Bychkov, 3♂, 1♀, 12.04.2012, V.S. Bychkov, M.Yu. Volkov, 1♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; Z3 vic. of Zhelezinka vill., 4♂, 2♀, 14.05.2011, S.V. Titov; Z4, vic. of Moiseevka vill., 2♂, 22.05.2011, S.A.&Yu.P. Lorents, 2♂, 2♀, 12.04.2017, S. & YU. P. Lorents; Z8, vic. of Pyateryzhsk vill., 1♂, 15.05.2009, S. A. Lorents; K10, vic. of Terenkol' vill., 1♀, 24.09.2011, L.N. Ivan'ko; P11, Pavlodar city, 3♂, 1♀, 11.09.2003, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 17.09.2009, 2♂, 1♀, 07.09.2011, 1♂, 02.10.2011, 2♂, 2♀, 04.10.2011, 5♀, 18.04.2012, 1♀, 10.09.2012, 2♀, 04.09.2013, 1♀, 15.09.2013, 2♀, 06.09.2014, 1♀, 11.09.2014, 3♀, 08.09.2015, S.V. Titov; P16 vic. of Sychevka vill., 5♂, 2♀, 11.04.2011, 2 ♀, 17.05.2011, S.V. Titov; L28, vic. of Akku vill., 1♂, 2♀, 11.04.2015, S.V. Titov; B30, Kurkeli natural landmark, 2♂, 2♀, at wine, 02.05.2012, 3♂, 1♀, 12.05.2012, 2♂, 1♀, 17.04.2016, S.V. Titov; B38, Zhumbak natural landmark, 1♂, 5♀, 14.04.2016, M. Černila & S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 24♂, 32♀, at wine, 12.04.2016, M. Černila & S.V. Titov, 2♀, 16.04.2017, 2♂, 3♀, 19.04.2017, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♀, 25.04.2017, S.V. Titov.

Subgenus *Lithomoia* Hübner, [1821] 1816

Xylena (*Lithomoia*) *solidaginis* (Hübner, 1803)* – FP: VIII; locality: Z2. (Appendix 1, Map 307)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, Japan (Volynkin, 2012; Titov et al, 2017 b).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♀, 14.08.2012, V.S. Bychkov.

Genus *Orbona* Hübner, [1821] 1816

Orbona fragariae (Vieweg, 1790)* – FP: IV, IX–X; localities: B31, B38. (Appendix 1, Map 308)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Central Europe, N Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, NE Kazakhstan, Russian Far East, China, Korea, Japan (Kononenko, 2016; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 9♀, 14.04.2016, 2♀, at wine, M. Černila & S.V. Titov; B38, Zhumbak natural landmark, 15♀, 17.04.2016, M. Černila & S.V. Titov.

Genus *Eupsilia* Hübner, [1821] 1816

Eupsilia transversa (Hufnagel, 1766)* – FP: IV–V, X; localities: Z2, P11, P12, P16, B30, B31, B38. (Appendix 1, Map 309)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 1♀, 19.05.2011, V.S. Bychkov; P11, Pavlodar city, 2♀, 27.05.2008, 1♂, 4♀, 30.05.2008, 1♀, 03.10.2011, 1♂, 7♀, 15.05.2012, 2♂, 5♀, 13.10.2015, 2♂, 2♀, 18.09.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 5♀, 17.09.2009, 2♀, 07.09.2011, 1♂, 02.10.2011, 1♀, at wine, 04.10.2011, 3♀, 18.04.2012, 2♂, 1♀, at wine, 15.09.2013, 5♂, 2♀, 11.09.2014, 1♀, 08.09.2015, 3♀, 19.04.2016, 2♂, 1♀, 22.04.2017, 1♀, 19.09.2017, S.V. Titov; P16 vic. of Sychevka vill., 1♀, 11.04.2011, 3♂, 6♀, 17.05.2011, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 3♀, 02.05.2012, 2♂, 2♀, 12.05.2012, S.V. Titov; B31, vic. of Shonai vill., 1♀, at wine, 15.09.2012, S.M. Reznichenko, 2♂, 4♀, 24.09.2013, 2♂, 3♀, 05.05.2014, S.V. Titov, 3♀, at wine, 14.04.2016, M. Černila & S.V. Titov; B38, Zhumbak natural landmark, 2♀, at wine, 17.04.2016, M. Černila & S.V. Titov.

Subtribe Cosmiina Guenée, 1852

Genus *Enargia* Hübner, [1821] 1816

Enargia paleacea (Esper, 1788) – FP: VII–VIII; localities: P11, P12, S17, S20, L24, B31, B39. Reference: Pospelov (1962). (Appendix 1, Map 310)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 2♂, 09.07.2008, S.V. Titov, 1♂, 28.07.2008, 2♀, 30.07.2008, 3♂, 4♀, 19.07.2010, 1♂, 24.07.2011, 5♂, 12.08.2011, 2♂, 2♀, 18.08.2011, 4♂, 2♀, 31.07.2012, 7♂, 3♀, 02.08.2012, 2♂, 1♀, 06.08.2012, 5♂, 3♀, 31.08.2012, N.E. Tarasovskaya, 6♂, 2♀, 23.08.2014, 4♂, 2♀, 21.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 5♂, 8♀, 13.07.2013, 9♂, 8♀, 05.08.2013, 2♂, 3♀, 26.08.2013, 2♂, 5♀, 13.08.2015, S.V. Titov; S17 vic. of Sofiyevka vill., 3 ex., 27.07–01.08.1958, S.M. Pospelov; S20, vic. of Shalday vill., 6♂, 2♀, 18.07.2007, 4♂, 2♀, 22.07.2007, 1♂, 12.08.2012, S.V. Titov; L24, Tuz lake, 7♂, 3♀, 06.08.2015, S.V. Titov; B31, vic. of Shonai vill., 5♂, 2♀, 04.08.2013, S.M. Reznichenko, 1♀, 09.08.2013, 10♂, 2♀, 14.08.2013, 6♂, 7♀, 15.08.2013, 9♂, 4♀, 18.08.2013, S.V. Titov; B39, Moldybulak natural landmark, 8♂, 7♀, 19.08.2015, S.V. Titov.

Enargia abluta (Hübner, 1808)* – FP: VII–VIII; localities: P11, P12, L24. (Appendix 1, Map 311)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, (ssp. *abluta*), N and E Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, NW Altai (ssp. *glaucula*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 1♀, 30.07.2008, N.E. Tarasovskaya, 1♂, 21.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 02.08.2009, 3♂, 1♀, 13.07.2013, 1♂, 26.08.2013, 6♂, 1♀, 13.08.2015, S.V. Titov; L24, Tuz lake, 1♂, 21.07.2015, S.V. Titov.

Genus *Ipimorpha* Hübner, [1821] 1816

Ipimorpha retusa ([Denis & Schiffermüller], 1775)* – FP: VII–VIII; localities: Z4, P12. (Appendix 1, Map 312)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z4, vic. of Moiseevka vill., 1♂, 25.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 2♀, 13.07.2013, 1♂, 26.08.2013, S.V. Titov.

Ipimorpha subtusa ([Denis & Schiffermüller], 1775)* – VII–VIII; localities: Z4, P12. (Appendix 1, Map 313)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z4, vic. of Moiseevka vill., 1♀, 28.08.2011, S.A.&Yu.P. Lorents; P12, vic. of Pavlodarskoye vill., 2♂, 02.08.2009, S.V. Titov.

Genus *Cosmia* Ochsenheimer, 1816

Subgenus *Ulmia* Fibiger & Hacker, 2007

Cosmia (*Ulmia*) *affinis* (Linnaeus, 1767)* – FP: VIII; locality: Z1. (Appendix 1, Map 314)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia (ssp. *affinis*), Russian Far East, China, Korea, Japan (ssp. *magna*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 18.08.2013, V.S. Bychkov.

Genus *Brachyxanthia* Butler, 1878

Brachyxanthia zelotypa (Lederer, 1853)* – FP: VIII; locality: Z1. (Appendix 1, Map 315)

Biogeographical feature. Manchurian - Middle Asian - Siberian, subboreal. E and NE Kazakhstan, Ural, W, S and E Siberia, N Mongolia, Russian Far East, NE China, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 18.08.2013, V.S. Bychkov.

Subtribe Pseudohadenina L. Ronkay & Fibiger, 2007

Genus *Pseudohadena* Alphéraky, 1889

Subgenus *Pseudohadena* Alphéraky, 1889

Pseudohadena argyllostigma (Varga & L. Ronkay, 1991)* – FP: IX; locality: E47. Reference: Titov et al. (2016). (Appendix 1, Map 316)

Biogeographical feature. Central-Asian-Siberian, subboreal. Russia (W Siberia), NE Kazakhstan (Ronkay et al.,, 1995; Titov & Volynkin, 2016 c.; Titov et al., 2017 b).

Bionomics. Xero-halophilous species.

Material: E47, vic. of Karazhar vill., 6♂, 1♀, 11.09.2015, 1♂, 19.09.2015, at light, S.V. Titov.

Genus *Eremohadena* Ronkay, Varga & Fabian, 1995

Eremohadena immunda (Eversmann, 1842)* – FP: VI–IX; localities: L28, B33. (Appendix 1, Map 317)

Biogeographical feature. Middle Asian subtemperate. C and SE Europe, Caucasus and Transcaucasia, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W and NE Kazakhstan, W and S Siberia, Mongolia (Kononenko, 2016; Titov et al., 2017 b).

Bionomics. Xerophilous species.

Material: L28, vic. of Akku vill., 1♀, 18.06.2015, S.V. Titov; B33, Toraygyr lake, 1♂, 11.06.2014, S.V. Titov, A.V. Volynkin

Subtribe Antitypina Forbes & Franclemont, 1954

Genus *Antitype* Hübner, [1821] 1816

Antitype chi (Linnaeus, 1758)* – FP: IX; locality: B32, B40. (Appendix 1, Map 318)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *chi*), Russian Far East (ssp. *subcaerulea*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: B32, rock area Kempirtas, 1♀, 30.07.2013, S.M. Reznichenko; B40, vicinity of the Konyr Auliye cave, 1♀, 22.09.2017, S.V. Titov.

Genus *Ammoconia* Lederer, 1857

Ammoconia caecimacula ([Denis & Schiffermüller], 1775)* – FP: IX; localities: B31. (Appendix 1, Map 319)

Biogeographical feature. West Palaearctic, subboreal. Transcaucasia (ssp. transcaucasica), Europe, C. Caucasus, S Russia (S European part, Ural, S Siberia), S Ural (ssp. *caecimacula*), E and SE Kazakhstan, Middle Asia (Kyrgyzstan), W and S Siberia (ssp. *sibirica*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: B31, vic. of Shonai vill., 1♂, 1♀, 15.09.2012, 1♂, 1♂, 1♀, 10.09.2013, S.M. Reznichenko, 1♂, 1♀, 24.09.2013, S.V. Titov.

Genus *Dasypolia* Guenée, 1852

Subgenus *Dasypolia* Guenée, 1852

Dasypolia (*Dasypolia*) *templi* (Thunberg, 1792)* – FP: IV, X; localities: E46, E51. (Appendix 1, Map 320)

Biogeographical feature. Transpalaearctic, temperate. N Africa (Atlas Mts) (ssp. *powelli*), N and C Europe, N S Russia (S European part, Ural, S Siberia), S Ural (ssp. *templi*), S Alps (ssp. *alpina*), Carpatian Mts. (ssp. *koenigi*), W Balkans (ssp. *vecchimontium*), Appenines (ssp. *calabrolucana*), Sicily I. (ssp. *banghaasi*), Caucasus, Transcaucasia (ssp. *armeniaca*), Asia Minor (ssp. *anatolica*), Turkmenistan (ssp. *dushaki*), S Kyrgyzstan, Tajikistan (ssp. *hortensis*), N and E Kyrgyzstan, SE Kazakhstan (ssp. *centralasiae*), W Siberia, Altai, Sayan, Transbaikalia (? ssp. *templi* s.l) (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Xero-mesophilous species.

Material: E46, Shiderty river, Zhartas natural landmark, 2♂, 1♀, 12.04.2016, M. Černila & S.V. Titov, 1♀, 19.04.2017, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 2♂, 1♀, 03.10.2014, M. Černila & S.V. Titov, 1♀, 20.04.2015, S.V. Titov, 1♂, 1♀, 18.04.2017, S.V. Titov.

Dasypolia (*Dasypolia*) *timoi* Fibiger & Nupponen, 2006* – FP: IV, X; locality: E46. Reference: Titov et al. (2017). (Appendix 1, Map 321)

Biogeographical feature. Central-Asian, Xeromontane. Russia (S Ural), C and NE Kazakhstan (Gorbunov, 2011, Nupponen & Fibiger, 2012; Kononenko, 2016; Titov et al., 2017a., 2017b).

Bionomics. Xerophilous species.

Material: E46, Shiderty river, Zhartas natural landmark, 1♀, 12.04.2016, M. Černila & S.V. Titov, 3♀, 16.04.2017, S.V. Titov.

Subgenus *Cteipolia* Staudinger, 1896

Dasypolia (*Cteipolia*) *murina* (Ménétriés, 1848)* – FP: IV; IX–X; locality: B31, E46, E51, E53. (Appendix 1, Map 322)

Biogeographical feature. Uralian-Kazakhstan, subboreal. Russia (S Ural), W and NE Kazakhstan (Fibiger, et all., 2010; Titov, perss. comm).

Bionomics. Xeromontane species.

Material: B31, vic. of Shonai vill., 1♀, 10.04.2013, (originally known from the photo by. S.M. Reznichenko), 2♀, 04.04.2014, S.M. Reznichenko; E46, Shiderty river, Zhartas natural landmark, 2♀, 12.04.2016, M. Černila & S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 10♂, 03.10.2014, M. Černila & S.V. Titov, 1♀, 11.04.2016, M. Černila & S.V. Titov; E53, west shore of Shiderty reservoir, 1♀, 19.04.2012, 1♂, 1♀, 17.04.2017, S.V. Titov.

Genus *Blepharita* Hampson, 1907

Blepharita amica (Treitschke, 1825)* – FP: IX. locality: B40. (Appendix 1, Map 323)

Biogeographical feature. Eurasiatic Palaearctic, temperate. N Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, NE and E Kazakhstan, W and S Siberia, Transbaikalia (ssp. *amica*), Russian Far East, NE China, Korea, Japan (ssp. *usuriensis*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B40, vicinity of the Konyr Auliye cave, 3♂, 22.09.2017, S.V. Titov.

Genus *Mniotype* Franclemont, 1941

Mniotype adusta (Esper, 1790)* – FP: V; locality: B32, B35. (Appendix 1, Map 324)

Biogeographical feature. Holarctic, temperate. N America, Greenland, Europe, Caucasus and Transcaucasia, Near East, S Russia (S European part, Ural, S Siberia), S Ural (ssp. *adusta*), Middle Asia, S and NE Kazakhstan, Mongolia, NW China (ssp. *vicina*), Himalaya (ssp. *adjuncta*), W, S and E Siberia, Russian Far East (ssp. *moesta*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: B32, rock area Kempirtas, 1♀, 27.05.2015 1♂, 1♀, 14.04.-15.04.2016, M. Černila, S.V. Titov, M. Kučinić; B35, vic. of Zhana Zhosaly vill., 1♀, 28.05.2015, M. Černila, S.V. Titov, M. Kučinić.

Mniotype satura ([Denis & Schiffermüller], 1775)* – FP: IX; locality: P24. (Appendix 1, Map 325)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, S Russia (S European part, Ural, S Siberia), S Ural, NE Kazakhstan, W and S Siberia, Transbaikalia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P24, vic. of Dolgoye vill., 1♀, 02.09.2017, S.V. Titov.

Tribe Noctuini Latreille, 1809

Subtribe Agrotina Rambur, 1848

Genus *Actebia* Stephens, 1829

Subgenus *Actebia* Stephens, 1829

Actebia (*Actebia*) *praecox* (Linnaeus, 1758)* – FP: VIII–IX; localities: P12, S23. (Appendix 1, Map 326)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 26.08.2013, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 11.08.2014, S.M. Reznichenko.

Subgenus *Protexarnis* McDunnough, [1929]

Actebia (*Protexarnis*) *squalida* (Guenée, 1852) – FP: VI–VIII; localities: I6, AK1, AK2, P11, P19, S17, L24, L27, B37, E46. Reference: Pospelov (1962, as *Protexarnis*). (Appendix 1, Map 327)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. N Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, NW China (ssp. *squalida*), N China (ssp. *aucta*), S China (ssp. *terracotta*), N Himalaya (ssp. *anthracina*) (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: I6, vic. of Koskol (old name State farm «Koskul'skiy»), 7 ex., 05.07–23.08.1958, on the wheat fields, S.M. Pospelov; AK1, vic. of Krasnokutskoye vill., 05.08–23.08.1958, S.M. Pospelov; AK2 vic. of Razumovka vill., (1973–1976), Kh.A.Aibasov & A.B.Zhdanko; P11, Pavlodar city, 05.08. – 23.08.1960, S.M. Pospelov, 1♂, 27.06.2006, 3♂, 2♀, 12.08.2011, 1♀, 18.08.2011, N.E. Tarasovskaya, 1♂, 2♀, 31.07.2012, 1♂, 02.08.2012, 2♀, 06.08.2012, 1♂, 4♀, 31.08.2012, 1♂, 2♀, 23.08.2014, 1♂, 1♀, 13.10.2015, S.V. Titov, 2♂, 02.08. 2017, 5♂, 21.08.2017, S.V. Titov; S17 vic. of Sofiyevka vill., 13.08.1958, S.M. Pospelov; L24, Tuz lake, 3♂, 2♀, 06.08.2015, 1♂, 16.06.2016, S.V. Titov; L27, Borly lake, 8♂, 2♀, 25.06.2013, 1♂, 29.07.2013, S.V. Titov; B37, Zhasybay lake, 1♂, 01.08.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 3♀, 08.08.2008, 1♂, 18.07.2009, S.V. Titov, 5♂, 7♀, 12.08.2012, S.V. Titov, A.V. Volynkin;

Genus *Dichagyris* Lederer, 1857

Subgenus *Albocosta* Fibiger & Lafontaine, 1997

Dichagyris (*Albocosta*) *musiva* (Hübner, [1803])* – FP: VII–VIII; localities: P23, B30, B31, E46, M40. (Appendix 1, Map 328)

Biogeographical feature. Euro-Siberian, subboreal. C and S Europe, Asia Minor, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Transbaikalia, N Mongolia (ssp. *musiva*), E Mongolia (ssp. *sheljuzhkoi*), W China (ssp. *clarivena*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P23, vic. of Zhetekshi vill., 2♂, 3♀, 04.08.2015, 1♂, 24.07.2016, 2♀, 26.07.2016, 4♂, 10♀, 30.07.2016, S.V. Titov; B30, Kurkeli natural landmark, 1♀, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 1♂, 4♀, 18.08.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 3♀, 08.08.2008, 1♂, 18.07.2009, S.V. Titov, 1♂, 3♀, 12.08.2012, S.V. Titov, A.V. Volynkin; M40, Kalmakyrgan Mts., 1♂, 27.07.2014, S.V. Titov.

Dichagyris (*Albocosta*) *flammatra* ([Denis & Schiffermüller], 1775)* – FP: VI; locality: E47. (Appendix 1, Map 329)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. N Africa, W Europe, Transcaucasia, Asia Minor, Near East, NE Kazakhstan, W Siberia, Afghanistan, N India, Tibet (Fibiger, 1990; Titov et al, 2017 b).

Bionomics. Xero-mesophilous species.

Material: E47, vic. of Karazhar vill., 1♂ 13.06.2007, S.V. Titov.

Subgenus *Dichagyris* Lederer, 1857

Dichagyris (*Dichagyris*) *vallesiaca* (Boisduval, 1837)* – FP: VII–VIII; localities: B33, B36. (Appendix 1, Map 330)

Biogeographical feature. Euro-Siberian, subboreal. C Europe (Alps) (ssp. *vallesiaca*), Crimea (ssp. *crimaea*), Asia Minor, Near East (ssp. *griseotincta*), Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural (ssp. *subsqualorum*), NE Kazakhstan, Altai (Volynkin, 2012; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: B33, Toraygyr lake, 1♂, 09.07.2016, S.V. Titov; B36, Dulga tas rock, 1♂, 1♀, 26.07.2014, S.V. Titov.

Dichagyris (*Dichagyris*) *lutescens* (Eversmann, 1844)* – FP: VIII; locality: P11. (Appendix 1, Map 331)

Biogeographical feature. European-Siberian, subboreal. Central Asia, NE Kazakhstan, W Siberia (Fibiger, 1990; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: P11, Pavlodar city, 1960, Fedosimov (Coll. KSRIPPQ).

Dichagyris (*Dichagyris*) *truculenta* (Lederer, 1853)* – FP: VIII; localities: L26, B31, E46. (Appendix 1, Map 332)

Biogeographical feature. West Palaearctic-Central Asian, subboreal. W Europe, Transcaucasia, Asia Minor, Near East, Central Asia, NE Kazakhstan, W Siberia, Altai, (Fibiger, 1990; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: L26, vic. of Sharbakty vill., 2♂, 2♀, 11.08.2013, S.V. Titov; B31, vic. of Shonai vill., 5♂, 3♀, 04.08.2013, 1♀, 17.08.2013, S.M. Reznichenko, 1♂, 5♀, 18.08.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 9♂, 3♀, 08.08.2008, S.V. Titov, 11♂, 4♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Dichagyris (*Dichagyris*) *signifera* ([Denis & Schiffermüller], 1775)* – FP: VII; localities: B30, E50. (Appendix 1, Map 333)

Biogeographical feature. West Palaearctic-Central Asian, subboreal. Caucasus and Transcaucasia, Asia Minor, Near East, Central Asia, Uzbekistan, Kyrgyzstan, NE Kazakhstan, W Siberia, Altai (Fibiger, 1990; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: B30, Kurkeli natural landmark, 1♂, ♀, 12.07.2016, S.V. Titov; Olenty river valley, 1♀, 22.07.2014, S.V. Titov.

Dichagyris (*Dichagyris*) *orientis* (Alphéraky, 1882)* – FP: VI–VIII; localities: P12, P13, P22, S20, S23, B29, E54. (Appendix 1, Map 334)

Biogeographical feature. West Palaearctic-Central Asian, subboreal. Caucasus and Transcaucasia, Asia Minor, Central Asia, NE Kazakhstan, SW Siberia, W Mongolia, W China, (Fibiger, 1990; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 25.06.2007, 2♂, 2♀, 02.08.2009, 1♂, 02.07.2012, 1♂, 13.07.2013, 2♂, 1♀, 05.08.2013, 5♂, 6♀, 26.08.2013, 1♀, 03.08.2014, 1♂, 4♀, 13.08.2015, 6♂, 9♀, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 1♀, 18.08.2010, L.N. Ivan'ko; P22, vic. of Baydala vill., 2♂, 2♀, 13.06.2016, S.V. Titov; S20, vic. of Shalday vill., 1♂, 16.06.2007 4♂, 3♀, 18.07.2007, 8♂, 1♀, 22.07.2007, 2♀, 12.08.2012, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 4♀, 30.07.2007, S.V. Titov; B29, Birzhankol' lake, 1♀, 28.06.2008, 4♂, 5♀, 21.07.2008, 1♂, 17.06.2009, 3♀, 10.08.2017, S.V. Titov; E54 Ulken-Koyandy Mt., 2♂, 4♀, 17.08.2016, S.V. Titov.

Dichagyris (*Dichagyris*) *latipennis* (Püngeler, 1909)* – FP: VIII; localities: P11, S23, B32. (Appendix 1, Map 335)

Biogeographical feature. Central Asian, subtemperate. Asia Minor, Middle Asia, S Russia (SE European part), NE Kazakhstan (Nupponen, Fibiger, 2012, Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: P11, Pavlodar city, 1♀, 23.08.2014, S.V. Titov; S23, vic. of Sharbakty vill., 2♀, 11.08.2014, S.M. Reznichenko; B32, rock area Kempirtas, 1♂, 30.07.2013, S.V. Titov.

Genus *Euxoa* Hübner, [1821] 1816
Subgenus *Chorizagrotis* Smith, 1890

Euxoa (*Chorizagrotis*) *adumbrata* (Eversmann, 1842) – FP: VIII; localities: I6, I13, AK2, S17, B31. References: Pospelov (*1962, as Chorizagrotis*), Shek (1975, as inexpectata). (Appendix 1, Map 336)

Biogeographical feature. Holarctic, temperate. N America (Alaska, Canada, N USA), Greenland, Europe, Asia Minor, Caucasus and Transcaucasia, Middle Asia, Afghanistan, N Himalaya (Nepal), Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: I6, vic. of Koskol (old name State farm «Koskul'skiy»), 3 ex., 05.07 – 23.08.1958, on the wheat fields, S.M. Pospelov; K, 1♀, 27.07.1955, 1♂,13.08.1961, Aleksandrov (Coll. KSRIPPQ); I13, 2♂, 20.06.1962, vic., of Tikhonov vill., Ryabchenko (Coll. KSRIPPQ); AK2 vic. of Razumovka vill., (1973–1976), Kh.A.Aibasov & A.B.Zhdanko; S17 vic. of Sofiyevka vill., 10.07–15.07.1958, S.M. Pospelov; B31, vic. of Shonai vill., 6♂, 10♀, 02.08.2013, 3♂, 7♀, 04.08.2013, S.M. Reznichenko, 4♂, 6♀, 09.08.2013, 2♂, 5♀, 14.08.2013, 1♂, 2♀, 15.08.2013, 4♂, 6♀, 17.08.2013, S.M. Reznichenko, 1♀, 18.08.2013, S.V. Titov, 11♂, 5♀, 27.08.2013, S.M. Reznichenko.

Subgenus *Euxoa* Hübner, [1821] 1816

Euxoa (*Euxoa*) *conspicua* (Hübner, 1827)* – FP: VIII; locality: S23. (Appendix 1, Map 337)

Biogeographical feature. West Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, Himalaya, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, NW China (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: S23, vic. of Sharbakty vill., 8♂, 9♀, 11.08.2014, S.M. Reznichenko.

Euxoa (*Euxoa*) *temera* (Hübner, [1808])* – FP: VIII; locality: S23, B31. (Appendix 1, Map 338)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), Altai (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: S23, vic. of Sharbakty vill., 1♂, 02.08.2013, 1♂, 2♀, 04.08.2013, 3♂, 1♀, 09.08.2013, 2♂, 4♀, 14.08.2013, 3♂, 3♀, 15.08.2013, 1♂, 2♀, 17.08.2013, S.M. Reznichenko, 2♂, 18.08.2013, S.V. Titov, 5♂, 6♀, 27.08.2013, S.M. Reznichenko.

Euxoa (*Euxoa*) *ochrogaster* (Guenée, 1853) – FP: VII–IX; localities: Z1, I6, AK2, P13, S17, L24, B31, E46, E50, U48. References: Pospelov (1962, *as islandica rossica*), Shek (1975, *as islandica*). (Appendix 1, Map 339)

Biogeographical feature. Holarctic, temperate. N America (Canada, N USA) (ssp. ochrogaster), Iceland (ssp. *islandica*), N Europe, Caucasus, Middle Asia, Afghanistan, Himalaya, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (ssp. *rossica*) (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z1, vic. of Mikhailovka vill., 2♂, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 1♂, 2♀, 08.07.2013, V.S. Bychkov, 3♂, 5♀, 19.08.2017, S.V. Titov; I6, state farm «Koskul'skiy», 26 ex., 15.07. S.M. Pospelov; AK2 vic. of Razumovka vill., (1973–1976), Kh.A.Aibasov & A.B.Zhdanko; P13, vic. of Rozovka vill., 1♀, 18.08.2010, L.N. Ivan'ko; S17 vic. of Sofiyevka vill., 13.07.–14.08.1958, S.M. Pospelov; L24, Tuz lake, 2♂, 06.08.2015, S.V. Titov; B31, vic. of Shonai vill., 1♀, 04.08.2013, S.M. Reznichenko, 2♂, 3♀, 09.08.2013, 1♀, 14.08.2013, 5♂, 1♀, 15.08.2013, 2♂, 2♀, 17.08.2013, S.M. Reznichenko, 2♂, 6♀, 18.08.2013, S.V. Titov, 1♀, 27.08.2013, S.M. Reznichenko; E46, Shiderty river, Zhartas natural landmark, 12♂, 6♀, 08.08.2008, 2♂, 18.07.2009, S.V. Titov, 19♂, 7♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E50, Olenty river valley, 4♂, 2♀, 22.08.2013, S.V. Titov, 1♀, 22.07.2014, S.V. Titov; U48, vic. of Uspenka vill., 13.07–14.08.1958, S.M. Pospelov.

Euxoa (*Euxoa*) *phantoma* (I. Kozhantschikov, 1928) – FP: VI–VIII; localities: Z1, P12, P13, S17, B31. References: Pospelov (1962), Shek (1975). (Appendix 1, Map 340)

Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. S Ural, E Kazakhstan, W, S and E Siberia, Russian Far East, N Mongolia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 05.07.2011, M.Yu. Volkov, 1♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 6♂, 2♀, 08.07.2013, V.S. Bychkov, 6♂, 10♀, 19.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♀, 25.06.2007, 2♂, 1♀, 02.08.2009, 2♀, 03.07.2013, 3♂, 1♀, 13.07.2013, 1♂, 05.08.2013, 3♂, 6♀, 26.08.2013, 1♂, 03.08.2014, 1♂, 18.07.2015, 3♀, 13.08.2015, 2♂, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 1♂, 2♀, 18.08.2010, L.N. Ivan'ko; S17 vic. of Sofiyevka vill., 2 ex., 01.08–13.08.1958, S.M. Pospelov; B31, vic. of Shonai vill., 1♂, 4♀, 15.08.2013, 3♂, 6♀, 17.08.2013, S.M. Reznichenko, 1♂, 18.08.2013, S.V. Titov, 2♂, 6♀, 27.08.2013, S.M. Reznichenko.

Euxoa (*Euxoa*) *cursoria* (Hufnagel, 1766) – FP: VIII–IX; localities: P11, S17, S23, B31, E46. References: Pospelov (1962), Shek (1975). (Appendix 1, Map 341)

Biogeographical feature. Holarctic, subboreal. N America, Europe, Caucasus, Middle Asia, Afghanistan, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, N China (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P11, Pavlodar city, 09.07–16.08.1958, S.M. Pospelov, 10♂, 8♀, 11.09.2003, 6♂, 3♀, 12.08.2011, 4♂, 7♀, 18.08.2011, N.E. Tarasovskaya, 1♀, 02.08.2012, 13♂, 9♀, 06.08.2012, 9♂, 2♀, 31.08.2012,. E Tarasovskaya, 2♂, 23.08.2014, S.V. Titov, 6♂, 2♀, 02.08. 2017, 5♂, 16.08.2017, K. S. Titov, 7♂, 1♀, 21.08.2017, S.V. Titov, 8♂, 3♀, 18.09.2017, S.V. Titov; S17 vic. of Sofiyevka vill., 11 ex., 09.07–16.08.1958, S.M. Pospelov (Coll. ZISP); S23, vic. of Sharbakty vill., 1♂, 1♀, 30.07.2007, S.V. Titov, 4♂, 1♀, 11.08.2014, S.M. Reznichenko; B31, vic. of Shonai vill., 1♀, 15.09.2012, 1♀, 09.08.2013, 5♂, 1♀, 14.08.2013, 6♂, 2♀, 17.08.2013, S.M. Reznichenko, 7♂, 8♀, 18.08.2013, S.V. Titov, 7♂, 3♀, 27.08.2013, 18♂, 10♀, 10.09.2013, S.M. Reznichenko, 5♂, 1♀, 24.09.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 5♀, 08.08.2008, S.V. Titov, 12♂, 9♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Euxoa (*Euxoa*) *distinguenda* (Lederer, 1857)* – FP: VII–IX; localities: K, P11, P12, L24, E50. (Appendix 1, Map 342)

Biogeographical feature. Euro-Siberian, subboreal. C and S Europe (ssp. *distinguenda*), E Europe, Caucasus, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (ssp. *distincta*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: K, 1♀, 27.07.1955, Aleksandrov (Coll. KSRIPPQ); P11, Pavlodar city, 1♀, 04.08.1961, 1♂,13.08.1961, K.A.Slivkina (Coll. KSRIPPQ); P12, vic. of Pavlodarskoye vill., 1♀, 02.08.2009, 2♂, 6♀, 17.09.2009, 11♂, 4♀, 07.09.2011, 15♂, 8♀, 10.09.2012, 2♀, 03.07.2013, 6♂, 2♀, 13.07.2013, 1♂, 6♀, 05.08.2013, 2♂, 3♀, 26.08.2013, 4♂, 7♀, 04.09.2013, 9♂, 4♀, 15.09.2013, 5♂, 6♀, 03.08.2014, 7♂, 2♀, 06.09.2014, 10♂, 8♀, 11.09.2014, 3♂, 18.07.2015, 1♀, 13.08.2015, 4♂, 1♀, 08.09.2015, S.V. Titov; L24, Tuz lake, 4♂, 2♀, 20.09.2011, 1♂, 21.07.2015, S.V. Titov; E50, Olenty river valley, 1♂, 9♂, 3♀, 22.07.2014, S.V. Titov.

Euxoa (*Euxoa*) *obelisca* ([Denis & Schiffermüller], 1775) – FP: VIII; locality: P11, B31. Reference: Shek (1975). (Appendix 1, Map 343)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P11, Pavlodar city, 12.07.1962, Ryabchenko (Coll. KSRIPPQ); B31, vic. of Shonai vill., 1♂, 2♀, 24.09.2013, S.V. Titov.

Euxoa (*Euxoa*) *segnilis* (Duponchel, 1836)* – FP: VII–VIII; localities: P11, L24, B31, E46. (Appendix 1, Map 344)

Biogeographical feature. European-Central Asian, subboreal. C and SE Europe, SE Russia, NE Kazakhstan (Fibiger, 1990; Titov et al, 2017 b)

Bionomics. Xerophilous species.

Material: P11, Pavlodar city, 2♂, 3♀, 09.07.2008, S.V. Titov, 3♂, 1♀, 18.08.2011, N.E. Tarasovskaya; L24, Tuz lake, 1♀, 21.07.2015, 1♂, 4♀, 06.08.2015, S.V. Titov; B31, vic. of Shonai vill., 2♂, 18.08.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 5♂, 2♀, 18.07.2009, S.V. Titov.

Euxoa (*Euxoa*) *nigrofusca* (Esper, [1788]) – FP: VII–VIII; localities: I6, P11, P12, S23, L24, L26, B31, B35, E46, E50. Reference: Pospelov (*1962, as tritici*). (Appendix 1, Map 345)

Biogeographical feature. Eurasiatic Palaearctic, temperate. N Africa, Europe, Asia Minor, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: I6, vic. of Koskol (old name State farm «Koskul'skiy»), 1 ex.15.07.1958, S.M. Pospelov; P11, Pavlodar city, 21.07.1961, K.A.Slivkina (Coll. KSRIPPQ), 1♀, 28.07.2008, N.E. Tarasovskaya, 2♀, 21.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 2♂, 13.07.2013, 1♂, 05.08.2013, 3♂, 4♀, 26.08.2013, 1♀, 03.08.2014, 5♂, 1♀, 18.07.2015, 1♂, 13.08.2015, 6♀, 27.07.2016, S.V. Titov; S23, vic. of Sharbakty vill., 9♂, 5♀, 30.07.2007, S.V. Titov, 1♂, 6♀, 11.08.2014, 2♂, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 1♀, 21.07.2015, S.V. Titov; L26, vic. of Sharbakty vill., 1♂, 2♀, 11.08.2013, S.V. Titov; B31, vic. of Shonai vill., 6♂, 4♀,

04.08.2013, 1♀, 09.08.2013, 4♂, 14.08.2013, 2♂, 1♀, 15.08.2013, 1♀, 17.08.2013, S.M. Reznichenko, 6♂, 3♀, 18.08.2013, S.V. Titov, 1♂, 27.08.2013, S.M. Reznichenko; B35, vic. of Zhana Zhosaly vill., 1♀, 25.07.2014, S.V. Titov, 2♂, 16.07.2016, 3♂, 04.08.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 15♂, 8♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E50, Olenty river valley, 1♂, 1♀, 21.08.–22.08.2013, S.V. Titov, 2♂, 1♀, 22.07.2014, S.V. Titov.

Euxoa (*Euxoa*) *eruta* (Hübner, [1817])* – FP: VIII; locality: E46. (Appendix 1, Map 346)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: E46, Shiderty river, Zhartas natural landmark, 2♂, 1♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Euxoa (*Euxoa*) *nigricans* (Linnaeus, 1761) – FP: VII–IX; localities: I6, AK2, P12, P13, S17, S23, L24, B31, B35. Reference: Pospelov (1962). (Appendix 1, Map 347)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: I6, vic. of Koskol (old name State farm «Koskul'skiy»), 1 ex.13.07.1958, S.M. Pospelov; AK2 vic. of Razumovka vill., (1973–1976), Kh.A.Aibasov & A.B.Zhdanko; P12, vic. of Pavlodarskoye vill., 2♂, 4♀, 17.09.2009, 6♂, 2♀, 07.09.2011, 5♂, 1♀, 10.09.2012, 2♂, 1♀, 26.08.2013, 2♂, 04.09.2013, 2♂, 2♀, 15.09.2013, 6♂, 7♀, 06.09.2014, 4♂, 6♀, 11.09.2014, 1♂, 7♀, 13.08.2015, 1♀, 08.09.2015, 3♂, 1♀, 27.07.2016, 8♂, 11♀, 19.09.2017, S.V. Titov; P13, vic. of Rozovka vill., 4♀, 18.08.2010, L.N. Ivan'ko; S17 vic. of Sofiyevka vill., 23.08.1958, S.M. Pospelov; S23, vic. of Sharbakty vill., 2♂, 6♀, 30.07.2007, S.V. Titov, 3♂, 4♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 1♂, 1♀, 20.09.2011, 5♂, 1♀, 06.08.2015, S.V. Titov; B31, vic. of Shonai vill., 6♂, 3♀, 15.09.2012, 2♂, 2♀, 15.08.2013, S.M. Reznichenko, 5♂, 8♀, 18.08.2013, S.V. Titov, 7♂, 3♀, 27.08.2013, 2♂, 8♀, 10.09.2013, S.M. Reznichenko,

3♂, 2♀, 24.09.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 6♂, 2♀, 25.07.2014, S.V. Titov, 7♂, 2♀, 04.08.2017, S.V. Titov.

Euxoa (*Euxoa*) *aquilina* ([Denis & Schiffermüller], 1775)* – FP: VII–VIII; localities: P11, S23, L24, B31, E46, E50. (Appendix 1, Map 348)

Biogeographical feature. West Palaearctic, subboreal. Corsica and Sardinia I. (ssp. *falleri*), Israel, Jordan (ssp. *titschacki*), N Africa, Europe, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, C and S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai, W Mongolia, NW China (ssp. *aquilina*) (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: P11, Pavlodar city, 3♂, 1♀, 09.07.2008, S.V. Titov, 1♂, 28.07.2008, 4♂, 2♀, 30.07.2008, N.E. Tarasovskaya, 1♂, 2♀, 19.07.2010, 2♀, 24.07.2011, 1♀, 12.08.2011, 4♂, 2♀, 18.08.2011, N.E. Tarasovskaya, 3♂, 2♀, 31.07.2012, 1♂, 4♀, 31.08.2012, 1♂, 4♀, 21.08.2017, S.V. Titov; S23, vic. of Sharbakty vill., 3♂, 1♀, 30.07.2007, S.V. Titov, 1♂, 6♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 2♂, 1♀, 06.08.2015, S.V. Titov; B31, vic. of Shonai vill., 4♂, 7♀, 27.08.2013, S.M. Reznichenko; E46, Shiderty river, Zhartas natural landmark, 2♂, 1♀, 08.08.2008, 1♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E50, Olenty river valley, 3♂, 2♀, 22.07.2014, S.V. Titov.

Euxoa (*Euxoa*) *basigramma* (Staudinger, 1870) – FP: VII–IX; localities: I 11, P13, S23, L24, L26, B31, E46. Reference: Shek (1975). (Appendix 1, Map 349)

Biogeographical feature. European-Central Asian, subboreal. Asia Minor, Near East (ssp. *hyrcana*), Europe, Caucasus, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, NW China (ssp. *basigramma*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: I 11, vic. of Kuban' vill., 07.1961, K.A.Slivkina (Coll. KSRIPPQ); P13, vic. of Rozovka vill., 2♂, 1♀, 18.08.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 9♂, 12♀, 30.07.2007, S.V. Titov, 8♂, 4♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 7♂, 2♀, 21.07.2015, 6♂, 3♀, 06.08.2015, S.V. Titov; L26, vic. of Sharbakty vill., 7♂, 1♀, 11.08.2013, 1♀, 12.06.2014, S.V. Titov; B31, vic. of Shonai vill., 7♂, 3♀, 15.09.2012, 6♂, 3♀, 04.08.2013, 5♂, 2♀, 27.08.2013, 1♂, 10.09.2013, S.M. Reznichenko, 3♂, 6♀, 24.09.2013, S.V. Titov; E46,

Shiderty river, Zhartas natural landmark, 2♂, 4♀, 20.07.2007, 8♂, 1♀, 08.08.2008, S.V. Titov, 13♂, 8♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Euxoa (*Euxoa*) *fallax* (Eversmann, 1854)* – FP: VIII; locality: S23. (Appendix 1, Map 350)

Biogeographical feature. European-Central Asian, subboreal. SE Russia (S European part), NE Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan, Mongolia (Fibiger, 1990; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: S23, vic. of Sharbakty vill., 1♂, 11.08.2014, S.M. Reznichenko.

Euxoa (*Euxoa*) *deserta* (Staudinger, 1870)* – FP: VIII; localities: Z4, P12, S23. Reference: Shek (1975). (Appendix 1, Map 351)

Biogeographical feature. Siberian - Mediterranean, subboreal. Caucasus and Transcaucasia, Asia Minor (ssp. *glaseri*), Near East (ssp. *hamadanensis*), Turkmenistan, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, W Altai (ssp. *deserta*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z4, vic. of Moiseevka vill., 1♂, 2♀, 15.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 2♂, 13.08.2015, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 18.08.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 1♂, 2♀, 11.08.2014, S.M. Reznichenko.

Euxoa (*Euxoa*) *recussa* (Hübner, [1817]) – FP: VIII; locality: B31. Reference: Shek (1975). (Appendix 1, Map 352)

Biogeographical feature. West Palaearctic-Central Asian, subboreal. C and S Europe, Caucasus, Asia Minor (ssp. *recussa*), N Europe, S Russia (S European part, Ural, S Siberia), S Ural, NE Kazakhstan, W, S and E Siberia, N Mongolia, Russian Far East (ssp. *tetrastigma*), Middle Asia (ssp. *ligula*) (Volynkin, 2012; Titov et al, 2017 b).

Bionomics. Meso-xerophilous species.

Material: B31, vic. of Shonai vill., 3♂, 4♀, 17.08.2013, S.M. Reznichenko, 2♂, 6♀, 18.08.2013, S.V. Titov, 1♂, 1♀, 27.08.2013, S.M. Reznichenko.

Subgenus *Orosagrotis* Hampson, 1903

Euxoa (*Orosagrotis*) *tristis* (Staudinger, 1897)* – FP: VIII; locality: S23. (Appendix 1, Map 353)

Biogeographical feature. European-Central Asian, subboreal. Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, Mongolia, NW China, Russian Far East (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: S23, vic. of Sharbakty vill., 2♂, 1♀, 11.08.2014, S.M. Reznichenko.

Euxoa (*Orosagrotis*) *deficiens* (Wagner, 1913) – FP: VIII; localities: Z3, P11. References: Kozhantschikov (1929, 1937), Volynkin (2012). (Appendix 1, Map 354)

Biogeographical feature. Central Asian, subboreal. Middle Asia, E, SE and NE Kazakhstan, SE Altai, NW China, Mongolia (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Xerophilous species.

Material In Pavlodar Region, the species is known only by two old specimens collected by A.G. Yakobson (both are in coll. ZISP): the holotype of *Euxoa filipjevi* I. Kozhantschikov, 1929 (a junior synonym of *E deficiens*) from Zhelezinka (Type locality: "Altai (Shelesinskaja, Irtysh)"), and a female with label "Irtysh river, Pavlodar, 19.VIII.[19]06, A.G. Yakobson". No new material is knowN

Genus *Agrotis* Ochsenheimer, 1816

Agrotis characteristica (Alphéraky, 1892)* – FP: VIII–IX; localities: B31, E46, E54. (Appendix 1, Map 355)

Biogeographical feature. East Palaearctic, subboreal. E and SE Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, Mongolia, Russian Far East, N and NW China, Korea (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B31, vic. of Shonai vill., 2♂, 3♀, 15.09.2012, 1♂, 1♀, 18.08.2013, S.V. Titov, 5♂, 3♀, 10.09.2013, S.M. Reznichenko, 10♂, 5♀, 24.09.2013, S.V. Titov; E46, Shiderty river,

Zhartas natural landmark, 2♂, 1♀, 08.08.2008, 18♂, 6♀, 12.08.2012, S.V. Titov, A.V. Volynkin, V. Titov; E54 Ulken-Koyandy Mt., 8♂, 2♀, 17.08.2016, S.V. Titov.

Agrotis trifurca (Eversmann, 1837) – FP: VIII; localities: P13, S17, S23, E46. References: Pospelov (1962), Shek (1975). (Appendix 1, Map 356)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. E Europe, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P13, vic. of Rozovka vill., 2♂, 1♀, 18.08.2010, L.N. Ivan'ko; S17 vic. of Sofiyevka vill., 2 ex., 13.08.1958, S.M. Pospelov; S23, vic. of Sharbakty vill., 1♀, 11.08.2014, S.M. Reznichenko; E46, Shiderty river, Zhartas natural landmark, 2♀, 08.08.2008, 7♂, 4♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Agrotis cinerea ([Denis & Schiffermüller], 1775)* – FP: IX; locality: B31. (Appendix 1, Map 357)

Biogeographical feature. European-Central Asian, subboreal. Asia Minor, Caucasus and Transcaucasus, Turkmenistan, Central Asia, NE Kazakhstan (Fibiger, 1990; Titov et al, 2017 b).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 2♂, 1♀, 10.09.2013, S.M. Reznichenko.

Agrotis exclamationis (Linnaeus, 1758)* – FP: V–VIII; localities: Z1, Z2, Z6, I12, K10, P11, P12, P13, P19, L28, A42, E48. Reference: Pospelov (1962). (Appendix 1, Map 358)

Biogeographical feature. Transpalaearctic, temperate. N Africa (ssp. *nigriorbis*), Europe (Corsica – ssp. *corsica*), Near East, Caucasus and Transcaucasia, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, China (ssp. *exclamationis*), Russian Far East, Korea, Japan (ssp. *informis*) (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z1, vic. of Mikhailovka vill., 10♂, 2♀, 05.07.2011, M.Yu. Volkov, 7♂, 6♀, 19.05.2012, V.S. Bychkov, M.Yu. Volkov, 29♂, 5♀, 09.06.2012, S.V. Titov, 7♂, 9♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 3♂, 2♀, 08.07.2013, 4♂, 2♀, 18.08.2013, V.S. Bychkov, 6♂, 2♀, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 2♂, 1♀, 27.05.2011, V.S.

Bychkov, M.Yu. Volkov, 1♀, 09.07.2011, V.S. Bychkov, 6♂, 3♀, 14.08.2012, V.S. Bychkov, 2♂, 2♀, 09.06.2013, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 5♂, 2♀, 21.07.2013, V.S. Bychkov; 1♂, I12, vic. of Zarechnoye vill., 20.07.1960, K. A. Slivkina (Coll. KSRIPPQ); K10, vic. of Terenkol' vill., 8♂, 5♀, 24.09.2011, 3♂, 7♀, 19.06.2012, L.N. Ivan'ko, 5♂, 6♀, 10.07.2013, S.V. Titov; P11, Pavlodar city, 41 ex., 15.06–08.07.1960, S.M. Pospelov, 3♂, 5♀, 11.09.2003, 2♂, 4♀, 27.06.2006, 7♂, 6♀, 27.05.2008, S.V. Titov, 11♂, 5♀, 30.05.2008, 6♂, 8♀, 12.06.2008, N.E. Tarasovskaya, 1♂, 09.07.2008, S.V. Titov, 3♂, 1♀, 28.07.2008, 4♂, 2♀, 30.07.2008, N.E. Tarasovskaya, 1♂, 1♀, 28.05.2010, 1♀, 19.07.2010, 2♂, 1♀, 21.05.2011, S.V. Titov, 9♂, 7♀, 05.07.2011, 3♂, 5♀, 24.07.2011, 18♂, 7♀, 12.08.2011, 1♂, 4♀, 18.08.2011, N.E. Tarasovskaya, 2♂, 1♀, 15.05.2012, S.V. Titov, 1♂, 09.06.2012, L.N. Ivan'ko, 2♂, 1♀, 02.07.2012, 2♂, 1♀, 31.07.2012, 5♂, 02.08.2012, 7♂, 2♀, 06.08.2012, 5♂, 2♀, 31.08.2012, 2♂, 7♀, 16.05.2013, N.E. Tarasovskaya, 9♂, 2♀, 23.08.2014, 1♀, 03.07.2016, V.I. Blokhin, 9♂, 2♀, 02.08. 2017, 32♂, 15♀, 21.08.2017, S.V. Titov, S.V. Titov; P12, vic. of Pavlodarskoye vill., 8♂, 2♀, 25.06.2007, 1♀, 02.08.2009, 28♂, 3♀, 17.06.2012, 15♂, 6♀, 02.07.2012, 17♂, 8♀, 03.07.2013, 21♂, 8♀, 13.07.2013, 23♂, 9♀, 05.08.2013, 14♂, 7♀, 26.08.2013, 5♂, 2♀, 13.08.2015, 1♀, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 31♂, 14♀, 02.05.2010, 24♂, 7♀, 05.06.2010, 8♂, 1♀, 07.06.2010, 1♂, 08.06.2010, 5♂, 2♀, 02.07.2010, 6♂, 7♀, 06.07.2010, 3♂, 2♀, 18.07.2010, 13♂, 7♀, 18.08.2010, L.N. Ivan'ko; P19, vic. of Zhertumsyk vill., 2♀, 11.06.2016, 3♂, 4♀, 25.08.2017, S.V. Titov; L28, vic. of Akku vill., 17♂, 5♀, 18.06.2015, S.V. Titov, 13♂, 9♀, 24.08.2015, S.V. Titov, 2♂, 3♀, 20.07.2017, A.S. Karim; A42, Irtysh river, Zholpak natural landmark, 3♂, 5♀, 30.06.2007, 15♂, 8♀, 07.07.2008, 1♂, 1♀, 07.08.2017, S.V. Titov; E48, Shiderty reservoir, water pump №7, 5♂, 3♀, 12.06.2012, 5♂, 9♀, 28.06.2012, 18♂, 22♀, 06.08.2017, S.V. Titov.

Agrotis segetum ([Denis & Schiffermüller], 1775)* – FP: VI–VIII, X; localities: Z1, P11, P12, P13, S23, L28. (Appendix 1, Map 359)

Biogeographical feature. Subcosmopolitan, temperate. Old World. (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 10.10.2010, M.Yu. Volkov; P11, Pavlodar city, 6♂, 2♀, 19.07.2010, S.V. Titov, 1♂, 05.07.2011, 3♂, 1♀, 18.08.2011, 2♂, 2♀, 02.07.2012, 1♂, 31.07.2012, 1♂, 16.05.2013, N.E. Tarasovskaya, 1♂, 2♀, 23.08.2014, 1♀, 13.10.2015, 3♀, 21.08.2017, S.V. Titov, 2♂, 7♀, 18.09.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂,

25.06.2007, 2♀, 02.08.2009, 2♂, 6♀, 17.09.2009, 2♀, 07.09.2011, 3♀, 02.10.2011, 1♀, 04.10.2011, 5♂, 2♀, 13.07.2013, 1♀, 05.08.2013, 6♂, 2♀, 26.08.2013, 1♀, 13.08.2015, 8♂, 6♀, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 2♂, 08.06.2010, 4♂, 1♀, 02.07.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 5♂, 2♀, 30.07.2007, S.V. Titov, 1♀, 11.08.2014, 1♂, 19.06.2015, S.M. Reznichenko; L28, vic. of Akku vill., 4♂, 1♀, 24.08.2015, S.V. Titov.

Agrotis clavis (Hufnagel, 1766)* – FP: VII–VIII; localities: B35, B36, E46. (Appendix 1, Map 360)

Biogeographical feature. Transpalaearctic, temperate. Corsica (ssp. corsa) Europe, Caucasus and Transcaucasia, Near East, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural (ssp. *clavis*), W, S and E Siberia, Mongolia, Russian Far East, N India, NW China, Korea, Japan (ssp. *amurensis*), C China (ssp. *justifica*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B35, vic. of Zhana Zhosaly vill., 1♂, 25.07.2014, S.V. Titov; B36, Dulga tas rock, 1♀, 26.07.2014, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 08.08.2008, S.V. Titov, 2♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Agrotis vestigialis (Hufnagel, 1766) – FP: VIII–IX; localities: P12, P13, S17, S23, L24, U48. References: Pospelov (1962), Shek (1975). (Appendix 1, Map 361)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P13, vic. of Rozovka vill., 7♂, 2♀, 18.08.2010, L.N. Ivan'ko; P12, vic. of Pavlodarskoye vill., 28♂, 22♀, 02.08.2009, 10♂, 7♀, 17.09.2009, 18♂, 12♀, 07.09.2011, 43♂, 15♀, 10.09.2012, 10♂, 3♀, 26.08.2013, 6♂, 2♀, 03.08.2014, 21♂, 5♀, 06.09.2014, 11♂, 7♀, 11.09.2014, 8♂, 3♀, 08.09.2015, 4♂, 7♀, 19.09.2017, S.V. Titov; S17 vic. of Sofiyevka vill., 1 ex., 09.08.1958, S.M. Pospelov; S23, vic. of Sharbakty vill., 6♂, 2♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 12♂, 7♀, 06.08.2015, S.V. Titov; U48, vic. of Uspenka vill., 1 ex.,15.07.1958, S.M. Pospelov.

Agrotis ripae (Hübner, [1823]) – FP: VII–IX; localities: Z4, Z6, P11, S18, S23, L24, L26, L28, B31. Reference: Pospelov (1962). (Appendix 1, Map 362)

Biogeographical feature. West Palaearctic-Central Asian subboreal. N Africa, Europe, S Russia (S European part, Ural, S Siberia), NE Kazakhstan (Fibiger, 1990; Karsholt & Razowski, 1996; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: Z4, vic. of Moiseevka vill., 2♂, 28.08.2011, S.A.&Yu.P. Lorents; Z6, vic. of Novokuz'minka vill., 6♂, 2♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 6 ex., 24.06–09.07.1960, S.M. Pospelov, 6♂, 7♀, 11.09.2003, 2♂, 3♀, 30.07.2008, 5♂, 2♀, 18.08.2011, 4♂, 2♀, 31.07.2012, N.E. Tarasovskaya, 6♂, 5♀, 23.08.2014, 8♂, 2♀, 02.08.2017, 9♂, 3♀, 21.08.2017, S.V. Titov; S18, Maraldy lake, 1♂, 10.06.1959, Fedosimov (Coll. KSRIPPQ); S23, vic. of Sharbakty vill., 2♂, 30.07.2007, S.V. Titov, 1♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 4♂, 1♀, 20.09.2011, 2♂, 21.07.2015, 3♂, 2♀, 06.08.2015, S.V. Titov; L26, vic. of Sharbakty vill., 1♂, 2♀, 11.08.2013, S.V. Titov; L28, vic. of Akku vill., 7♂, 2♀, 24.08.2015, S.V. Titov, 2♂, 20.07.2017, A.S. Karim, S.V. Titov; B31, vic. of Shonai vill., 1♀, 15.09.2012, S.M. Reznichenko, 8♂, 4♀, 09.08.2013, 7♂, 2♀, 14.08.2013, 1♂, 15.08.2013, 1♀, 17.08.2013, S.M. Reznichenko, 2♂, 3♀, 18.08.2013, S.V. Titov, 4♂, 5♀, 27.08.2013, 2♂, 6♀, 10.09.2013, S.M. Reznichenko, 2♀, 24.09.2013, S.V. Titov.

Agrotis desertorum Boisduval, 1840* – FP: VI–VIII; localities: P11, P12, L24. Reference: Shek (1975). (Appendix 1, Map 363)

Biogeographical feature. West Palaearctic, subboreal. Asia Minor (ssp. *wagneri*), Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, NW China (ssp. *desertorum*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P11, Pavlodar city, 3♂, 1♀, 27.06.2006, 5♂, 2♀, 12.06.2008, N.E. Tarasovskaya, S.V. Titov, 1♂, 30.07.2008, N.E. Tarasovskaya, 3♂, 6♀, 18.08.2011, N.E. Tarasovskaya, 9♂, 6♀, 21.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 25.06.2007, 12♂, 7♀, 13.08.2015, 4♂, 2♀, 27.07.2016, S.V. Titov; L24, Tuz lake, 6♂, 1♀, 21.07.2015, 7♂, 2♀, 06.08.2015, S.V. Titov.

Agrotis ipsilon (Hufnagel, 1766)* – FP: VIII–X; localities: P12, L24, B31, E46, E51. (Appendix 1, Map 364)

Biogeographical feature. Subcosmopolitan, temperate. All continents except the polar regions (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 13.08.2015, 1♂, 1♀, 08.09.2015, 2♀, 19.09.2017, S.V. Titov; L24, Tuz lake, 1♂, 08.05.2011, 2♂, 3♀, 20.09.2011, S.V. Titov; B31, vic. of Shonai vill., 2♀, 15.09.2012, 1♀, 17.08.2013, 1♀, 10.09.2013, S.M. Reznichenko, 2♂, 1♀, 24.09.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♀, 08.08.2008, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 1♂, 03.10.2014, M. Černila & S.V. Titov, 1♀, 06.08.2017, S.V. Titov.

Subtribe Noctuina Latreille, 1809

Subtribe Axyliina Fibiger & Lafontaine, 2005

Genus *Axylia* Hübner, [1821] 1816

Axylia putris (Linnaeus, 1761)* – FP: VI–VII; localities: K10, P12, A42. (Appendix 1, Map 365)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Asia Minor, Caucasus and Transcaucasia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, China, Korea, Japan, SE Asia (ssp. *putris*), Himalaya (ssp. *triseriata*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: K10, vic. of Terenkol' vill., 1♂, 2♀, 19.06.2012, L.N. Ivan'ko, 1♀, 10.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 25.06.2007, 5♂, 4♀, 17.06.2012, 3♂, 1♀, 02.07.2012, 11♂, 5♀, 03.07.2013, 2♂, 4♀, 13.07.2013, 3♂, 1♀, 18.07.2015, 5♂, 2♀, 27.07.2016, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 7♂, 9♀, 30.06.2007, 8♂, 6♀, 07.07.2008, S.V. Titov.

Genus *Ochropleura* Hübner, [1821] 1816

Ochropleura plecta (Linnaeus, 1761)* – FP: VI; locality: P23. (Appendix 1, Map 366)

Biogeographical feature. Subcosmopolitan, temperate. SW Europe (Pyrenees), N Africa (Morocco) (ssp. *unimacula*), N America, C Europe, Caucasus and Transcaucasia, Asia Minor, S

Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, China, India, Sri Lanka (ssp. *plecta*), Russian Far East, Korea, Japan (ssp. *glaucimacula*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P23, vic. of Zhetekshi vill., 1♀, 30.07.2016, S.V. Titov.

Subtribe Noctuina Latreille, 1809

Genus *Diarsia* Hübner, [1821] 1816

Diarsia dahlii (Hübner, [1813])* – FP: VII; locality: P11. (Appendix 1, Map 367)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *dahlii*), Transbaikalia, N Mongolia, Russian Far East, N China, Korea, Japan (ssp. *nana*), W China (Tibet) (ssp. *tibetica*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 2♂, 1♀, 28.07.2008, 1♂, 1♀, 30.07.2008, ♂, 1♀, 24.07.2011, N.E. Tarasovskaya, 1♀, 31.07.2012, S.V. Titov.

Diarsia brunnea ([Denis & Schiffermüller], 1775)* – FP: VIII; locality: B33. (Appendix 1, Map 368)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B33, Toraygyr lake, 3♂, 2♀, 09.08.2017, S.V. Titov.

Diarsia mendica (Fabricius, 1775)* – FP: VI–VII; localities: P11, P12, E48. (Appendix 1, Map 369)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Near East (Iran) (ssp. *monochroma*), Europe, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural (ssp. *mendica*), W and S Siberia, Transbaikalia, Russian Far East (ssp. *lamentanda*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 2♂, 1♀, 28.07.2008, 1♀, 30.07.2008, N.E. Tarasovskaya, 1♂, 3♀, 19.07.2010, S.V. Titov, 1♂, 31.07.2012, 2♂, 4♀, 31.08.2012, N.E. Tarasovskaya, 5♂, 2♀, 21.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 1♀, 25.06.2007, 1♀, 17.06.2012, 4♂, 2♀, 02.07.2012, 6♂, 7♀, 13.07.2013, 4♂, 7♀, 18.07.2015, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♂, 28.06.2012, S.V. Titov.

Genus *Sineugraphe* Boursin, 1954

Sineugraphe exusta (Butler, 1878)* – FP: VIII; locality: E48. (Appendix 1, Map 370)

Biogeographical feature. East Palaearctic, temperate. Ural, W and S Siberia, Mongolia, Russian Far East, Korea, Japan (ssp. *exusta*), SW China (ssp. *sinica*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: E47, vic. of Karazhar vill., 2♂, 1♀, 11.08.2008, S.V. Titov.

Genus *Cerastis* Ochsenheimer, 1816

Cerastis rubricosa ([Denis & Schiffermüller], 1775)* – FP: IV–V; localities: B31, B38. (Appendix 1, Map 371)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Asia Minor, Caucasus, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 2♂, 1♀, 10.04.2013, 3♂, 5♀, 04.04.2014, S.M. Reznichenko, 4♂, 1♀, 05.05.2014, S.V. Titov, 2♂, 6♀, 14.04.2016, M. Černila & S.V. Titov; B38, Zhumbak natural landmark, 7♂, 2♀, 17.04.2016, M. Černila & S.V. Titov.

Cerastis leucographa ([Denis & Schiffermüller], 1775)* – FP: IV–V; localities: P14, M39. (Appendix 1, Map 372)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, N and E Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, Transbaikalia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P14 vic. of Kenzhenkol vill., 1♂, 1♀, 01.05.–05.05.2010, 1♂, 1♀, 19.07.–20.07.2012, S.V. Titov; M39, vic. of Koktobe vill., 1♂, 1♀, 24.05.2010, 1♂, 1♀, 12.04.2012, S.V. Titov.

Genus *Paradiarsia* McDunnough, [1829]

Paradiarsia punicea (Hübner, [1803])* – FP: VI–VII; locality: P12. (Appendix 1, Map 373)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, N Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 25.06.2007, 1♀, 17.06.2012, 3♂, 2♀, 03.07.2013, 4♂, 6♀, 13.07.2013, 1♂, 18.07.2015, 6♂, 27.07.2016, V. Titov.

Genus *Netrocerocora* Bartel, 1902

Netrocerocora quadrangula (Eversmann, 1844)* – FP: VI; localities: Z2, K10. (Appendix 1, Map 374)

Biogeographical feature. Siberian - Mediterranean, subboreal. Caucasus and Transcaucasia, Asia Minor, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, W and S Siberia, Mongolia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 05.06.2012, S.V. Titov, V.S. Bychkov, 1♀, 09.06.2013, V.S. Bychkov; K10, vic. of Terenkol' vill., 1♀, 19.06.2012, L.N. Ivan'ko.

Genus *Rhyacia* Hübner, [1821] 1816

Rhyacia caradrinoides (Staudinger, 1897)* – FP: VI; locality: B33. (Appendix 1, Map 375)

Biogeographical feature. S Siberian - Central Asian, subboreal. Kazakhstan, Middle Asia, Ural, S Siberia, Mongolia, NW China (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B33, Toraygyr lake, 2♂, 1♀, 11.06.2014, S.V. Titov, A.V. Volynkin

Rhyacia simulans (Hufnagel, 1766) – FP: VII; localities: P11, S23. Reference: Shek (*1975, as Caradrina auguroides*). (Appendix 1, Map 376)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: 1♀,P11, Pavlodar city, 22.07.1962, Ryabchenko (Coll. KSRIPPQ); S23, vic. of Sharbakty vill., 2♂, 1♀, 30.07.2007, S.V. Titov.

Rhyacia arenacea (Hampson, 1907)* – FP: VIII; locality: B30. (Appendix 1, Map 377)

Biogeographical feature. European-Central Asian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Afghanistan, Himalaya, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B30, Kurkeli natural landmark, 1♀, 16.08.2016, S.V. Titov.

Genus *Chersotis* Boisduval, 1840

Chersotis transiens (Staudinger, 1896)* – FP: VII–VIII; localities: B31, B33, B35, E46, M40. (Appendix 1, Map 378)

Biogeographical feature. S Siberian - Central Asian, subboreal. Middle Asia, Kazakhstan, S Ural, W, S and E Siberia, N Mongolia, N Russian Far East, S Mongolia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B31, vic. of Shonai vill., 24♂, 19♀, 02.08.2013, 10♂, 8♀, 04.08.2013, S.M. Reznichenko, 14♂, 15♀, 09.08.2013, 8♂, 4♀, 14.08.2013, 2♂, 11♀, 15.08.2013, 5♂, 6♀, 17.08.2013, S.M. Reznichenko, 3♂, 18.08.2013, S.V. Titov, 16♂, 27♀, 27.08.2013, S.M. Reznichenko; B33, Toraygyr lake, 1♂, 1♀, 09.07.2016, 1♂, 1♀, 15.07.2016, 1♂, 1♀, 28.07.2016, 10♂, 4♀, 17.05.2017, 8♂, 2♀, 03.08.2017, 12♂, 5♀, 09.08.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 7♂, 8♀, 25.07.2014, S.V. Titov, 5♂, 3♀, 04.07.2016, 17♂, 12♀,

16.07.2016, 21♂, 8♀, 04.08.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 27♂, 31♀, 08.08.2008, 5♂, 11♀, 18.07.2009, S.V. Titov, 42♂, 21♀, 12.08.2012, S.V. Titov, A.V. Volynkin; M40, Kalmakyrgan Mts., 8♂, 1♀, 27.07.2014, S.V. Titov.

Chersotis elegans (Eversmann, 1837)* – FP: VII–VIII; localities: B31, B35. (Appendix 1, Map 379)

Biogeographical feature. European-Central Asian, subboreal. Near East (ssp. *hermonis*), Europe, Caucasus and Transcaucasia, Asia Minor, Near East (Iran), Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Altai (ssp. *elegans*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B31, vic. of Shonai vill., 2♂, 1♀, 14.08.2013, S.M. Reznichenko, 1♂, 18.08.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 25.07.2014, 1♀, 04.08.2017, S.V. Titov.

Chersotis margaritacea (de Villers, 1789)* – FP: VIII; localities: B31, B33. (Appendix 1, Map 380)

Biogeographical feature. European-Central Asian, subboreal. N Africa, W Europe, Transcaucasia, Asia Minor, Russia (Altai), Central Asia, NE Kazakhstan (Fibiger, M., 1993; Titov et al, 2017 b).

Bionomics. Xeromontane

Material: B31, vic. of Shonai vill., 5♂, 4♀, 18.08.2013, 2♀, food on the inflorescences of wild onions, S.V. Titov.

Genus *Noctua* Linnaeus, 1758

Noctua interposita (Hübner, 1790)* – FP: VII–IX; localities: P12, P23, S23, B31, B35, A45, A46. (Appendix 1, Map 381)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 3♀, 26.08.2013, 2♂, 06.09.2014, 1♂, 18.07.2015, 2♂, 4♀, 27.07.2016, 2♀, 19.09.2017, S.V. Titov; P23, vic. of Zhetekshi vill., 3♂, 2♀, 04.08.2015, 1♀, 24.07.2016, 5♂, 2♀, 30.07.2016, S.V. Titov; S23, vic. of Sharbakty vill., 5♀, 30.07.2007, S.V. Titov, 7♂, 1♀, 11.08.2014, S.M. Reznichenko; B31, vic. of Shonai vill., 2♂, 15.09.2012, 1♀, 02.08.2013, 1♂, 1♀, 15.08.2013, S.M. Reznichenko, 3♂, 18.08.2013, S.V. Titov, 1♂, 27.08.2013, S.M. Reznichenko, 2♀, 24.09.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 25.07.2014, S.V. Titov, 1♀, 04.08.2017, S.V. Titov; A45, old road bridge, the Irtysh river, 2♀, 26.07.2009, 2♂, 31.09.2009, S.V. Titov; A46, vic. of Kurkol' vill., 1♀, 25.07.2016, 1♀, 22.08.2017, S.V. Titov.

Genus *Spaelotis* Boisduval, 1840

Spaelotis ravida ([Denis & Schiffermüller], 1775) – FP: VI, VIII–IX; localities: I6, AK1, AK2, P11, P12, S17, L24, L27, S23, B32, E47, U48, U52. Reference: Pospelov (1962). (Appendix 1, Map 382)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, Afghanistan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: I6, vic. of Koskol (old name State farm «Koskul'skiy»), 51 ex., 16.06–23.08.1958, on the wheat fields, S.M. Pospelov; AK1, vic. of Krasnokutskoye vill., 16.06–23.08.1958, S.M. Pospelov; AK2 vic. of Razumovka vill., (1973–1976), Kh.A.Aibasov & A.B.Zhdanko; P11, Pavlodar city, 16.06–23.08.1960, S.M. Pospelov; 1♀, 11.09.2003, 10♂, 8♀, 27.06.2006, 1♂, 1♀, 12.06.2008, N.E. Tarasovskaya, 3♂, 2♀, 09.07.2008, S.V. Titov, 6, 1♀, 28.07.2008, 12♂, 9♀, 30.07.2008, N.E. Tarasovskaya, 8♂, 4♀, 19.07.2010, S.V. Titov, 2♂, 5♀, 12.08.2011, 3♂, 18.08.2011, 1♂, 02.08.2012, N.E. Tarasovskaya, 6♂, 2♀, 23.08.2014, 4♀, 21.08.2017, 2♂, 1♀, 18.09.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 5♂, 25.06.2007, 1♂, 02.08.2009, 8♀, 17.09.2009, 3♂, 2♀, 07.09.2011, 1♂, 1♀, 02.07.2012, 2♂, 10.09.2012, 1♂, 03.07.2013, 6♂, 2♀, 13.07.2013, 2♀, 05.08.2013, 9♂, 1♀, 26.08.2013, 1♀, 04.09.2013, 2♂, 2♀, 15.09.2013, 4♀, 03.08.2014, 2♂, 9♀, 11.09.2014, 1♂, 18.07.2015, 8♂, 6♀, 13.08.2015, 1♀, 08.09.2015, 11♂, 1♀, 27.07.2016, 1♂, 4♀, 19.09.2017, S.V. Titov; S17 vic. of Sofiyevka vill.,

19.06–23.08.1958, S.M. Pospelov; L24, Tuz lake, 1♀, 20.09.2011, 12♂, 2♀, 21.07.2015, 4♀, 06.08.2015, 13♂, 7♀, 16.06.2016, S.V. Titov; L27, Borly lake, 3♂, 25.06.2013, 1♂, 29.07.2013, S.V. Titov; S23, vic. of Sharbakty vill., 8♂, 7♀, 30.07.2007, S.V. Titov, 6♂, 1♀, 11.08.2014, 5♂, 2♀, 19.06.2015, S.M. Reznichenko; B32, rock area Kempirtas, 25♂, 16♀, 13.08.2008, 6♂, 7♀, 13.06.2013, 9♂, 1♀, 28.06.2013, 1♂, 30.07.2013, 7♂, 2♀, 25.09.2013, 3♂, 2♀, 13.06.2014, S.V. Titov; E47, vic. of Karazhar vill., 10♂, 5♀, 13.06.2007, 1♂, 2♀, 11.08.2008, 4♂, 3♀, 30.06.2009, 2♂, 8♀, 12.09.2015, 1♂, 8♀, 21.09.2015, S.V. Titov; U48, vic. of Uspenka vill., 13.07–14.08.1958, S.M. Pospelov; B, 16.06 – 23.08.1960, S.M. Pospelov; U52, vic. of Lozovoye vill., 14♂, 3♀, 29.06.2016, S.V. Titov.

Spaelotis deplorata (Staudinger, 1896)* – FP: VI–VIII; localities: B31, B34. (Appendix 1, Map 383)

Biogeographical feature. Central Asian, subboreal. Near East, Middle Asia, Kazakhstan, S Ural, Altai, Mongolia, N and NW China, N Korea (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B31, vic. of Shonai vill., 1♀, 15.08.2013, S.M. Reznichenko, 1♂, 2♀, 18.08.2013, S.V. Titov; B34, natural landmark Kirigichi, 1♂, 30.06.2013, S.V. Titov.

Spaelotis senna (Freyer, 1829)* – FP: VII–IX; locality: B31. (Appendix 1, Map 384)

Biogeographical feature. European-Central Asian, Xeromontane. N Africa, Europe, Italy, (ssp. *einsenbergeri*), Turkey, Iran (ssp. *contorta*), NE Kazakhstan (Fibiger, M., 1993; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: B31, vic. of Shonai vill., 1♂, 15.09.2012, S.V. Titov.

Genus *Opigena* Boisduval, 1840

Opigena polygona ([Denis & Schiffermüller], 1775)* – FP: VIII; locality: B31. (Appendix 1, Map 385)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Transcaucasia, Asia Minor, Near East (ssp. *chersotimorpha*), Middle Asia, Kazakhstan, W and C China, Nepal, Mongolia

(ssp. *obscurata*), Europe, Caucasus, S Ural, W, S and E Siberia (ssp. *polygona*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B31, vic. of Shonai vill., 1♂, 15.08.2013, S.M. Reznichenko, 1♂, 18.08.2013, S.V. Titov.

Genus *Eurois* Hübner, [1821] 1816

Eurois occulta (Linnaeus, 1758)* – FP: VI–VIII; localities: Z1, Z2, P12, E48. (Appendix 1, Map 386)

Biogeographical feature. Holarctic, boreal. C. America, Europe, Caucasus, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, N Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 05.07.2011, M.Yu. Volkov, 3♂, 2♀, 09.06.2012, S.V. Titov, 3♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 6♂, 1♀, 08.07.2013, V.S. Bychkov, 1♂, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 10♂, 4♀, 09.07.2011, V.S. Bychkov, 1♂, 05.06.2012, S.V. Titov, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 5♂, 7♀, 25.06.2007, 1♀, 02.08.2009, 4♂, 17.06.2012, 1♀, 02.07.2012, 3♀, 05.08.2013, 2♂, 4♀, 26.08.2013, 1♀, 18.07.2015, 7♀, 27.07.2016, S.V. Titov; E48, Shiderty reservoir, water pump №7, 3♂, 3♀, 12.06.2012, 1♂, 5♀, 28.06. 2012, 3♀, 06.08.2017, S.V. Titov.

Genus *Graphiphora* Ochsenheimer, 1816

Graphiphora augur (Fabricius, 1775)* – FP: VII; locality: B35. (Appendix 1, Map 387)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, N Mongolia, N China, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B35, vic. of Zhana Zhosaly vill., 1♂, 16.07.2016,S.V. Titov.

Genus *Anaplectoides* McDunnough, [1929]

Anaplectoides prasina ([Denis & Schiffermüller], 1775)* – FP: VI–VIII; localities: P12, A45. (Appendix 1, Map 388)

Biogeographical feature. Holarctic, boreal. N America, Europe, Asia Minor, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 6♂, 5♀, 25.06.2007, 2♀, 02.08.2009, 10♂, 6♀, 17.06.2012, 11♂, 9♀, 02.07.2012, 1♂, 1♀, 03.07.2013, 4♂, 2♀, 13.07.2013, 3♂, 05.08.2013, 1♂, 5♀, 03.08.2014, 1♂, 1♀, 18.07.2015, 4♀, 13.08.2015, 1♂, 1♀, 27.07.2016, 1♂, 1♀, 22.04.2017, S.V. Titov; A45, old road bridge, the Irtysh river, 2♀, 26.07.2009, 1♀, 31.09.2009, S.V. Titov.

Genus *Pseudohermonassa* Varga, 1990

Pseudohermonassa melancholica (Lederer, 1853)* – FP: VII–VIII; localities: Z1, P11, L24, B31. (Appendix 1, Map 389)

Biogeographical feature. Manchurian - Middle Asian - Siberian, subboreal. Ural, W and S Siberia, Russian Far East, N Mongolia, China (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 2♂, 1♀, 08.07.2013, V.S. Bychkov, 2♂, 19.08.2017, S.V. Titov; P11, Pavlodar city, 1♂, 09.07.2008, S.V. Titov, 1♀, 18.08.2011, N.E. Tarasovskaya; L24, Tuz lake, 2♀, 21.07.2015, S.V. Titov; B31, vic. of Shonai vill., 1♀, 04.08.2013, S.M. Reznichenko.

Genus *Xestia* Hübner, [1818]

Subgenus *Xestia* Hübner, [1818]

Xestia (*Xestia*) *baja* ([Denis & Schiffermüller], 1775)* – FP: VII–IX; localities: P11, P12, S23, L24, B35. (Appendix 1, Map 390)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia (ssp. *baja*), Russian Far East, China, Korea, Japan (ssp. *tabida*) (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: P11, Pavlodar city, 8♂, 5♀, 11.09.2003, 5♂, 3♀, 09.07.2008, S.V. Titov, 1♂, 28.07.2008, 2♀, 30.07.2008, 6♂, 2♀, 24.07.2011, 7♂, 3♀, 12.08.2011, 7♂, 9♀, 18.08.2011, N.E. Tarasovskaya, 9♀, 31.07.2012, 4♂, 02.08.2012, 3♂, 5♀, 06.08.2012, 6♂, 2♀, 31.08.2012, N.E. Tarasovskaya, 1♂, 9♀, 23.08.2014, S.V. Titov, 1♂, 02.08.2017, 4♂, 5♀, 21.08.2017, S.V. Titov, 10♂, 8♀, 18.09.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 02.08.2009, 7♂, 6♀, 07.09.2011, 2♂, 2♀, 10.09.2012, 1♂, 03.07.2013, 4♂, 2♀, 13.07.2013, 8♂, 05.08.2013, 2♂, 6♀, 26.08.2013, 1♀, 04.09.2013, 3♂, 4♀, 15.09.2013, 1♂, 03.08.2014, 7♂, 1♀, 06.09.2014, 3♂, 11.09.2014, 1♂, 1♀, 18.07.2015, 6♂, 3♀, 13.08.2015, 4♂, 2♀, 08.09.2015, 1♀, 27.07.2016, 7♂, 2♀, 19.09.2017, S.V. Titov; S23, vic. of Sharbakty vill., 7♂, 1♀, 30.07.2007, S.V. Titov, 2♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 3♀, 21.07.2015, 2♂, 06.08.2015, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 25.07.2014, 3♀, 16.07.2016, 2♂, 4♀, 04.08.2017, S.V. Titov.

Subgenus *Megasema* Hübner, [1821] 1816

Xestia (*Megasema*) *c-nigrum* (Linnaeus, 1758) – FP: VI–IX; localities: Z1, Z2, Z6, K10, P11, P12, P13, P19, S23, L24, B32, A42, E48, U48. Reference: Pospelov (1962, *as Amathes*). (Appendix 1, Map 391)

Biogeographical feature. Subcosmopolitan, temperate. N America, N Africa, Europe, Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, Afghanistan, Himalaya, India, Sri Lanka, Russia, Mongolia, China, Korea, Japan, Indochina (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z1, vic. of Mikhailovka vill., 25♂, 6♀, 08.07.2013, V.S. Bychkov, 17♂, 10♀, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 12♂, 8♀, 09.07.2011, V.S. Bychkov, 2♂, 8♀, 05.06.2012, S.V. Titov, V.S. Bychkov, 21♂, 8♀, 14.08.2012, V.S. Bychkov, 5♂, 1♀, 09.06.2013, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 10♂, 4♀, 21.07.2013, V.S. Bychkov; K10, vic. of Terenkol' vill., 1♂, 5♀, 24.09.2011, L.N. Ivan'ko, 6♂, 2♀, 19.06.2012,

L.N. Ivan'ko, 2♀, 10.07.2013, S.V. Titov; P11, Pavlodar city, 28 ex., 09.06–17.07.1960, S.M. Pospelov, P12, vic. of Pavlodarskoye vill., 3♂, 1♀, 25.06.2007, 7♂, 02.08.2009, 18♂, 3♀, 17.09.2009, 6♂, 2♀, 07.09.2011, 1♀, 17.06.2012, 1♂, 4♀, 02.07.2012, 5♂, 1♀, 10.09.2012, 8♂, 1♀, 03.07.2013, 1♂, 2♀, 13.07.2013, 3♂, 3♀, 05.08.2013, 1♂, 2♀, 26.08.2013, 1♀, 04.09.2013, 7♂, 1♀, 15.09.2013, 8♂, 2♀, 03.08.2014, 3♂, 06.09.2014, 5♂, 6♀, 11.09.2014, 19♂, 4♀, 18.07.2015, 3♂, 3♀, 13.08.2015, 1♂, 08.09.2015, 12♂, 2♀, 19.09.2017, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 1♀, 18.08.2010, L.N. Ivan'ko; P19, vic. of Zhertumsyk vill., 1♂, 5♀, 11.06.2016, 7♂, 2♀, 25.08.2017, S.V. Titov; S23, vic. of Sharbakty vill., 7♂, 9♀, 30.07.2007, S.V. Titov, 13♂, 4♀, 11.08.2014, 1♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 6♂, 3♀, 20.09.2011, 11♀, 21.07.2015, 8♂, 5♀, 06.08.2015, 6♂, 1♀, 16.06.2016, S.V. Titov; B32, rock area Kempirtas, 7♂, 3♀, 13.08.2008, 5♂, 13.06.2013, 1♂, 4♀, 28.06.2013, 7♂, 3♀, 30.07.2013, 6♂, 3♀, 25.09.2013, 8♂, 6♀, 13.06.2014, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 1♂, 30.06.2007, 4♂, 12♀, 07.07.2008, 11♂, 6♀, 07.08.2017, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♂, 12.06.2012, 1♂, 28.06.2012, 7♂, 9♀, 06.08.2017, S.V. Titov; U48, vic. of Uspenka vill., 8 ex., 16.06–23.08.1958, S.M. Pospelov.

Xestia (*Megasema*) *ditrapezium* ([Denis & Schiffermüller], 1775)* – FP: VI–VII; localities: Z1, Z6, P11, P12, P13, A42, A45, E48. (Appendix 1, Map 392)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Middle Asia (Kyrgyzstan), Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia (ssp. *ditrapezium*), Russian Far East, China, Korea, Japan (ssp. *orientalis*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♂, 05.07.2011, M.Yu. Volkov, 3♂, 1♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 6♂, 2♀, 08.07.2013, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 10♂, 2♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 3♂, 2♀, 27.06.2006, 1♀, 12.06.2008, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 6♂, 1♀, 25.06.2007, 3♂, 1♀, 17.06.2012, 2♂, 02.07.2012, 5♂, 1♀, 03.07.2013, 3♀, 13.07.2013, 1♂, 7♀, 18.07.2015, S.V. Titov; P13, vic. of Rozovka vill., 1♂,4♀, 18.07.2010, L.N. Ivan'ko; A42, Irtysh river, Zholpak natural landmark, 22♂, 11♀, 30.06.2007, 3♂, 2♀, 07.07.2008, S.V. Titov; A45, old road bridge, the Irtysh river, 2♀, 26.07.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 6♂, 1♀, 12.06.2012, 4♂, 3♀, 28.06. 2012, S.V. Titov.

Xestia (*Megasema*) *triangulum* (Hufnagel, 1766)* – FP: VI–VIII; localities: Z1, Z4, Z6, P12, P13, B30, B37. (Appendix 1, Map 393)

Biogeographical feature. Euro-Siberian, subboreal. Near East (Iran) (ssp. *ehrmanni*), Europe, Asia Minor, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *triangulum*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 8♂, 3♀, 05.07.2011, M.Yu. Volkov, 8♂, 2♀, 09.06.2012, S.V. Titov, 6♂, 3♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 1♂, 08.07.2013, V.S. Bychkov, 2♂, 3♀, 19.08.2017, S.V. Titov; Z4, vic. of Moiseevka vill., 3♀, 28.08.2011, S.A.&Yu.P. Lorents, 1♀, 25.07.2013, S.V. Titov; Z6, vic. of Novokuz'minka vill., 1♀, 21.07.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 7♂, 1♀, 25.06.2007, 1♀, 02.08.2009, 7♂, 4♀, 17.09.2009, 1♂, 07.09.2011, 1♂, 2♀, 13.07.2013, 5♂, 8♀, 05.08.2013, 7♂, 11♀, 26.08.2013, 1♀, 04.09.2013, 9♂, 2♀, 15.09.2013, 1♂, 7♀, 03.08.2014, 1♀, 06.09.2014, 6♂, 2♀, 11.09.2014, 1♂, 18.07.2015, 1♀, 08.09.2015, 3♂, 5♀, 19.09.2017, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 18.08.2010, L.N. Ivan'ko; B30, Kurkeli natural landmark, 3♂, 5♀, 16.08.2016, S.V. Titov; B37, Zhasybay lake, 2♀, 01.08.2017, S.V. Titov.

Xestia (*Megasema*) *kollari* (Lederer, 1853)* – FP: VII–VIII; localities: B31, B35, B36, M40. (Appendix 1, Map 394)

Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. E Kazakhstan, S Ural, S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B31, vic. of Shonai vill., 12♂, 3♀, 14.08.2013, 5♂, 2♀, 15.08.2013, 3♂, 1♀, 17.08.2013, S.M. Reznichenko, 11♂, 5♀, 18.08.2013, S.V. Titov, 25♂, 13♀, 27.08.2013, S.M. Reznichenko; B35, vic. of Zhana Zhosaly vill., 46♂, 8♀, 25.07.2014, S.V. Titov, 12♂, 2♀, 16.07.2016, 19♂, 9♀, 04.08.2017, S.V. Titov; B36, Dulga tas rock, 8♂, 5♀, 26.07.2014, S.V. Titov; M40, Kalmakyrgan Mts., 4♂, 2♀, 27.07.2014, S.V. Titov.

Xestia (*Megasema*) *ashworthii* (Doubleday, 1855)* – FP: VII; locality: E50. (Appendix 1, Map 395)

Biogeographical feature. Euro-Siberian, subboreal. N and S Europe, England (ssp. *ashworthii*), N Europe (ssp. *jotunensis*), Italy (ssp. *lactescens*), Caucasus and Transcaucasia, Asia Minor (ssp. *artvina*), Turkmenistan, S Russia (S European part, Ural, S Siberia), S Ural, N and NE Kazakhstan, W and S Siberia (ssp. *candelarum*) (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Xerophilous species.

Material: E50, Olenty river valley, 1♂, 22.07.2014, S.V. Titov.

Genus *Eugraphe* Hübner, [1821] 1816

Eugraphe sigma ([Denis & Schiffermüller], 1775)* – FP: VI–VIII; localities: Z4, K10, P12, L28, B33. (Appendix 1, Map 396)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, N Caucasus, N and E Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, NE China, Korea, Japan (ssp. *sigma*), C China (ssp. *anthracina*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z4, vic. of Moiseevka vill., 10♂, 6♀, 22.05.2011, S.A.&Yu.P. Lorents; K10, vic. of Terenkol' vill., 12♂, 8♀, 19.06.2012, L.N. Ivan'ko; P12, vic. of Pavlodarskoye vill., 26♂, 13♀, 25.06.2007, 1♂, 02.08.2009, 1♂, 3♀, 05.08.2013, 2♀, 26.08.2013, 4♂, 1♀, 13.08.2015, 1♂, 27.07.2016, S.V. Titov; L28, vic. of Akku vill., 11♂, 3♀, 18.06.2015, S.V. Titov; B33, Toraygyr lake, 5♂, 2♀, 11.06.2013, S.V. Titov, A.V. Volynkin, 3♂, 1♀, 11.06.2014, 1♂, 28.07.2016, 7♂, 1♀, 16.06.2017, 1♂, 03.08.2017, S.V. Titov.

Genus *Coenophila* Stephens, 1850

Coenophila subrosea (Stephens, 1829)* – FP: VIII; locality: B31. (Appendix 1, Map 397)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus, N Kazakhstan, N, NW and C S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, C China, Japan (Volynkin, 2012).

Bionomics. Hygrophilous species.

Material: B31, vic. of Shonai vill., 3♂, 09.08.2013, 2♂, 1♀, 14.08.2013, 5♂, 2♀, 15.08.2013, 1♂, 1♀, 17.08.2013, S.M. Reznichenko, 1♀, 18.08.2013, 1♂, 27.08.2013, S.V. Titov.

Genus *Eugnorisma* Boursin, 1946

Subgenus *Eugnorisma* Boursin, 1946

Eugnorisma (*Eugnorisma*) *ignoratum* Varga & L. Ronkay, 1994* – FP: VII–IX; localities: P12, B31, B32, B33, B35. (Appendix 1, Map 398)

Biogeographical feature. European-Central Asian, subboreal. Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, W Siberia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 17.09.2011, S.V. Titov; B31, vic. of Shonai vill., 7♂, 3♀, 15.09.2012, S.V. Titov; B32, rock area Kempirtas, 1♂, 30.07.2013, S.M. Reznichenko; B33, Toraygyr lake, 1♂, 09.07.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 4♂, 25.07.2014, S.V. Titov.

Eugnorisma (*Eugnorisma*) *insignata* (Lederer, 1853)* – FP: VIII–IX; localities: B31, B33, E46. (Appendix 1, Map 399)

Biogeographical feature. European-Central Asian, subboreal. Transcaucasia, Near East (ssp. *leuconeura*), Turkmenistan (ssp. *pallescens*), N Caucasus, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, Altai, Mongolia, NW China, Afghanistan, (ssp. *insignata*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B31, vic. of Shonai vill., 9♂, 5♀, 15.09.2012, 1♀, 10.04.2013, 8♂, 11♀, 29.06.2013, 1♂, 02.08.2013, 1♂, 04.08.2013, S.M. Reznichenko, 1♀, 09.08.2013, 2♂, 14.08.2013, 1♂, 15.08.2013, S.V. Titov, 3♀, 17.08.2013, S.M. Reznichenko, 5♂, 1♀, 18.08.2013, S.V. Titov, 2♂, 1♀, 27.08.2013, S.M. Reznichenko, 15♂, 22♀, 10.09.2013, S.M. Reznichenko, 20♂, 35♀, 24.09.2013, S.V. Titov; B33, Toraygyr lake, 1♂, 09.08.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 12.08.2012, S.V. Titov, A.V. Volynkin

Eugnorisma (*Eugnorisma*) *eminens* (Lederer, 1855)* – FP: VIII; locality: B32. (Appendix 1, Map 400)

Biogeographical feature. Siberian - Mediterranean, subboreal. Transcaucasia, Asia Minor, Near East (N Iran), Middle Asia, Kazakhstan, Altai (ssp. *eminens*), Afghanistan (ssp. *clarior*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: B32, rock area Kempirtas, 1♂, 30.07.2013, S.M. Reznichenko.

Genus *Miniphila* Beck, 1996

Miniphila miniago (Freyer, 1839)* – FP: IX–X; localities: P12. (Appendix 1, Map 401)

Biogeographical feature. European-Central Asian, subboreal. Europe, Transcaucasia, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, W Siberia, Altai (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 7♂, 10♀, 17.09.2009, 12♂, 15♀, 07.09.2011, 3♀, 02.10.2011, 2♂, 1♀, 04.10.2011, 16♂, 5♀, 04.09.2013, 7♂, 9♀, 15.09.2013, 5♂, 6♀, 11.09.2014, 19♂, 32♀, 08.09.2015, 4♂, 1♀, 19.09.2017, S.V. Titov.

Genus *Protolampra* McDunnough, 1928

Protolampra sobrina (Duponchel, 1843)* – FP: VII–VIII; localities: B30, B31, E46. (Appendix 1, Map 402)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus, N and C S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, N Korea (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: B30, Kurkeli natural landmark, 1♂, 1♀, 08.07.2016, 4♂, 12.07.2016, 1♂, 2♀, 16.08.2016, S.V. Titov; B31, vic. of Shonai vill., 3♂, 09.08.2013, 1♀, 14.08.2013, 8♂, 10♀, 15.08.2013, S.V. Titov, 1♂, 27.08.2013, S.M. Reznichenko, 1♂, 20.07.2007, 2♂, 1♀, 08.08.2008, S.V. Titov, 1♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Genus *Nyssocnemis* Lederer, 1857

Nyssocnemis eversmanni (Lederer, 1853)* – FP: VIII; locality: B31. (Appendix 1, Map 403)

Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, W and S Siberia, N Mongolia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: B31, vic. of Shonai vill., 1♀, 27.08.2013, S.M. Reznichenko.

Subfamily HADENINAE Guenée, 1852

Tribe Orthosiini Guenée, 1837

Genus *Panolis* Hübner, [1821]

Panolis flammea ([Denis & Schiffermüller], 1775)* – FP: IV–V; localities: L24, B30, B38. (Appendix 1, Map 404)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: L24, Tuz lake, 1♂, 3♀, 12.05.2015, S.V. Titov; B30, Kurkeli natural landmark, 1♀, 02.05.2012, 2♂, 1♀, 17.04.2016, M. Černila, S.V. Titov; B38, Zhumbak natural landmark, 1♂, 2♀, 17.04.2016, M. Černila & S.V. Titov.

Genus *Orthosia* Ochsenhiemer, 1816

Subgenus *Orthosia* Ochsenhiemer, 1816

Orthosia (*Orthosia*) *incerta* (Hufnagel, 1766)* – FP: IV–V; localities: Z1, Z2, Z4, P11, P12, P13, P14, P16, L24, B30, B31, B38, M37, A44. (Appendix 1, Map 405)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Asia Minor, Near East, Europe, Caucasus, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S

Siberia, N Mongolia, China (ssp. *incerta*), Russian Far East, Korea, Japan (ssp. *incognita*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 5♂, 1♀, 13.04.2012, 2♂, 7♀, 19.05.2012, V.S. Bychkov, M.Yu. Volkov; Z2, vic. of Krasnovka vill., 10♂, 7♀, 19.05.2011, V.S. Bychkov, 3♂, 2♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; Z4, vic. of Moiseevka vill., 6♂, 4♀, 22.05.2011, S.A.&Yu.P. Lorents, 2♂, 7♀, 12.04.2017, S. & YU. P. Lorents; P11, Pavlodar city, 5♂, 6♀, 27.05.2008, S.V. Titov, 10♂, 15♀, 30.05.2008, N.E. Tarasovskaya, 2♂, 28.05.2010, 1♀, 21.05.2011, 7♂, 8♀, 15.05.2012, S.V. Titov; P12, vic. of Pavlodarskoye vill., 8♂, 2♀, 18.04.2012, 7♂, 6♀, 19.04.2016, 15♂, 8♀, 22.04.2017, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 30.04.2010, 2♂, 5♀, 02.05.2010, L.N. Ivan'ko; P14 vic. of Kenzhenkol vill., 4♂, 6♀, 05.05.2010, S.V. Titov; P16 vic. of Sychevka vill., 7♂, 8♀, 11.04.2011, 5♂, 9♀, 17.05.2011, S.V. Titov; L24, Tuz lake, 7♂, 3♀, 08.05.2011, 17♂, 9♀, 12.05.2015, S.V. Titov; B30, Kurkeli natural landmark, 19♂, 8♀, 02.05.2012, 6♂, 26♀, S.V. Titov, 12.05.2012, 8♂, 5♀, 17.04.2016, M. Černila, S.V. Titov; B31, vic. of Shonai vill., 2♂, 10♀, 10.04.2013, 7♂, 5♀, 04.08.2013, 2♂, 1♀, 04.04.2014, S.M. Reznichenko, 1♀, 05.05.2014, S.V. Titov, 28♂, 14♀, 14.04.2016, M. Černila & S.V. Titov; B38, Zhumbak natural landmark, 2♂, 7♀, 17.04.2016, M. Černila & S.V. Titov; M37, vic. of Karasor lake, 6♂, 3♀, 23.05.2010, S.V. Titov; A44, Kishi Kalkaman lake, 9♂, 3♀, 09.05.2010, S.V. Titov.

Orthosia (*Orthosia*) *ronkayorum* Volynkin & Titov, 2014* – FP: IV–V; localities: B31, E48, E53. Reference: Volynkin & Titov. (2014). (Appendix 1, Map 406)

Biogeographical feature. Central Asian, subboreal. NE Kazakhstan (Volynkin, Titov, 2014; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: B31, vic. of Shonai vill., 1♀, 04.04.2014, S.M. Reznichenko; E48, Shiderty reservoir, water pump №7, 2♂, 2♀, 25.04.2017, S.V. Titov; E53, west shore of Shiderty reservoir, 15♂, 1♀, 19.04.2012, S.V. Titov, 1♀, 08.05.2013, S.V. Titov, A.V. Volynkin, 1♀, 17.04.2017, S.V. Titov (coll. CST, AVB, ZISP).

Subgenus *Poporthosia* Beck, 1996

Orthosia (*Poporthosia*) *populeti* (Fabricius, 1775)* – FP: IV; localities: Z1, Z2, P12, B38, E46. (Appendix 1, Map 407)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Asia Minor, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural, NE Kazakhstan, W Siberia, Altai (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 13.04.2012, V.S. Bychkov, M.Yu. Volkov; Z2, vic. of Krasnovka vill., 4♂, 2♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; P12, vic. of Pavlodarskoye vill., 3♂, 6♀, 18.04.2012, 2♂, 5♀, 22.04.2017, S.V. Titov; B38, Zhumbak natural landmark, 2♂, 7♀, 1.04.2016, M. Černila & S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 12♂, 5♀, 12.04.2016, M. Černila & S.V. Titov, 1♂, 16.04.2017, S.V. Titov.

Subgenus *Cororthosia* Berio, 1980

Orthosia (*Cororthosia*) *gracilis* ([Denis & Schiffermüller], 1775)* – FP: IV–V; localities: Z2, P13, P14. (Appendix 1, Map 408)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Asia Minor, Caucasus and Transcaucasia, Europe, S Russia (S European part, Ural, S Siberia), N and NE Kazakhstan, (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 7♂, 5♀, 19.05.2011, V.S. Bychkov, 1♂, 12.04.2012, 1♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; P12, vic. of Pavlodarskoye vill., 3♀, 18.04.2012, 2♂, 1♀, 19.04.2016, 6♂, 7♀, 22.04.2017, S.V. Titov; P14 vic. of Kenzhenkol vill., 2♂, 1♀, 05.05.2010, S.V. Titov.

Orthosia (*Cororthosia*) *opima* (Hübner, [1809])* – FP: IV; localities: B31, B38, E46. (Appendix 1, Map 409)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: B31, vic. of Shonai vill., 2♀, 10.04.2013, 2♂, 1♀, 04.04.2014, S.M. Reznichenko, 18♂, 9♀, 14.04.2016, M. Černila & S.V. Titov; B38, Zhumbak natural landmark, 15♂, 9♀, 17.04.2016, M. Černila & S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 21♂, 15♀, 12.04.2016, M. Černila & S.V. Titov, 3♂, 1♀, 16.04.2017, 1♀, 19.04.2017, S.V. Titov.

Subgenus *Semiophora* Stephens, 1829

Orthosia (*Semiophora*) *gothica* (Linnaeus, 1758)* – FP: IV–V; localities: Z1, Z2, P12, P13, B30, B31, B38. (Appendix 1, Map 410)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East (continental part) (ssp. *gothica*), Russian Far East (Sakhalin, Kuril islands), Japan (ssp. *jezoensis*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 11♂, 5♀, 13.04.2012, 13♂, 7♀, 19.05.2012, V.S. Bychkov, M.Yu. Volkov; Z2, vic. of Krasnovka vill., 8♂, 6♀, 19.05.2011, 4♂, 9♀, 12.04.2012, 2♂, 3♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; P12, vic. of Pavlodarskoye vill., 5♂, 3♀, 18.04.2012, 7♂, 6♀, 19.04.2016, 15♂, 8♀, 22.04.2017, S.V. Titov; P13, vic. of Rozovka vill., 1♂, 2♀, 30.04.2010, 1♀, 02.05.2010, L.N. Ivan'ko; B30, Kurkeli natural landmark, 1♂, 1♀, 02.05.2012, 3♂, 2♀, 12.05.2012, 7♂, 6♀, 17.04.2016, M. Černila, S.V. Titov; B31, vic. of Shonai vill., 16♂, 10♀, 10.04.2013, 2♂, 6♀, 04.04.2014, S.M. Reznichenko, 7♂, 5♀, 05.05.2014, S.V. Titov, 7♂, 8♀, 14.04.2016, M. Černila & S.V. Titov; B38, Zhumbak natural landmark, 16♂, 7♀, 17.04.2016, M. Černila & S.V. Titov.

Genus *Anorthoa* Berio, 1908

Anorthoa munda ([Denis & Schiffermüller], 1775)* – FP: IV; localities: Z1, Z2, B31. (Appendix 1, Map 411)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Asia Minor, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, NE Kazakhstan, W and S Siberia,

Russian Far East, China, Korea, Japan (ssp. *munda*), Taiwan (ssp. *plumbeata*) (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 2♀, 13.04.2012, 5♂, 2♀, 12.04.2012, 1♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; B31, vic. of Shonai vill., 2♂, 2♀, 10.04.2013, 1♂, 04.04.2014, S.M. Reznichenko, 6♂, 5♀, 14.04.2016, M. Černila & S.V. Titov.

Genus *Perigrapha* Lederer, 1857

Subenus *Perigrapha* Lederer, 1857

Perigrapha (*Perigrapha*) *circumducta* (Lederer, 1855)* – FP: IV–V; localities: Z2, Z4, B30, B31, B38, E46, E48, M39. (Appendix 1, Map 412)

Biogeographical feature. Eurasiatic Palaearctic, temperate. S Russia (S European part, Ural, S Siberia), S Ural, NE and E Kazakhstan, W and S Siberia, Russian Far East, NW China (Xinjiang) (ssp. *pallescens*), Korea, Japan (ssp. *circumducta*), (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 1♀, 19.05.2011, V.S. Bychkov, 19♂, 5♀, 12.04.2012, 6♂, 2♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov; Z4, vic. of Moiseevka vill., 7♂, 12.04.2017, S. & YU. P. Lorents; B30, Kurkeli natural landmark, 3♂, 6♀, 02.05.2012, at wine, 6♂, 7♀, 12.05.2012, 7♂, 5♀, 17.04.2016, M. Černila, S.V. Titov; B31, vic. of Shonai vill., 25♂, 42♀, 10.04.2013, 1♂, 1♀, 04.04.2014, S.M. Reznichenko, 12♂, 6♀, 05.05.2014, S.V. Titov, 2♂, 6♀, 14.04.2016, M. Černila & S.V. Titov; B38, Zhumbak natural landmark, 1♂, 3♀, 17.04.2016, M. Černila & S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 3♀, 17.05.2015, S.V. Titov, 23♂, 43♀, at wine, 12.04.2016, M. Černila & S.V. Titov, 3♂, 4♀, 16.04.2017, 2♂, 6♀, 19.04.2017, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1ex. 12.06.2012, caterpillar of the third age on *Caragana pumila,* 5♂, 6♀, at wine, 12.04.2017, S.V. Titov; M39, vic. of Koktobe vill., 12♂, 5♀, 12.04.2012, S.V. Titov.

Genus *Egira* Duponchel, 1845

Egira anatolica (Hering, 1933)* – FP: V; locality: L24. (Appendix 1, Map 413)

Biogeographical feature. European-Central Asian, subboreal. S and C Europe, Asia Minor, Near East, Caucasus and Transcaucasia, Turkmenistan, S Russia (S European part, Ural, S Siberia), S Ural, NE and E Kazakhstan, Kyrgyzstan (Hacker et al. 2002, Gorbunov, 2011, Volynkin, Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: L24, Tuz lake, 6♂, 2♀, 12.05.2016, S.V. Titov.

Tribe Tholerini Beck, 1996

Genus *Tholera* Hübner, [1821]

Tholera cespitis ([Denis & Schiffermüller], 1775)* – FP: VIII–IX; localities: P12, E54. (Appendix 1, Map 414)

Biogeographical feature. Euro-Siberian, subboreal. Asia Minor, Near East, Middle Asia (Kyrgyzstan) (ssp. *armena*), Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *cespitis*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 2♀, 17.09.2009, 10♂, 8♀, 07.09.2011, 2♂, 4♀, 10.09.2012, 2♀, 26.08.2013, 1♂, 3♀, 04.09.2013, 1♀, 15.09.2013, 12♂, 8♀, 06.09.2014, 16♂, 17♀, 11.09.2014, 5♂, 6♀, 13.08.2015, 7♂, 5♀, 08.09.2015, 3♂, 4♀, 19.09.2017, S.V. Titov; E54 Ulken-Koyandy Mt., 7♂, 7♀, 17.08.2016, S.V. Titov.

Tholera decimalis (Poda, 1761)* – FP: VIII–IX; localities: P12, B32, E54. (Appendix 1, Map 415)

Biogeographical feature. Transpalaearctic, temperate. N Africa (ssp. *chebka*), Europe, Caucasus, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, NE, C and E Kazakhstan, W and S Siberia (ssp. *decimalis*) (Volynkin, 2012; Titov et al., 2017 b).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 11♂, 17♀, 17.09.2009, 8♂, 7♀, 07.09.2011, 6♂, 4♀, 10.09.2012, 2♂, 4♀, 04.09.2013, 1♀, 15.09.2013, 6♂, 7♀, 06.09.2014, 8♂, 2♀, 11.09.2014, 7♂, 3♀, 08.09.2015, 2♂, 14♀, 19.09.2017, S.V. Titov; B32, rock area Kempirtas, 1♂, 1♀, 25.09.2013, S.V. Titov, A.V. Volynkin; E54 Ulken-Koyandy Mt., 1♂, 1♀, 17.08.2016, S.V. Titov.

Tholera hilaris (Staudinger, 1901)* – FP: VIII–IX; localities: P12, S23, E54. (Appendix 1, Map 416)

Biogeographical feature. European-Central Asian, subboreal. Caucasus and Transcaucasia, Asia Minor, W and NE Kazakhstan, W Siberia (Hacker et al., 2002; Kononenko, 2005; Gorbunov, 2011; Titov et al., 2017 b).

Bionomics. Xerophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♂, 2♀, 17.09.2009, 7♂, 4♀, 07.09.2011, 2♂, 2♀, 10.09.2012, 6♂, 7♀, 15.09.2013, 3♂, 7♀, 06.09.2014, 5♂, 12♀, 11.09.2014, 5♂, 4♀, 19.09.2017, S.V. Titov; S23, vic. of Sharbakty vill., 6♂, 2♀, 11.08.2014, S.M. Reznichenko; E54 Ulken-Koyandy Mt., 4♂, 7♀, 17.08.2016, S.V. Titov.

Genus *Cerapteryx* Curtis, 1833

Cerapteryx graminis (Linnaeus, 1758)* – FP: VI; localities: B29, A42. (Appendix 1, Map 417)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, Mongolia, C China (Volynkin, 2012).

Bionomics. Hygro-mesophilous species.

Material: B29, Birzhankol' lake, 8♂, 2♀, 17.06.2008, 7♂, 2♀, 28.06.2008, 5♂, 3♀, 17.06.2009, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 7♂, 6♀, 30.06.2007, S.V. Titov.

Tribe Hadenini Guenée, 1837

Genus *Anarta* Ochsenheimer, 1816

Subgenus *Cardiestra* (Boursin, 1963)

Anarta (*Cardiestra*) *vaciva* (Püngeler, 1906)* – FP: VI; locality: E47. Reference: Titov et al. (2017). (Appendix 1, Map 418)

Biogeographical feature. Central Asian, subboreal. SE Kazakhstan, Almaty region, (Hacker, 1998), NE Kazakhstan, Pavlodar Region (Hacker, 1998; Lehmann et al., 1998; Titov et al., 2017 a, b).

Bionomics. Xero-halophilous species.

Material: E47, vic. of Karazhar vill., 1♂, 30.06.2009, S.V. Titov, (slide AV0799m Volynkin).

Subgenus *Calocestra* Beck, [1992]

Anarta (*Calocestra*) *dianthi* (Tauscher, 1809)* – FP: V–VI, VIII; localities: S23, L24, B32, A44, E46, E47, E48. (Appendix 1, Map 419)

Biogeographical feature. West Palaearctic, subboreal. Europe (Hungary – ssp. *hungarica*, Italy – ssp. *parenzani*, Spain – ssp. *hubiesi*), N Africa (ssp. *getula*), Asia Minor, Middle Asia (Turkmenistan), Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural (ssp. *dianthi*), Middle Asia (Uzbekistan, Kyrgyzstan, Tajikistan), Kazakhstan, S Siberia (Altai, Tuva), Mongolia, NW China (ssp. *lukhtanovorum*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: S23, vic. of Sharbakty vill., 3♂, 4♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 8♂, 2♀, 12.05.2015, 6♂, 4♀, 16.06.2016, S.V. Titov; B32, rock area Kempirtas, 9♂, 7♀, 17.05.2007, 6♂, 5♀, 13.08.2008, 13♂, 19♀, 13.06.2013, 21♂, 12♀, 17.05.2014, 6♂, 4♀, 13.06.2014, S.V. Titov; A44, Kishi Kalkaman lake, 7♂, 5♀, 09.05.2010, 3♂, 7♀, 31.05.2010, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 11♀, 10.05.2007, under a stone on the ground, 5♂, 8♀, 08.08.2008, S.V. Titov, 4♂, 3♀, 26.05.2015, M. Černila, S.V. Titov, M. Kučinić; E47, vic. of Karazhar vill., 4♂, 7♀, 13.06.2007, S.V. Titov; E48, Shiderty reservoir, water pump №7, 17♂, 12♀, 12.06.2012, S.V. Titov.

Anarta (*Calocestra*) *trifolii* (Hufnagel, 1766) – FP: V–IX; localities: Z1, Z2, Z6, K10, P11, P12, P13, P17, S15, S17, S23, L24, L27, B32, B35, A45, E46, E47, E48, M40. Reference: Pospelov (*1962, as Discestra*). (Appendix 1, Map 420)

Biogeographical feature. Holarctic, temperate. N and S America, N Africa, Europe, Caucasus and Transcaucasia, Near East, Asia Minor, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, Mongolia, China, Korea, Japan (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z1, vic. of Mikhailovka vill., 5♂, 3♀, 05.07.2011, M.Yu. Volkov, 1♂, 4♀, 19.05.2012, V.S. Bychkov, M.Yu. Volkov, 1♂, 1♀, 09.06.2012, S.V. Titov, 1♂, 7♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 2♂, 8♀, 08.07.2013, V.S. Bychkov, 7♂, 2♀, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 1♂, 19.05.2011, V.S. Bychkov, 15♂, 7♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 3♂, 2♀, 09.07.2011, V.S. Bychkov, 6♂, 1♀, 05.06.2012, S.V. Titov, V.S. Bychkov, 1♀, 14.08.2012, V.S. Bychkov, 3♀, 09.06.2013, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 3♂, 10♀, 21.07.2013, V.S. Bychkov; K10, vic. of Terenkol' vill., 5♂, 12♀, 24.09.2011, L.N. Ivan'ko, 3♂, 1♀, 15.06.–19.06.2012, L.N. Ivan'ko, 5♂, 7♀, 10.07.2013, S.V. Titov; P11, Pavlodar city, 08.07 – 14.08.1960, S.M. Pospelov; 7♂, 9♀, 11.09.2003, 5♂, 3♀, 27.06.2006, 8♂, 10♀, 27.05.2008, S.V. Titov, 2♂, 1♀, 30.05.2008, 1♀, 12.06.2008, N.E. Tarasovskaya, 3♂, 5♀, 09.07.2008, S.V. Titov, 7♂, 2♀, 28.07.2008, 18♂, 5♀, 30.07.2008, N.E. Tarasovskaya, 5♂, 6♀, 28.05.2010, S.V. Titov, 7♂, 3♀, 19.07.2010, 7♂, 1♀, 21.05.2011, S.V. Titov, 1♂, 05.07.2011, 8♂, 9♀, 24.07.2011, 4♂, 8♀, 12.08.2011, 6♂, 11♀, 18.08.2011, N.E. Tarasovskaya, 13♂, 5♀, 15.05.2012, S.V. Titov, 16♂, 7♀, 31.07.2012, 8♂, 9♀, 02.08.2012, 7♂, 2♀, 06.08.2012, 6♂, 8♀, 31.08.2012, 1♂, 16.05.2013, N.E. Tarasovskaya, 8♂, 13♀, 23.08.2014, S.V. Titov, 5♂, 1♀, 03.07.2016, V.I. Blokhin 2♂, 1♀, 02.08.2017, 5♂, 7♀, 21.08.2017, 10♂, 8♀, 18.09.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 12♂, 5♀, 25.06.2007, 6♂, 7♀, 02.08.2009, 18♂, 9♀, 17.09.2009, 2♂, 6♀, 07.09.2011, 10♂, 7♀, 03.07.2013, 4♂, 1♀, 13.07.2013, 1♂, 05.08.2013, 5♂, 1♀, 26.08.2013, 1♂, 2♀, 04.09.2013, 2♀, 15.09.2013, 4♂, 6♀, 03.08.2014, 3♂, 7♀, 06.09.2014, 5♂, 7♀, 11.09.2014, 15♂, 7♀, 18.07.2015, 2♂, 10♀, 13.08.2015, 8♂, 9♀, 08.09.2015, 1♀, 27.07.2016, 6♂, 7♀, 19.09.2017, S.V. Titov; P13, vic. of Rozovka vill., 15♂, 14♀, 02.05.2010, 6♂, 7♀, 05.06.2010, L.N. Ivan'ko; P17, vic. of Koryakovka, 7♂, 3♀, 22.05.2011, 4♂, 21.05.2017, S.V. Titov; S15, vic. of Alekseyevka vill., 1♀, 05–06.07.1960, G.Kh. Shek (Coll. KSRIPPQ); S17 vic. of Sofiyevka vill., 24ex., 08.06–14.08.1958, S.M. Pospelov; S23, vic. of Sharbakty vill., 9♂, 7♀, 30.07.2007, S.V. Titov, 12♂, 16♀, 11.08.2014, 1♂, 1♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 3♂, 7♀, 08.05.2011, 8♂, 3♀, 20.09.2011, 8♂, 10♀, 12.05.2015, 23♂, 5♀, 21.07.2015, 19♂, 4♀, 06.08.2015, 17♂, 5♀, 16.06.2016, S.V. Titov; L27, Borly lake, 2♂, 6♀, 25.06.201329, 7♂, 3♀, 29.07.2013, S.V. Titov; B32, rock area Kempirtas, 8♂, 9♀, 17.05.2007, 10♂, 19♀, 13.08.2008, 27♂, 8♀, 13.06.2013 23♂, 28.06.2013, 14♂, 8♀, 30.07.2013, 5♂, 7♀, 25.09.2013, 2♂, 6♀, 17.05.2014, 8♂, 12♀, 13.06.2014, S.V. Titov, 10♂, 10♀, 27.05.2015, M. Černila, S.V. Titov, M. Kučinić; B35, vic. of Zhana Zhosaly vill., 18♂, 20♀, 18.05.2006, 7♂, 3♀, 25.07.2014, S.V. Titov, 1♂,

28.05.2015, M. Černila, S.V. Titov, M. Kučinić, 5♂, 2♀, 04.07.2016, 7♂, 10♀, 16.07.2016, 12♂, 3♀, 04.08.2017, S.V. Titov; A45, old road bridge, the Irtysh river, 3♂, 7♀, 26.07.2009, 8♂, 11♀, 29.05.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 5♂, 7♀, 10.05.2007, 2♂, 5♀, 20.07.2007, 3♂, 5♀, 18.07.2008, 7♂, 3♀, 08.08.2008, 1♀, 18.07.2009, 5♂, 6♀, 12.08.2012, S.V. Titov, A.V. Volynkin, 7♂, 6♀, 17.05.2015, S.V. Titov, 6♂, 2♀, 26.05.2015, M. Černila, S.V. Titov, M. Kučinić; E47, vic. of Karazhar vill., 4♂, 6♀, 13.06.2007, 7♂, 2♀, 11.08.2008, 3♂, 1♀, 12.09.2015, 5♂, 14♀, 21.09.2015, S.V. Titov; M40, Kalmakyrgan Mts., 15♂, 9♀, 27.07.2014, S.V. Titov.

Anarta (*Calocestra*) *stigmosa* (Christoph, 1887) – FP: V–VI, VIII; localities: Z1, Z2, Z4, Z5, Z7, Z8, P17, P19, P22, L24, L28, E46, E47. (Appendix 1, Map 421)

Biogeographical feature. Siberian - Mediterranean, subboreal. S Europe (ssp. *atlantica*), Caucasus and Transcaucasia, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Transbaikalia, Mongolia, NW China (ssp. *stigmosa*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 5♂, 4♀, 19.05.2012, V.S. Bychkov, M.Yu. Volkov, 6♂, 2♀, 09.06.2012, S.V. Titov, 2♂, 2♀, 19.08.2017, S.V. Titov; Z2, vic. of Krasnovka vill., 1♀, 19.05.2011, V.S. Bychkov, 3♂, 2♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 1♂, 05.06.2012, S.V. Titov, V.S. Bychkov, 5♂, 2♀, 14.08.2012, 1♂, 09.06.2013, V.S. Bychkov; Z4, vic. of Moiseevka vill., 6♂, 4♀, 22.05.2011, S.A.&Yu.P. Lorents, 2♂, 6♀, 28.08.2011, S.A.&Yu.P. Lorents; Z5, vic. of Slavyanovka vill., 7♂, 8♀, 11.06.2012, S.V. Titov, V.S. Bychkov; Z8, vic. of Pyateryzhsk vill., 3♂, 3♀, 05.08.2009, S.V. Titov; P17, vic. of Koryakovka, 7♀, 22.05.2011, 1♂, 1♀, 21.05.2017, S.V. Titov; P19, vic. of Zhertumsyk vill., 4♂, 2♀, 11.06.2016, 2♂, 6♀, 25.08.2017, S.V. Titov; P22, vic. of Baydala vill., 2♂, 3♀, 13.06.2016, S.V. Titov. L24, Tuz lake, 6♂, 7♀, 08.05.2011, 2♂, 1♀, 16.06.2016, S.V. Titov; L28, vic. of Akku vill., 2♂, 3♀, 18.06.2015, S.V. Titov, 7♂, 9♀, 24.08.2015, S.V. Titov; E47, vic. of Karazhar vill., 11♂, 7♀, 13.06.2007, 8♂, 5♀, 11.08.2008, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 6♂, 7♀, 10.05.2007, 9♂, 2♀, 17.05.2015, S.V. Titov, 2♂, 26.05.2015, M. Černila, S.V. Titov, M. Kučinić.

Genus *Polia* Ochsenheimer, 1816

Polia bombycina (Hufnagel, 1766)* – FP: VI–VIII; localities: Z1, Z6, P12, B29, B31, B35, A42, E50. (Appendix 1, Map 422)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, N Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, NW Mongolia (ssp. *bombycina*), Middle Asia (SE Kazakhstan, Kyrgyzstan, Tajikistan), NW China (Xinjiang, Qinghai), SW Mongolia (ssp. *puengeleri*), C. Mongolia (ssp. *mongolica*), S Mongolia (spp. *psammochroa*), Russian Far East, NE China, Korea, Japan (ssp. *grisea*) (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z1, vic. of Mikhailovka vill., 8♂, 2♀, 05.07.2011, M.Yu. Volkov, 3♂, 6♀, 09.06.2012, S.V. Titov, 2♂, 7♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 16♂, 15♀, 08.07.2013, V.S. Bychkov, 6♀, 19.08.2017, S.V. Titov; Z6, vic. of Novokuz'minka vill., 3♂, 10♀, 21.07.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 9♂, 4♀, 25.06.2007, 7♂, 7♀, 02.08.2009, 2♂, 1♀, 13.07.2013, 1♀, 05.08.2013, 2♂, 4♀, 26.08.2013, 7♂, 2♀, 03.08.2014, 2♂, 27.07.2016, S.V. Titov; B29, Birzhankol' lake, 9♂, 3♀, 17.06.2008, 7♂, 2♀, 28.06.2008, 5♂, 12♀, 21.07.2008, 15♂, 4♀, 17.06.2009, 7♂, 5♀, 10.08.2017, S.V. Titov; B31, vic. of Shonai vill., 1♂, 02.08.2013, S.M. Reznichenko, 8♂, 9♀, 09.08.2013, 12♂, 11♀, 14.08.2013, 4♂, 2♀, 15.08.2013, 2♂, 18.08.2013, S.V. Titov, 3♂, 7♀, 27.08.2013, S.M. Reznichenko; B35, vic. of Zhana Zhosaly vill., 7♂, 6♀, 25.07.2014, 8♂, 2♀, 04.08.2017, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 3♂, 2♀, 30.06.2007, 7♂, 6♀, 07.07.2008, 2♂, 7♀, 18.04.2016, 6♂, 2♀, 07.08.2017, S.V. Titov; E50, Olenty river valley, 1♂, 04.06.2013, T.K. Aylybayev, 2♂, 7♀, 22.08.2013, 1♂, 2♀, 22.07.2014, S.V. Titov.

Polia hepatica (Clerck, 1759) – FP: VI; locality: P11. Reference: Shek (1975). (Appendix 1, Map 423)

Biogeographical feature. Eurasiatic Palaearctic, boreomontanE Europe, Caucasus, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, N Mongolia, Russian Far East, N Korea (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 1♂, 06.1960, G.Kh. Shek (Coll. KSRIPPQ).

Polia nebulosa (Hufnagel, 1766)* – FP: VI; localities: Z1, Z2, K10, P11, P12, P13, S20, B29, B33, A42, A46, U54. (Appendix 1, Map 424)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, N Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 3♂, 6♀, 09.06.2012, S.V. Titov; Z2, vic. of Krasnovka vill., 15♂, 7♀, 05.06.2012, S.V. Titov, V.S. Bychkov, 3♂, 5♀, 09.06.2013, V.S. Bychkov; K10, vic. of Terenkol' vill., 6♂, 8♀, 19.06.2012, L.N. Ivan'ko; P11, Pavlodar city, 1♀, 06.1960, G.Kh. Shek (Coll. KSRIPPQ), 2♀, 27.06.2006, 1♂, 5♀, 12.06.2008, N.E. Tarasovskaya, 6♂, 9♀, 09.06.2012, S.V. Titov; P12, vic. of Pavlodarskoye vill., 17♂, 1♀, 25.06.2007, 10♂, 5♀, 17.06.2012, 6♂, 7♀, 06.09.2014, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 8♀, 05.06.2010, 2♂, 3♀, 07.06.2010, 6♂, 8♀, 08.06.2010, L.N. Ivan'ko; S20, vic. of Shalday vill., 2♂, 5♀, 16.06.2007, S.V. Titov; B29, Birzhankol' lake, 3♂, 1♀, 17.06.2008, 2♂, 2♀, 28.06.2008, 1♂, 17.06.2009, S.V. Titov; B33, Toraygyr lake, 11♂, 8♀, 11.06.2013, S.V. Titov, A.V. Volynkin, 6♂, 2♀, 11.06.2014, 9♂, 4♀, 16.06.2017, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 3♂, 2♀, 30.06.2007, S.V. Titov; A46, vic. of Kurkol' vill., 5♂, 3♀, 27.06.2016, S.V. Titov; U54 Big Azhbulat lake, 2♂, 2♀, 30.06.2016, S.V. Titov.

Polia serratilinea (Treitschke, 1825) – FP: VII–VIII; localities: Z1, P11, B31, B35. Reference: Pospelov (1962). (Appendix 1, Map 425)

Biogeographical feature. West Palaearctic, subboreal. C Europe (ssp. *serratilinea*), SE Europe (Balkans) (ssp. *kowatschevi*), Asia Minor, Near East (ssp. *pinkeri*), Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, Altai (ssp. *spalax*), Afghanistan, Himalaya (ssp. *tenebricosa*), Mongolia, W China (ssp. *eremorealis*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 4♂, 2♀, 05.07.2011, M.Yu. Volkov, 1♂, 3♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov; P11, Pavlodar city, 13 ex., 20.06 – 05.07.1960, S.M. Pospelov, 2♀, 30.07.2008, N.E. Tarasovskaya; B31, vic. of Shonai vill., 2♂, 09.08.2013, S.V. Titov, 6♂, 3♀, 14.08.2013, S.V. Titov, 5♂, 4♀, 15.08.2013, S.V. Titov, 2♂, 17.08.2013, S.M.

Reznichenko, 1♂, 18.08.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 6♀, 25.07.2014, 7♂, 1♀, 16.07.2016, 1♂, 04.08.2017, S.V. Titov.

Polia altaica (Lederer, 1853)* – FP: VII–VIII; localities: S23, B31, B33, B35, M40, M41. (Appendix 1, Map 426)

Biogeographical feature. S Siberian - Central Asian, subboreal. Kazakhstan, Middle Asia, Himalaya, S Ural, S Siberia, Mongolia, NW and W China (Volynkin, 2012).

Bionomics. Meso-xerophilous species,

Material: S23, vic. of Sharbakty vill., 1♀, 11.08.2014, S.M. Reznichenko; B31, vic. of Shonai vill., 2♂, 1♀, 27.08.2013, S.M. Reznichenko; B33, Toraygyr lake, 4♂, 3♀, 15.07.2016, 1♀, 09.08.2017, S. V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 6♀, 04.08.2017, S. V. Titov; M40, Kalmakyrgan Mts., 1♀, 27.07.2014, S. V. Titov; M41 Semipalatinsk nuclear test site, 1♀, 29.07.2014, S. V. Titov.

Genus *Pachetra* Guenée, 1841

Pachetra sagittigera (Hufnagel, 1766)* – FP: V–VI; localities: Z2, P12, P17. (Appendix 1, Map 427)

Biogeographical feature. West Palaearctic, subboreal. N Africa (ssp. *melanophaea*), Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia (ssp. *sagittigera*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 5♀, 19.05.2011, V.S. Bychkov, 6♂, 3♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 4♂, 7♀, 05.06.2012, S.V. Titov, V.S. Bychkov, 5♂, 2♀, 09.06.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 6♂, 3♀, 25.06.2007, 7♂, 4♀, 17.06.2012, S.V. Titov; P17, vic. of Koryakovka, 2♂, 1♀, at wine, 22.05.2011, 5♀, 21.05.2017, S.V. Titov.

Genus *Lacanobia* Billberg, 1820

Subgenus *Lacanobia* Billberg, 1820

Lacanobia (*Lacanobia*) *w-latinum* (Hufnagel, 1766)* – FP: IV–VI; localities: Z1, L27, B33. (Appendix 1, Map 428)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 3♂, 2♀, 13.04.2012, V.S. Bychkov, M.Yu. Volkov, 6♂, 2♀, 19.05.2012, V.S. Bychkov, M.Yu. Volkov, 7♂, 3♀, 09.06.2012, S.V. Titov; L27, Borly lake, 7♂, 5♀, 25.06.2013, S.V. Titov; B33, Toraygyr lake, 2♀, 11.06.2013, S.V. Titov, A.V. Volynkin, 3♂, 2♀, 11.06.2014, 1♀, 17.05.2017, 7♂, 2♀, 16.06.2017, S.V. Titov.

Subgenus *Dianobia* Behounek, 1992

Lacanobia (*Dianobia*) *thalassina* (Hufnagel, 1766) – FP: VI–VII; localities: Z6, P11, L24, B32, B33. Reference: Pospelov (1962). (Appendix 1, Map 429)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z6, vic. of Novokuz'minka vill., 5♂, 2♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 3 ex., 09.06 – 17.06.1960, S.M. Pospelov, 3♂, 7♀, 27.06.2006, 2♂, 1♀, 12.06.2008, N.E. Tarasovskaya, 2♂, 3♀, 09.07.2008, S.V. Titov, 3♂, 2♀, 19.07.2010, S.V. Titov, 5♂, 2♀, 05.07.2011, 1♂, 02.07.2012, 2♂, 2♀, 31.07.2012, N.E. Tarasovskaya, 1♀, 03.07.2016, V.I. Blokhin; L24, Tuz lake, 8♂, 7♀, 16.06.2016, S.V. Titov; B32, rock area Kempirtas, 9♂, 5♀, 13.06.2013 6♂, 2♀, 28.06.2013, 3♂, 4♀, 13.06.2014, S.V. Titov; B33, Toraygyr lake, 6♂, 2♀, 11.06.2013, 7♂, 2♀, S.V. Titov, A.V. Volynkin, 11.06.2014, 5♂, 2♀, 09.07.2016, 6♂, 4♀, 15.07.2016, 4♂, 16.06.2017, S.V. Titov.

Lacanobia (*Dianobia*) *suasa* ([Denis & Schiffermüller], 1775) – FP: IV–IX; localities: Z2, Z6, P11, P17, S23, L24, L26, L28, B31, B32, B35, A45, E46. Reference: Pospelov (1962). (Appendix 1, Map 430)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z2, vic. of Krasnovka vill., 2♂, 1♀, 19.05.2011, V.S. Bychkov, 1♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 3♂, 1♀, 09.07.2011, V.S. Bychkov, 1♂, 12.04.2012, V.S. Bychkov, M.Yu. Volkov, 2♂, 3♀, 14.04.2012, V.S. Bychkov, M.Yu. Volkov, 6♂, 7♀, 05.06.2012, S.V. Titov, V.S. Bychkov, 1♂, 14.08.2012, V.S. Bychkov, 5♂, 7♀, 09.06.2013, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 5♂, 2♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 24 ex., 13.07.1960, S.M. Pospelov, 2♂, 4♀, 11.09.2003, 3♂, 1♀, 27.05.2008, S.V. Titov, 1♂, 30.05.2008, 3♂, 1♀, 12.06.2008, N.E. Tarasovskaya, 1♀, 28.05.2010, 2♂, 19.07.2010, 5♂, 2♀, 21.05.2011, 7♂, 11♀, 15.05.2012, S.V. Titov, 9♂, 2♀, 02.07.2012, 3♂, 2♀, 31.07.2012, 1♀, 02.08.2012, 1♂, 06.08.2012, 1♂, 4♀, 31.08.2012, 10♂, 2♀, 16.05.2013, N.E. Tarasovskaya, 1♂, 6♀, 23.08.2014, 2♂, 4♀, 21.08.2017, 5♂, 2♀, 18.09.2017, S.V. Titov; P17, vic. of Koryakovka, 9♂, 1♀, 22.05.2011, 7♂, 21.05.2017, S.V. Titov; S23, vic. of Sharbakty vill., 2♂, 5♀, 30.07.2007, S.V. Titov 6♂, 3♀, 11.08.2014, 4♂, 7♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 2♂, 08.05.2011, 3♂, 4♀, 21.07.2015, 8♂, 2♀, 06.08.2015, 8♂, 3♀, 16.06.2016, S.V. Titov; L26, vic. of Sharbakty vill., 1♀, 11.08.2013, 3♂, 1♀, 12.06.2014, S.V. Titov; L28, vic. of Akku vill., 7♂, 5♀, 11.04.2015, 2♂, 3♀, 18.06.2015, 8♂, 10♀, 24.08.2015, S.V. Titov, 9♂, 4♀, 20.07.2017, A.S. Karim; B31, vic. of Shonai vill., 9♂, 2♀, 10.04.2013, 2♂, 6♀, 29.06.2013, 16♂, 8♀, 04.08.2013, S.M. Reznichenko, 5♂, 2♀, 09.08.2013, 7♂, 3♀, 14.08.2013, 2♂, 5♀, 18.08.2013, S.V. Titov, 2♂, 1♀, 27.08.2013, 1♀, 10.09.2013, 4♂, 1♀, 04.04.2014, S.M. Reznichenko, 5♂, 4♀, 05.05.2014, S.V. Titov, 2♂, 4♀, 14.04.2016, M. Černila & S.V. Titov; B32, rock area Kempirtas, 1♀, 17.05.2007, 2♂, 3♀, 13.08.2008, 6♂, 1♀, 13.06.2013, 2♂, 7♀, 28.06.2013, 2♂, 3♀, 17.05.2014, 5♂, 7♀, 13.06.2014, S.V. Titov, 2♂, 2♀, 27.05.2015, M. Černila, S.V. Titov, M. Kučinić, 4♂, 15.04.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 18.05.2006, 3♂, 2♀, 25.07.2014, S.V. Titov, 3♂, 1♀, 28.05.2015, M. Černila, S.V. Titov, M. Kučinić, 2♂, 5♀, 04.07.2016, 3♂, 6♀, 16.07.2016, 7♂, 2♀, 04.08.2017, S.V. Titov; A45, old road bridge, the Irtysh river, 2♂, 3♀, 26.07.2009, 8♂, 2♀, 29.05.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 2♀, 18.07.2008, 1♂, 08.08.2008, 1♀, 17.05.2015, S.V. Titov.

Lacanobia (*Dianobia*) *contigua* ([Denis & Schiffermüller], 1775)* – FP: VI–VII; localities: Z6, P12, B29. (Appendix 1, Map 431)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z6, vic. of Novokuz'minka vill., 3♂, 5♀, 21.07.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 2♂, 4♀, 25.06.2007, 1♂, 17.06.2012, 2♂, 1♀, 02.07.2012, 1♂, 03.07.2013, 2♂, 2♀, 13.07.2013, 4♂, 2♀, 18.07.2015, S.V. Titov; B29, Birzhankol' lake, 6♂, 5♀, 17.06.2008, 4♂, 7♀, 28.06.2008, 3♂, 4♀, 21.07.2008, 1♂, 17.06.2009, S.V. Titov.

Subgenus *Diataraxia* Hübner, [1821]

Lacanobia (*Diataraxia*) *oleracea* (Linnaeus, 1758)* – FP: VI–IX; localities: Z6, P12, S23, L24, L28, A45, E48. (Appendix 1, Map 432)

Biogeographical feature. Transpalaearctic, temperate. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z6, vic. of Novokuz'minka vill., 2♂, 3♀, 21.07.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 7♂, 5♀, 25.06.2007, 3♂, 02.08.2009, 7♂, 17.09.2009, 3♂, 8♀, 07.09.2011, 2♂, 02.07.2012, 5♂, 4♀, 10.09.2012, 2♂, 03.07.2013, 6♂, 7♀, 13.07.2013, 3♂, 3♀, 05.08.2013, 11♂, 5♀, 26.08.2013, 7♂, 2♀, 04.09.2013, 2♀, 15.09.2013, 5♂, 2♀, 03.08.2014, 6♂, 7♀, 06.09.2014, 2♂, 8♀, 11.09.2014, 9♂, 7♀, 18.07.2015, 8♂, 5♀, 13.08.2015, 3♂, 08.09.2015, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 30.07.2007, S.V. Titov, 2♂, 11.08.2014, S.M. Reznichenko, 6♂, 2♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 3♂, 2♀, 21.07.2015, 6♂, 2♀, 06.08.2015, 7♂, 16.06.2016, S.V. Titov; L28, vic. of Akku vill., 9♂, 2♀, 18.06.2015, S.V. Titov, 7♂, 1♀, 24.08.2015, S.V. Titov, 1♀, 20.07.2017, A.S. Karim, S.V. Titov; A45, old road bridge, the Irtysh river, 2♂, 3♀, 26.07.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 12.06.2012, 2♂, 28.06. 2012, S.V. Titov.

Lacanobia (*Diataraxia*) *splendens* (Hübner, [1803–1808])* – FP: VI; locality: Z2. (Appendix 1, Map 433)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea (Volynkin, 2012; Titov et al, 2017 b).

Bionomics. Mesophilous species.

Material: Z2, vic. of Krasnovka vill., 1♂, 09.06.2013, V.S. Bychkov.

Lacanobia (*Diataraxia*) *aliena* (Hübner, [1808])* – FP: VI–VIII; localities: Z1, Z6, P11, P12, L24, L27, B32. (Appendix 1, Map 434)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 2♂, 1♀, 09.06.2012, S.V. Titov, 1♂, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 7♂, 5♀, 08.07.2013, V.S. Bychkov, 3♂, 19.08.2017, S.V. Titov; Z6, vic. of Novokuz'minka vill., 2♂, 3♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 7♂, 5♀, 27.06.2006, 2♂, 6♀, 12.06.2008, N.E. Tarasovskaya, 4♂, 2♀, 09.07.2008, S.V. Titov, 5♂, 28.07.2008, 3♂, 4♀, 30.07.2008, N.E. Tarasovskaya, 7♂, 2♀, 19.07.2010, S.V. Titov, 1♂, 4♀, 05.07.2011, 1♀, 24.07.2011, 2♂, 1♀, 12.08.2011, 3♂, 6♀, 18.08.2011, 5♂, 02.07.2012, 2♂, 7♀, 31.07.2012, 6♂, 2♀, 02.08.2012, 9♂, 1♀, 06.08.2012, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 3♂, 2♀, 25.06.2007, 1♀, 02.08.2009, 1♀, 17.06.2012, 1♂, 02.07.2012, 2♂, 6♀, 03.07.2013, 1♂, 13.07.2013, 2♂, 6♀, 05.08.2013, 1♂, 03.08.2014, 2♂, 2♀, 18.07.2015, 3♂, 2♀, 13.08.2015, 6♂, 2♀, 27.07.2016, S.V. Titov; L24, Tuz lake, 7♂, 8♀, 21.07.2015, 3♂, 1♀, 06.08.2015, 1♂, 16.06.2016, S.V. Titov; L27, Borly lake, 1♂, 1♀, 25.06.201329, 5♂, 7♀, 29.07.2013, S.V. Titov; B32, rock area Kempirtas, 5♂, 2♀, 13.08.2008 4♀, 13.06.2013, 1♀, 28.06.2013, 1♀, 30.07.2013, 3♂, 1♀, 13.06.2014, S.V. Titov, 1♂, 1♀, 27.05.2015, M. Černila, S.V. Titov, M. Kučinić.

Lacanobia (*Diataraxia*) *blenna* (Hübner, [1824]) – FP: VI–VIII; localities: P11, P12, S23, E47. References: Pospelov (1962, as *Mamestra peregrina*), Shek (1975, as *Mamestra peregrina*). (Appendix 1, Map 435)

Biogeographical feature. West Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, NW Altai (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: P11, Pavlodar city, 1 ex., 04.07.1960, S.M. Pospelov, 2♂, 4♀, 12.06.2008, N.E. Tarasovskaya, 1♀, 09.07.2008, S.V. Titov, 2♂, 3♀, 28.07.2008, 5♂, 4♀, 30.07.2008, N.E. Tarasovskaya, 2♂, 19.07.2010, S.V. Titov, 3♂, 1♀, 05.07.2011, 5♂, 1♀, 24.07.2011, 1♀, 12.08.2011, N.E. Tarasovskaya, 2♂, 1♀, 18.08.2011, N.E. Tarasovskaya, 1♂, 03.10.2011, 2♂, 1♀, 15.05.2012, S.V. Titov, 1♂, 09.06.2012, L.N. Ivan'ko, 3♂, 1♀, 02.07.2012, 6♂, 1♀, 31.07.2012, 1♂, 02.08.2012, 2♂, 06.08.2012, 8♂, 1♀, 31.08.2012, N.E. Tarasovskaya, 2♂, 23.08.2014, 1♂, 21.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 3♀, 25.06.2007, 2♂, 1♀, 02.08.2009, 7♂, 1♀, 17.06.2012, 1♂, 02.07.2012, 1♂, 03.07.2013, 3♂, 2♀, 13.07.2013, 12♂, 7♀, 05.08.2013, 1♂, 03.08.2014, 4♂, 2♀, 13.08.2015, S.V. Titov; S23, vic. of Sharbakty vill., 3♂, 30.07.2007, S.V. Titov 2♂, 3♀, 11.08.2014, 1♂, 19.06.2015, S.M. Reznichenko; E47, vic. of Karazhar vill., 3♂, 3♀, 13.06.2007, 1♂, 11.08.2008, 4♂, 2♀, 30.06.2009, S.V. Titov.

Genus *Melanchra* Hübner, [1820]

Melanchra persicariae (Linnaeus, 1761)* – FP: VII; localities: P12, B30, B35. (Appendix 1, Map 436)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Asia Minor, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 02.07.2012, 3♂, 1♀, 18.07.2015, S.V. Titov; B30, Kurkeli natural landmark, 3♂, 2♀, 01.07.2014, 1♂, 08.07.2016, 1♀, 12.07.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 1♀, 25.07.2014, S.V. Titov, 1♂, 04.07.2016, S.V. Titov.

Genus *Ceramica* Guenée, 1852

Ceramica pisi (Linnaeus, 1758)* – FP: VI–VII; localities: P12, B30, A42. (Appendix 1, Map 437)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 25.06.2007, 2♂, 2♀, 17.06.2012, 1♂, 03.07.2013, 3♂, 1♀, 13.07.2013, 2♂, 18.07.2015, 1♂, 27.07.2016, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 14.06.2013, 1♂, 2♀, 01.07.2014, S.V. Titov, 3♂, 1♀, 08.07.2016, 4♂, 2♀, 12.07.2016, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 4♂, 2♀, 30.06.2007, 1♀, 07.07.2008, S.V. Titov.

Genus *Hada* Billberg, 1820

Hada plebeja (Linnaeus, 1761)* – FP: VII; localities: B30, B36. (Appendix 1, Map 438)

Biogeographical feature. Eurasiatic Palaearctic, boreal. Asia Minor, Near East (ssp. *sultana*), Europe, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East (ssp. *plebeja*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: B30, Kurkeli natural landmark, 1♀, 08.07.2016, 3♂, 2♀, 12.07.2016, S.V. Titov; B36, Dulga tas rock, 1♂, 26.07.2014, S.V. Titov.

Genus *Hyssia* Guenée, 1852

Hyssia cavernosa (Eversmann, 1842)* – FP: VI–VII; localities: Z1, Z6, K10, A46. (Appendix 1, Map 439)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. C and S Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia (ssp. *cavernosa*), Russian Far East, China, Korea (ssp. *korebia*), Mongolia (ssp. *kaszabi*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 3♂, 1♀, 05.07.2011, M.Yu. Volkov; Z6, vic. of Novokuz'minka vill., 1♀, 21.07.2013, V.S. Bychkov; K10, vic. of Terenkol' vill., 2♂,

10.07.2013, S.V. Titov; A46, vic. of Kurkol' vill., 2♂, 1♀, 27.06.2016, 1♂, 1♀, 25.07.2016, S.V. Titov.

Genus *Mamestra* Ochsenheimer, 1816

Mamestra brassicae (Linnaeus, 1758) – FP: VI–VIII; localities: P11, P12, P13, S23, L28. Reference: Pospelov (1962). (Appendix 1, Map 440)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, China, Korea, Japan, Taiwan, Himalaya (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: P11, Pavlodar city, 3♂, 1♀, 27.06.2006, S.V. Titov, 6♂, 1♀, 12.06.2008, N.E. Tarasovskaya, 1♂, 09.07.2008, S.V. Titov, 2♂, 28.07.2008, 1♂, 30.07.2008, N.E. Tarasovskaya, 1♂, 19.07.2010, S.V. Titov, 1♀, 05.07.2011, 2♂, 1♀, 24.07.2011, 4♀, 12.08.2011, 2♂, 1♀, 18.08.2011, N.E. Tarasovskaya, 1♂, 02.08.2012, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 2♂, 3♀, 25.06.2007, 4♂, 2♀, 02.08.2009, 5♂, 6♀, 17.06.2012, 2♂, 1♀, 02.07.2012, 1♀, 03.08.2014, 1♀, 13.08.2015, S.V. Titov; P13, vic. of Rozovka vill., 1♀, 05.06.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 2♂, 1♀, 19.06.2015, S.M. Reznichenko; L28, vic. of Akku vill., 3♂, 2♀, 18.06.2015, S.V. Titov.

Genus *Sideridis* Hübner, [1821]

Subgenus *Sideridis* Hübner, [1821]

Sideridis (*Sideridis*) *lampra* (Schawerda, 1913)* – FP: VI; localities: Z2, Z5. (Appendix 1, Map 441)

Biogeographical feature. Euro-Siberian, subboreal. SE Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 1♀, 05.06.2012, S.V. Titov, V.S. Bychkov, 2♀, 09.06.2013, V.S. Bychkov; Z5, vic. of Slavyanovka vill., 1♂, 11.06.2012, S.V. Titov, V.S. Bychkov.

Sideridis (*Sideridis*) *turbida* (Esper, 1790) – FP: V–VIII; localities: Z2, Z6, P11, P12, P13, L27, B30, B32, B33, A42, E48. Reference: Pospelov (1962, as albicolon). (Appendix 1, Map 442)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, C and S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: Z2, vic. of Krasnovka vill., 20♂, 7♀, 19.05.2011, V.S. Bychkov, 13♂, 7♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 5♂, 2♀, 09.07.2011, V.S. Bychkov, 3♂, 4♀, 05.06.2012, S.V. Titov, V.S. Bychkov, 4♂, 7♀, 14.08.2012, V.S. Bychkov, 2♂, 3♀, 09.06.2013, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 3♂, 4♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 95 ex., 01.06 – 04.07.1960, S.M. Pospelov, 12.06.1961, Ryabchenko (Coll. KSRIPPQ), 5♂, 2♀, 27.06.2006, 1♀, 27.05.2008, S.V. Titov, 3♂, 9♀, 30.05.2008, 6♂, 1♀, 12.06.2008, N.E. Tarasovskaya, 11♂, 3♀, 09.07.2008, S.V. Titov, 2♂, 5♀, 28.07.2008, 7♂, 2♀, 30.07.2008, N.E. Tarasovskaya, 1♂, 28.05.2010, 6♂, 4♀, 19.07.2010, 2♂, 1♀, 21.05.2011, S.V. Titov, 6♂, 7♀, 05.07.2011, 7♂, 9♀, 24.07.2011, 2♂, 9♀, 12.08.2011, 16♂, 8♀, 18.08.2011, N.E. Tarasovskaya, 5♂, 2♀, 15.05.2012, S.V. Titov, 7♂, 6♀, 02.07.2012, 9♂, 10♀, 31.07.2012, 7♂, 6♀, 02.08.2012, 23♂, 5♀, 06.08.2012, 3♂, 6♀, 31.08.2012, 19♂, 7♀, 16.05.2013, N.E. Tarasovskaya, 3♂, 6♀, 23.08.2014, 8♂, 12♀, 02.08. 2017, 9♂, 7♀, 21.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 4♂, 5♀, 25.06.2007, 2♂, 7♀, 02.08.2009, 2♂, 2♀, 17.06.2012, 3♂, 4♀, 02.07.2012, 14♂, 21♀, 03.07.2013, 15♂, 8♀, 13.07.2013, 1♂, 05.08.2013, 2♂, 26.08.2013, 3♂, 4♀, 03.08.2014, 2♂, 7♀, 18.07.2015, 19♂, 4♀, 13.08.2015, 11♂, 9♀, 27.07.2016, S.V. Titov; P13, vic. of Rozovka vill., 6♂, 7♀, 02.05.2010, 8♂, 9♀, 05.06.2010, 24♂, 18♀, 07.06.2010, 9♂, 08.06.2010, 2♂, 5♀, 02.07.2010, 8♂, 2♀, 06.07.2010, 3♂, 4♀, 18.07.2010, 1♀, 18.08.2010, L.N. Ivan'ko; L27, Borly lake, 1♂, 1♀, 25.06.2013, 6♂, 2♀, 29.07.2013, S.V. Titov; B30, Kurkeli natural landmark, 7♂, 2♀, 02.05.2012, 3♂, 4♀, 12.05.2012, 9♂, 10♀, 14.06.2013, 4♂, 12♀, 01.07.2014, S.V. Titov, 7♂, 2♀, 08.07.2016, 3♂, 3♀, 12.07.2016, 10♂,

7♀, 16.08.2016, S.V. Titov; E48, Shiderty reservoir, water pump №7, 6♂, 7♀, 12.06.2012, 2♂, 6♀, 28.06. 2012, 1♂, 06.08.2017, S.V. Titov; B33, Toraygyr lake, 2♂, 3♀, 11.06.2013, 7♂, 8♀, S.V. Titov, A.V. Volynkin, 7♂, 13♀, 11.06.2014, 2♂, 6♀, 09.07.2016, 7♂, 2♀, 15.07.2016, 3♂, 6♀, 28.07.2016, 3♂, 5♀, 17.05.2017, 7♂, 2♀, 16.06.2017, 1♂, 03.08.2017, 6♂, 2♀, 09.08.2017, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 9♂, 7♀, 30.06.2007, 8♂, 5♀, 07.07.2008, 6♂, 10♀, 07.08.2017, S.V. Titov; B32, rock area Kempirtas, 7♂, 3♀, 17.05.2007, 2♂, 6♀, 13.08.2008 1♂, 13.06.2013, 5♂, 28.06.2013, 2♂, 1♀, 30.07.2013, 1♂, 17.05.2014 27♂, 32♀, 13.06.2014, S.V. Titov, 9♂, 5♀, 27.05.2015, M. Černila, S.V. Titov, M. Kučinić.

Sideridis (*Sideridis*) *egena* (Lederer, 1853)* – FP: VI–VIII; localities: Z6, K10, P12, S23, L24, L28, B32. (Appendix 1, Map 443)

Biogeographical feature. European-Central Asian, subboreal. E Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, NW China (ssp. *egena*), Himalaya (ssp. *subfusca*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z6, vic. of Novokuz'minka vill., 2♂, 1♀, 21.07.2013, V.S. Bychkov; K10, vic. of Terenkol' vill., 1♂, 19.06.2012, L.N. Ivan'ko, 3♂, 10.07.2013, S.V. Titov; P12, vic. of Pavlodarskoye vill., 3♂, 4♀, 25.06.2007, 2♂, 4♀, 02.08.2009, 5♂, 3♀, 17.06.2012, 1♂, 02.07.2012, 1♀, 03.07.2013, 2♂, 13.07.2013, 3♂, 1♀, 05.08.2013, 3♂, 1♀, 26.08.2013, 1♂, 18.07.2015, S.V. Titov; S23, vic. of Sharbakty vill., 6♂, 7♀, 30.07.2007, S.V. Titov, 2♂, 1♀, 11.08.2014, S.M. Reznichenko, 9♂, 5♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 3♂, 7♀, 21.07.2015, 6♂, 1♀, 06.08.2015, 1♂, 16.06.2016, S.V. Titov; L28, vic. of Akku vill., 4♂, 3♀, 18.06.2015, S.V. Titov, 1♂, 24.08.2015, S.V. Titov, 1♀, 20.07.2017, A.S. Karim; B32, rock area Kempirtas, 3♂, 2♀, 13.08.2008, 7♂, 3♀, 13.06.2013, 2♂, 28.06.2013 1♂, 1♀, 30.07.2013, 1♀, 13.06.2014, S.V. Titov.

Subgenus *Aneda* Sukhareva, 1973

Sideridis (*Aneda*) *rivularis* (Fabricius, 1775)* – FP: VII–VIII; locality: B35. (Appendix 1, Map 444)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, China (ssp. *rivularis*), Russian Far East (ssp. *pacifica*) (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: B35, vic. of Zhana Zhosaly vill., 4♂, 2♀, 16.07.2016, 1♂, 04.08.2017, S.V. Titov.

Genus *Heliophobus* Boisduval, 1829

Heliophobus unicolor (Alphéraky, 1889)* – FP: VII; locality: P12. (Appendix 1, Map 445)

Biogeographical feature. Euro-Siberian, subboreal. Europe, W Caucasus, N Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, N Mongolia (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 18.07.2015, 1♀, 27.07.2016, S.V. Titov.

Heliophobus mongoliensis Simonyi, 2015* – FP: VI–VII; localities: Z1, Z6, P11, P12, P13, L24, L27, L28, B31, B33, E47, E50. (Appendix 1, Map 446)

Biogeographical feature. Central Asian, subboreal. E and NE Kazakhstan, Transbaikalia, Mongolia, NW China (Simonyi, 2015; Titov et al., 2017 b).

Bionomics. Xero-thermophilous species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 05.07.2011, M.Yu. Volkov; Z6, vic. of Novokuz'minka vill., 3♂, 1♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 1♂, 27.06.2006, 1♀, 12.06.2008, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 25.06.2007, 1♂, 2♀, 03.07.2013, S.V. Titov; P13, vic. of Rozovka vill., 1♂, 18.07.2010, L.N. Ivan'ko; L24, Tuz lake, 1♂, 21.07.2015, S.V. Titov; L27, Borly lake, 1♂, 1♀, 25.06.2013, 1♂, 2♀, 29.07.2013, S.V. Titov; L28, vic. of Akku vill., 3♂, 2♀, 18.06.2015, S.V. Titov; B31, vic. of Shonai vill., 3♂, 3♀, 29.06.2013, S.V. Titov; B33, Toraygyr lake, 2♀, 11.06.2013, S.V. Titov, A.V. Volynkin, 11.06.2014, 7♂, 3♀, 15.07.2016, 5♂, 2♀, 28.07.2016, S.V. Titov; E47, vic. of

Karazhar vill., 1♂, 30.06.2009, S.V. Titov; E50, Olenty river valley, 3♂, 1♀, 22.07.2014, S.V. Titov.

Genus *Saragossa* Staudinger, 1900

Saragossa siccanorum (Staudinger, 1870)* – FP: VI–VIII; localities: P14, P19, L24, L26, B32, B33. (Appendix 1, Map 447)

Biogeographical feature. European-Central Asian, subboreal. E Europe, S Russia (S European part, Ural, S Siberia), Transcaspia, Asia Minor, Afghanistan, W and NE Kazakhstan, S Siberia, W Mongolia, W China, (Hacker et al. 2002; Gorbunov, 2011; Titov et al., 2017 b).

Bionomics. Xero-halophilous species.

Material: P14 vic. of Kenzhenkol vill., 8♂, 2♀, 20.07.2012, S.V. Titov; P19, vic. of Zhertumsyk vill., 5♂, 2♀, 11.06.2016, 1♀, 25.08.2017, S.V. Titov; L24, Tuz lake, 1♀, 21.07.2015, S.V. Titov; L26, vic. of Sharbakty vill., 3♂, 1♀, 11.08.2013, 2♂, 12.06.2014, S.V. Titov; B32, rock area Kempirtas, 2♀, 13.08.2008, 1♂, 13.06.2013, 2♂, 28.06.2013, 2♀, 30.07.2013, 3♂, 1♀, 13.06.2014, S.V. Titov; B33, Toraygyr lake, 2♂, 11.06.2013, S.V. Titov, A.V. Volynkin, 1♂, 09.07.2016, 1♂, 15.07.2016, 2♀, 03.08.2017, 3♀, 09.08.2017, S.V. Titov.

Saragossa porosa (Eversmann, 1854)* – FP: VI–VII; localities: Z4, B29, E46, E47. (Appendix 1, Map 448)

Biogeographical feature. European-Central Asian, subboreal. SE Europe, SW Siberia, W and NE Kazakhstan, Kyrgyzstan (Hacker et al. 2002; Gorbunov, 2011; Titov et al., 2017 b).

Bionomics. Xerophilous species.

Material: Z4, vic. of Moiseevka vill., 1♂, 25.07.2013, S.V. Titov; B29, Birzhankol' lake, 1♂, 1♀, 28.06.2008, 2♂, 1♀, 17.06.2009, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♀, 18.07.2009, S.V. Titov; E47, vic. of Karazhar vill., 1♂, 10.06.2007, S.V. Titov.

Genus *Conisania* Hampson, 1905

Subgenus *Conisania* Hampson, 1905

Conisania (*Conisania*) *leineri* (Freyer, 1836) – FP: VI–VII; localities: P11, S18, L27, B29, A46, E48, M40. References: Pospelov (1962), Shek (1975). (Appendix 1, Map 449)

Biogeographical feature. European-Central Asian, subboreal. N and E Europe (ssp. leineri), W and N Europe (ssp. *pomerana*), N Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia (ssp. *furcata*), Middle Asia, S and E Kazakhstan, Altai, Transbaikalia), NW China, Mongolia (ssp. *bovina*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: P11, Pavlodar city, 9ex., 23.06 – 24.06., S.M. Pospelov, 1♀, 27.06.2006, 1♀, 02.07.2012, N.E. Tarasovskaya; S18, Maraldy lake, 2♂, 3♀, 20.06.2012, 2♂, 1♀, 23.07.2012, S.V. Titov; L27, Borly lake, 3♂, 25.06.2013, 1♀, 29.07.2013, S.V. Titov; B29, Birzhankol' lake, 2♀, 28.06.2008, S.V. Titov; A46, vic. of Kurkol' vill., 2♂, 2♀, 27.06.2016, S.V. Titov; E48, Shiderty reservoir, water pump №7, 5♂, 2♀, 12.06.2012, S.V. Titov; M40, Kalmakyrgan Mts., 1♂, 27.07.2014, S.V. Titov.

Subgenus *Luteohadena* Beck, [1992]

Conisania (*Luteohadena*) *luteago* ([Denis & Schiffermüller], 1775)* – FP: V–VII; localities: Z1, Z2, Z4, K10, P12, P13, P14, P17, P19, L24, B31. (Appendix 1, Map 450)

Biogeographical feature. West Palaearctic, subboreal. Sardinia (ssp. *behouneki*), W Europe (ssp. *olbiena*), N Africa, C, S and E Europe, Asia Minor, Near East (W Iran), Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *luteago*), SE Asia Minor, Near East, Transcaucasia (Azerbaijan) (ssp. *meridionalis*) (Volynkin, 2012).

Bionomics. Meso-xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 6♂, 2♀, 05.07.2011, M.Yu. Volkov; Z2, vic. of Krasnovka vill., 2♂, 1♀, 19.05.2011, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♂, 4♀, 22.05.2011, S.A.&Yu.P. Lorents; K10, vic. of Terenkol' vill., 1♀, 19.06.2012, L.N. Ivan'ko; P12, vic. of Pavlodarskoye vill., 8♂, 3♀, 25.06.2007, 4♂, 2♀, 17.06.2012, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 4♀, 02.05.2010, 7♂, 2♀, 05.06.2010, 1♀, 07.06.2010, 3♂, 1♀, 08.06.2010, 2♂, 2♀, 02.07.2010, L.N. Ivan'ko; P14 vic. of Kenzhenkol vill., 6♂, 2♀, 05.05.2010, S.V. Titov; P17, vic. of Koryakovka, 8♂, 5♀, 22.05.2011, 3♂, 2♀, 21.05.2017, S.V. Titov; P19, vic. of Zhertumsyk vill., 2♂, 4♀, 11.06.2016, S.V. Titov; L24, Tuz lake, 11♂, 7♀, 08.05.2011, 4♂, 2♀, 12.05.2015, 1♀, 16.06.2016, S.V. Titov; B31, vic. of Shonai vill., 6♂, 3♀, 29.06.2013, 2♂, 1♀, 05.05.2014, S.V. Titov.

Conisania (*Luteohadena*) *literata* (Fischer von Waldheim, 1840)* – FP: V–VI; localities: Z2, P11, P12. (Appendix 1, Map 451)

Biogeographical feature. European-Central Asian, subboreal. Asia Minor (ssp. *subfusca*), Near East, Middle Asia, N Pakistan, S Russia (S European part, Ural, Kazakhstan, S Siberia), S Ural, Altai (ssp. *literata*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 3♂, 1♀, 05.06.2012, S.V. Titov, V.S. Bychkov, 6♂, 4♀, 09.06.2013, V.S. Bychkov; P11, Pavlodar city, 1♂, 2♀, 27.06.2006, 2♂, 6♀, 12.06.2008, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 7♂, 2♀, 25.06.2007, S.V. Titov.

Genus *Hecatera* Guenée, 1852

Hecatera bicolorata (Hufnagel, 1766)* – FP: V–VIII; localities: Z2, Z4, S23, E50. (Appendix 1, Map 452)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East (Iran, Lebanon), Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 19.05.2011, V.S. Bychkov, 1♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 2♂, 1♀, 09.07.2011, V.S. Bychkov, 1♂, 05.06.2012, S.V. Titov, V.S. Bychkov; Z4, vic. of Moiseevka vill., 1♂, 2♀, 22.05.2011, S.A.&Yu.P. Lorents, 1♀, 28.08.2011, S.A.&Yu.P. Lorents, 5♂, 4♀, 25.07.2013, S.V. Titov; S23, vic. of Sharbakty vill., 2♂, 3♀, 30.07.2007, S.V. Titov, 2♂, 2♀, 11.08.2014, 1♂, 19.06.2015, S.M. Reznichenko; E50, Olenty river valley, 1♂, 22.08.2013, S.V. Titov, 2♀, 22.07.2014, S.V. Titov.

Hecatera dysodea ([Denis & Schiffermüller], 1775)* – FP: VI–VIII; localities: P11, P12, S23, L24, L28, B32. (Appendix 1, Map 453)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, C and S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai, NW China (ssp. *dysodea*), Himalaya (ssp. *nebulosa*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: P11, Pavlodar city, 1♂, 02.07.2012, 1♂, 02.08.2017, S.V. Titov; P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 25.06.2007, 3♂, 1♀, 02.08.2009, 4♂, 1♀, 17.06.2012, 1♂, 02.07.2012, 1♀, 03.07.2013, 1♀, 05.08.2013, 2♀, 27.07.2016, S.V. Titov; S23, vic. of Sharbakty vill., 1♀, 30.07.2007, S.V. Titov, 3♂, 1♀, 11.08.2014, 1♂, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 2♀, 21.07.2015, 1♀, 06.08.2015, 1♂, 16.06.2016, S.V. Titov; L28, vic. of Akku vill., 2♂, 1♀, 18.06.2015, S.V. Titov, 2♂, 1♀, 24.08.2015, S.V. Titov; B32, rock area Kempirtas, 6♂, 2♀, 13.06.2013, 1♀, 30.07.2013, 1♂, 13.06.2014, S.V. Titov.

Genus *Enterpia* Guenée, 1850

Enterpia picturata (Alphéraky, 1882)* – FP: VII–VIII; localities: A46, E46, E50. (Appendix 1, Map 454)

Biogeographical feature. European-Central Asian, subboreal. Caucasus, S. Iran, S Russia (S European part, Ural, S Siberia), W and NE Kazakhstan, Mongolia, (Hacker et al. 2002; Gorbunov, 2011; Titov et al., 2017a, b).

Bionomics. Xerophilous species.

Material: A46, vic. of Kurkol' vill., 1♂, 2♀, 25.07.2016, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 1♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E50, Olenty river valley, 3♂, 1♀, 22.07.2014, S.V. Titov.

Genus *Hadena* Schrank, 1802

Subgenus *Hadena* Schrank, 1802

Hadena (*Hadena*) *capsincola* ([Denis & Schiffermüller], 1775)* – FP: VII–VIII; localities: Z6, B31, B35. (Appendix 1, Map 455)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: Z6, vic. of Novokuz'minka vill., 1♂, 21.07.2013, V.S. Bychkov; B31, vic. of Shonai vill., 2♀, 18.08.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 2♀, 04.08.2017, S.V. Titov.

Hadena (*Hadena*) *magnolii* (Boisduval, 1829) – FP: V–VI; localities: Z2, P11, P12, B30, B32, E48. References: Pospelov (1962), Shek (1975). (Appendix 1, Map 456)

Biogeographical feature. West Palaearctic, subboreal. N Africa, C, S and E Europe, S Russia (S European part, Ural, S Siberia), Near East, Turkmenistan, Uzbekistan, Kyrgyzstan, W and NE Kazakhstan, (Hacker et al. 2002, Gorbunov, 2011, Titov et al., 2017a, b).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 1♀, 19.05.2011, V.S. Bychkov, 3♂, 1♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 4♂, 2♀, 05.06.2012, S.V. Titov, V.S. Bychkov; P11, Pavlodar city, 1 ex., 09.06.1960, S.M. Pospelov, 4♂, 3♀, 27.06.2006, 1♂, 2♀, 27.05.2008, S.V. Titov, 6♂, 2♀, 30.05.2008, 2♂, 2♀, 12.06.2008, N.E. Tarasovskaya; P12, vic. of Pavlodarskoye vill., 3♂, 1♀, 25.06.2007, 1♀, 17.06.2012, S.V. Titov; B30, Kurkeli natural landmark, 6♂, 1♀, 12.05.2012, 2♂, 1♀, 14.06.2013, S.V. Titov; B32, rock area Kempirtas, 3♂, 17.05.2007, 2♂, 3♀, 13.06.2014, S.V. Titov; E48, Shiderty reservoir, water pump №7, 3♂, 3♀, 12.06.2012, 2♀, 28.06. 2012, S.V. Titov.

Hadena (*Hadena*) *compta* ([Denis & Schiffermüller], 1775)* – FP: VII–VIII; localities: B35, E46, M40. (Appendix 1, Map 457)

Biogeographical feature. Transpalaearctic, temperate. N Africa (ssp. *almoravida*), Europe, Asia Minor, Caucasus and Transcaucasia, Near East (Levante, Syria) (ssp. *compta*), Near East (Iran: Elburs Mts. – ssp. *persica*; Zagros Mts. – ssp. *kashgaia*), Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (ssp. *armeriae*) (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: B35, vic. of Zhana Zhosaly vill., 2♂, 3♀, 25.07.2014, S.V. Titov, 6♂, 2♀, 04.07.2016, 1♀, 16.07.2016, 4♂, 04.08.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♂, 2♀, 08.08.2008, 6♂, 2♀, 18.07.2009, S.V. Titov, 2♂, 3♀, 12.08.2012, S.V. Titov, A.V. Volynkin; M40, Kalmakyrgan Mts., 6♂, 2♀, 27.07.2014, S.V. Titov.

Hadena (*Hadena*) *variolata* (Smith, 1888)* – FP: VII; locality: M40. (Appendix 1, Map 458)

Biogeographical feature. Holarctic, Siberian-American, subboreal. N America (ssp. *variolata*), Middle Asia (Kyrgyzstan), Kazakhstan, Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea (ssp. *dealbata*), Japan (ssp. *kogurei*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: M40, Kalmakyrgan Mts., 2♂, 3♀, 27.07.2014, S.V. Titov.

Hadena (*Hadena*) *albimacula* (Borkhausen, 1792) – FP: VI–VII, IX; localities: S23, B32, B33, B35, E50. References: Suvortsev (1894). (Appendix 1, Map 459)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia (*Turkmenistan*) S Russia (S European part, Ural, S Siberia), S Ural (ssp. *albimacula*), W Himalaya (ssp. *nivalis*), Afghanistan, N and E Himalaya, Middle Asia (Uzbekistan, Kyrgyzstan, Tajikistan), Kazakhstan, W and S Siberia, Mongolia (ssp. *excelsa*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material S23, vic. of Sharbakty vill., 1♂, 30.07.2007, S.V. Titov, 3♂, 19.06.2015, S.M. Reznichenko; B, (1894) Pavlodarskiy county, stanitsa (cossack village) Bayanaul'skaya, colonel N A. Krekov, mountain engineer I. V. Ignatiev; B32, rock area Kempirtas, 3♂, 13.06.2013, 1♂, 28.06.2013, 1♂, 13.06.2014, S.V. Titov; B33, Toraygyr lake, 2♂, 1♀, 11.06.2013, S.V. Titov, A.V. Volynkin, 1♀, 11.06.2014, 1♂, 1♀, 09.07.2016, 1♂, 2♀, 15.07.2016, 2♂, 3♀, 28.07.2016, 2♂, 16.06.2017, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 3♂, 2♀, 25.07.2014, S.V. Titov, 2♂, 2♀, 04.07.2016, 1♀, 16.07.2016, S.V. Titov; E50, Olenty river valley, 1♂, 2♀, 22.07.2014, S.V. Titov.

Hadena (*Hadena*) *dsungarica* Hacker, 1996* – FP: VI; locality: B32. Reference: Titov et al. (2017). (Appendix 1, Map 460)

Biogeographical feature. Central Asian, subboreal. E and NE Kazakhstan, Altai, W Mongolia) (Volynkin, 2012; Titov et al., 2017a, b).

Bionomics. Xerophilous speices.

Material: B32, rock area Kempirtas, 1♂, 12.06.2013, S.V. Titov, A.V. Volynkin (coll. CAV).

Hadena (*Hadena*) *persimilis* Hacker, 1996* – FP: VII; locality: A46. Reference: Titov et al. (2017). (Appendix 1, Map 461)

Biogeographical feature. European-Central Asian, subboreal. SE Europe and Asia Minor, Turkmenistan, Iran, Armenia, Azerbaijan, Turkey and Levant, Greece (ssp. *balcanica*), S Russia (S European part, Ural, S Siberia), W and NE Kazakhstan, (Hacker et al. 2002; Titov et al., 2017 a, b).

Bionomics. Xerophilous speices.

Material: A46, vic. of Kurkol', 2♂, 21.06.2016, S.V. Titov.

Hadena (*Hadena*) *filograna* (Esper, [1788])* – FP: VI; localities: L26, L27, B32, E48. (Appendix 1, Map 462)

Biogeographical feature. West Palaearctic, subboreal. N Africa (ssp. *rungsi*), Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, Altai (ssp. *filograna*), S Ural, W Siberia (ssp. *consparcata*) (Volynkin, 2012).

Bionomics. Xerophilous speices.

Material: L26, vic. of Sharbakty vill., 6♂, 1♀, 12.06.2014, S.V. Titov; L27, Borly lake, 3♂, 3♀, 25.06.2013, S.V. Titov; B32, rock area Kempirtas, 5♂,2♀, 13.06.2013, 6♀, 28.06.2013, 2♂, 7♀, 13.06.2014, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♂, 3♀, 12.06.2012, 5♂, 2♀, 28.06. 2012, S.V. Titov.

Subgenus *Anepia* Hampson, 1918

Hadena (*Anepia*) *perplexa* ([Denis & Schiffermüller], 1775)* – FP: VI–VIII; localities: L24, B32, B33, B35, E46. (Appendix 1, Map 463)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *perplexa*), Afghanistan (ssp. *paghmana*), Himalaya (ssp. *plantei*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: L24, Tuz lake, 1♀, 06.08.2015, S.V. Titov; B32, rock area Kempirtas, 3♂, 2♀, 13.06.2013, 1♂, 13.06.2014, S.V. Titov; B33, Toraygyr lake, 4♂, 2♀, 11.06.2013, S.V. Titov, A.V. Volynkin, 11.06.2014, 1♂, 09.07.2016, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 4♂,

1♀, 16.07.2016, 1♀, 04.08.2017, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 1♂, 08.08.2008, 1♂, 3♀, 18.07.2009, S.V. Titov, 1♀, 12.08.2012, S.V. Titov, A.V. Volynkin

Hadena (*Anepia*) *christophi* (Möschler, 1862)* – FP: V–VI; localities: Z2, P12, P19, M38. (Appendix 1, Map 464)

Biogeographical feature. European-Central Asian, subboreal. E Europe, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, W Siberia, S Siberia, W Mongolia, NW China (Xinjiang) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 2♀, 05.06.2012, S.V. Titov; P12, vic. of Pavlodarskoye vill., 1♂, 25.06.2007, S.V. Titov; P19, vic. of Zhertumsyk vill., 3♂, 1♀, 11.06.2016, S.V. Titov; M38, vic. of Zhamantuz lak, 2♀, 22.05.2010, 1♂, 1♀, S.V. Titov.

Hadena (*Anepia*) *irregularis* (Hufnagel, 1766)* – FP: VI–VII; localities: P12, E48. (Appendix 1, Map 465)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Caucasus and Transcaucasia, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 1♀, 17.06.2012, 2♂, 4♀, 02.07.2012, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♀, 12.06.2012, collected on flowers of *Elaeagnus commutata* during power, 1♂, 3♀, 28.06. 2012, S.V. Titov.

Tribe Leucaniini Guenée, 1837

Genus *Mythimna* Ochsenheimer, 1816

Subgenus *Mythimna* Ochsenheimer, 1816

Mythimna (*Mythimna*) *turca* (Linnaeus, 1761)* – FP: VIII; locality: E46. (Appendix 1, Map 466)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Mesophilous species.

Material: E46, Shiderty river, Zhartas natural landmark, 2♀, 08.08.2008, S.V. Titov.

Mythimna (*Mythimna*) *velutina* (Eversmann, 1846) – FP: VI–VIII; localities: Z1, Z6, P13, S17, S18, S23, L24, L27, B35, A42, E46, E47, E50. M40, Reference: Pospelov (1962). (Appendix 1, Map 467)

Biogeographical feature. East Palaearctic, subboreal. Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z1, vic. of Mikhailovka vill., 6♂, 5♀, 05.07.2011, M.Yu. Volkov, 10♂, 9♀, 09.06.2012, S.V. Titov, 15♂, 8♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 3♂, 2♀, 08.07.2013, V.S. Bychkov, 7♂, 2♀, 19.08.2017, S.V. Titov; Z6, vic. of Novokuz'minka vill., 2♂, 1♀, 21.07.2013, V.S. Bychkov; S17 vic. of Sofiyevka vill., 19 ex., 08.07–01.08.1958, S.M. Pospelov; S18, Maraldy lake, 1♀, 11.07.1960, Fedosimov (Coll. KSRIPPQ); P13, vic. of Rozovka vill., 5♂, 7♀, 05.06.2010, 3♂, 1♀, 07.06.2010, 1♂, 08.06.2010, 7♂, 1♀, 02.07.2010, 4♂, 5♀, 06.07.2010, 1♀, 18.07.2010, 7♂, 2♀, 18.08.2010, L.N. Ivan'ko; S18, Maraldy lake, 11♂, 3♀, 20.06.2012, 5♂, 4♀, 23.07.2012, S.V. Titov; S23, vic. of Sharbakty vill., 1♂, 30.07.2007, S.V. Titov, 1♂, 2♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 10♂, 8♀, 21.07.2015, 5♂, 2♀, 06.08.2015, 3♂, 16.06.2016, S.V. Titov; L27, Borly lake, 7♂, 6♀, 25.06.2013, 9♂, 12♀, 29.07.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 2♂, 8♀, 25.07.2014, S.V. Titov, 1♂, 7♀, 04.07.2016, 4♂, 9♀, 16.07.2016, 2♂, 2♀, 04.08.2017, S.V. Titov; A42, Irtysh river, Zholpak natural landmark, 5♂, 2♀, 30.06.2007, 3♂, 6♀, 07.07.2008, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 6♂, 2♀, 08.08.2008, 7♂, 5♀, 18.07.2009, S.V. Titov, 14♂, 12♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E47, vic. of Karazhar vill., 9♂, 5♀, 13.06.2007, 6♂, 4♀, 11.08.2008, 14♂, 6♀, 30.06.2009, S.V. Titov; E50, Olenty river valley, 6♂, 2♀, 22.07.2014, S.V. Titov; M40, Kalmakyrgan Mts., 2♂, 3♀, 27.07.2014, S.V. Titov.

Mythimna (*Mythimna*) *pudorina* ([Denis & Schiffermüller], 1775)* – FP: VI–VII; localities: P12, P22, E50. (Appendix 1, Map 468)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Hygrophilous species.

Material: P12, vic. of Pavlodarskoye vill., 2♂, 02.07.2012, 1♂, 18.07.2015, 3♂, 6♀, 27.07.2016, S.V. Titov; P22, vic. of Baydala vill., 4♂, 13.06.2016, S.V. Titov; E50, Olenty river valley, 5♂, 2♀, 22.07.2014, S.V. Titov.

Mythimna (*Mythimna*) *conigera* ([Denis & Schiffermüller], 1775)* – FP: VII–VIII; localities: Z1, B39, E46, E50, M40. (Appendix 1, Map 469)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Eurytopic species.

Material: Z1, vic. of Mikhailovka vill., 1♀, 05.07.2011, M.Yu. Volkov; B39, Moldybulak natural landmark,3♂, 3♀, 19.08.2015, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 6♂, 2♀, 08.08.2008, 2♂, 18.07.2009, S.V. Titov, 5♂, 3♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E50, Olenty river valley, 7♂, 2♀, 22.07.2014, S.V. Titov; M40, Kalmakyrgan Mts., 1♂, 27.07.2014, S.V. Titov.

Mythimna (*Mythimna*) *pallens* (Linnaeus, 1758) – FP: V–IX; localities: Z6, P11, P12, P13, S23, L24, L27, E46, E47, E48. Reference: Shek (1975). (Appendix 1, Map 470)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East (Iraq), Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z6, vic. of Novokuz'minka vill., 2♂, 1♀, 21.07.2013, V.S. Bychkov; P11, Pavlodar city, 14♂, 8♀, 11.09.2003, 7♂, 5♀, 27.06.2006, 6♂, 3♀, 27.05.2008, S.V. Titov, 2♂, 8♀, 30.05.2008, 1♂, 12.06.2008, N.E. Tarasovskaya, 11♂, 4♀, 09.07.2008, S.V. Titov, 18♂, 6♀, 28.07.2008, 25♂, 24♀, 30.07.2008, 1♀, 05.07.2011, 3♂, 5♀, 24.07.2011, 7♂, 9♀,

12.08.2011, 1♂, 18.08.2011, N.E. Tarasovskaya, 2♂, 1♀, 02.07.2012, 3♂, 15♀, 31.07.2012, 3♂, 14♀, 02.08.2012, 5♂, 4♀, 06.08.2012, 3♂, 16♀, 31.08.2012, 2♂, 16.05.2013, N.E. Tarasovskaya, 2♂, 11♀, 23.08.2014, S.V. Titov; P12, vic. of Pavlodarskoye vill., 17♂, 21♀, 25.06.2007, 3♂, 6♀, 02.08.2009, 7♂, 19♀, 17.09.2009, 2♂, 42♀, 07.09.2011, 6♂, 1♀, 17.06.2012, 17♂, 8♀, 13.07.2013, 9♂, 3♀, 26.08.2013, 4♂, 15♀, 04.09.2013, 2♂, 10♀, 15.09.2013, 15♂, 16♀, 03.08.2014, 3♂, 2♀, 06.09.2014, 1♀, 11.09.2014, 7♂, 2♀, 18.07.2015, 16♂, 8♀, 13.08.2015, 21♂, 23♀, 08.09.2015, 18♂, 27♀, 19.09.2017, S.V. Titov; P13, vic. of Rozovka vill., 3♂, 2♀, 07.06.2010, 7♂, 4♀, 08.06.2010, 15♂, 7♀, 02.07.2010, 6♂, 2♀, 06.07.2010, 15♂, 11♀, 18.08.2010, L.N. Ivan'ko; S23, vic. of Sharbakty vill., 4♂, 2♀, 30.07.2007, S.V. Titov, 3♂, 5♀, 11.08.2014, 6♂, 7♀, 19.06.2015, S.M. Reznichenko; L24, Tuz lake, 1♀, 20.09.2011, S.V. Titov; L27, Borly lake, 1♀, 25.06.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 13♂, 17♀, 08.08.2008, S.V. Titov, 8♂, 5♀, 12.08.2012, S.V. Titov, A.V. Volynkin; E47, vic. of Karazhar vill., 21♂, 18♀, 11.08.2008, 23♂, 19♀, 08.09.2011, 29♂, 34♀, 12.09.2015, 33♂, 42♀, 21.09.2015, S.V. Titov; E48, Shiderty reservoir, water pump №7, 8♂, 7♀, 12.06.2012, 1♂, 2♀, 28.06. 2012, 1♂, 06.08.2017, S.V. Titov.

Mythimna (*Mythimna*) *deserticola* (Bartel, 1902) – FP: VI–VII, IX; localities: K10, P11, P12, L27. References: Pospelov (1962); Shek (1975). (Appendix 1, Map 471)

Biogeographical feature. S Siberian - Central Asian, subboreal. Europe, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: K10, vic. of Terenkol' vill., 1♀, 19.06.2012, L.N. Ivan'ko; P11, Pavlodar city, 5 ex., 16-25.06.1960, S.M. Pospelov, 6♂, 2♀, 11.09.2003, 7♂, 8♀, 27.06.2006, S.V. Titov; P12, vic. of Pavlodarskoye vill., 5♂, 3♀, 25.06.2007, 2♂, 17.09.2009, 6♀, 13.07.2013, 7♂, 3♀, 11.09.2014, S.V. Titov; L27, Borly lake, 15♂, 2♀, 25.06.2013, S.V. Titov.

Mythimna (*Mythimna*) *impura* (Hübner, [1808])* – FP: VI–VII, IX; localities: P12, S23, A42, E47, E48. (Appendix 1, Map 472)

Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Near East (Syria), Kazakhstan, S Russia (S European part, Ural, S

Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Hygro-mesophilous species.

Material: P12, vic. of Pavlodarskoye vill., 1♀, 25.06.2007, 2♀, 08.09.2015, S.V. Titov; S23, vic. of Sharbakty vill., 3♂, 1♀, 19.06.2015, S.M. Reznichenko; A42, Irtysh river, Zholpak natural landmark, 1♂, 2♀, 30.06.2007, S.V. Titov; E47, vic. of Karazhar vill., 5♂, 4♀, 13.06.2007, 1♀, 12.09.2015, S.V. Titov; E48, Shiderty reservoir, water pump №7, 2♂, 7♀, 12.06.2012, S.V. Titov.

Mythimna (*Mythimna*) *straminea* (Treitschke, 1825)* – FP: VII; locality: Z6. (Appendix 1, Map 473)

Biogeographical feature. Euro-Siberian, temperate. N Africa, W and N Europe, Caucasus, Turkey, Kazakhstan, Mongolia, Russian Far East (Hacker et al. 2002).

Bionomics. Hygrophilous species

Material: Z6, vic. of Novokuz'minka vill., 2♂, 21.07.2013, V.S. Bychkov.

Mythimna (*Mythimna*) *vitellina* (Hübner, [1808])* – FP: VI; locality: Z2. (Appendix 1, Map 474)

Biogeographical feature. West Palaearctic, subboreal. N Africa, S Europe, Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, Pamir, N Pakistan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 1♂, 2♀, 14.08.2012, V.S. Bychkov.

Subgenus *Sablia* Sukhareva, 1973

Mythimna (*Sablia*) *anderreggi* (Boisduval, 1840)* – FP: V–VI; localities: Z2, L24, B30, B32, B33, M39. (Appendix 1, Map 475)

Biogeographical feature. European-Central Asian, subboreal. SE Europe (ssp. *pseudocomma*), N and E Europe, Caucasus, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, Altai (ssp. *anderreggii*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 4♂, 1♀, 19.05.2011, V.S. Bychkov; L24, Tuz lake, 6♂, 7♀, 08.05.2011, S.V. Titov; B30, Kurkeli natural landmark, 1♂, 1♀, 02.05.2012, 2♂, 9♀, 12.05.2012, 1♂, 2♀, 14.06.2013, S.V. Titov; B32, rock area Kempirtas, 1♂, 1♀, 17.05.2007, 7♂, 11♀, 17.05.2014, 5♂, 13.06.2014, S.V. Titov, 2♂, 3♀, 27.05.2015, M. Černila, S.V. Titov, M. Kučinić; B33, Toraygyr lake, 16♂, 7♀, 11.06.2013, S.V. Titov, A.V. Volynkin, 2♂, 11.06.2014, 4♂, 7♀, 17.05.2017, 6♂, 4♀, 16.06.2017, S.V. Titov; M39, vic. of Koktobe vill., 2♂, 1♀, 24.05.2010, S.V. Titov.

Mythimna (*Sablia*) *albiradiosa* (Eversmann, 1852)* – FP: V–VII; localities: Z2, P12, P19, L27, B32, E46, E47. (Appendix 1, Map 476)

Biogeographical feature. S Siberian - Central Asian, subboreal. S Ural, S Siberia, NE Kazakhstan, Mongolia, Far East. (Hacker et al. 2002; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 7♂, 3♀, 19.05.2011, V.S. Bychkov, 2♂, 4♀, 27.05.2011, V.S. Bychkov, M.Yu. Volkov, 5♂, 2♀, 09.07.2011, V.S. Bychkov, 6♂, 4♀, 05.06.2012, S.V. Titov, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 1♀, 25.06.2007, 2♀, 17.06.2012, 5♂, 2♀, 02.07.2012, 2♂, 27.07.2016, S.V. Titov; P19, vic. of Zhertumsyk vill., 3♂, 2♀, 11.06.2016, S.V. Titov; L27, Borly lake, 1♂, 1♀, 25.06.2013, S.V. Titov; B32, rock area Kempirtas, 4♂, 3♀, 17.05.2007, 1♀, 13.06.2014, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 3♀, 17.05.2015, S.V. Titov, 1♂, 1♀, 26.05.2015, M. Černila, S.V. Titov, M. Kučinić; E47, vic. of Karazhar vill., 6♂, 1♀, 13.06.2007, 1♀, 30.06.2009, S.V. Titov.

Mythimna (*Sablia*) *opaca* (Staudinger, 1900)* – FP: VI; locality: Z2. (Appendix 1, Map 477)

Biogeographical feature. East Palaearctic, subboreal. S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East (ssp. *opaca*), Himalaya (ssp. *kaschmirensis*) (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: Z2, vic. of Krasnovka vill., 1♂, 09.06.2013, V.S. Bychkov.

Subgenus *Hyphilare* Hübner, [1821]

Mythimna (*Hyphilare*) *ferrago* (Fabricius, 1787)* – FP: VII–VIII; localities: Z1, Z6, P12, S23, L24, B35, E50. (Appendix 1, Map 478)

Biogeographical feature. West Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai (ssp. *ferrago*), Himalaya (ssp. *caliginata*) (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z1, vic. of Mikhailovka vill., 4♀, 05.07.2011, M.Yu. Volkov, 5♂, 3♀, 21.07.2012, V.S. Bychkov, M.Yu. Volkov, 6♂, 2♀, 08.07.2013, V.S. Bychkov, 6♂, 4♀, 19.08.2017, S.V. Titov; Z6, vic. of Novokuz'minka vill., 9♂, 4♀, 21.07.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 10♂, 4♀, 02.08.2009, 5♂, 7♀, 17.09.2009, 3♂, 2♀, 05.08.2013, 8♂, 6♀, 26.08.2013, 2♀, 18.07.2015, 7♂, 8♀, 13.08.2015, 2♂, 27.07.2016, S.V. Titov; S23, vic. of Sharbakty vill., 2♂, 6♀, 30.07.2007, S.V. Titov, 8♂, 3♀, 11.08.2014, S.M. Reznichenko; L24, Tuz lake, 2♂, 6♀, 21.07.2015, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 7♂, 3♀, 25.07.2014, S.V. Titov, 8♂, 3♀, 16.07.2016, 2♂, 04.08.2017, S.V. Titov; E50, Olenty river valley, 1♂, 22.07.2014, S.V. Titov.

Mythimna (*Hyphilare*) *l-album* (Linnaeus, 1767)* – FP: VIII; locality: L24. (Appendix 1, Map 479)

Biogeographical feature. West Palaearctic, subboreal. N Africa, Caucasus and Transcaucasia, Asia Minor, Near East, Middle Asia, Himalaya, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, W Altai (Volynkin, 2012).

Bionomics. Xerophilous species.

Material: L24, Tuz lake, 1♂, 06.08.2015, S.V. Titov.

Genus *Leucania* Ochsenheimer, 1816

Subgenus *Leucania* Ochsenheimer, 1816

Leucania (*Leucania*) *comma* (Linnaeus, 1761)* – FP: V–VII; localities: Z2, Z6, P12, P19, B32, E46, E48. (Appendix 1, Map 480)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Transcaucasia Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Mongolia, Russian Far East, NW China (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z2, vic. of Krasnovka vill., 2♂, 3♀, 19.05.2011, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 1♀, 21.07.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 2♂, 13.07.2013, S.V. Titov; P19, vic. of Zhertumsyk vill., 3♂, 4♀, 11.06.2016, S.V. Titov; B32, rock area Kempirtas, 2♀, 13.06.2014, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 6♂, 18.07.2009, S.V. Titov; E48, Shiderty reservoir, water pump №7, 1♂, 12.06.2012, S.V. Titov.

Leucania (*Leucania*) *obsoleta* (Hübner, 1803)* – FP: VI–VII; localities: Z4, Z6, P12, S18, B32. (Appendix 1, Map 481)

Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: Z4, vic. of Moiseevka vill., 2♂, 25.07.2013, S.V. Titov; Z6, vic. of Novokuz'minka vill., 1♀, 21.07.2013, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 2♂, 25.06.2007, S.V. Titov; S18, Maraldy lake, 1♂, 23.07.2012, S.V. Titov; B32, rock area Kempirtas, 1♂, 30.07.2013, S.V. Titov.

Genus *Senta* Stephens, 1834

Senta flammea (Curtis, 1828)* – FP: VI; localities: Z2, L27. (Appendix 1, Map 482)

Biogeographical feature. Euro-Siberian, subboreal. Europe, Russia (S Ural), W Siberia, W, N and NE Kazakhstan, Japan (Hacker et al, 2002).

Bionomics. Hygrophilous species

Material: Z2, vic. of Krasnovka vill., 1♀, 05.06.2012, S.V. Titov, V.S. Bychkov; L27, Borly lake, 2♂, 1♀, 25.06.2013, S.V. Titov.

Tribe Eriopygini Fibiger & Lafontaine, 2005

Genus *Lasionhada* Berio, 1980

Lasionhada proxima (Hübner, [1808])* – FP: VI–VIII; localities: B29, B31, B35, B36, M40. (Appendix 1, Map 483)

Biogeographical feature. Eurasiatic Palaearctic, temperate. C and N Europe, Caucasus and Transcaucasia, Near East, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, N Mongolia, Russian Far East (Volynkin, 2012).

Bionomics. Xero-mesophilous species.

Material: B29, Birzhankol' lake, 2♂, 8♀, 17.06.2008, S.V. Titov; B31, vic. of Shonai vill., 6♂, 3♀, 15.08.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 25.07.2014, S.V. Titov; B36, Dulga tas rock, 3♂, 3♀, 26.07.2014, S.V. Titov; M40, Kalmakyrgan Mts., 7♂, 2♀, 27.07.2014, S.V. Titov.

Genus *Eriopygodes* Hampson, 1905

Eriopygodes imbecilla (Fabricius, 1794) – FP: VI–VII; localities: S17, L27, B34. References: Pospelov (1962), Shek (1975). (Appendix 1, Map 484)

Biogeographical feature. Euro-Siberian, temperate. Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, N, E and NE Kazakhstan, W, S and E Siberia, Mongolia (Volynkin, 2012; Titov et al, 2017 b).

Bionomics. Mesophilous species.

Material: S17 vic. of Sofiyevka vill., 1 ex., 08.07.1958, S.M. Pospelov; L27, Borly lake, 2♂, 1♀, 25.06.2013, S.V. Titov; B34, natural landmark Kirigichi, 1♂, 30.06.2013, S.V. Titov.

Eriopygodes impar (Staudinger, 1870)* – FP: V–VI; localities: B30, E46, M38. (Appendix 1, Map 485)

Biogeographical feature. European-Central Asian, subboreal. E Europe, S Ural, W, E and NE Kazakhstan (Hacker et al, 2002; Gorbunov, 2011; Titov et al, 2017 b).

Bionomics. Xerophilous species.

Material: B30, Kurkeli natural landmark, 2♂, 8♀, 12.05.2012, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 8♂, 56♀, 26.05.2015, M. Černila, S.V. Titov, M. Kučinić; M38, vic. of Zhamantuz lak, 2♀, 22.05.2010, S.V. Titov.

5.3. New and rare species in the Noctuoidea fauna of the Pavlodar region

During the period of the study of the fauna of the Pavlodar region of Kazakhstan, 411 (84.7%) species of Noctuoidea were discovered, 1 new species for the science was described (*Orthosia ronkayorum* Volynkin & Titov, 2014) (Fig. 6), 1 more species is under description (*Victrix akbet* Volynkin, Titov & Černila, in press) (Fig. 7) (Volynkin & Titov, 2014; Volynkin et al., in press).

Prior to the research of the author of this work, 74 species of Noctuoidea (15.2%) was known for the fauna of Pavlodar region. A list of 411 new species, of Noctuoidea for the region, marked with the symbol *, is detailed in chapter 6.2. Fauna Noctuoidea of the Pavlodar region of Kazakhstan.

5.3.1. Endemism

The species *Orthosia ronkayorum* Volynkin & Titov, 2014 (Fig. 6) is currently considered endemic. Probably, its status is temporary because there is no data on the distribution of the species outside the Pavlodar region yet. Perhaps the species is endemic to the Kazakh Upland. It is likely that this species will be found in the rest of the Kazakh Upland, especially in its central part with which the Pavlodar region is connected by the hydrographic network of the Shiderty and Olenta rivers. The probable larval food plant *Salix caspica* grows on the banks of these rivers.

5.3.2. Rare species

The rarity of the species is relative, it is very difficult to determine the species status without having data on the biomonitoring of the study group and statistical data on the dynamics of natural or anthropogenic changes in the study area. There are very few rare species, among them there are more species that are poorly studied with the incorrectly established status of rarity. The situation with the Red Book of Kazakhstan is reversed, it includes only three species of Macroheterocera, one of which belongs to the superfamily Noctuoidea – *Catocala optima* Staudinger, 1888 (Zhdanko, 2003). Such information does not mean that there are no other “rare” species or species that need protection in Kazakhstan, it confirms only a poor knowledge of the fauna of the country. At present only two regions of Kazakhstan,West Kazakhstan and

North-East (Pavlodar) regions have a relatively good degree of fauna explored. Data accumulated In this study makes it possible to compile a list of the most rare occurring species within the range of their habitat. This study laid the foundation for biomonitoring in the Pavlodar region on the basis of insects from the superfamily Noctuoidea.

Figure 6. Species new for science. *Orthosia ronkayorum* Volynkin & Titov, 2014.

Figure 7. Species new for science. *Victrix akbet* Volynkin, Titov & Černila, in press.

Figure 8. *Cucullia tiefi* Tshetverikov, 1956, a rare species in the world fauna and Kazakhstan.

When determining the status of “rarity”, information was used on the extreme limits of the distribution areal of species. Many species found on the territory of the Pavlodar region by a few specimens are not included in this list, because they are either migrant or species that have a wide distribution area.

5.3.2.1. Rare species encountered in the Noctuidea fauna of the Pavlodar region of Kazakhstan

Criteria for the rarity of the species: with ** are indicated the species found on the edge of their areal; with *** are indicated the species with a “hidden lifestyle”; with sign ‘!’ is marked extremely rare species *Cucullia tiefi* Tshetverikov, 1956, discovered by the author of the work in the territory of the Pavlodar region, 99 years after the discovery of type specimens in the steppes of Western Kazakhstan and Southern Russia (Ural) (Fig. 8).

As a result of the study, data were obtained on 73 species of Noctuoidea rare in the fauna of the Pavlodar region. The habitats of these species deserve more detailed research and protection.

Below is a list and color plates showing the “rare” species of Noctuoidea. The list was compiled for the development of a separate study on the conservation of habitats of such, in specially protected areas, national parks, wildlife sanctuaries and nature reserves.

** *Gynaephora (Dicallomera) pumila* (Staudinger, 1881) – FP: VIII; locality: B31, B33. Biogeographical feature. Central Asian, subboreal. Russia (S Ural), N, NE and E Kazakhstan, (Trofimova, 2009; Titov et al., 2017 b). Bionomics. Xeromontane species. Material. B31, vic. of Shonai vill., 1♂, 14.08.2013, S.V. Titov, S.A.Knyazev; B33, Toraygyr lake, 1♂, 03.08.2017, S.V. Titov (Fig. 11).

** *Hyphoraia aulica* (Linnaeus, 1758) – FP: V; locality: B38. Biogeographical feature. Trans-Palaearctic, temperate. Europe, S Russia (S European part, Ural, S Siberia),

Caucasus and Transcaucasia, Asia Minor, N and NE Kazakhstan, S Siberia, China, Korea, Japan (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017b). Bionomics. Xero-mesophilous species Material: B38, natural landmark Zhumbak, 1♀, ex larva,14.04.2016, M. Černila (coll. MCK) (Fig. 11).

** *Chelis caecilia* (Kindermann in Lederer, 1853) – FP: VI; locality: B31. Biogeographical feature. West Palaearctic-Central Asian, subboreal. SE Europe, S Russia (S European part, Ural, S Siberia), E and NE Kazakhstan, Mongolia (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b). Bionomics. Xeromontane. Material: B31, vic. of Shonai vill., 6♂, 27.06.2013, S.V. Titov (Fig. 11).

** *Chelis dahurica* (Boisduval, 1832) – FP: VI–VII; localities: Z1, Z6. Biogeographical feature. S Siberian - Central Asian, subboreal. S Russia (S European part, Ural, S Siberia), Transbaikalia, NE and E Kazakhstan (Dubatolov, 2006, 2010; Speidel & Witt, 2011; Titov et al, 2017 b). Bionomics. Meso-xerophilous species. Material: Z1, vic. of Mikhailovka vill., 1♂, 25.06.2013, V.S. Bychkov; Z6, vic. of Novokuz'minka vill., 1♂, 21.07.2013, V.S. Bychkov (Fig. 11).

** *Eudiaphora turensis* (Erschoff, 1874) – FP: V; locality: B29. Biogeographical feature. Central Asian, subboreal. NE Iran, S. Turkmenistan, W, NE and SE Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Afghanistan, SW Mongolia, China (Dubatolov, 2006, 2010; Gorbunov, 2011; Titov et al, 2017 b). Bionomics. Xeromontane species. Material: B29, Birzhankol' lake, 2♂, 05.05.2014, S.M. Reznichenko.

** *Herminia tristriga* W Kozhantschikov, 1929 – FP: VI–VII; locality: A46. Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. W and S Siberia, Russian Far East (Volynkin, 2012). Bionomics. Mesophilous species. Material: A46, vic. of Kurkol' vill., 8♂, 5♀, 21.06.2016, S.V. Titov.

** *Eublemma panonica* (Freyer, 1840) – FP: VII; locality: L24. Biogeographical feature. Western Palaearctic, subboreal. S Russia (S European part, Ural, S Siberia), N Africa, Near East, S and C Europe, Kazakhstan. Bionomics. Xerophilous species (Kononenko, 2010). Material: L24, Tuz lake, 5♀, 21.07.2015, S.V. Titov (Fig. 11).

** *Eublemma pallidula* (Herrich-Schäffer, 1856) – FP: VI; localities: P22, L27. Biogeographical feature. European-Central Asian, subboreal. S and E Europe, Near East, S Russia (S European part, Ural, S Siberia), Caucasus and Transcaucasia, Middle Asia, Kazakhstan (Kononenko, 2010). Bionomics. Xerophilous species. Material: P22, vic. of Baydala vill., 3♂, 1♀, 13.06.2016, S.V. Titov; L27, Borly lake, 6♂, 2♀, 25.06.2013, S.V. Titov.

** *Eublemma polygramma* (Duponchel, 1842) – FP: VI; locality: L24. Biogeographical feature. Western Palaearctic, subboreal. N Africa, Near East, C and S Europe, Caucasus and Transcaucasia, Russia (S European part, Ural), Kazakhstan, Middle

Asia (Kononenko, 2010). Bionomics. Xero-thermophilous species. Material: L24, Tuz lake, 1♂, 16.06.2016, S.V. Titov.

** *Lygephila asiatica* Pekarsky, 2016 – FP: VII; locality: E50. Biogeographical feature. Central Asian, subboreal. S. SE NE Kazakhstan (Pekarsky, 2016, Titov et al, 2017 b). Bionomics. Meso-thermophilous species. Material: E50, Olenty river, 1♂, 22.07.2014, S.V. Titov.

** *Autophila* (*Cheirophanes*) *chamaephanes* Boursin, 1940 – FP: IV, IX–X; locality: B32, B41. Reference: Titov et al. (2017). Biogeographical feature. European-Central Asian, subboreal. S Russia (S European part, Ural, S Siberia), Caucasus, Turkey, Kazakhstan, Middle Asia, S Siberia (Kononenko, 2010). Bionomics. Xero-thermophilous species. Material: B32, rock area Kempirtas, 1♂, 25.09.2013, S.V. Titov, A.V. Volynkin, 1♂, 15.04.2016, M. Černila, S.V. Titov; B41, in hibernation inside the cave Konyr Auliye, 5♂, 15♀, 17–19.10.2017, S.V. Titov (Fig. 9).

** *Autophila* (*Autophila*) *vespertalis* (Staudinger, 1896) – FP: VII; locality: B33. Biogeographical feature. Central Asian, subboreal. Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, Russian Altai, C and W Mongolia, Afghanistan, Pakistan, S Turkey, NW China (Boursin, 1940; Volynkin, 2012). Bionomics. Xeromontane species. Material: B33, Toraygyr lake, 1♂, 16.06.2017, S.V. Titov.

** *Acantholipes regularis* (Hübner, 1813) – FP: VI; locality: P22. Biogeographical feature. European-Central Asian, subtemperate. S Russia (S European part, Ural, S Siberia), Near East, S Europe, Middle Asia, Pakistan, Nepal (Kononenko, 2010). Bionomics. Xerophilous species. Material: P22, vic. of Baydala vill., 1♂, 13.06.2016, S.V. Titov.

** *Catocala adultera* Ménétriès, 1856 – FP: VII–VIII–IX; localities: Z2, P12, L24. Biogeographical feature. Eurasiatic Palaearctic, temperate. N Europe, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East, Korea (Volynkin, 2012). Bionomics. Mesophilous species. Material: Z2, vic. of Krasnovka vill., 3♂, 4♀, 21.07.2012, V.S. Bychkov; P12, vic. of Pavlodarskoye vill., 1♂, 18.07.2015, S.V. Titov; L24, Tuz lake, 1♀, 20.09.2011, S.V. Titov (Fig. 13).

** *Catocala deducta* Eversmann 1843 – FP: VIII–IX; localities: P12, L24. Biogeographical feature. European-Central Asian, subboreal. Russia (S Ural), E the NE Kazakhstan (Zaisan lake, Irtish river). Bionomics. Mesophilous species. Material: P12, vic. of Pavlodarskoye vill., 1♂, 2♀, in wine, 03.09.2013, ♂, 2♀, in wine, 13.08.2015, S.V. Titov; L24, Tuz lake, 1♀, 20.09.2011, S.V. Titov (Fig. 12).

** *Drasteria christophi* (Alphéraky, 1895) – FP: V; locality: M41. Biogeographical feature. West Palaearctic-Central Asian, subboreal. Turkmenistan, W and NE Kazakhstan (Gorbunov, 2011; Titov et al., 2017 a., b). Bionomics. Xero-thermophilous species. Material: M41, the former Semipalatinsk nuclear test site, 1♀, 21.05.2010, on the ground, S.V. Titov (Fig. 11).

** *Nola crambiformis* Rebel, 1902 – FP: VI–VII; localities: B30, B33, A46. Biogeographical feature. Central Asian, subboreal. Russia (S European part, S Ural), Kazakhstan, Uzbekistan (Kononenko, 2010). Bionomics. Meso-xerophilous species. Material: A46, vic. of Kurkol' vill., 1♂, 21.06.2016, S.V. Titov; B30, Kurkeli natural landmark, 9♂, 08.07.2016, S.V. Titov; B33, окр. оз. Toraygyr, 28♀, 13.07.2016, S.V. Titov; B35, Kyzyltau Mts., vic. of Zhana Zhosaly, 3♂, 16.07.2016, S.V. Titov.

** *Nola confusalis* (Herrich-Schäffer, 1847) – FP: V; locality: B33. Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus and Transcaucasia, Kazakhstan, S Russia (S European part, Ural, S Siberia), Transbaikalia, Mongolia, Russian Far East (Volynkin, 2012). Bionomics. Mesophilous species. Material: B33, Toraygyr lake, 1♀, 15.05.2017, S.V. Titov, A.V. Volynkin, M. S. Ivanova.

** *Nycteola eremostola* Dufay, 1961 – FP: VI; locality: E48. Biogeographical feature. Euro-Siberian, subboreal. E Europe, Russia (S European part, Ural), Transbakialia, Near East (Turkey), W, NE and E Kazakhstan (Kononenko, 2010; Titov et al., 2017 b). Bionomics. Hygrothermophilous species. Material: E48, Shiderty reservoir, water pump №7, 1♀, 12.06.2012, S.V. Titov (Fig. 11).

** *Panchrysia deaurata* (Esper, 1787) – FP: VI–VII; localities: B32, B33, B35. Biogeographical feature. Siberian-Mediterranean, subboreal. S Europe, Caucasus, Middle Asia, Himalaya, S Russia (S European part, Ural, S Siberia), NE Kazakhstan (Volynkin, 2012; Titov et al., 2017 b). Bionomics. Meso-xerophilous species. Material: B32, Bayanaul Mts., rock area Kempirtas, 1♂, 1♀, 13.06.2014, S.V. Titov, A.V. Volynkin; B33, Toraygyr lake, 1♂, 11.06.2013, S.V. Titov; B35, vic. of Zhana Zhosaly vill., 1♂, 16.07.2016, S.V. Titov.

** *Lamprotes c-aureum* (Knoch, 1781) – FP: VIII; locality: P12. Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Near East, Caucasus and Transcaucasia, Middle Asia, S Russia (S European part, Ural, S Siberia), Kazakhstan, Russian Far East (Kononenko, 2010). Bionomics. Hygro-mesophilous species. Material: P12, vic. of Pavlodarskoye vill., 1♀, 02.08.2009, S.V. Titov.

** *Autographa mandarina* (Freyer, 1845) – FP: VIII; localities: S20, S23. Biogeographical feature. Eurasiatic Palaearctic, temperate. N Europe, N and E S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, N Mongolia, Russian Far East, N and NE China (east to E Tibet), Korea, Japan (Volynkin, 2012). Bionomics. Mesophilous species. Material: S20, vic. of Shalday vill., 1♂, 2♀, 12.08.2012, S.V. Titov; S23, vic. of Sharbakty vill., 1♀, 11.08.2013, S.M. Reznichenko.

** *Syngrapha interrogationis* (Linnaeus, 1758) – FP: VII–VIII; localities: Z1, B31. Biogeographical feature. Holarctic, boreomontanE Europe, Caucasus, S Russia (S European part, Ural, S Siberia), S Ural (ssp. *interrogationis*), E Kazakhstan, S Siberia, N Mongolia, Russian far East, NE China, N Korea, Japan (ssp. *transbaikalensis*) (Volynkin, 2012). Bionomics. Mesophilous species. Material: Z1, vic. of Mikhailovka vill., 1♀, 21.07.2012, V.S. Bychkov; B31, vic. of Shonai vill., 1♂, 04.08.2013, S.M. Reznichenko.

** *Leiometopon simyrides* Staudinger, 1888 – FP: VI; locality: E47. Reference: Titov et al. (2017). Biogeographical feature. Central-Asian, subboreal. Bionomics. Xero-halophilous species. Material: E47, vic. of Karazhar vill., 2♀, 30.06.2009, S.V. Titov (Fig. 9).

! *Cucullia tiefi* Tshetverikov, 1956 – FP: IV; locality: E53. Reference: Titov & Volynkin (2013). Biogeographical feature. Uralian-Kazakhstan, subboreal. Russia (S Ural), W and NE Kazakhstan (Titov & Volykin, 2013; Kononenko, 2016). Bionomics. Xerophilous species. Material: E53, west shore of Shiderty reservoir, 1♂, 1♀, 19.04.2012, S.V. Titov (Fig. 8).

** *Cucullia praecana* Eversmann, 1843 – FP: VI–VII; localities: B30, E47. Biogeographical feature. Euro-Siberian, subboreal. Europe, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, N Mongolia (Volynkin, 2012). Bionomics. Xerophilous species. Material: B30, Kurkeli natural landmark, 1♀, 12.07.2016, S.V. Titov; E47, vic. of Karazhar vill., 1♂, 13.06.2007, S.V. Titov.

** *Cucullia magnifica* (Freyer, 1839) – FP: VIII; locality: L24. Biogeographical feature. Euro-Siberian, subboreal. C and SE Europe, Russia (S European part, Ural, S Siberia); S Ural, W Siberia, Asia Minor, Caucasus, Middle Asia, Kazakhstan, Russian Far East, W China (Kononenko, 2016). Bionomics. Xero-thermophilous species. Material: L24, Tuz lake, 1♀, 06.08.2015, S.V. Titov.

** *Cucullia biradiata* W Kozhantshikov, 1925 – FP: VI; locality: A41, Z2. Reference: Pospelov (1962). Biogeographical feature. S Siberian - Central Asian, subboreal. E, N and NE Kazakhstan, S Siberia, N Mongolia (Volynkin, 2012; Titov et al, 2017b). Bionomics.

Xerophilous species. Material: A41, soviet farm « Zhol–Kuduk», 1♂, 09.06.1960, S.M. Pospelov, (Coll. ZISP); Z2, vic. of Krasnovka vill., 1♀, 09.06.2013, V.S. Bychkov.

Cucullia lactea (Fabricius, 1787) – FP: V–VII; localities: M40, E46. Biogeographical feature. Euro-Siberian, subtemperate. Asia Minor, Transcaucasia, SE Europe, Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Altai, W Kazakhstan (Kononenko, 2016). Bionomics. Xerophilous species. Material: M40, Kalmakyrgan Mts., 1♀, 27.07.2014, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 5♂, 2♀, 26.05.2015, S.V. Titov (Fig. 11).

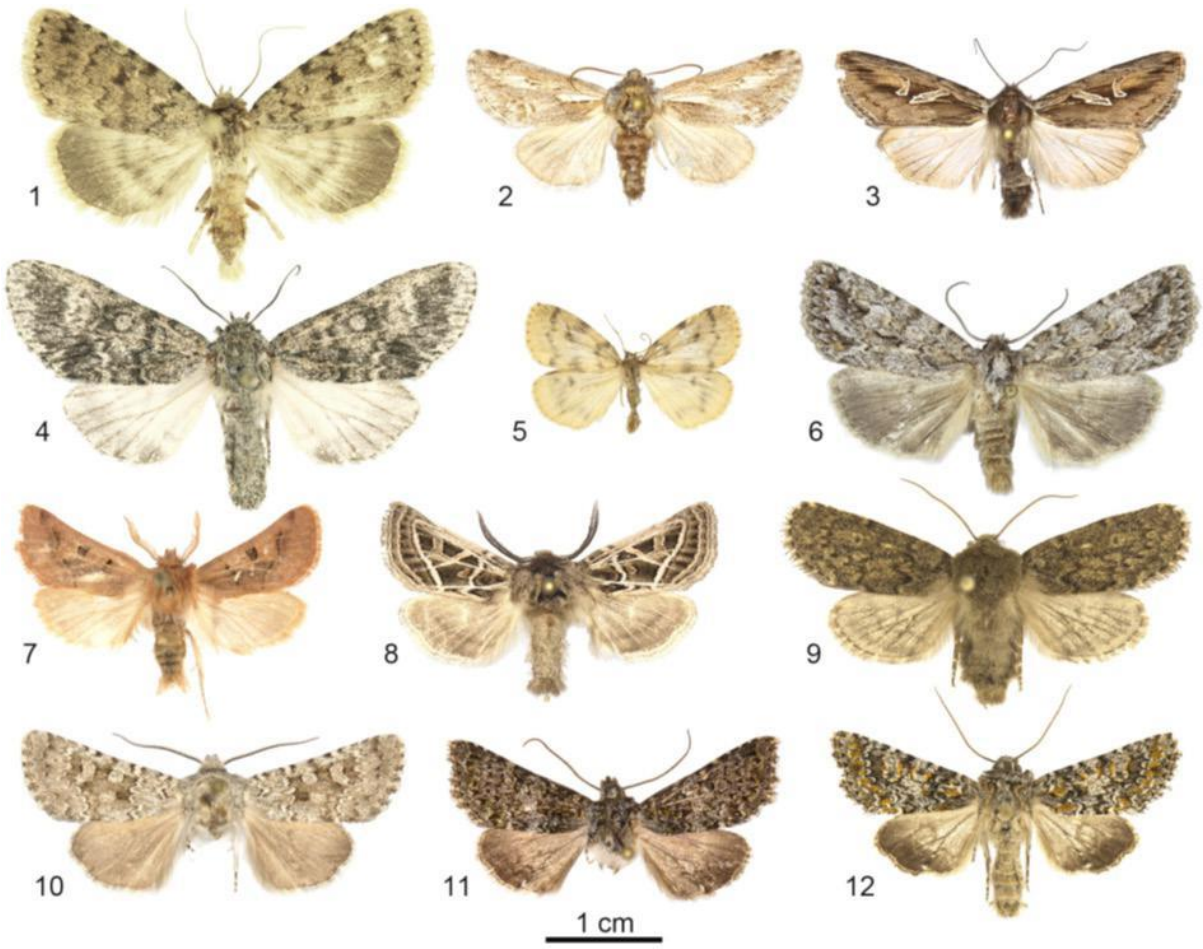

Figure 9. Noctuoid moths: adults. 1 – *Autophila chamaephanes*, 2 – *Leiometopon simyrides*, 3 – *Lophoterges centralasiae*, 4 – *Acronicta megacephala*, 5 – *Thumatha senex*, 6 – *Phidrimana amurensis*, 7 – *Episema tersa*, 8 – *Leucochlaena fallax*, 9 – *Dasypolia timoi*, 10 – *Anarta vaciva*, 11 – *Hadena dsungarica*, 12 – *Hadena persimilis*.

** *Amphipyra pyramidea* (Linnaeus, 1758) – FP: VIII; locality: P12. Biogeographical feature. Eurasiatic Palaearctic subboreal. Europe, S Russia (S European part, Ural, S Siberia), S Ural, N and NE Kazakhstan, W Siberia, Russian Far East, China, Korea, Japan (Kononenko, 2016; Titov et al., 2017 b). Bionomics. Mesophilous species. Material: P12, vic. of Pavlodarskoye vill., 18.VII.2015, 1♂, for wine, 2♀, on colonies of aphids, S.V. Titov (Fig. 11).

** *Calophasia opalina* (Esper, [1794]) – FP: V; locality: L25. Biogeographical feature. West Palaearctic, subtemperate. N Africa, S and SE Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, Mongolia, (Kononenko, 2016). Bionomics. Xerophilous species. Material: L25, highway M-38 near the border of Pavlodar and east Kazakhstan regions, 1♂, 02.06.2013, M. Černila, S.V. Titov, A.V. Volynkin

** *Sympistis exacta* (Christoph, 1887) – FP: VI–VIII; localities: B29, B31, M40. Biogeographical feature. West Palaearctic-Central Asian, subboreal., Iran, SE Turkey, (ssp. *vanensis*), Turkmenistan, Tajikistan, Afghanistan, NW China (Xinjiang), S, NE and E Kazakhstan, Mongolia (Altai Mts, Khangay Mts) (ssp. *mongolica*) (Gyulai et al., 1992, Titov et al., 2017 a, b). Bionomics. Xero-thermophilous species. Material: B29, Birzhankol' lake, 3♂, 1♀, 17.06.08, 1♂, 10.08.2017, S.V. Titov; B31, vic. of Shonai vill., 1♂, 29.06.2013, 2♂, 1♀, 02.08.2013, 1♀, 09.08.2013, S.M. Reznichenko, 2♂, 15.08.2013, S.V. Titov; M40, Kalmakyrgan Mts., 1♂, 27.07.2014, S.V. Titov (Fig. 11).

** *Sympistis senica* (Eversmann, 1856) – FP: IX; locality: B31. Biogeographical feature. Manchurian - Central Asian - Siberian, subboreal. S Ural, W and S Siberia (ssp. *senica*), Kazakhstan, N Mongolia (Khngay Mts) (ssp. *mysterica*), Transbaikalia, Russian Far East, Japan (ssp. *literata*) (Volynkin, 2012). Bionomics. Xeromontane species. Material: B31, vic. of Shonai vill., 3♀, 12.09.2012, S.V. Titov & S.M. Reznichenko (Fig. 10).

** *Lophoterges* (*Variterges*) *centralasiae* (Staudinger, 1901) – FP:VI;VIII. localities: B29, B31, B33. Reference: Titov et al. (2017). Biogeographical feature. Central Asian, subboreal. Uzbekistan, Kyrgyzstan, Tajikistan, S and E Kazakhstan, NW China (Xinjiang) (Ronkay, 2005). Bionomics. Xero-thermophilous species. Material: B29, Birzhankol' lake, 1♂, 10.06.2008, A. Steidel, (ZSM); 1♂, 27.06.2008, S.V. Titov; B31, vic. of Shonai vill., 3♂, 1♀, 27.06.2013, S.V. Titov; B33, Toraygyr lake, 3♂, 08.06.2014, 4♂, 18.06.2017, 1♂, 1♀, 03.08.2017, S.V. Titov (Fig. 9).

** *Epimecia ustula* (Freyer, 1835) – FP: V; locality: B30. Biogeographical feature. European-West Asian, temperate. C and S Europe, N Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural, W and NE Kazakhstan, S Siberia (Kononenko, 2016; Titov et al., 2017 b). Bionomics. Meso-xerophilous species. Material: B30, Kurkeli natural landmark, 1♂, 01.05.2012, S.V. Titov (Fig. 11).

*** *Schinia cognata* (Freyer, 1833) – FP: VII; locality: M41. The species is known from Pavlodar Region only by pictures taken in nature. Biogeographical feature. Euro-Siberian, subtemperate. S Russia (S European part, Ural, S Siberia), S Ural, C, S, and E Europe, W, NE Kazakhstan (Kononenko, 2016; Titov et al., 2017 b).Bionomics. Xero-heliophilous, species. Material: M41, the former Semipalatinsk nuclear test site, 1ex., 24.07.2014, photo by O.V. Lyakhov (Fig. 10).

** *Caradrina* (*Eremodrina*) *monssacralis* (Varga & L. Ronkay, 1991) – FP: VIII; locality: E46. Reference: Volynkin & Titov (2016). Biogeographical feature. Central Asian, subboreal. Middle Asia, NE, E Kazakhstan, SW Mongolia (Volynkin & Titov, 2016 a). Bionomics. Xeromontane species. Material: E46, Shiderty river, Zhartas natural landmark, 1♂, 08.08.2012, S.V. Titov.

** *Trachea atriplicis* (Linnaeus, 1758) – FP: VI; locality: P11. Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Russian Far East, China, Korea, Japan (Volynkin, 2012). Bionomics. Mesophilous species. Material: P11, Pavlodar city, 1♀, 09.06.2012, L.N. Ivan'ko.

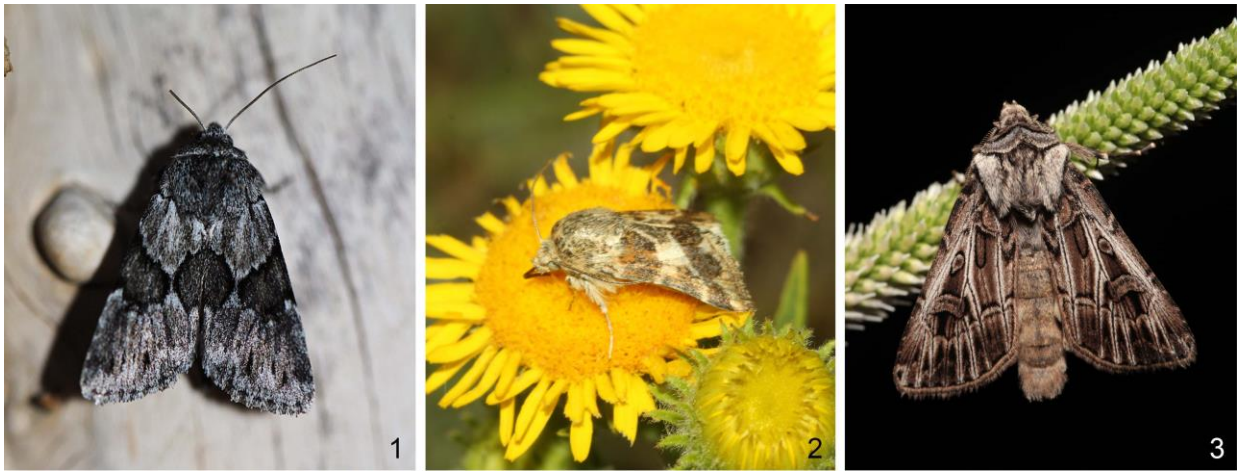

Figure 10. 1 – *Sympistis senica* (dark form); 2 – *Schinia cognata*; 3 – *Agrotis characteristica*.

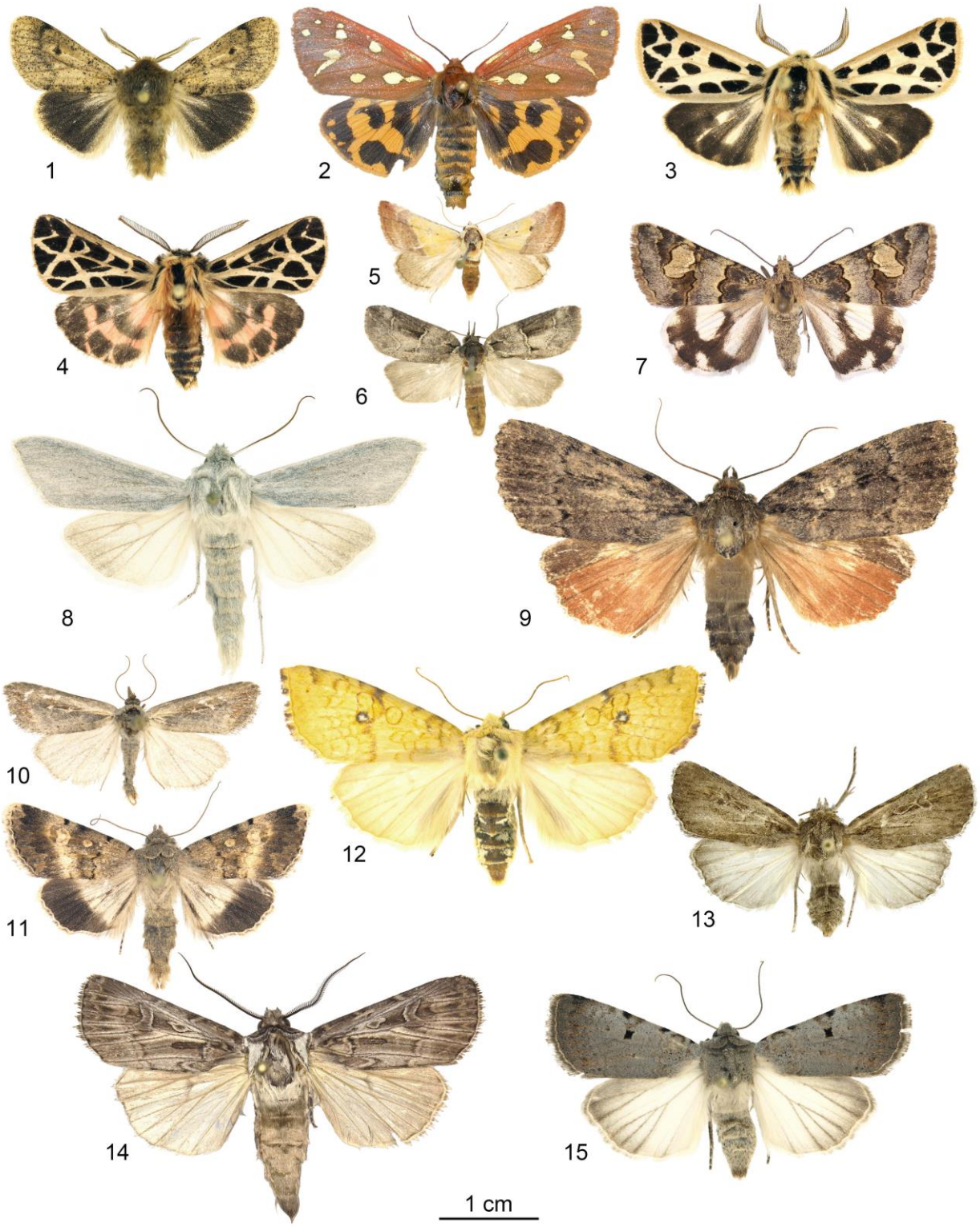

Figure 11. Noctuoid moths: adults. 1 – *Gynaephora pumila*, 2 – *Hyphoraia aulica*, 3 – *Chelis caecilia*, 4 – *Chelis dahurica*, 5 – *Eublemma panonica*, 6 – *Nycteola eremostola*, 7 – *Drasteria christophi*, 8 – *Cucullia lactea*, 9 – *Amphipyra pyramidea*, 10 – *Epimecia ustula*, 11 – *Sympistis exacta*, 12 – *Cirrhia tunicata*, 13 – *Dichagyris latipennis*, 14 – *Agrotis characteristica*, 15 – *Chersotis margaritacea*.

** *Celaena haworthii* (Curtis, 1829) – FP: IX; localities: P12, E47. Biogeographical feature. Eurasiatic Palaearctic, temperate. N, C and NE Europe, Transcaucasia, N S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East (Volynkin, 2012). Material: P12, vic. of Pavlodarskoye vill., 1♂, 04.09.2013, S.V. Titov; E47, vic. of Karazhar vill., 1♀, 21.09.2015, S.V. Titov.

** *Hydraecia ultima* Holst, 1965 – FP: VIII; locality: P11. Biogeographical feature. Eurasiatic Palaearctic, temperate. N and C Europe, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, Russian Far East, Kazakhstan, Mongolia, N China, Japan (Kononenko, 2016). Bionomics. Hygrophilous species. Material: P11, Pavlodar city, 1♀, 23.08.2014, S.V. Titov.

41.** *Hydraecia osseola* (Staudinger, 1882) – FP: IX; localities: P12, E47. Biogeographical feature. Eurasiatic Palaearctic, subboreal. S and SE Europe, N Caucasus, S Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan, W Siberia, China (Tibet) (Kononenko, 2016). Bionomics. Hygrophilous species. Material: P12, vic. of Pavlodarskoye vill., 1♀, 18.09.2015, S.V. Titov; E47, vic. of Karazhar vill., 15♂, 2♀, 19.09.2015, S.V. Titov.

** *Archanara dissoluta* (Treitschke, 1825) – FP: VIII; locality: E46. Biogeographical feature. Euro-Siberian, subtemperate. Russia: N Caucasus, European part; S Ural, W Siberia, Altai (Volynkin 2007). – Europe, Asia Minor, Middle Asia, Kazakhstan (Volynkin, 2012). Bionomics. Hygrophilous species. Material: E46, Shiderty river, Zhartas natural landmark, 1♂, 18.07.2008, S.V. Titov.

** *Denticucullus pygmina* (Haworth, 1809) – FP: VIII–IX; localities: E54. Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Asia Minor, Near East, S Russia (S European part, Ural, S Siberia), W Siberia, Russian Far East, NE Kazakhstan (Volynkin, 2012; Titov et al., 2017 b). Bionomics. Hygrophilous species. Material: E54 Ulken-Koyandy Mt., 1♂, 17.08.2016, S.V. Titov.

** *Hypocoena stigmatica* (Eversmann, 1855) – FP: VI; locality: K10. Biogeographical feature. Holarctic, temperate. Iceland (ssp. *dispersa*), N America (Alaska), Ural, W, S and E Siberia, Mongolia, Russian Far East (ssp. *stigmatica*) (Volynkin, 2012). Bionomics. Meso-xerophilous species. Material: K10, vic. of Terenkol' vill., 1♂, 1♀, 19.06.2012, L.N. Ivan'ko, L.N. Ivan'ko.

** *Globia sparganii* (Esper, 1790) – FP: VIII; locality: E46. Biogeographical feature. Eurasiatic Palaearctic, subboreal. Europe, Caucasus, Asia Minor, Near East, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far

East, China, Korea, Japan (Volynkin, 2012). Bionomics. Hygrophilous species. Material: E46, Shiderty river, Zhartas natural landmark, 1♂, 08.08.2008, S.V. Titov.

** *Episema tersa* ([Denis & Schiffermüller], 1775) – FP: IX–IX; locality: B31.

Ref erence: Titov et al. (2017). Biogeographical feature. European-Central Asian, subtemperate. C and S Europe, Caucasus and Transcaucasia, Asia Minor, Middle Asia, Russia (S European part, Ural, S Siberia), S Ural, Kazakhstan (Kononenko, 2016; Titov et al., 2017 a., b). Bionomics. Xero-thermophilous species. Material: B31, vic. of Shonai vill., 3♂, 06.09.2013, S.V. Titov (Fig. 9).

** *Leucochlaena* (*Furcochlaena*) *fallax* (Staudinger, 1870) – FP: VIII; localities: P12, B31. Reference: Titov et al. (2017). Biogeographical feature. Uralian-Kazakhstan, subboreal. Russia (S European part, Ural, S Siberia); S Ural, W and NE Kazakhstan (Kononenko, 2016; Titov et al., 2017 a., b). Bionomics. Xerophilous species. Material: P12, vic. of Pavlodarskoye vill., 2♂, 14.09.2013, S.V. Titov; B31, vic. of Shonai vill., 2♂, 1♀, 09.09.2013, S.V. Titov (Fig. 9).

** *Cirrhia tunicata* (Graeser, 1890) – FP: IX–X; localities: P12, E51. Biogeographical feature. East Palaearctic, subboreal. Transbaikalia, Russian Far East, Kyrgyzstan, NE Kazakhstan, Mongolia, China, Korea, Japan (Kononenko, 2016; Titov et al., 2017 b). Bionomics. Mesophilous species. Material: P12, vic. of Pavlodarskoye vill., 1♂, 3♀, 13.10.2015, S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 1♀, 03.10.2014, M. Černila & S.V. Titov (Fig. 11).

** *Agrochola* (*Agrochola*) *vulpecula* (Lederer, 1853) – FP: IX; locality: P12. Biogeographical feature. Siberian-Pacific, subboreal. E Kazakhstan, W and S Siberia, Mongolia, Russian Far East, China, Korea, Japan (Volynkin, 2012). Bionomics. Mesophilous species. Material: 1♀, 08.09.2015, S.V. Titov.

Figure 12. *Catocala deducta*

Figure 13. *Catocala adultera*

** *Agrochola* (*Leptologia*) *lota* (Clerck, 1759) – FP: X; locality: E51. Biogeographical feature. West Palaearctic, subboreal. N Africa, Europe, Asia Minor, Near East, Caucasus and Transcaucasia, Middle Asia (Turkmenistan), S Russia (S European part, Ural, S Siberia), S Ural, W Siberia, NW Altai (Volynkin, 2012). Bionomics. Mesophilous species. Material: E51, cretaceous slope of Ulken Ak-Zhar, 1♂, 1♀, 03.10.2014, at wine, M. Černila & S.V. Titov.

** *Cosmia* (*Ulmia*) *affinis* (Linnaeus, 1767) – FP: VIII; locality: Z1. Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Kazakhstan, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W Siberia (ssp. *affinis*), Russian Far East, China, Korea, Japan (ssp. *magna*) (Volynkin, 2012). Bionomics. Mesophilous species. Material: Z1, vic. of Mikhailovka vill., 1♀, 18.08.2013, V.S. Bychkov.

** *Brachyxanthia zelotypa* (Lederer, 1853) – FP: VIII; locality: Z1. Biogeographical feature. Manchurian - Middle Asian - Siberian, subboreal. E and NE Kazakhstan, Ural, W, S Biogeographical feature. Manchurian - Middle Asian - Siberian, subboreal. E and NE Kazakhstan, Ural, W, S and E Siberia, N Mongolia, Russian Far East, NE China, Japan (Volynkin, 2012). Bionomics. Mesophilous species. Material: Z1, vic. of Mikhailovka vill., 1♂, 18.08.2013, V.S. Bychkov.

** *Pseudohadena argyllostigma* (Varga & L. Ronkay, 1991) – FP: IX; locality: E47. Reference: Titov et al. (2016). Biogeographical feature. Central-Asian-Siberian, subboreal. Russia (W Siberia), NE Kazakhstan (Ronkay et al.,, 1995; Titov & Volynkin, 2016 c.; Titov et al., 2017 b). Bionomics. Xero-halophilous species. Material: E47, vic. of Karazhar vill., 6♂, 1♀, 11.09.2015, 1♂, 19.09.2015, at light, S.V. Titov.

** *Eremohadena immunda* (Eversmann, 1842) – FP: VI–IX; localities: L28, B33. Biogeographical feature. Middle Asian subtemperate. C and SE Europe, Caucasus and Transcaucasia, Middle Asia, S Russia (S European part, Ural, S Siberia), S Ural, W and NE Kazakhstan, W and S Siberia, Mongolia (Kononenko, 2016; Titov et al., 2017 b). Bionomics. Xerophilous species. Material: L28, vic. of Akku vill., 1♀, 18.06.2015, S.V. Titov; B33, Toraygyr lake, 1♂, 11.06.2014, S.V. Titov, A.V. Volynkin

** *Antitype chi* (Linnaeus, 1758) – FP: IX; locality: B32, B40. Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (ssp. *chi*), Russian Far East (ssp. *subcaerulea*) (Volynkin, 2012). Bionomics. Xero-mesophilous species. Material: B32, rock area Kempirtas, 1♀, 30.07.2013, S.M. Reznichenko; B40, vicinity of the Konyr Auliye cave, 1♀, 22.09.2017, S.V. Titov.

** *Dasypolia* (*Dasypolia*) *timoi* Fibiger & Nupponen, 2006 – FP: IV, X; locality: E46. Reference: Titov et al. (2017). Biogeographical feature. Central-Asian, Xeromontane. Russia (S Ural), C and NE Kazakhstan (Gorbunov, 2011, Nupponen & Fibiger, 2012; Kononenko, 2016; Titov et al., 2017 a., b). Bionomics. Xerophilous species. Material: E46, Shiderty river, Zhartas natural landmark, 1♀, 12.04.2016, M. Černila & S.V. Titov, 3♀, 16.04.2017, S.V. Titov (Fig. 9).

Dasypolia (*Cteipolia*) *murina* (Ménétriés, 1848) – FP: IV; IX–X; locality: B31, E46, E51, E53. Biogeographical feature. Uralian-Kazakhstan, subboreal. Russia (S Ural), W and NE Kazakhstan (Fibiger, et all., 2010; Titov, perss. comm). Bionomics. Xeromontane species. Material: B31, vic. of Shonai vill., 1♀, 10.04.2013, (originally known from the photo by. S.M. Reznichenko), 2♀, 04.04.2014, S.M. Reznichenko; E46, Shiderty river, Zhartas natural landmark, 2♀, 12.04.2016, M. Černila & S.V. Titov; E51, cretaceous slope of Ulken Ak-Zhar, 10♂, 03.10.2014, M. Černila & S.V. Titov, 1♀, 11.04.2016, M. Černila & S.V. Titov; E53, west shore of Shiderty reservoir, 1♀, 19.04.2012, 1♂, 1♀, 17.04.2017, S.V. Titov.

Lithophane (*Lithophane*) *furcifera* (Hufnagel, 1766) – FP: IV–V, IX–X; localities: B30, B31, B38. Reference: Titov et al. (2016). Biogeographical feature. West Palaearctic, subboreal, nemoral. N Africa, Europe, Middle East, Caucasus and Transcaucasia, Asia Minor, S Russia (S European part, Ural, S Siberia), Kazakhstan, W Siberia, (Kononenko, 2016; Titov et al., 2016 d., 2017 b). Bionomics. Mesophilous species. Material: B30, Kurkeli natural landmark, 2♂, 6♀, 02.05.2012, 3♂, 15♀, 12.05.2012, 1♂, 3♀, 17.04.2016, S.V. Titov; B31, vic. of Shonai vill., 7♂, 8♀, 15.09.2012, S.M. Reznichenko, 6♂, 9♀, 09.08.2013, S.V. Titov, 16♂, 21♀, 10.09.2013, S.M. Reznichenko, 8♂, 9♀, 24.09.2013, S.V. Titov, 7♀, 05.05.2014, S.V. Titov; B38, Zhumbak natural landmark, 5♂, 25♀, 14.04.2016, at wine, M. Černila & S.V. Titov.

Xylena (*Lithomoia*) *solidaginis* (Hübner, 1803) – FP: VIII; locality: Z2. Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, Russian Far East, Japan (Volynkin, 2012; Titov et al, 2017 b). Bionomics. Mesophilous species. Material: Z2, vic. of Krasnovka vill., 1♀, 14.08.2012, V.S. Bychkov.

** *Dichagyris* (*Dichagyris*) *lutescens* (Eversmann, 1844) – FP: VIII; locality: P11. Biogeographical feature. European-Siberian, subboreal. Central Asia, NE Kazakhstan, W Siberia (Fibiger, 1990; Titov et al, 2017 b). Bionomics. Xerophilous species. Material: P11, Pavlodar city, 1960, Fedosimov (Coll. KSRIPPQ).

** *Euxoa* (*Euxoa*) *fallax* (Eversmann, 1854) – FP: VIII; locality: S23. Biogeographical feature. European-Central Asian, subboreal. SE Russia (S European part), NE Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan, Mongolia (Fibiger, 1990; Titov et al, 2017 b). Bionomics. Xerophilous species. Material: S23, vic. of Sharbakty vill., 1♂, 11.08.2014, S.M. Reznichenko.

** *Agrotis characteristica* (Alphéraky, 1892) – FP: VIII–IX; localities: B31, E46, E54. Biogeographical feature. East Palaearctic, subboreal. E and SE Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, S Siberia, Mongolia, Russian Far East, N and NW China, Korea (Volynkin, 2012). Bionomics. Xerophilous species. Material: B31, vic. of Shonai vill., 2♂, 3♀, 15.09.2012, 1♂, 1♀, 18.08.2013, S.V. Titov, 5♂, 3♀, 10.09.2013, S.M. Reznichenko, 10♂, 5♀, 24.09.2013, S.V. Titov; E46, Shiderty river, Zhartas natural landmark, 2♂, 1♀, 08.08.2008, 18♂, 6♀, 12.08.2012, S.V. Titov, A.V. Volynkin, V. Titov; E54 Ulken-Koyandy Mt., 8♂, 2♀, 17.08.2016, S.V. Titov (Figs 10–11).

** *Rhyacia caradrinoides* (Staudinger, 1897) – FP: VI; locality: B33. Biogeographical feature. S Siberian - Central Asian, subboreal. Kazakhstan, Middle Asia, Ural, S Siberia, Mongolia, NW China (Volynkin, 2012). Bionomics. Xerophilous species. Material: B33, Toraygyr lake, 2♂, 1♀, 11.06.2014, S.V. Titov, A.V. Volynkin

** *Rhyacia arenacea* (Hampson, 1907) – FP: VIII; locality: B30. Biogeographical feature. European-Central Asian, subboreal. Europe, Caucasus and Transcaucasia, Asia Minor, Near East, Afghanistan, Himalaya, Middle Asia, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia (Volynkin, 2012). Bionomics. Xerophilous species. Material: B30, Kurkeli natural landmark, 1♀, 16.08.2016, S.V. Titov.

** *Chersotis margaritacea* (de Villers, 1789) – FP: VIII; localities: B31, B33. Biogeographical feature. European-Central Asian, subboreal. N Africa, W Europe, Transcaucasia, Asia Minor, Russia (Altai), Central Asia, NE Kazakhstan (Fibiger, M., 1993; Titov et al, 2017 b). Bionomics. Xeromontane. Material: B31, vic. of Shonai vill., 5♂, 4♀, 18.08.2013, 2♀, food on the inflorescences of wild onions, S.V. Titov (Fig. 11).

** *Spaelotis senna* (Freyer, 1829) – FP: VII–IX; locality: B31. Biogeographical feature. European-Central Asian, Xeromontane. N Africa, Europe, Italy, (ssp. *einsenbergeri*), Turkey, Iran (ssp. *contorta*), NE Kazakhstan (Fibiger, M., 1993; Titov et al, 2017 b). Bionomics. Xerophilous species. Material: B31, vic. of Shonai vill., 1♂, 15.09.2012, S.V. Titov.

* *Graphiphora augur* (Fabricius, 1775) – FP: VII; locality: B35. Biogeographical feature. Eurasiatic Palaearctic, boreal. Europe, Caucasus, Kazakhstan, S Russia (S European part, Ural, S Siberia), S Ural, W, S and E Siberia, N Mongolia, N China, Japan (Volynkin, 2012). Bionomics. Mesophilous species. Material: B35, vic. of Zhana Zhosaly vill., 1♂, 16.07.2016, S.V. Titov.

** *Anarta* (*Cardiestra*) *vaciva* (Püngeler, 1906) – FP: VI; locality: E47. Reference: Titov et al. (2017). Biogeographical feature. Central Asian, subboreal. SE Kazakhstan, Almaty region, (Hacker, 1998), NE Kazakhstan, Pavlodar Region (Hacker, 1998; Lehmann et al., 1998; Titov et al., 2017 a, b). Bionomics. Xero-halophilous species. Material: E47, vic. of Karazhar vill., 1♂, 30.06.2009, S.V. Titov, (slide AV0799m Volynkin).

** *Polia hepatica* (Clerck, 1759) – FP: VI; locality: P11. Reference: Shek (1975). Biogeographical feature. Eurasiatic Palaearctic, boreomontanE Europe, Caucasus, Asia Minor, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, N Mongolia, Russian Far East, N Korea (Volynkin, 2012). Bionomics. Mesophilous species. Material: P11, Pavlodar city, 1♂, 06.1960, G.Kh. Shek (Coll. KSRIPPQ).

** *Lacanobia* (*Diataraxia*) *splendens* (Hübner, [1803–1808]) – FP: VI; locality: Z2. Biogeographical feature. Eurasiatic Palaearctic, temperate. Europe, Caucasus and Transcaucasia, S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Russian Far East, China, Korea (Volynkin, 2012; Titov et al, 2017 b).Bionomics. Mesophilous species. Material: Z2, vic. of Krasnovka vill., 1♂, 09.06.2013, V.S. Bychkov.

** *Hadena* (*Hadena*) *dsungarica* Hacker, 1996 – FP: VI; locality: B32. Reference: Titov et al. (2017). Biogeographical feature. Central Asian, subboreal. E and NE Kazakhstan, Altai, W Mongolia) (Volynkin, 2012; Titov et al., 2017a, b). Bionomics. Xerophilous speices. Material: B32, rock area Kempirtas, 1♂, 12.06.2013, S.V. Titov, A.V. Volynkin (coll. CAV) (Fig. 9).

** *Hadena* (*Hadena*) *persimilis* Hacker, 1996 – FP: VII; locality: A46. Reference: Titov et al. (2017). Biogeographical feature. European-Central Asian, subboreal. SE Europe and Asia Minor, Turkmenistan, Iran, Armenia, Azerbaijan, Turkey and Levant, Greece (ssp. *balcanica*), S Russia (S European part, Ural, S Siberia), W and NE Kazakhstan, (Hacker et al. 2002; Titov et al., 2017 a, b). Bionomics. Xerophilous speices. Material: A46, vic. of Kurkol', 2♂, 21.06.2016, S.V. Titov (Fig. 9).

** *Mythimna* (*Sablia*) *opaca* (Staudinger, 1900) – FP: VI; locality: Z2. Biogeographical feature. East Palaearctic, subboreal. S Russia (S European part, Ural, S Siberia), S Ural, W and S Siberia, Mongolia, Russian Far East (ssp. *opaca*), Himalaya (ssp. *kaschmirensis*) (Volynkin,

2012). Bionomics. Xerophilous species. Material: Z2, vic. of Krasnovka vill., 1♂, 09.06.2013, V.S. Bychkov.

5.4. Distribution of Noctuoidea fauna in the geomorphological landscapes of the Pavlodar region of Kazakhstan

The Pavlodar region is located in the junction zone of the Kazakh Upland and the West Siberian Plain (Khamzina, 2013), divided by the Irtysh River from south-east to north-west into two unequal parts. The main territory of the left bank of the Irtysh is Kazakh Upland.

The relief of larger part of the right bank of the Irtysh is represented by the southwestern outskirts of the West Siberian Plain. The left bank – has absolute heights of 100–200 meters. The southwestern part of the region is represented in the form of the Kazakh Upland, where the mountain ranges Bayanaul (1026 m) and Kyzyltau (1055 m) are distinguished (Khamzina, 2013).

Figure 14. Map of geomorphological landscapes of North-Eastern Kazakhstan: KU – Kazakh Upland, WS – West Siberian Plain.

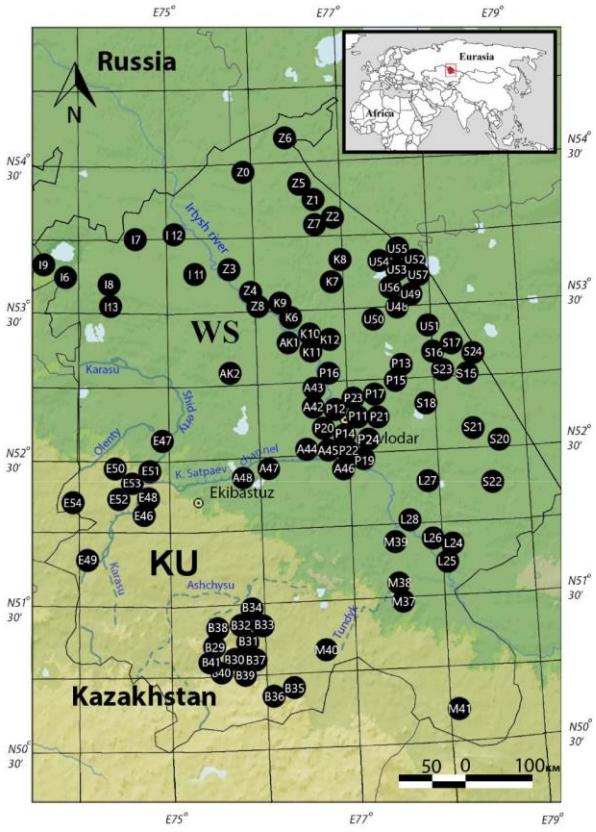

Figure 15. Map of geomorphological landscapes of North-Eastern Kazakhstan with indication of localities of collection.

For the Pavlodar region, two geomorphological landscapes are distinguished: KU – Kazakh Upland and WS – West Siberian Plain (Figs 14– 15).

In this section of the work, the confinement of species of Noctuoidea geomorphological, geobotanical, landscape-biotopic and bionomic groups is studied.

This study concerns only the main types of macrolandscapes. In describing the characteristics of landscapes, brief information on the types of microlandscapes, which, together with macrolandscapes, have a great influence on the richness of fauna is also provided. Before describing the characteristics of landscape biotope groups, codes of the localities of the investigation are given.

The information for compiling the geomorphological and landscape biotope structure of the Pavlodar region is compiled on the basis of personal data, geography data (Khamzina, 2013) and vegetation data of the Pavlodar region (Kamkin, 2009, 2013).

Distribution of Noctuoidea fauna in geomorphological landscapes, geobotanical districts and landscape-biotopic groups of Northeast Kazakhstan is shown in Appendix 11 and Appendix 12.

5.4.1. Noctuoidea fauna in the the steppe subzones and geobotanical districts of the Pavlodar region

The Eurasian steppe region is divided in a direction from north to south into three bands or subzones. The steppe have flat, homogeneous relief, without pronounced altitudinal zonality in the most part of the territory of the Pavlodar region. The landscape elevations are concentrated in the south-west of the Pavlodar region in the form of hills and mountains of the Kazakh Upland. River valleys of large and small rivers of the region, such as Irtis, Shiderty, Olenty, Karasu, Ashchysu, Tundyk, are not obstacles for Noctuoidea to spread.

The main limiting factor in the distribution of species in the steppes of the Pavlodar region is latitudinal natural zonality and climatic sectors. These climatic parameters form the limits of growth, the intensity of growth, the density of phytocenoses and the species composition of plants with which Noctuoidea are trophically associated at different stages of development.

Latitudinal zonality and meridional climatic sectorality form vegetation, landscape and fauna composition.

Geomorphological landscapes, natural steppe zonality, geobotanical and landscape-biotope zoning of the Pavlodar region were used to conduct a biogeographic analysis of the Noctuoidea fauna on the territory of the Pavlodar region. Among the listed types of zoning, the geobotanical and landscape-biotope zoning was the most suitable for this study, since vegetation and landscapes have a greater influence on the formation of fauna and reflect the boundaries of faunal groups.

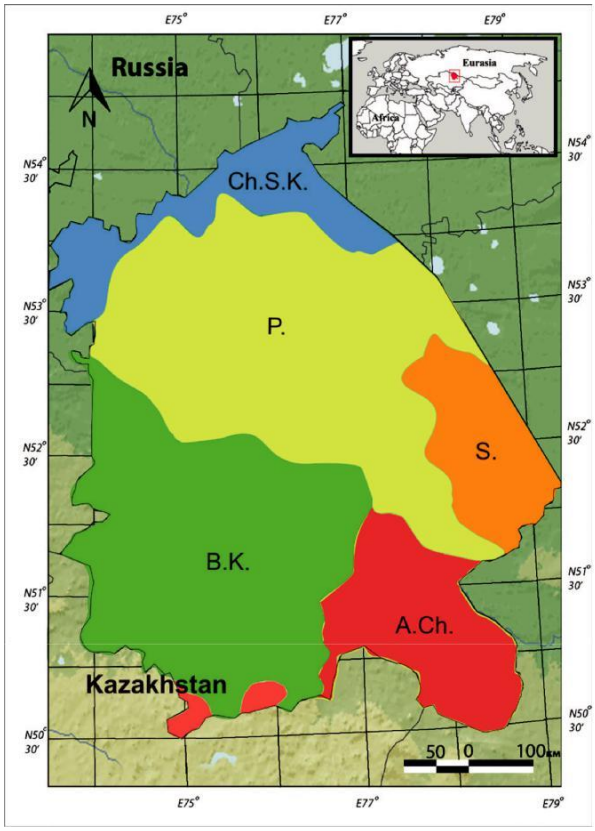

Figure 16. Map of geobotanical districts of Northeastern Kazakhstan: Ch.S.K. – Chaglinsko-Seletinsko-Karasuk geobotanical area, P. – Pavlodar geobotanical area, B.K. – Bayanaul–Karaganda geobotanical area, S. – Semipalatinsk geobotanical area, A. Ch. – Arkalyk-Chingiz geobotanical area.

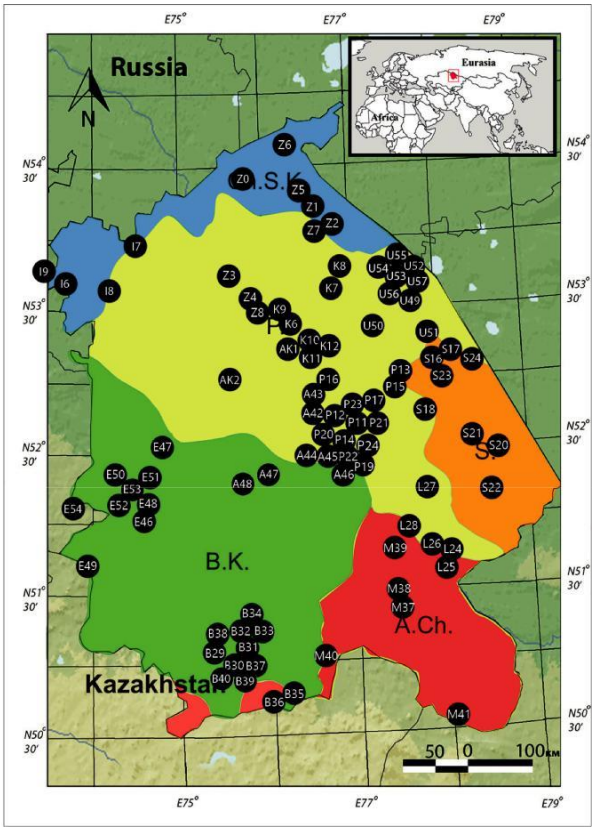

Figure 17. Map of geobotanical districts of North-Eastern Kazakhstan with indication of localities of material collection.

5.4.2. Zonal characteristic and composition of the Noctuoidea fauna in the steppe zone and geobotanical districts of the Pavlodar region

Subzone of mixed grass – fescue-feather grass steppes – Chaglinsko-Seletinsko-Karasuk geobotanical area (Ch.S.K). (Figs 16–17). South-western part of the West Siberian Plain. On the coasts of numerous salt lakes are the complexes of halophilic plants. In places birch forests (solitary groups) are frequent. Stony steppes and pine forests are absent (Lavrenko, 1947). In this type of biotopes we founded 170 species of Noctuoidea (35.05% of species established in Pavlodar region) (Appendix 3).

Subzone of fescue-feather grass steppes – Pavlodar geobotanical area (P). (Figs 16–19). South-western part of the West Siberian Plain. The fescue-feather grass steppes predominate (*Festuca-Stipa*), with the predominance of *Stipa capillata, S. pennata, Festuca valesiaca*. Birch forests are rare. A halophilic vegetation from *Halocnemum strobilaceum, Halimione verrucifera* near numerous lakes. In this type of biotopes we founded 314 Noctuoidea species (64.74% species established in Pavlodar region) (Appendix 3).

Semipalatinsk geobotanical area (S). (Figs 16–17). Occupies the southeastern part of the flat plain of Pavlodar Priirtyshye. Small areas are occupied by steppe pine forests, which are absent in the previous district. (Lavrenko, 1947). In this type of biotopes we founded 166 species of Noctuoidea (34.22% of species established in Pavlodar region) (Appendix 3).

Bayanaul-Karaganda geobotanical area (B.K). (Figs 16–17). Occupies the low mountain part of the Kazakh Upland. The vegetation composition of this district is quite complicated. Fescue-feather grass steppes In the depressions, stony steppes and rocks vegetation on the widely present hills (elevations). On the slopes and in the depressions of the hills are widespread thickets of steppe shrubs *Spiraea hypericifolia, Caragana frutex*. On the granite hills, there are individual massifs of steppe pine forests (*Pínus sylvestris*), rarely, in the depressions of hills, birch forests (*Betula pendula*) (Lavrenko, 1947). In this type of biotopes we founded 367 species of Noctuoidea (75.67% of species established in Pavlodar region) (Appendix 3).

Subzone of wormwood-fescue-feather grass steppes. Arkalyk-Chingiz geobotanical area (A. Ch). (Figs 16–17). A small territorial presence in the Pavlodar region. The eastern part of the southern margin of the middle low-mountainous part of the Kazakh Upland, with separate middle-mountain massifs. By vegetation very close to the previous area; differs from it by the absence of mixed forests with the participation of *Alnus glutinosa* and coniferous forests with

Pinus sylvestris. In this type of biotopes we founded 30 species of Noctuoidea (6.18% of species established in Pavlodar region) (Appendix 3).

To calculate the similarity of the composition of faunas between the geobotanical districts, the Jaccard formula was used.

The results of the computation showed that the most faunistic similarity is between Bayanaul-Karaganda (368 species) and the Pavlodar geobotanical area (314 species). The second cluster included Semipalatinsk (166 species) and Pavlodar geobotanical area (314 species). The third icluded Pavlodar (314 species) and Chaglinsko-Seletinsko-Karasuk geobotanical area (170 species). The fourth is Semipalatinsk (166 species) and Bayanaul-Karaganda geobotanical area (367 species). The fifth is Bayanaul-Karaganda and Chaglinsko-Seletinsko-Karasuk geobotanical area (170 species). The sixth is Semipalatinsk (166 species) and Chaglinsko-Seletinsko-Karasuk geobotanical area (170 species). The least similarity is shown in Arkalyk-Chingiz geobotanical area, located in the south of the Pavlodar region (30 species). This data is shown in the dendrogram of the cluster analysis (Fig. 18, Tab. 3).

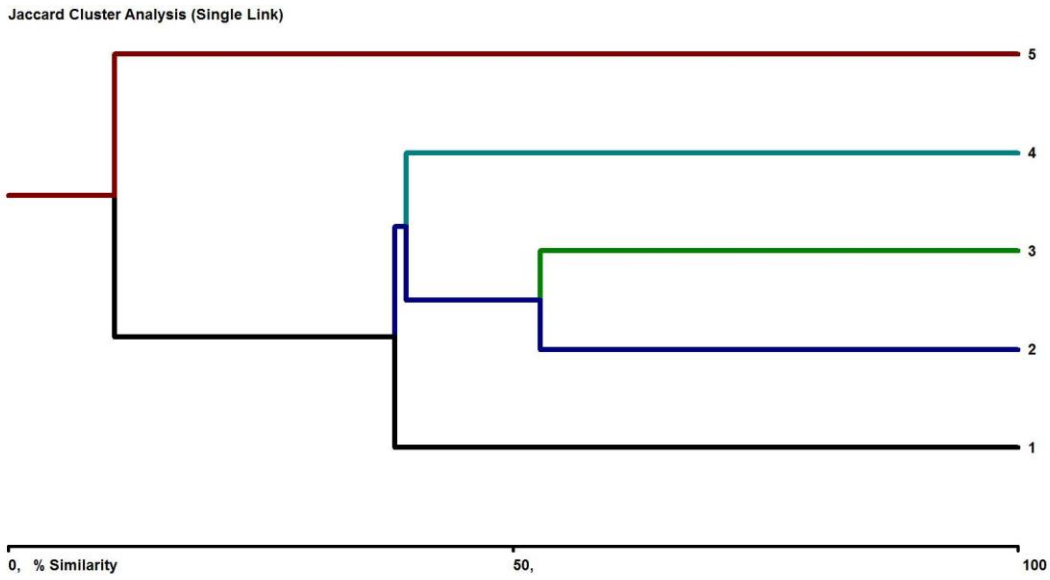

Figure 18. Dendrogram of the similarity of species composition of Noctuoidea in geobotanical areas of Northeast Kazakhstan. 1 – Chaglinsko-Seletinsko-Karasuk geobotanical county, 2 – Pavlodar geobotanical county, 3 – Bayanaul-Karaganda geobotanical county, 4 – Semipalatinsk geobotanical county, 5 – Arkalyk-Chingiz Geobotanical area.

Table 3. Matrix of similarity of the species composition of the Noctuoidea fauna of the geobotanical districts of Northeast Kazakhstan by the Jaccard index.

Similarity Matrix	Chaglinsko-Seletinsko-Karasuk geobotanical area	Pavlodar geobotanical area	Bayanaul-Karaganda geobotanical area	Semipalatinsk geobotanical area	rkalyk-Chingiz geobotanical area
Chaglinsko-Seletinsko-Karasuk geobotanical area	*	38.3954	31.3726	28.8462	10.5556
Pavlodar geobotanical area	*	*	53.0337	39.5349	6.5015
Bayanaul-Karaganda geobotanical area	*	*	*	32.2581	7.0081
Semipalatinsk geobotanical area	*	*	*	*	10.1124
Arkalyk-Chingiz geobotanical area	*	*	*	*	*

5.5. Ecological analysis of the Noctuoidea fauna in the Pavlodar region

For the Pavlodar region there are 8 ecological groups of the Noctuoidea fauna in different natural zones:

1. Temperate species – 136 (28.04%) of Noctuoidea species (Appendix 4).

This group includes ecologically plastic species that are widely distributed in different areas and types of biotopes.

2. Boreal species – 27 (5.56%) of Noctuoidea species (Appendix 4).

The species included in this group are widely distributed in the forest zone of Eurasia and have their distribution limits defined by the southern boundary of the forest zone

3. Subtemperate species – 18 (3.71%) of Noctuoidea species (Appendix 4).

The distribution of species from this group is limited to the northern boundary of the steppes, these species are also characteristic of the southern steppes, desert steppes and deserts.

4. Boreomontane species – 2 (0.41%) of Noctuoidea species (Appendix 4).

This group includes species inhabiting the taiga forests in the north of their areal in the southern part of their areal in the mountain taiga.

5. Nemoral species (subboreal southern forest) – 1 (0.20%) species of Noctuoidea (Appendix 4).

This group includes relic species that have become widespread in broad-leaved and mixed southern subboreal forests. (Manchurian-North-Chinese-North-Japanese) nemoral region (Emelyanov, 1974).

6. Boreal-Subtropical species – 2 (0.41%) of Noctuoidea species (Appendix 4).

The species included in this group have Holarctic distribution, populating the zones of northern coniferous forests of Eurasia and North America, and their subtropics.

7. Subboreal species – 296 (60.66%) of Noctuoidea species (Appendix 4).

Species of this group inhabit the steppe zone, sometimes found in the forest-steppe in the north of their areal and in the desert steppe in the south of the areal in the transition subzones of the steppe.

8. Migrant species – 9 (1.84%) of Noctuoidea species (Appendix 4).

A separate and unified group includes widely migratory species, with a non-fixed distribution area in natural zones. The majority of migrant species noted in the fauna of the Pavlodar region belong to Subcosmopolitan species 8; (1.64%) of the species. Such species include: *Trichoplusia ni, Autographa gamma, Cornutiplusia circumflexa, Agrotis segetum, A. ipsilon, Ochropleura plecta, Xestia c-nigrum, Spodoptera exigua, Helicoverpa armigera*.

The dominant latitudinal group of areals in the Noctuoidea fauna of the Pavlodar region is Subboreal group – 296 species (61.03%). The next dominant group is the Temperate group of species – 136 species (28.04%). The Boreal species group includes 27 species (5.56%), Subtemperate – 18 species (3.71%), the Boreomontane group includes – 2 species (0.41%), Nemoral group – 1 species (0.20%), Boreal-Subtropical group – 2 species (0.41%), Migrant group included – 9 species (1.85%).

5.5.1. Bionomics groups of the Noctuoidea fauna of the Pavlodar region

Humidity is an important factor, which determines the distribution and the bionomic distribution of the species in a specific habitat. For the Noctuoidea fauna of the Pavlodar region,

14 biominical groups are present: Mesophilous, Xero-mesophilous, Eurytopic, Hygrophilous, Xerothermophilous, Xero-halophilous, Hygro-thermophilous, Meso-xerophilous, Xero-heliophilous, Xeromontane, Hygro-mesophilous, Meso-hygrophilous, Xerophilous, Mesothermophilous.

Mesophilous species – 159 (32.72%) species of Noctuoidea (Appendix 5).

A group of species confined to moderately moist biotopes. The largest latitudinal group. among them are 74 temperate species and 64 subboreal species. 39 species are from the Erebidae family, 3 species from the Nolidae family and 116 species from the Noctuidae family.

Xerophilous species – 125 (25.72%) species of Noctuoidea (Appendix 5).

The second largest bionomic group in the fauna of the region are the xerophilous species. Species from this group inhabiting all subzones of the steppe, open steppe, forests of different types, sand dunes in the valley of the Irtysh River, slopes of the southern exposition of mountains, hills, slopes, ravines, wastelands in agrocenoses and residential area. The largest latitudinal group among them are subboreal species – 108 species. Of these, 18 species are from the Erebidae family and 90 from the Noctuidae family (Titov et al., 2017b).

Xero-mesophilous species – 55 species (11.32%). species of Noctuoidea (Appendix 5).

The third largest bionomical group in the Pavlodar region. A group of species associated with steppe with the transition to more humid biotopes, for example, to valleys of rivers, streams, artesian wells, lakes, relief depressions. The largest latitudinal group among them are subboreal species – 29 species and temperate species – 20 species. Of these, 3 species belong to the Erebidae family and 51 species to the Noctuidae family.

Meso-xerophilous species – 46 (9.47%) species of Noctuoidea (Appendix 5).

The fourth largest group. The largest latitudinal group among them are subboreal species – 35 species and 8 temperate species. Of these, 11 species belong to the family Erebidae, 1 species to the family Nolidae and 9 species to the family Noctuidae. The predominant latitudinal group among them are subboreal species – 35 species. Species inhabiting dry and moderately moist biotopes.

Xero-thermophilous species 24 species (4.94%) – species of Noctuoidea (Appendix 5).

A group of species confined to intensively warmed steppe habitats. Typically, such habitats include low mountains, hills, ravines, slopes with a southern and western exposure, shores of small water bodies, well warmed by the sun. 15 species in this group belong to the Erebidae family and 9 species to the Noctuidae family. The predominant latitudinal group among them are subboreal species – 20 species.

Hygrophilous species – 24 (4.94%) species of Noctuoidea (Appendix 5).

A group of species associated with abundantly moistened and waterlogged biotopes: a coastal line of freshwater reservoirs of various types, floodplain meadows. Among them, 1 species belongs to the Erebidae family and 23 species to the Noctuidae family. The largest latitudinal group among them are subboreal species – 13 species, all belong to the Noctuoidea family.

Eurytopic species – 21 (4.32%) species of Noctuoidea (Appendix 5).

A group of species that inhabits a variety of biotopes. Species that do not have a certain topical confinement. They have high ecological plasticity. Of these, 3 species belong to the Erebidae family and 18 to the Noctuidae family. The largest latitudinal group among them are temperate species – 14 species, and subboreal species – 4 species.

Xeromontane species – 14 (2.88%) species of Noctuoidea (Appendix 5).

A group of species associated with mountain-steppe biotopes. Of these, 8 species belong to the Erebidae family and 6 to the Noctuidae family. The only latitudinal group among them are subboreal species – 14 species.

Xero-halophilous species – 6 (1.23%) species of Noctuoidea (Appendix 5).

A group of species associated with dry steppe biotopes with the presence of solonchaks and solonetses, most often on the shores of saline lakes. Of these, 2 species belong to the Erebidae family and 4 species to the Noctuidae family.

Hygro-mesophilous species – 5 (1.03%) species of Noctuoidea (Appendix 5).

Species of this group are confined to near-water moist biotopes of floodplain forests and lakes. There are 5 species in the Noctuidae family in this group.

Meso-hygrophilous – 3 (0.62%) species of Noctuoidea (Appendix 5).

The species of this group are confined to near-water biotopes. From moistened with a gradation of habitat humidity in transition to moist near-water biotopes.

Hygro-thermophilous species – 2 (0.41%) species of Noctuoidea (Appendix 5).

This group includes species confined to the near-water biotopes in the south-west of the region. The species of this group are confined to well-warmed biotopes in the near-water space of shallow steppe rivers.

Xero-heliophilous species – 1 (0.21%) species of Noctuoidea (Appendix 5).

Imagos of species from this group are active at daytime. This group includes one species from the family Noctuidae.

Meso-thermophilous species – 1 (0.21%) species of Noctuoidea (Appendix 5).

This group includes one species from the family Noctuidae. The species of this group live in the biotopes well warmed by the sun. In the valleys of the steppe rivers, at some distance from the water, on the border of the above-floodplain terraces between the dry steppe and humidified lowlands.

5.5.2. Bionomic structure of the Noctuoidea fauna in the landscape-biotopic groups of the Pavlodar region

The group structure is presented in detail in the text in descending order according to the number indicated on the Figure 19. First, the groups with the greatest species wealth are represented. The dominant landscape-biotope groups of the Noctuoidea fauna of Northeastern Kazakhstan and their bioinomic structure are presented in Figure 19.

I group. Shrubby mountain steppe (Fig. 19). The greatest species richness in the region is in the Shrubby mountain steppe landscape biotope grouping; 337 (69.48%) species of Noctuoidea. The largest biominical groups of the dominant biotope – Shrubby mountain steppe are represented in the following order: Mesophilous – 101 species (30%), Xerophilous – 88 species (26%), Xeromesophilous – 42 species (12%), Meso-xerophilous – 31 species (9%), Xero-thermophilous – 19 species (6%), Hygrophilous – 15 species (4%), Eurytopic – 15 species (4%). The rest of the bionomic groups are insignificant.

II group. Floodplain forests of the Irtysh river (Fig. 19). The second landscape biotope grouping by species richness of Noctuoidea in the region is the Floodplain forests of the Irtysh river; 300; (61.85%) species of Noctuoidea. For the given biotope, the dominant bionomic groups are: Xerophilous – 76 species (25%), Xero-mesophilous – 35 species (12%), Mesoxerophilous – 30 species (10%), Xero-thermophilous – 13 species (4%), Hygrophilous – 15 species (5%), Eurytopic – 15 species (5%). The remaining biominical groups are insignificant in this biotope.

III group. Residential landscape (Fig. 19). The third largest is the residential landscape biotope group 284; (58.55%) of Noctuoidea species. This group is similar in species richness to the Floodplain forests of the Irtysh river. The largest biominical groups are: Mesophilous – 102 species (21%), Xerophilous – 73 species (15%), Xero-mesophilous – 35 species (7.21%), Meso-xerophilous – 27 species (5.56%), Xero-thermophilous – 11 species (2.27%), Hygrophilous – 16 species (3.30%), Eurytopic – 15 species (3.1%), Xero-halophilous – 1 species (0.20%), Hygro-mesophilous – 1 species (0.20%), Meso-hygrophilous – 2 species (0.41%), Hygro-thermophilous – 1 species (0.20%), Xero-heliophilous.

IV group. Mixed forests of Kazakh Upland (Fig. 19). The group is the fourth in terms of quantitative dominance in the landscape biotope structure of the Pavlodar region 276; (56.91%) of the Noctuoidea species. The biomonical groups of this biotope have the following sequence: Mesophilous – 89 species (18.35%), Xerophilous – 48 species (9.89%), Xero-mesophilous – 35 species (7.21%), Meso-xerophilous – 27 species (5.56%), Xero-thermophilous – 14 species (2.88%), Hygrophilous – 7 species (1.44%), Eurytopic – 14 species (2.88%), Xeromontane – 12 species (2.47%), Xero-halophilous – 3 species (0.61%), Hygro-mesophilous – 3 species (0.61%).

V group. Birch-aspen forests of the West Siberian Plain (Fig. 19). The group Birch-aspen forests of the West Siberian Plain is the fifth in terms of quantitative dominance in the landscapebiotopic structure of the Pavlodar region 171 species (35.25%) of Noctuoidea. The biomonical groups of this biotope have the following sequence: Mesophilous – 64 (13.19%) species, Xerophilous – 77 species, Xero-mesophilous – 32 species, Meso-xerophilous – 33 species, Xero-hermophilous – 7 species, Hygrophilous – 5 species, Eurytopic – 15 species, Hygromesophilous – 1 species.

VI group. Floodplain forests of Kazakh Uplands (Fig. 19). The group Floodplain forests of Kazakh Uplands includes 177 species (36.49%) Noctuoidea species and is the sixth in terms of quantitative dominance in the landscape-biotopic structure of the Pavlodar region. The biomonical groups of this biotope have the following sequence: Mesophilous – 39 species

(8.04%), Xerophilous – 57 species (11.75), Xero-mesophilous – 23 species (4.74%), Meso-xerophilous – 13 species (2.68%), Xero-thermophilous – 11 species (2.26%), Meso-thermophilous-1 species (0.20%), Hygrophilous-10 species (2.06%), Eurytopic-13 species (2.68%), Xeromontane – 3 species (0.61%), Xero-halophilous – 1 species (0.20%), Hygro-mesophilous – 2 species (0.41%), Meso-hygrophilous – 2 species (0.41%), Hygro-thermophilous – 2 species (0.41%).

VII group. Saline and alkali soils of salt lakes (Fig. 19). The group of Saline and alkali soils of salt lakes includes 142; (29.27%) of the Noctuoidea species. It is the seventh group on quantitative domination in the landscape-biotopic structure of the Pavlodar region. The biomonical groups of this biotope have the following sequence: Mesophilous – 101 species (20.82%), Xerophilous – 88 species (18.14%) Xero-mesophilous – 42 species (8.65%), Meso-xerophilous – 31 species (6.39%), Xero-thermophilous – 19 species (3.91%), Meso-thermopilous – 1 species (0.20%), Hygrophilous – 15 (3.09%), Eurytopic – 15 species (3.09%), Xeromontane – 14 species (2.88%), Xero-halophilous – 3 species (0.61%), Hygro-mesophilous – 5 species (1.03%), Meso-hygrophilous – 2 species (0.41%), Hygro-thermophilous – 2 species (0.41%).

VIII group. Pine relic forests of the West Siberian Plain (Fig. 19). The Pine relic forests of the West Siberian Plain includes 120; (24.74%) of the Noctuoidea species. It is the eighth group on quantitative domination in the landscape-biotopic structure of the Pavlodar region. The biomonical groups of this biotope have the following sequence: Mesophilous – 33 species (6.80%), Xerophilous – 33 species (6.80%), Xero-mesophilous – 15 species (3.09%), Meso-xerophilous – 13 species (2.88%), Xero-thermophilous – 11 species (2.26%), Hygrophilous – 1 species (0.20%), Eurytopic – 11 species (2.26%), Xero-halophilous – 2 species (0, 41%), Hygro-mesophilous – 15 species (3.09%).

IX group. Fescue-feather grass steppe (Fig. 19). The group Fescue-feather grass steppe includes 123; (25.36%) of the Noctuoidea species. It is the ninth group on quantitative domination in the landscape-biotopic structure of the Pavlodar region. The biomonical groups of this biotope have the following sequence: Mesophilous – 40 species (8.24%), Xerophilous – 18 species (3.71%), Xero-mesophilous – 23 species (4.74%), Meso-xerophilous – 18 species (3.81%), Xero-thermophilous – 4 species (0.82%), Hygrophilous – 3 species (0.61%), Eurytopic-13 species (2.68%), Xero-halophilous – 2 species (0.41%), Hygro-mesophilous – 1 species (0.20%), Hygro-thermophilous – 1 species (0.20%).

X group. Birch-aspen forests of the Kazakh Uplands (Fig. 19). The group of Birch-aspen forests of the Kazakh Uplands includes 77; (15.87%) of the Noctuoidea species. It is the tenth

group on quantitative domination in the landscape-biotopic structure of the Pavlodar region. The biomonical groups of this biotope have the following sequence: Mesophilous – 19 species (3.91%), Xerophilous – 19 species (3.91%), Xero-mesophilous – 14 species (2.88%), Meso-xerophilous – 14 species (2.88%), Xero-thermophilous – 4 species (0.82%), Eurytopic – 7 species (1.44%).

XI group. Agrocenosis (Fig. 19). The Agrocenosis group includes 29 (5.98%) species of Noctuoidea. It is the eleventh group on quantitative domination in the landscape-biotopic structure of the Pavlodar region.The biomonical groups of this biotope have the following sequence: Mesophilous – 8 species (1.69%), Xerophilous – 7 species (1.44%), Xero-mesophilous – 5 species (1.03%), Meso-xerophilous – 3 species (0.61%), Xero-thermophilous – 1 species (0.20%), Eurytopic – 5 species (1.03%).

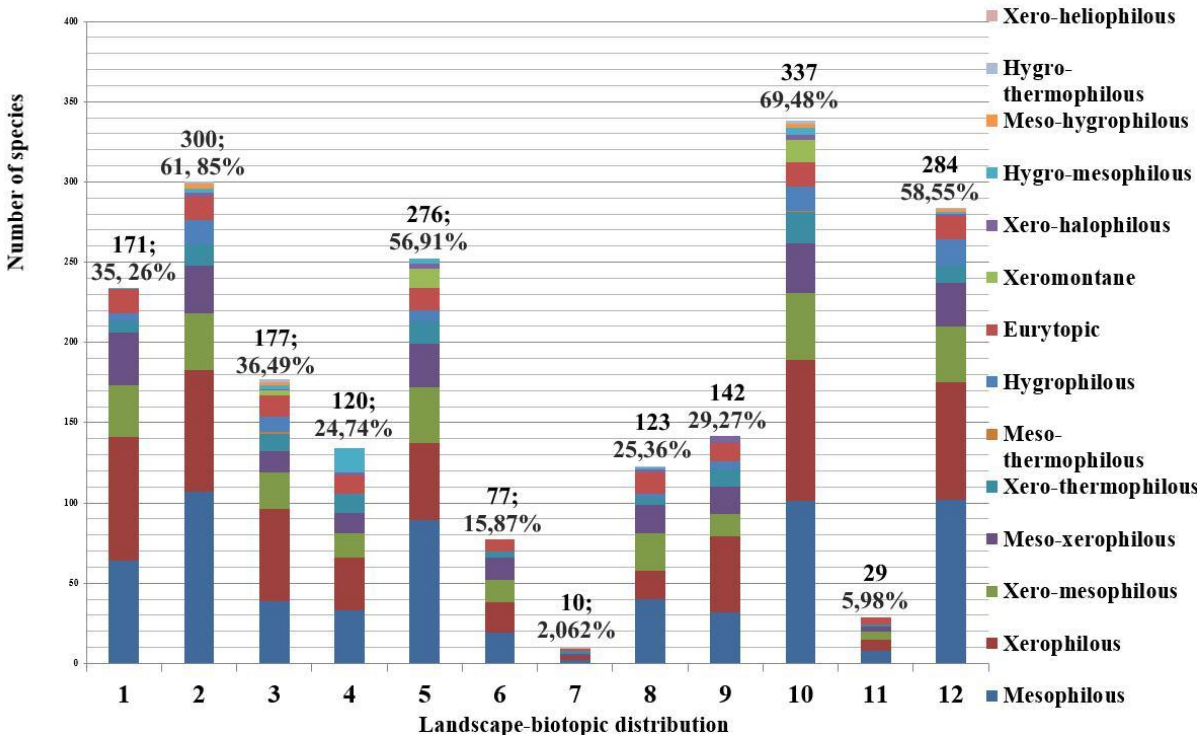

Figure 19. Dominant groups of the Noctuoidea fauna in the landscape-biotope groups of the Northeast Kazakhstan and their bioinomic structure: 1. Birch-aspen forests of the West Siberian Plain, 2. Floodplain forests of the Kazakh Uplands, Pine relic of the West Siberian Plains, 5. Mixed forests of the Kazakh Uplands, 6. Birch-aspen forests of the Kazakh Uplands, 7. Deserted wormwood-feather grass steppes, 8. Fescue-feather grass steppe, 9. Saline and alkali soils of salt lakes, 10. Shrubby mountain steppe, 11. Agrocenosis, 12. Residential landscape.

XII group. Deserted wormwood-feather grass steppes (Fig. 19). The Deserted wormwood-feather grass steppes group includes 10; (2.06%) species of Noctuoidea. The group has not been studied enough. The biomonical groups of this biotope have the following sequence: Mesophilous – 2 species (0.41%), Xerophilous-3 species (0.61%), Meso-xerophilous-1 species (0.20%), Xero-thermophilous – 2 species 0.41%), Eurytopic – 1 species (0.20), Xero-heliophilous – 1 species (0.20).

Using the Jaccard index formula, a similarity matrix and a cluster dendrogram were obtained, which interpret data on the similarity of landscape-biotopic groups of the Pavlodar region. (Fig. 20, Tab. 4).

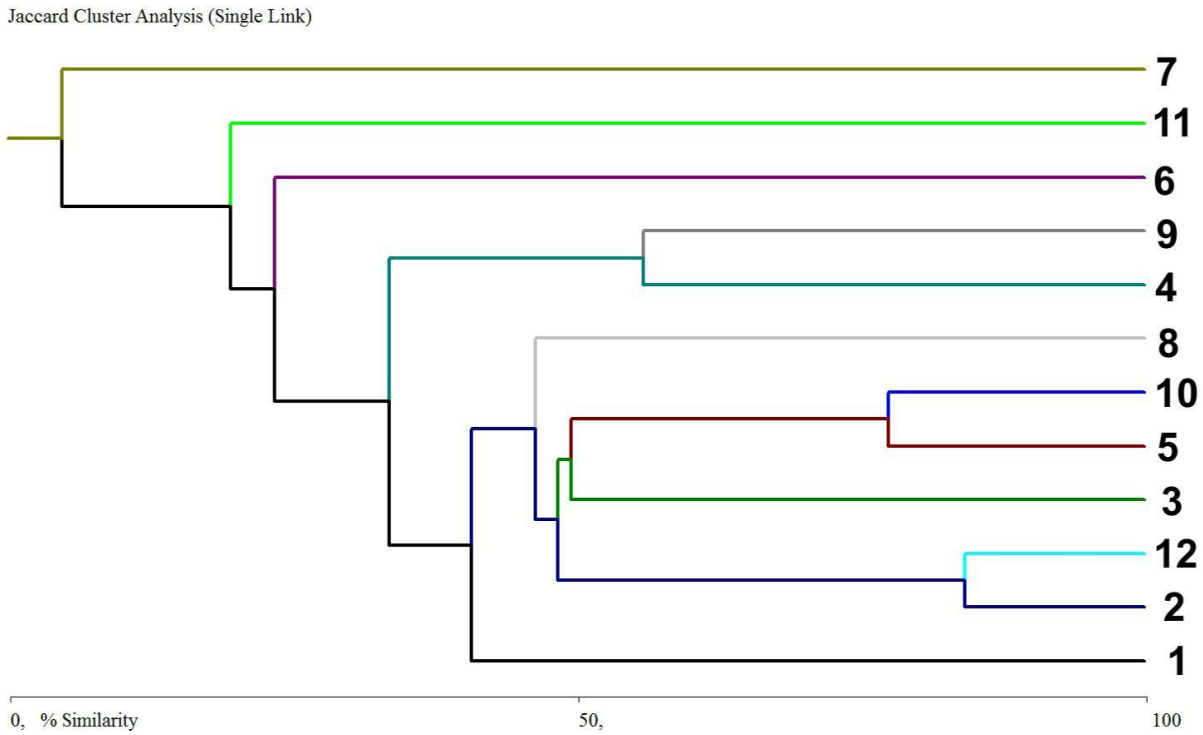

Figure 20. Dendrogram of the similarity of the fauna of the landscape-biotope groupings of Noctuoidea of the Pavlodar region.

Table 4. Matrix of similarity (according to Jaccard) of the species richness of Noctuoidea in the landscape-biotopic structure of the Pavlodar region

Similarity Matrix	Birch-aspen forests of the West Siberian Plain	Floodplain forests of the Irtysh river	Floodplain forests of Kazakh Uplands	Pine relic of the West Siberian Plain	Mixed forests of the Kazakh Uplands	Birch-aspen forests of the Kazakh Uplands	Deserted wormwood-feather grass steppes	Fescue-feather grass steppe	Saline and alkali soils of salt lakes	Shruby mountain steppe	Agrocenosis	Residential landscape
Birch - aspen forests of the West Siberian Plain	*	40,7738	30,4833	25,2137	32,0588	18,3962	2,809	30,4878	32,3529	31,3625	9,1892	37,2372
Floodplain forests of the river Irtysh	*	*	37,7522	28,0488	40,146	18,4953	1,6393	39,1304	33,5347	48,3721	8,5809	84,2271
Floodplain forests of Kazakh Uplands	*	*	*	26,2712	31,5942	20,7547	2,7322	33,0612	30,0813	49,5652	10,1064	36,2832
Pine relic of the West Siberian Plain	*	*	*	*	25,3165	22,9814	4	32,6733	55,9524	25,8242	12,0301	28,6624
Mixed forests of Kazakh Upland	*	*	*	*	*	21,2329	2,509	26,5672	26,284	77,4566	7,7738	38,6139
Birch - aspen forests Kazakh Upland	*	*	*	*	*	*	4,7619	23,4973	19,5652	19,8847	9,1837	17,5325
Deserted wormwood - feather grass steppes	*	*	*	*	*	*	*	3,268	3,4014	1,7544	2,6316	2,0833
Fescue-feather grass steppe	*	*	*	*	*	*	*	*	33,0275	28,5714	19,5946	46,4407
Saline and saline solonets of salt lakes	*	*	*	*	*	*	*	*	*	26,6491	11,039	32,7103
Shruby mountain steppe	*	*	*	*	*	*	*	*	*	*	6,686	46,0094
Agrocenosis	*	*	*	*	*	*	*	*	*	*	*	9,0592
Residential landscape	*	*	*	*	*	*	*	*	*	*	*	*

According to the data obtained from the similarity matrix and cluster analysis, the following landscape-biotopic groups, are placed in descending order. For convenience, the list of

groups is divided into three parts, distinguishing between groups with high, medium and low similarity (Tab. 5).

Table 5. Similarity between different types of biotopes and Noctuoidea fauna in Pavlodar region.

Biotopes	Similarity
High similarity	
Floodplain forests of the river Irtysh & Residential landscape	84.23%
Mixed forests of Kazakh Upland & Shrubby mountain steppe	77.46%
Pine relic of the West Siberian Plain & Saline and alkali soils of salt lakes	55.95%
Floodplain forests of Kazakh Uplands & Shrubby mountain steppe	49.56%
Floodplain forests of the river Irtysh & Shrubby mountain steppe	48.37%
Fescue-feather grass steppe & Residential landscape	46.44%
Shrubby mountain steppe & Residential landscape	46.01%
Birch-aspen forests of the West Siberian Plain & Floodplain forests of the Irtysh river	40.77%
Floodplain forests of the river Irtysh & Mixed forests of the Kazakh Uplands	40.15%
Floodplain forests of the river Irtysh & Fescue-feather grass steppe	39.13%
Mixed forests of Kazakh Upland & Residential landscape	38.61%
Floodplain forests of the river Irtysh & Floodplain forests of Kazakh Uplands	37.75%
Birch-aspen forests of the West Siberian Plain & Residential landscape	37.24%
Floodplain forests of Kazakh Uplands & Residential landscape	36.28%
Medium similarity	
Floodplain forests of the river Irtysh & Saline and alkali soils of salt lakes	33.53%
Floodplain forests of Kazakh Uplands & Fescue-feather grass steppe	33.06%
Fescue-feather grass steppe & Saline and alkali soils of salt lakes	33.03%
Saline and alkali soils of salt lakes & Residential landscape	32.71%
Pine relic of the West Siberian Plain & Fescue-feather grass steppe	32.67%
Birch-aspen forests of the West Siberian Plain & Saline and alkali soils of salt lakes	32.35%
Birch-aspen forests of the West Siberian Plain & Mixed forests of Kazakh Upland	32.06%
Floodplain forests of Kazakh Uplands & Mixed forests of Kazakh Upland	31.59%
Birch-aspen forests of the West Siberian Plain & Shrubby mountain steppe	31.36%
Birch-aspen forests of the West Siberian Plain & Fescue-feather grass steppe	30.49%
Birch-aspen forests of the West Siber. Plain & Floodplain forests of Kazakh Uplands	30.48%

End of table 5

Biotopes	Similarity
Floodplain forests of Kazakh Uplands & Saline and alkali soils of salt lakes	30.08%
Pine relic of the West Siberian Plain & Residential landscape	28.66%
Fescue-feather grass steppe & Shrubby mountain steppe	28.57%
Floodplain forests of the river Irtysh & Pine relic of the West Siberian Plain	28.05%
Saline and alkali soils of salt lakes & Shrubby mountain steppe	26.65%
Mixed forests of Kazakh Upland & Fescue-feather grass steppe	26.57%
Floodplain forests of Kazakh Uplands & Pine relic of the West Siberian Plain	26.27%
Mixed forests of Kazakh Upland & Saline and alkali soils of salt lakes	26.28%
Pine relic of the West Siberian Plain & Shrubby mountain steppe	25.82%
Pine relic of the West Siberian Plain & Floodplain forests of Kazakh Uplands	25.32%
Birch-aspen forests of the West Siberian Plain & Pine relic of the West Siberian Plain	25.21%
Birch-aspen forests Kazakh Upland & Fescue-feather grass steppe	23.50%
Pine relic of the West Siberian Plain & Birch-aspen forests of the Kazakh Uplands	22.98%
Mixed forests of Kazakh Upland & Birch-aspen forests of the Kazakh Uplands	21.23%
Floodplain forests of Kazakh Uplands & Birch-aspen forests of the Kazakh Uplands	20.75%
Birch-aspen forests Kazakh Upland & Shrubby mountain steppe	19.88%
Fescue-feather grass steppe & Agrocenosis	19.59%
Birch-aspen forests Kazakh Upland & Saline and alkali soils of salt lakes	19.56%
Floodplain forests of the river Irtysh & Birch-aspen forests of the Kazakh Uplands	18.50%
Birch-aspen forests of the West Siber. Plain & Birch-aspen forests of the Kazakh Uplands	18.40%
Birch-aspen forests Kazakh Upland & Residential landscape	17.53 %
Low similarity	
Pine relic of the West Siberian Plain & Agrocenosis	12.03%
Saline and alkali soils of salt lakes & Agrocenosis	11.04%
Floodplain forests of Kazakh Uplands & Agrocenosis	10.11%
Birch-aspen forests Kazakh Upland & Agrocenosis	9.18%
Birch-aspen forests of the West Siberian Plain & Agrocenosis	9.19%
Agrocenosis & Residential landscape	9.06%
Floodplain forests of the river Irtysh & Agrocenosis	8.58%

5.5.3. Bionomic structure of the Noctuoidea fauna of the Kazakh Upland geomorphological landscape and West Siberian Plain

The bionomical structure of the Noctuoidea fauna in the geomorphologicaal landscapes Kazakh Upland and West Siberian Plain is demonstrated in the figure 21 and in Appendix 6 and 7.

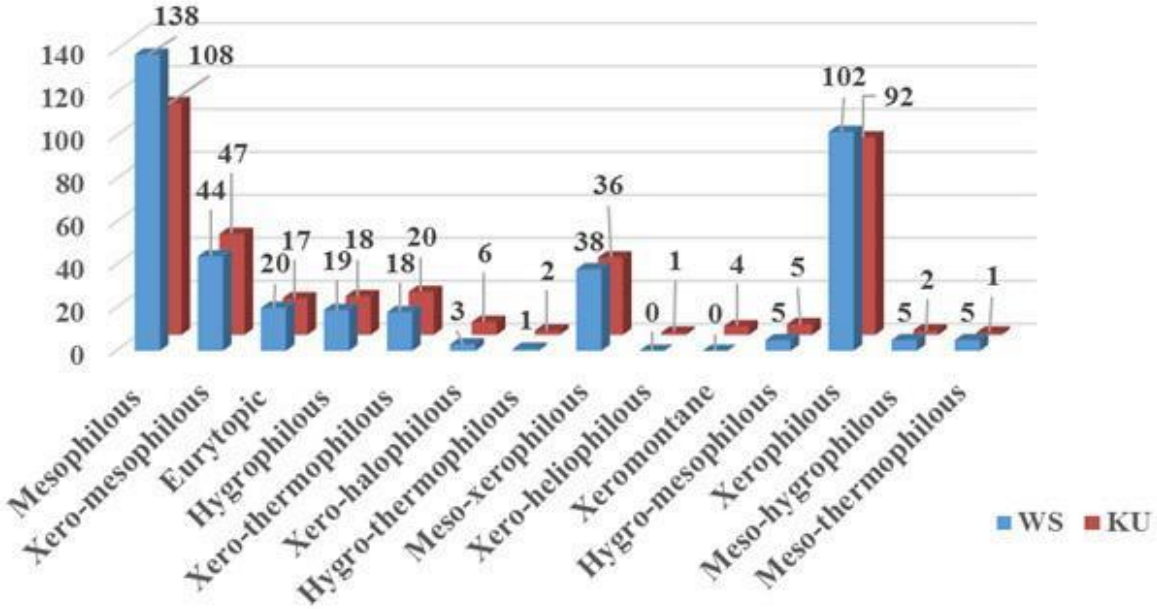

Figure 21. Biominic structure (groups) of the Noctuoidea fauna in the geomorphological landscapes of the Pavlodar region: Kazakh Upland (KU) and West Siberian Plain (WS).

5.5.4. Imago phenology of Noctuoidea fauna of the Pavlodar region

At the moment, there are various classifications of phenological groups of Lepidoptera (Streltsov, 1998; Martynenko, 2003; Yakovlev, 2003). In this study, I accept the classification according to Bubnova (2008). Based on this system, I accept 5 phenological groups for univoltine species. In the natural conditions of the Pavlodar region of Kazakhstan, the first generation of bivoltine groups begins in April, from the beginning of June, the second generation from the middle of July and the middle of August. On the basis of the accepted classification, I combined these species into a group of spring-summer species and thus obtained 6 phenological groups determined by the time of ocuurence of the imago.

Spring group – 16 (3.30%) species of Noctuoidea (Appendix 8).

Imago of species belonging to this group begin to emerge from the beginning or middle of April, in early May and usually ends by the end of May. Species of this group hibernate in the pupal stage.

Spring-summer group – 20 (4.12%) species of Noctuoidea (Appendix 8).

Includes bivoltine species, species with two generations within a year, the first generation flies in May, and the second – in the second half of July – early August. hibernate in the pupal stage.

Early-year group – 256 (52.78%) species of Noctuoidea (Appendix 8).

The imago activity of the species included in this group depends on meteoclimatic conditions, mostly on the sum of the positive temperatures of the soil and air. Usually flight of these species occur in the second half of May, in early June and end by the middle or end of July. In some cases, the weather conditions can prolong occurrence the imago, and it can be delayed until the beginning of August. Hibernates in the stage of the caterpillar and pupae.

Late-summer group – 160 (32.99%) species of Noctuoidea (Appendix 8).

Imago of species of this group begin to emerge from the second half of July, beginning of August, and end their activity by the beginning of September. Under special conditions, meteoclimatic factors can prolong the activity to mid-September. The pecies of this group most often hibernates at the stage of the larva, less often at the stage of the egg.

Autumn group – 18 (3.71%) species of Noctuoidea (Appendix 10).

In this group of species, imago occur at the beginning or middle of September and end at the end of September, beginning of October. Hibernate in the stage of the egg.

Autumn-spring group – 15 (3.09%) species of Noctuoidea (Appendix 8).

The activity of the imago of species of this group begins in the middle or at the end of September and ends with the onset of cold weather, the cessation of vegetation and the fall of the snow cover, by mid-October. Some species from the genus *Dasypolia* show activity even at the time of snow precipitation in autumn and spring at temperatures around 0°C or -1°C to -2°C

below zero. After hibernation females laying eggs. They finish the activity by the end of April, beginning of May.

5.6. Biogeographic analysis of Noctuoidea fauna of Pavlodar region

Entomological studies on the biogeographic zoning of Northeastern Kazakhstan were previously absent. The first attempt of such studies on the basis of studying the fauna of Lepidopteran insects from the superfamily Noctuoidea is undertaken as part of this work.

In this paper, a biogeographical analysis on the basis of 485 species of Noctuoidea fauna of Northeastern Kazakhstan is given (Appendix 9, Appendix 13).

Biologeographical analysis of the Noctuoidea fauna in the Pavlodar region divided this segment of fauna in 17 biogeographical groups.

1. Subcosmopolitan species – 8 species (1.64%) (Appendix 9).

The species of this biogeographic group is widespread in the world, the areal of distribution of these species covers several continents and zoogeographical regions.

2. Holarctic species – 23 species (4.73%) (Appendix 9).

This biogeographic group involved species common in the boreal zone, both in Eurasia and in North America, in the Holarctic region.

3. Siberian-American species – 1 species (0.21%) (Appendix 9).

The group includes species that have become widespread in Siberia, and in the boreal zone of North America.

4. Trans-Palaearctic species – 41 species (8.44%) (Appendix 9).

This biogeographic group involved species widely distributed throughout the entire Palearctic from the Atlantic Ocean in the west, to the Pacific Ocean in the east. Transpalearctic species have a high ecological plasticity and in their majority are not demanding for abiotic factors. climate.

5. Eurasiatic Palaearctic species – 163 species (33.54%) (Appendix 9).

The species of this group are widespread in the Palearctic, except for North Africa.

6. European-Siberian species – 45 species (9.26%) (Appendix 9).

The group includes widespread species in Europe and Siberia, reaching some regions of Eastern Siberia in the east.

7. Siberian-Mediterranean species – 10 species (2.06%) (Appendix 9).

The species included in this biogeographic group are widely distributed from the Mediterranean to Central Asia and Southern Siberia. Distribution to the north extends to the Southern Urals and the south of the European part of Russia.

8. West Palaearctic species – 46 species (9.47%) (Appendix 9).

This biogeographic group includes species that have become widespread in the western part of the Palearctic, from the Atlantic Ocean in the west to the mountain systems of the Altai, Tarbagatai, the Central Tien Shan and the Western Pamirs.

9. European-West Asian species – 9 species (1.85%) (Appendix 9).

The species of this biogeographic group are widespread in Europe and Western Asia, reaching Siberia at the east.

10. European-Central Asian species – 57 species (11.70%) (Apendix 9).

The species of this group are widely distributed from Europe to Central Asia.

11. Uralian-Kazakhstan species – 3 species (0.62%) (Appendix 9).

Species of this biogeographic group have a local distribution from the East European Plain in the mountains of the Southern Urals in Russia and Kazakhstan (Mugodzhary Mts) to the north-eastern margin of the Kazakh Upland. The species of this group are extremely rare.

12. West Palaearctic-Central Asian species – 12 species (2.47%) (Appendix 9).

This biogeographic group includes species whose distribution areas are widespread and pass through North Africa, Europe, North and Central Asia.

13. Central Asian species – 25 species (5.14%) (Appendix 9).

This biogeographic group includes species that are prevalent mainly in the interior regions of Asia.The distribution areas of these species are between south of the Russian part of Altai, Tuva and Transbaikalia.

14. Siberian-Central Asian species – 10 species (2.06%) (Appendix 9).

Species are widespread in Siberia and Central Asia.

15. East Palaearctic species – 16 species (3.29%) (Appendix 9).

These species are distributed in the eastern regions of the Palaearctic. Sometimes reaching the Urals, and the Near East Asia at the west.

16. Manchurian-Central Asian-Siberian species – 16 species (3.29%) (Appendix 9).

This biogeographic group included species widespread in the Manchurian region, in Southern Siberia and in Central Asia (Mongolia, Eastern and North-Eastern Kazakhstan), in some cases the areal of these species reaches the Southern Urals.

17. Siberian-Pacific species – 1 species (0.20%) (Appendix 9).

The species of this biogeographic group have a distribution area in the Stenopean nemorose region of the Palearctic (Emel'yanov, 1974) (Far East of Russia, NE and W. China, Korea, Japan) and in some regions of Siberia (Transbaikalia, Southern Siberia).

5.6.1. Distribution of biogeographical groups of Noctuoidea in the Pavlodar region of Kazakhstan

Pavlodar region has its own characteristic complex of physical and geographical characteristics and a certain species composition of phytocoenoses in different regions of its territory. The location of the Pavlodar region in the steppe natural zone and the absence of large obstacles in the form of high mountain ranges, vast deserts and seas make this region accessible to the penetration of elements of fauna from the adjacent zoogeographical regions of Europe and Asia. The dominant in the Pavlodar region are the winds of the western direction, which also influences the formation of the Noctuoidea fauna. Only a few species have a relict distribution, which is due to their historical confinement to the relict flora.

The participation of biogeographical groups in the species richness of the fauna of the geobotanical areas of the Pavlodar region is shown in the table 6. The distribution of arealogical groupings of Noctuoidea fauna and their species capacity in the geomorphological landscapes of KU – Kazakh Upland and WS – West Siberian Plain is shown in figure 22.

Table 6. Participation of longitudinal groups of areals in species richness of fauna of geobotanical districts of Pavlodar region. The colors in the area codes correspond to the colors of the areas on the map.

No.	**Longitudinal type of areal**	Geobotanical areas				
		Chaglinsko-Seletinsko-Karasuk geobotanical area	Pavlodar geobotanical area	Bayanaul-Karaganda geobotanical area	Semipalatinsk geobotanical area	Arkalyk-Chingiz geobotanical area
1	Eurasiatic Palaearctic	67	66	129	12	5
2	European-Central Asian	13	31	43	22	5
3	West Palaearctic	14	31	33	29	1
4	European-Siberian	13	23	33	11	4
5	Trans-Palaearctic	18	33	35	21	5
6	East Palaearctic	7	6	10	4	0
7	Central Asian	7	12	24	6	4
8	Holarctic	11	18	19	11	2
9	Manchurian - Central Asian - Siberian	4	6	13	4	0
10	West Palaearctic-Central Asian	2	7	11	2	1
11	Siberian - Mediterranean	5	6	8	4	0
12	Siberian - Central Asian	2	5	6	2	1
13	European - West Asian	3	6	6	2	2
14	Subcosmopolitan	3	5	6	4	0
15	Uralian-Kazakhstan	0	1	3	0	0
16	Siberian - American	0	0	1	0	0
17	Siberian-Pacific	0	1	0	0	0

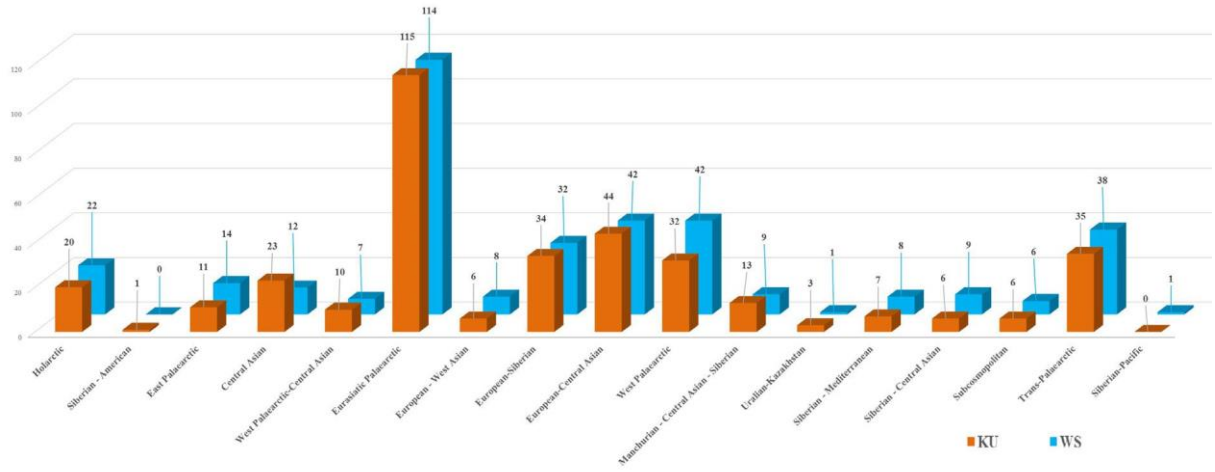

Figure 22. The distribution of biogeographic groups of Noctuoidea fauna in the geomorphological landscapes of KU – Kazakh Upland and WS – West Siberian Plain.

Below is a list of longitudinal groups that were divided by the degree of generality of the quantitative presence of species into three supergroups, indicated by Roman numerals.

Eurasiatic-Palaearctic biogeographic group (Fig. 23)

The dominant biogeographic group of species in the geobotanical areas of the Pavlodar region is the Eurasiatic Palaearctic group, which have become widespread in Eurasia. In the fauna of the Pavlodar region the group consists of 163 species. The species of thi s group are distributed unevenly in the geobotanical regions. The influence of this group is most noticeable in the fauna of Bayanaul-Karaganda geobotanical area (116 species) in the mixed forests of the Kazakh Upland and the mountain shrub steppes. Here predominantly temperate species (51 species), subboreal species (53 species) and boreal species (12 species) are prevalent. Other species also spread in this longitudinal group, for example, from Pavlodar geobotanical area (124 species), Chaglinsko-Seletinsko-Karasuk geobotanical area (67 species) and Semipalatinsk geobotanical area (44 species). Basically, these are temperate species that are widespread in various natural zones (Fig. 23). The other Eurasiatic Palaearctic species have little participation in the fauna of the geobotanical regions of the Pavlodar region. Equivalent influence on fauna is rendered by European-Central Asian and Trans-Palaearctic biogeographic groups in Bayanaul-Karaganda geobotanical area and Pavlodar geobotanical area.

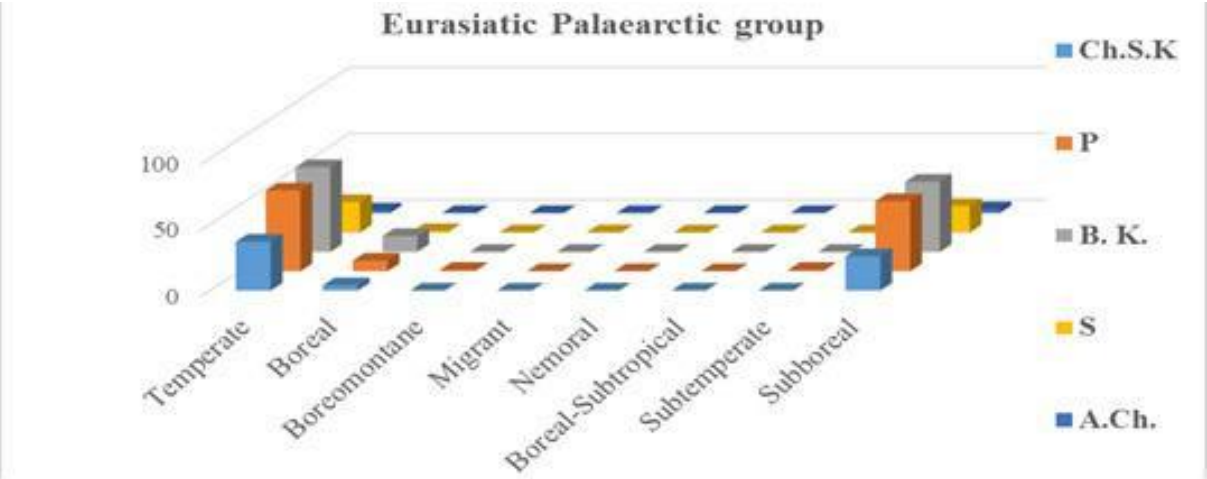

Figure 23. The influence of the Eurasiatic Palaearctic biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

European-Central Asian biogeographic group (Fig. 24)

The European-Central Asian biogeographic group has 56 species in the fauna of the Pavlodar region (Fig. 24), which are distributed in the following order of dominance: in Bayanaul-Karaganda geobotanical area (43 species), 37 of them belong to subboreal, 4 species to subtemperate and 2 species to temperate latitudinal groups. Pavlodar geobotanical area (31 species), 28 species refers to subboreal, 2 species – to subtemperate and 1 species to the temperate latitudinal group of species. In the Semipalatinsk geobotanical area (22 species) 19 of them refers to the subboreal, 2 species to the subtemperate and 1 species to the temperate. Chaglinsko-Seletinsko-Karasuk geobotanical area (13 species), represented predominantly by species of the subboreal latitudinal group (12 species) and 1 species from the temperate latitudinal group. In Arkalyk-Chingiz geobotanical area, only five species from this longitude group were identified, which belong to the subboreal latitudinal group.

Species of the European-Central Asian biogeographic group have a wide distribution area within the steppe belts in the Eurasian steppe region from Europe to Central Asia, without significant barriers for proliferation.

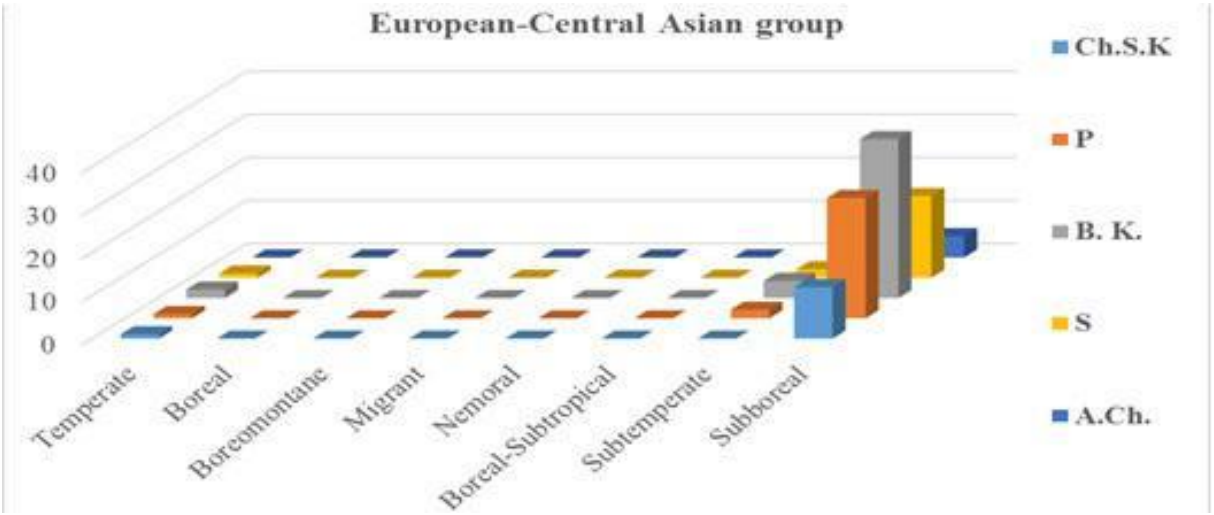

Figure 24. Influence of the European-Central Asian biogeographic group of species on the fauna of geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

3. West Palaearctic biogeographic group (Fig. 25)

In the fauna of Pavlodar region the group is represented by 46 species (Fig. 25). Types of West Palaearctic longitudinal group, like the previous groups, have a significant impact on the fauna of the geobotanical districts of the region. In the structure of the data obtained, a relatively

uniform distribution is noted only in the first three geobotanical districts listed below. There are 31 species in the fauna of Pavlodar geobotanical area, of which 28 species refer to subboreal, 2 species to subtemperate and 1 species to temperate latitudinal groups. The Bayanaul-Karaganda geobotanical area fauna is represented by 33 species, of which 31 species refer to subboreal, 1 species to temperate and 1 species to nemoral latitudinal groups. The fauna of Semipalatinsk geobotanical area is represented in the group by 29 species, 26 of them are subboreal, 2 species to temperate and 1 species to subtemperate. The West Palaearctic Longitudinal group has a smaller influence on the fauna of Chaglinsko-Seletinsko-Karasuk geobotanical area, in which 14 species of the subboreal latitudinal group were discovered. In Arkalyk-Chingiz geobotanical area from this longitudinal group only one species is found belonging to the subboreal latitudinal group of species. In the West Palaearctic longitudinal group, among all geobotanical districts, the xerophilous (17 species) species predominate from the subboreal latitudinal group. In the West Palaearctic longitudinal and in its accompanying latitudinal groups, mesophilous species (6 species), xero-mesophilous (8 species), meso-xerophilous (6 species), xero-thermophilous (5 species) are represented to a lesser extent.

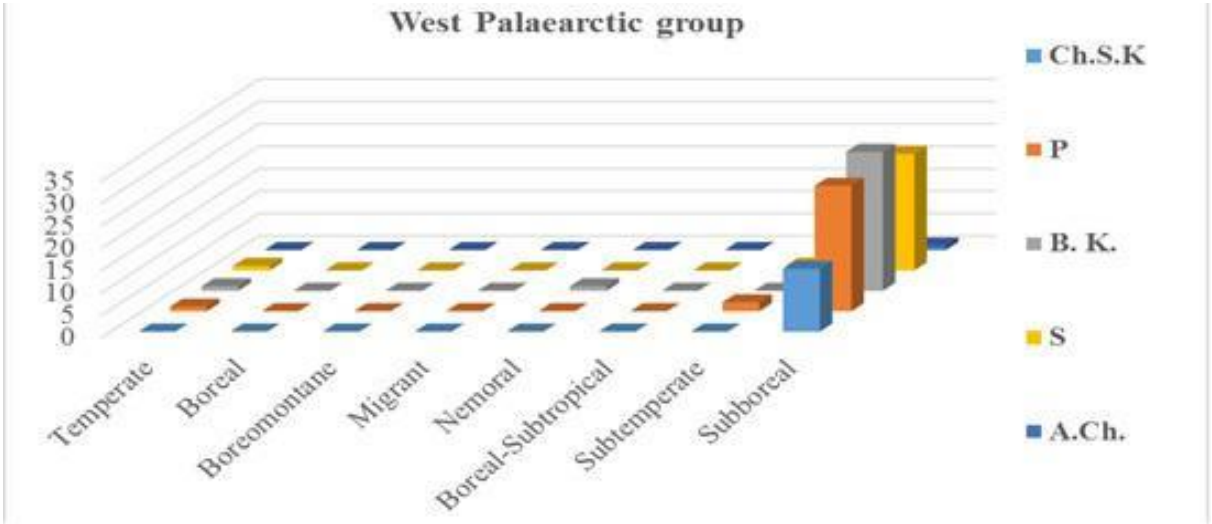

Figure 25. The influence of the West Palaearctic biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

4. European-Siberian biogeographic group (Fig. 26)

In the fauna of the Pavlodar region the group is represented by 45 species (Fig. 26). The European-Siberian biogeographical group has the greatest influence on the Bayanaul-Karaganda geobotanical area – 33 species, 25 of which belong to the subboreal species of the latitudinal

group and only 6 to the temperate latitudinal group of species, two species belong to subtemperate latitudinal group of species. The next geobotanical district, influenced by the European-Siberian group of species, is the Pavlodar geobotanical area (23 species), which is based on 17 species from the subboreal latitudinal group, 6 species to the temperate group. In the fauna of the Chaglinsko-Seletinsko-Karasuk geobotanical area the longitude group is represented by 13 species. Of these, 10 species refer to subboreal and 3 to temperate latitudinal groups. The composition of the fauna of Semipalatinsk geobotanical area includes 11 species, 7 of them from subboreal and 4 from temperate latitudinal groups. In Arkalyk-Chingiz geobotanical area – 4 species, 2 species from temperate, 1 species from subtemperate and 1 species from subboreal latitudinal groups. Data on Arkalyk-Chingiz geobotanical area may not be correct.

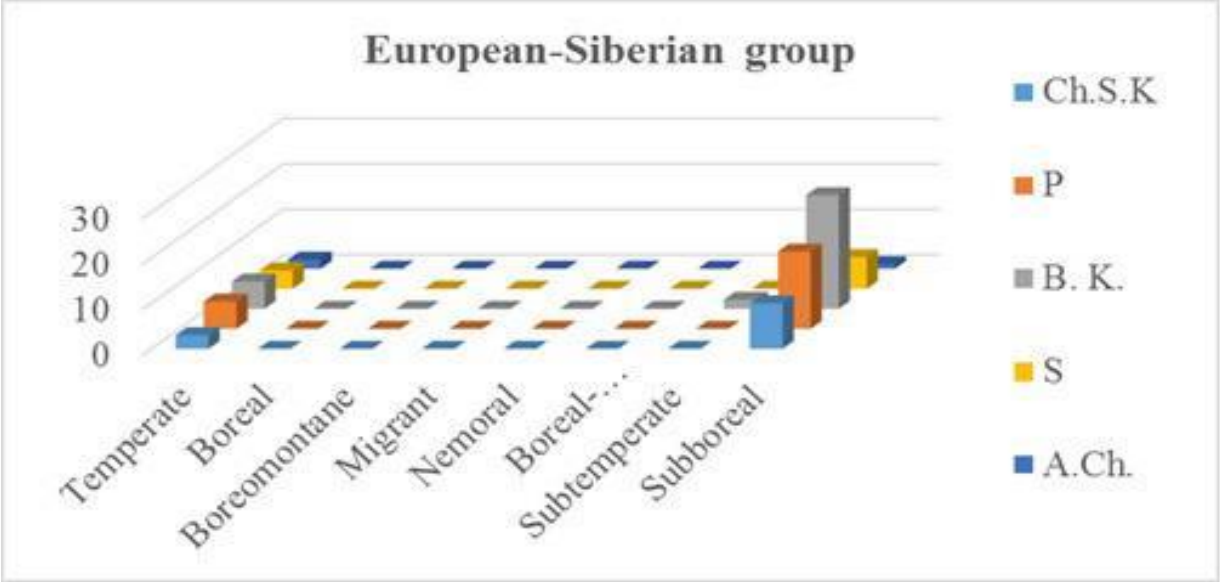

Figure 26. Influence of the European-Siberian longitudinal group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

5. Trans-Palaearctic biogeographic group (Fig. 27)

This biogeographic group has the widest distribution in the Palearctic. In the fauna of Pavlodar region the group is represented by 41 species (Fig. 27). The areal of latitudinal groups influencing the fauna of the geobotanical areas of the Pavlodar region is uneven here and mainly belongs to the temperate and subboreal latitudinal groups of species widespread both in the steppe and in other natural zones. In the Bayanaul-Karaganda geobotanical area, 35 species are found, 24 of which are from temperate, 10 from subboreal and 1 species from boreal groups of latitudinal species. In the fauna of Pavlodar geobotanical area the group is represented by 33

species, of which 21 are temperate and 11 are subboreal. In the fauna of Chaglinsko-Seletinsko-Karasuk geobotanical area is 18 species, 13 of them are temperate, 4 subboreal and 1 from the boreal latitudinal groups. In the fauna of the Semipalatinsk geobotanical area the group is represented by 21 species, of which 12 belong to the temperate and 9 to the subboreal latitudinal group of species. In Arkalyk-Chingiz geobotanical area, only five species from this biogeographical group were found, two of them are temperate, two species from subboreal and one species from boreal latitudinal groups.

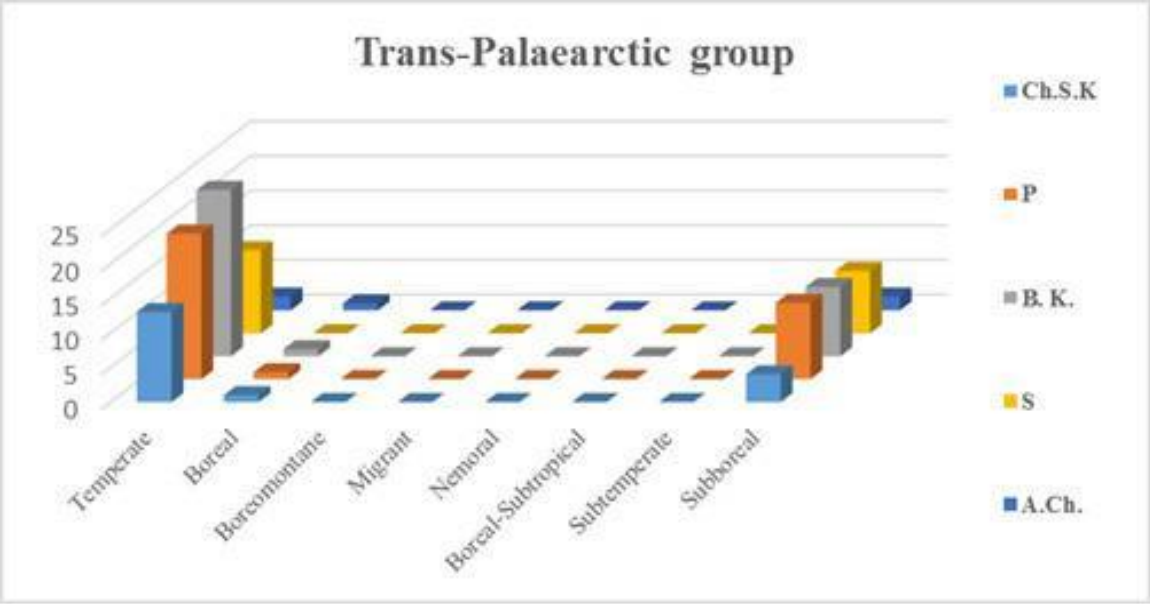

Figure 27. Influence of the Trans-Palaearctic biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

6. East Palaearctic biogeographic group (Fig. 28)

In the fauna of the Pavlodar region the group is represented by 27 species (Fig. 28). The largest number of species from this group is noted in Bayanaul-Karaganda geobotanical area – 10 species, among which 7 species refers to subboreal, 1 to temperate, 1 species to boreal and 1 species to subtemperate latitudinal groups. There are 7 species in the fauna of Chaglinsko-Seletinsko-Karasuk geobotanical area, 5 species refer to subboreal, 1 species to temperate and 1 species to boreal latitudinal groups. In the fauna of the Pavlodar geobotanical area there are 6 species, 4 of which are subboreal, 1 subtemperate species, and 1 species from boreal latitudinal groups. In the Semipalatinsk geobotanical area there are 4 species, 3 of them belong to the subboreal and one to the temperate latitudinal groups. There are no species from the East Palaearctic group in the fauna of the Arkalyk-Chingiz geobotanical area.

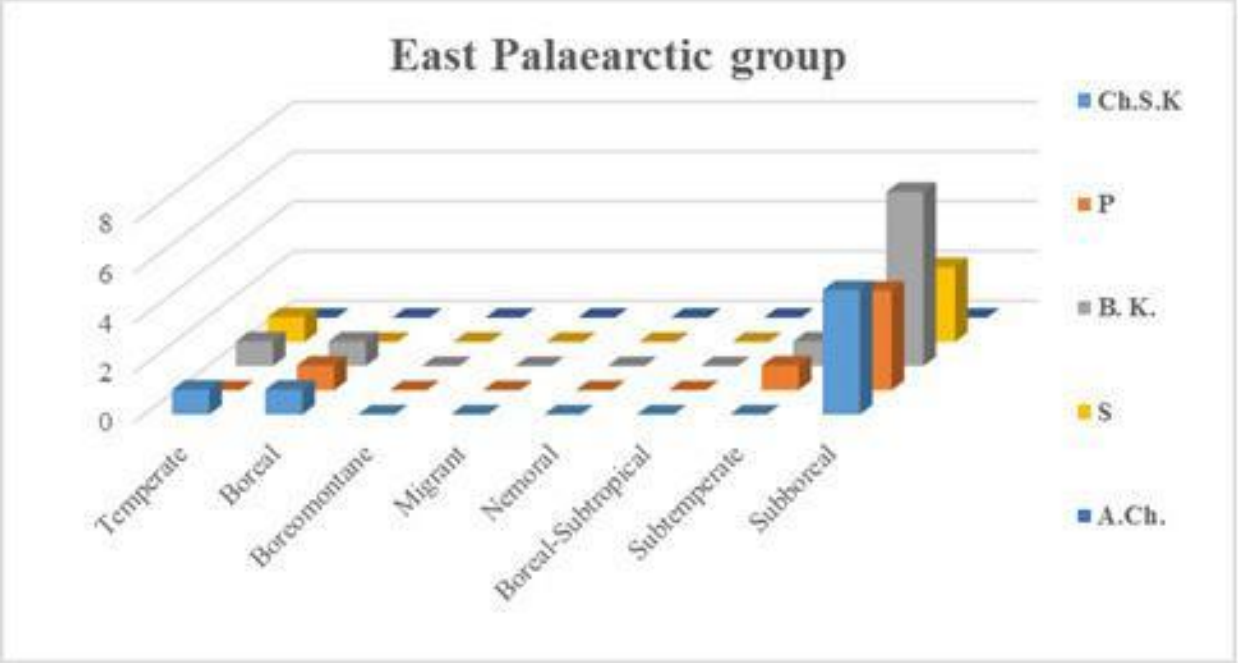

Figure 28. The influence of the East Palaearctic biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

7. Central Asian biogeographic group (Fig. 29)

In the fauna of the Pavlodar region the group is represented by 25 species (Fig. 29). This group completes the list of groups that exert significant influence on the geobotanical districts of the Pavlodar region. The Central Asian biogeographic group has greatest influence on Bayanaul-Karaganda geobotanical area – 24 species, of which 20 species belong to subboreal and 4 species to subtemperate latitudinal groups. In the Pavlodar geobotanical area, there are 12 species, of which 9 are subboreal and 3 species of subtemperate latitudinal groups. In the Chaglinsko-Seletinsko-Karasuk geobotanical area, there are 7 species, 6 species refer to subboreal and 1 species to subtemperate latitudinal groups. In the Semipalatinsk geobotanical area there are 6 species, 5 of the subboreal and 1 species from the subtemperate latitudinal groups. In the fauna of Arkalyk-Chingiz geobotanical area, four species from the subboreal latitudinal group are noted.

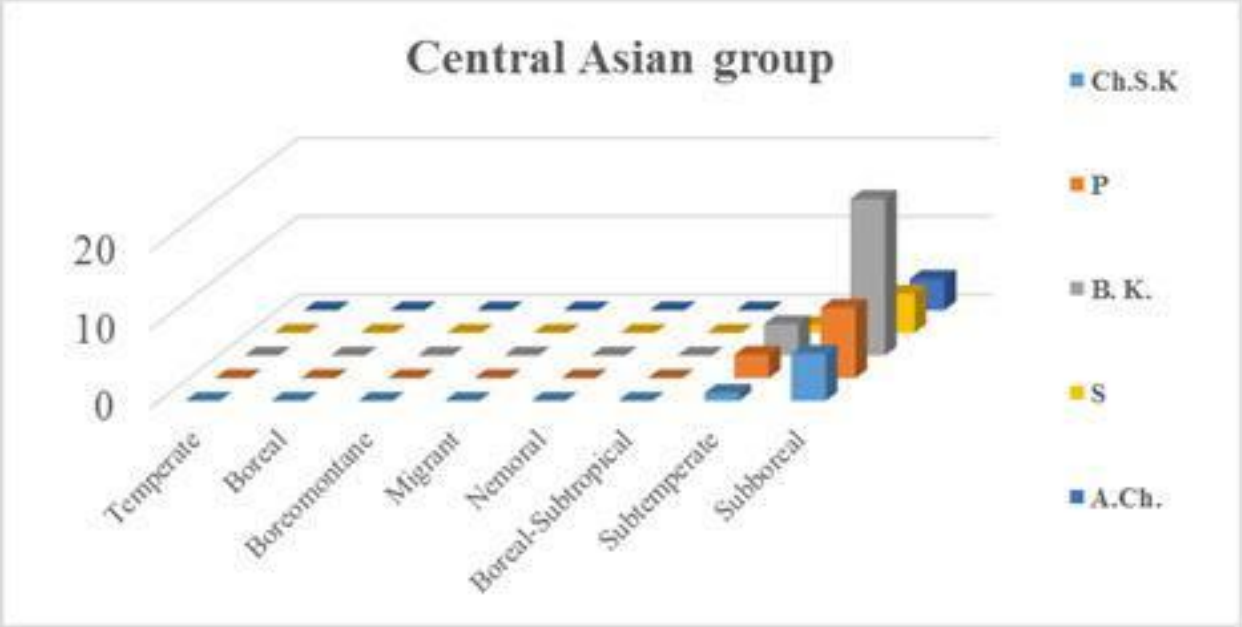

Figure 29. Influence of the Central Asian biogeographic group of species on the fauna of geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

8. Holarctic biogeographic group (Fig. 30)

The Holarctic species group have a major influence on the fauna of the geobotanical area and is also the largest longitudinal group in the world, which received a relatively equal distribution in the fauna of the regions. In the fauna of the Pavlodar region the group is represented by 23 species (Fig. 30). The largest number of species is found in Bayanaul-Karaganda geobotanical area – 19 species, among which 9 from temperate latitudinal group, 4 subboreal, 3 boreal and 2 boreal-subtropical species. In the Pavlodar geobotanical area there are 18 species, of which 9 are from the temperate latitudinal group, 4 are boreal, 3 are subboreal and 2 are boreal-subtropical species. In the fauna of the Chaglinsko-Seletinsko-Karasuk geobotanical area is 11 species, 6 from the temperate latitudinal group, 2 boreal-subtropical species. 1 boreal, 1 subboreal and 1 species from the boreomontane latitudinal group. In the Semipalatinsk geobotanical area there are 11 species, 5 from the temperate latitudinal group, 2 from the boreomontane group, 2 species from the boreal-subtropical species and 2 from the subboreal latitudinal group. In the fauna of the Arkalyk-Chingiz geobotanical area are two species from the boreal-subtropical latitudinal group. Despite the fact that the Holarctic group is the largest biogeographic region in the world, in the fauna of the Pavlodar region it is far from the most numerous, which is probably connected with the bionomic component: most species from this

longitudinal group are mesophilous and eurytopic species that are characteristic inhabitants of the deciduous forests. In the Pavlodar region such species are confined to such habitats as floodplain forests of the Irtysh River, floodplain forests of the rivers of the Kazakh Upland and mixed forests of the Kazakh Upland.

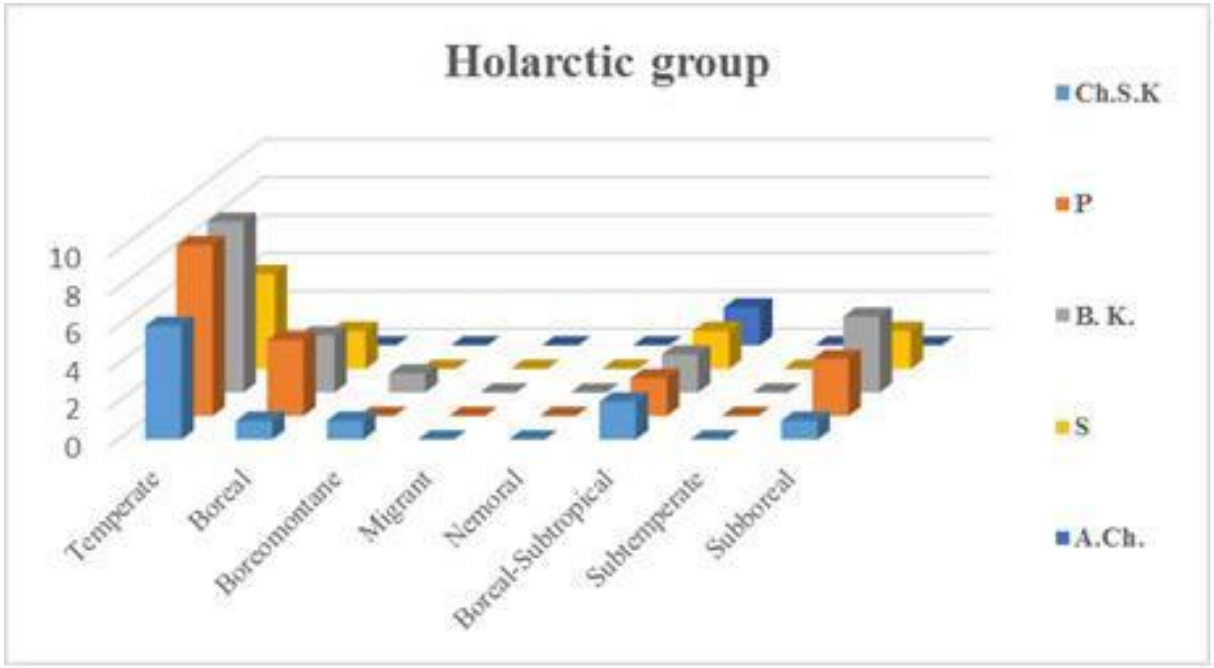

Figure 30. The influence of the Holarctic biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

9. Manchurian-Central Asian-Siberian biogeographic group (Fig. 31).

In the fauna of the Pavlodar region this biogeographic group is represented by 16 species (Fig. 31). The largest number of species is found in Bayanaul-Karaganda geobotanical area – 13 species, among which 10 species refers to subboreal and 3 species to boreal biogeographic groups. In the Pavlodar geobotanical area there are 6 species, of which 5 species refer to subboreal and one species to boreal latitudinal groups. There are 4 species in the fauna of the Chaglinsko-Seletinsko-Karasuk geobotanical area, of which 3 are subboreal and 1 species to boreal latitudinal groups. In the Semipalatinsk geobotanical area there are 4 species, of which 3 species refer to subboreal and 1 species to boreal biogeographic groups.

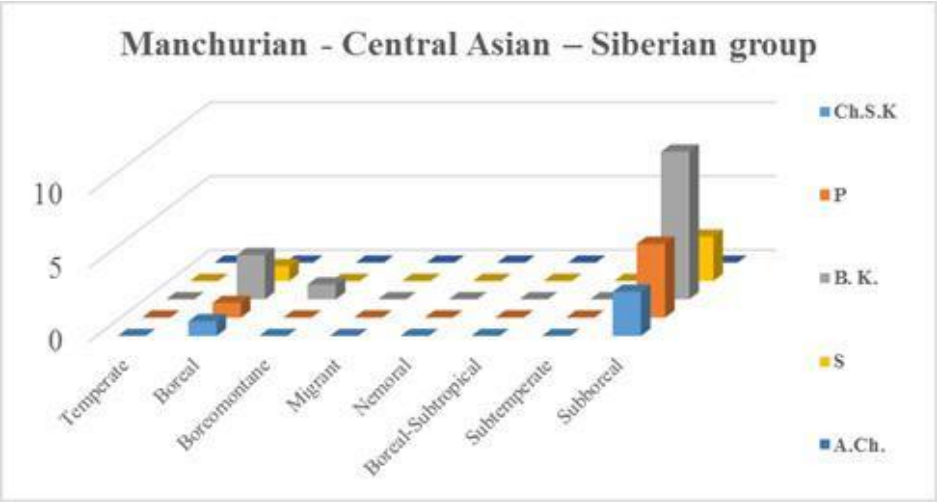

Figure 31. The influence of the Manchurian-Central Asian-Siberian biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

10. West Palaearctic-Central Asian biogeographic group (Fig. 32).

In the fauna of the Pavlodar region this biogeographic group is represented by 12 species (Fig. 32). The largest number of species is noted in the Bayanaul-Karaganda geobotanical area – 11 species from the subboreal latitudinal group. In the Pavlodar geobotanical area there are 7 species, from the subboreal latitudinal group. In the fauna of the Chaglinsko-Seletinsko-Karasuk geobotanical area is of two species from the subboreal latitudinal group. In Semipalatinsk geobotanical area – 2 species from the subboreal latitudinal group. There are no species from the West Palaearctic-Central Asian group in the fauna of the Arkalyk-Chingiz geobotanical area.

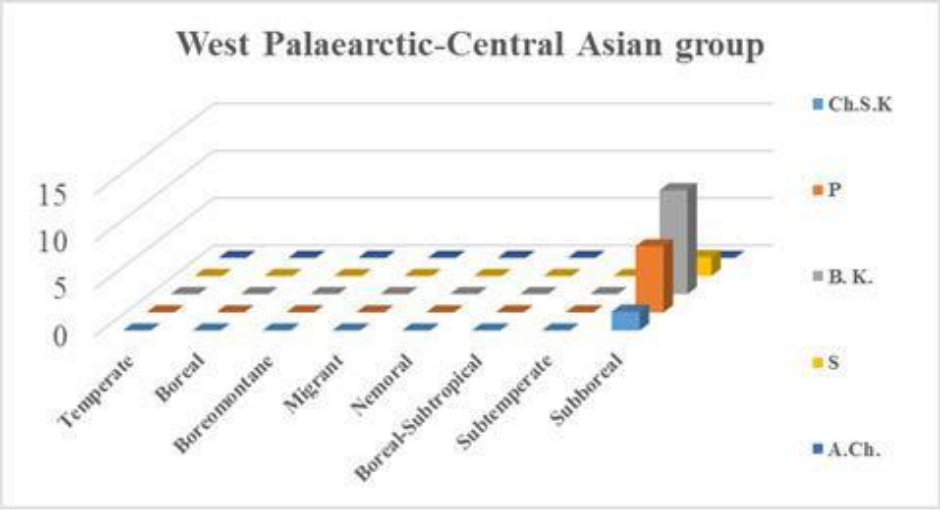

Figure 32. The influence of the West Palaearctic-Central Asian biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

11. Siberian-Mediterranean biogeographic group (Fig. 33).

In the fauna of Pavlodar region this biogeographic group is represented by 10 species. The largest number of species is found in Bayanaul-Karaganda geobotanical area – 8 species, 7 of them are subboreal and 1 species from temperate biogeographic groups (Fig. 33). In Pavlodar geobotanical area there are 6 species, of which 5 species refer to subboreal and 1 species to temperate latitudinal groups. In the fauna of the Chaglinsko-Seletinsko-Karasuk geobotanical area is 5 species, 4 species refer to the subboreal and 1 species to the temperate latitudinal groups. In Semipalatinsk geobotanical area – 4 species from the subboreal latitudinal group. There are no species from the Siberian-Mediterranean groups in the fauna of the Arkalyk-Chingiz geobotanical area.

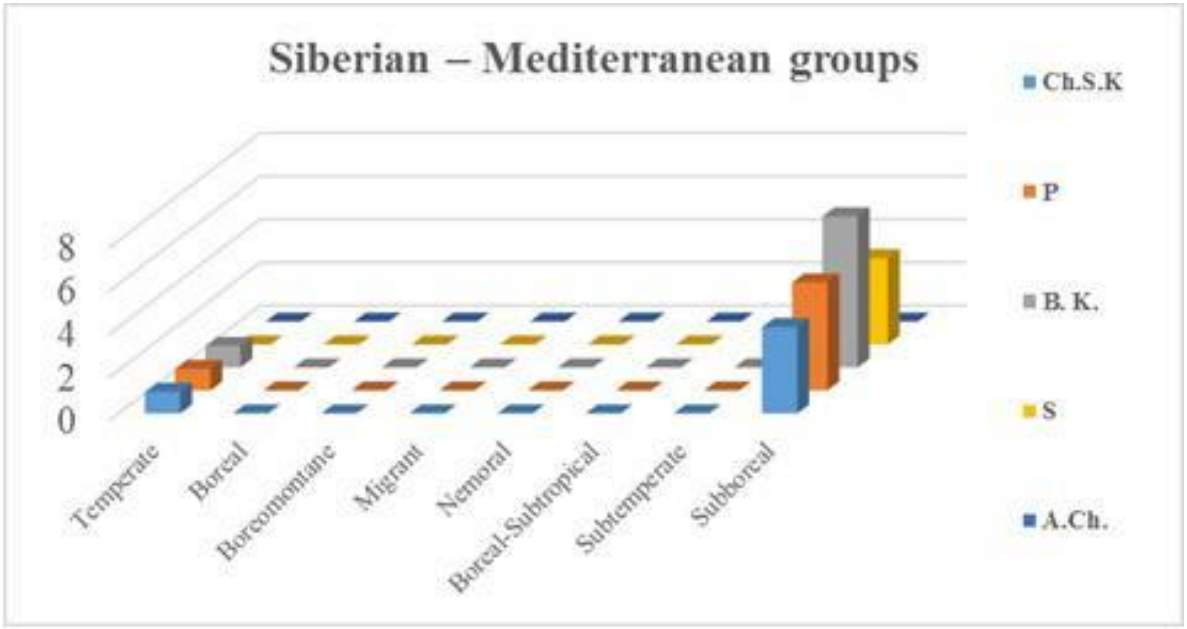

Figure 33. The influence of the Siberian-Mediterranean biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

12. Siberian-Central Asian biogeographic group (Fig. 34)

In the fauna of Pavlodar region the group is represented by 10 species (Fig. 34). The largest number of species is found in Bayanaul-Karaganda geobotanical area – 6 species from the subboreal biogeographic group. In the Pavlodar geobotanical area there are 5 species from the subboreal latitudinal group. In the fauna of the Chaglinsko-Seletinsko-Karasuk the geobotanical area is of two species from the subboreal latitudinal group. In the Semipalatinsk

geobotanical area there are 2 species from the subboreal biogeographic group. In the fauna Arkalyk-Chingiz geobotanical area 1 species from the subboreal latitudinal group.

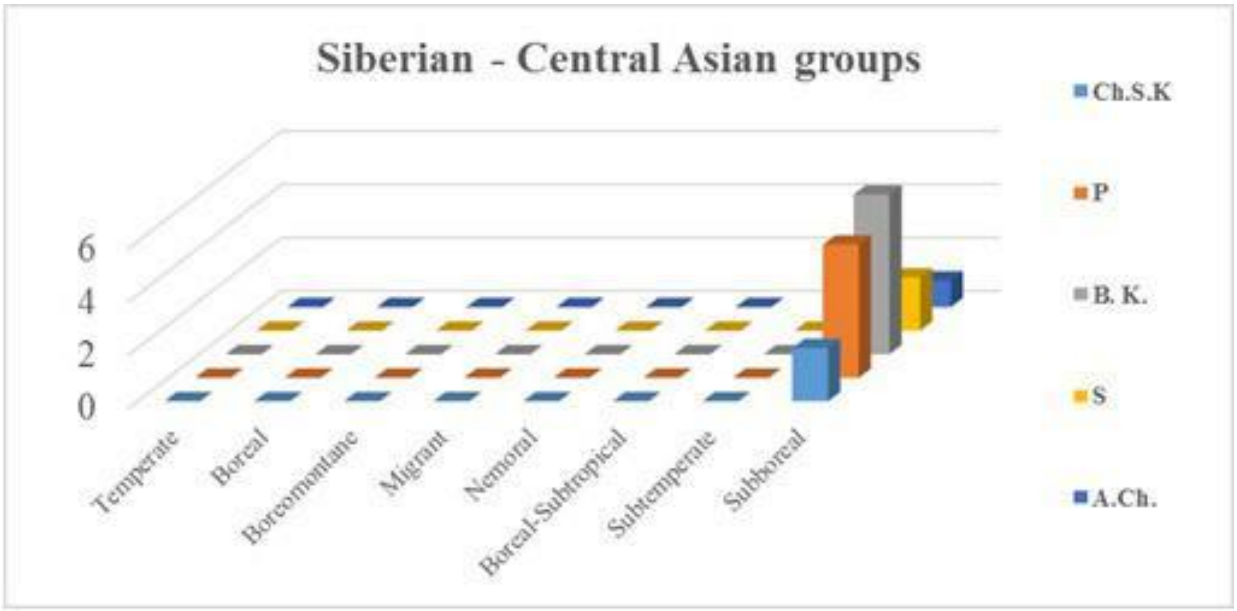

Figure 34. The influence of the Siberian-Central Asian biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

13. European-West Asian biogeographic group (Fig. 35).

In the fauna of the Pavlodar region this biogeographic group is represented by 9 species (Fig. 35). The largest number of species is found in Bayanaul-Karaganda geobotanical area – 6 species of them 2 species refers to temperate, 2 species refers to subboreal, 1 species refers to subtemperate and 1 species to boreal latitudinal groups. In Pavlodar geobotanical area there are 6 species, of which 5 species refer to subboreal and 1 species to temperate latitudinal groups. In the fauna of the Chaglinsko-Seletinsko-Karasuk geobotanical arrea are three species, two refer to the subboreal and one to the temperate latitudinal group. In Semipalatinsk geobotanical area – 2 species, 1 species from subtemperate and 1 species from subboreal latitudinal groups. In the fauna of Arkalyk-Chingiz geobotanical area there are 2 species, 1 species from subtemperate and 1 species from boreal biogeographic groups.

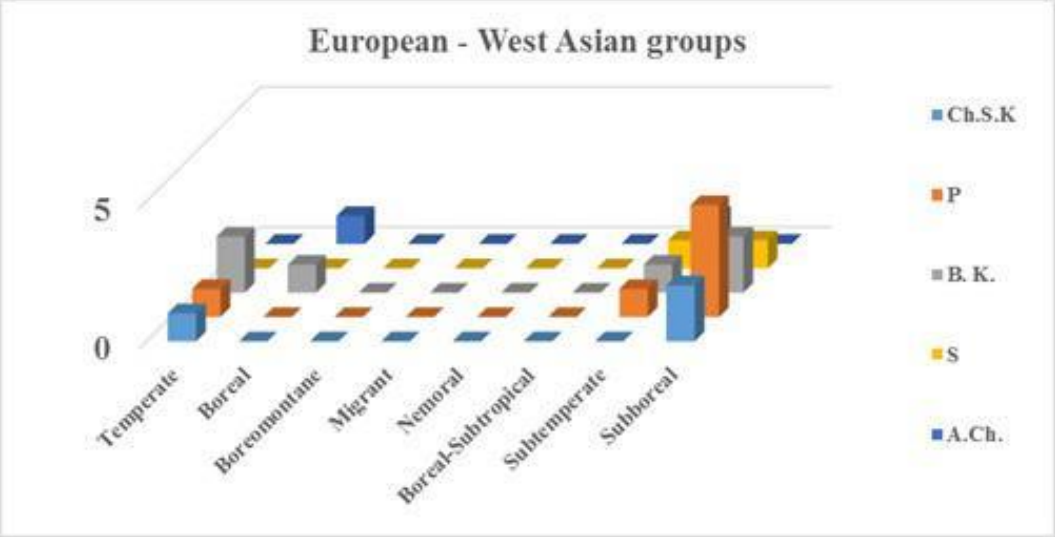

Figure 35. Influence of the European-West Asian biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region.

14. Subcosmopolitan biogeographic group (Fig. 36).

In the fauna of the Pavlodar region this biogeographioc group is represented by 8 species (Fig. 36). The largest number of species is found in Bayanaul-Karaganda geobotanical area – 6 species of which 3 species refer to temperate and 3 species refer to migrant latitudinal groups. In Pavlodar geobotanical area there are 5 species, 4 of them are temperate and 1 species of migrant latitudinal groups. In Semipalatinsk geobotanical area there are 4 species, 3 species refers to the temperate and 1 species to migrant latitudinal groups. There are no species from the West Palaearctic-Central Asian group in the fauna of the Arkalyk-Chingiz geobotanical area.

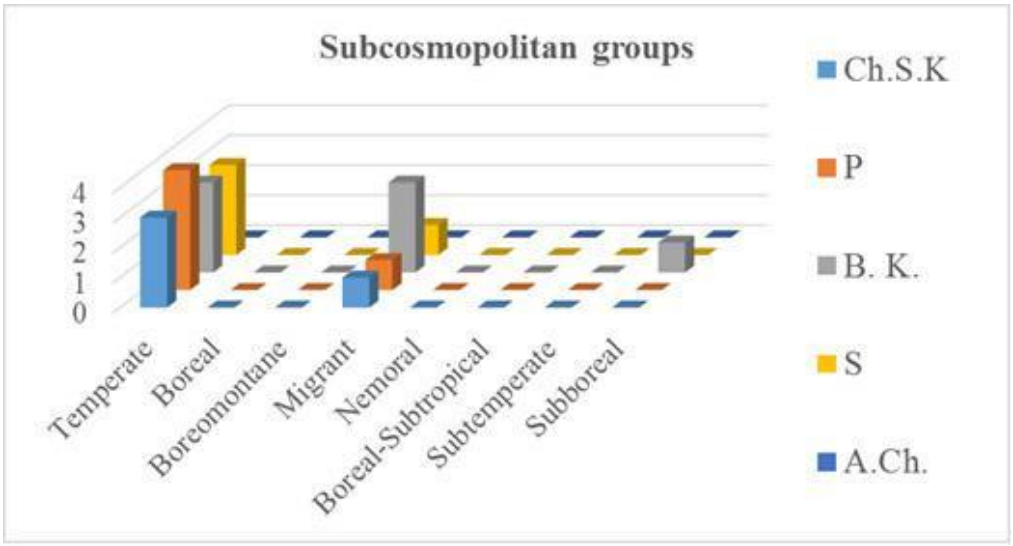

Figure 36. Influence of Subcosmopolitan biogeographic group of species on fauna of geobotanical regions of Pavlodar region in the section of latitudinal groups of areals.

15. Uralian-Kazakhstan biogeographic group (Fig. 37).

In the fauna of the Pavlodar region this biogeographic group is represented by 3 species (Fig. 37). The largest number of species is found in Bayanaul-Karaganda geobotanical area – 3 species from the subboreal latitudinal group. In the Pavlodar geobotanical area there is 1 species from the subboreal latitudinal group. There are no species from the Uralian-Kazakhstan groups in the Chaglinsko-Seletinsko-Karasuk geobotanical area, Semipalatinsk geobotanical area and in the fauna of the Arkalyk-Chingiz geobotanical area.

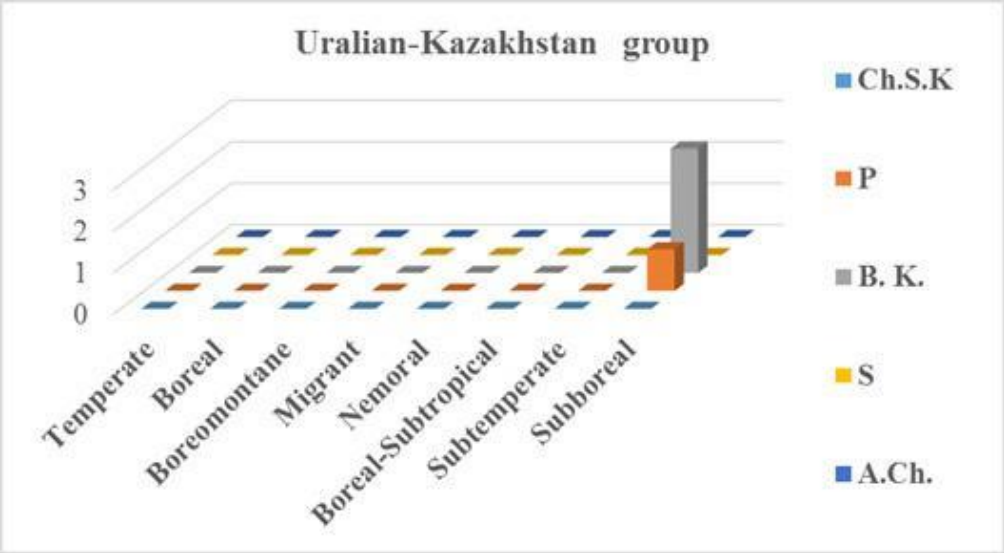

Figure 37. Influence of the Uralian-Kazakhstan biogeographic group of species on the fauna of geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

16. Siberian-American biogeographic group (Fig. 38).

In the fauna of the Pavlodar region the group consists of only one species from Bayanaul-Karaganda geobotanical area, the species belongs to the subboreal latitudinal group (Fig. 38). In the remaining geobotanical districts of the Pavlodar region, this biogeographic group is not present.

17. Siberian-Pacific biogeographic group (Fig. 39).

In the fauna of the Pavlodar region the group is represented by only 1 species from the Pavlodar geobotanical area (Fig. 39). In the remaining geobotanical districts of the Pavlodar region, this longitudinal group is not present.

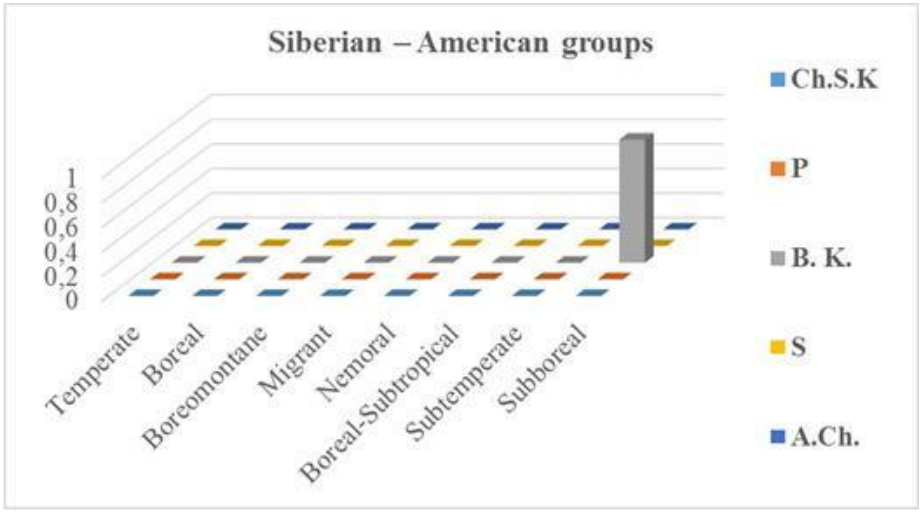

Figure 38. Influence of the Siberian-American biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

Figure 39. Influence of the Siberian-Pacific biogeographic group of species on the fauna of the geobotanical regions of the Pavlodar region in the section of latitudinal groups of areals.

5.7. Comparison of the Noctuoidea fauna of the Pavlodar region of Kazakhstan and Croatia

Northeast Kazakhstan and Croatia are on the same continent of Eurasia, at a considerable distance from each other (about 4000 km in a straight line), but in different subcontinents, Croatia in Europe, and Pavlodar region of Kazakhstan in Asia (Fig. 40). In addition to the fact that the two countries are on the same continent, they are united by a biogeographical region – the Palearctic, more precisely its western part, located on two continents – Africa and Eurasia.

The Western Palearctic entirely covers the European subcontinent, a part of the Asian subcontinent in the form of the territory of North Asia, which includes the West Siberian Plain, the Altai Mountainous Region, the Kazakh Upland, Tien Shan, Pamir-Alai, South-West Asia (Near Asia) the country of Atlas and the northern part of the Sahara (Isachenko, Shlyapnikov, 1989).

With a smaller area of its territory in relation to the area occupied by the Pavlodar region, Croatia's Noctuoidea fauna has higher taxonomic and species richness (Fig. 41) due to the influence of the temperate and subtropical Mediterranean climate, the diversity of natural and altitudinal zoning, the diversity of landscapes and floristic diversity.

Pavlodar region of Kazakhstan and Croatia probably have an ancient genetic connection at the level of the subboreal biota among themselves through the distant connection of their territories in different subcontinents within the vast ecoregion of the Eurasian steppe region.

In this study, a comparative analysis was carried out on the basis of the quantitative method of the Jaccard formula for establishing the percentage of fauna similarity between the two countries at different taxonomic levels

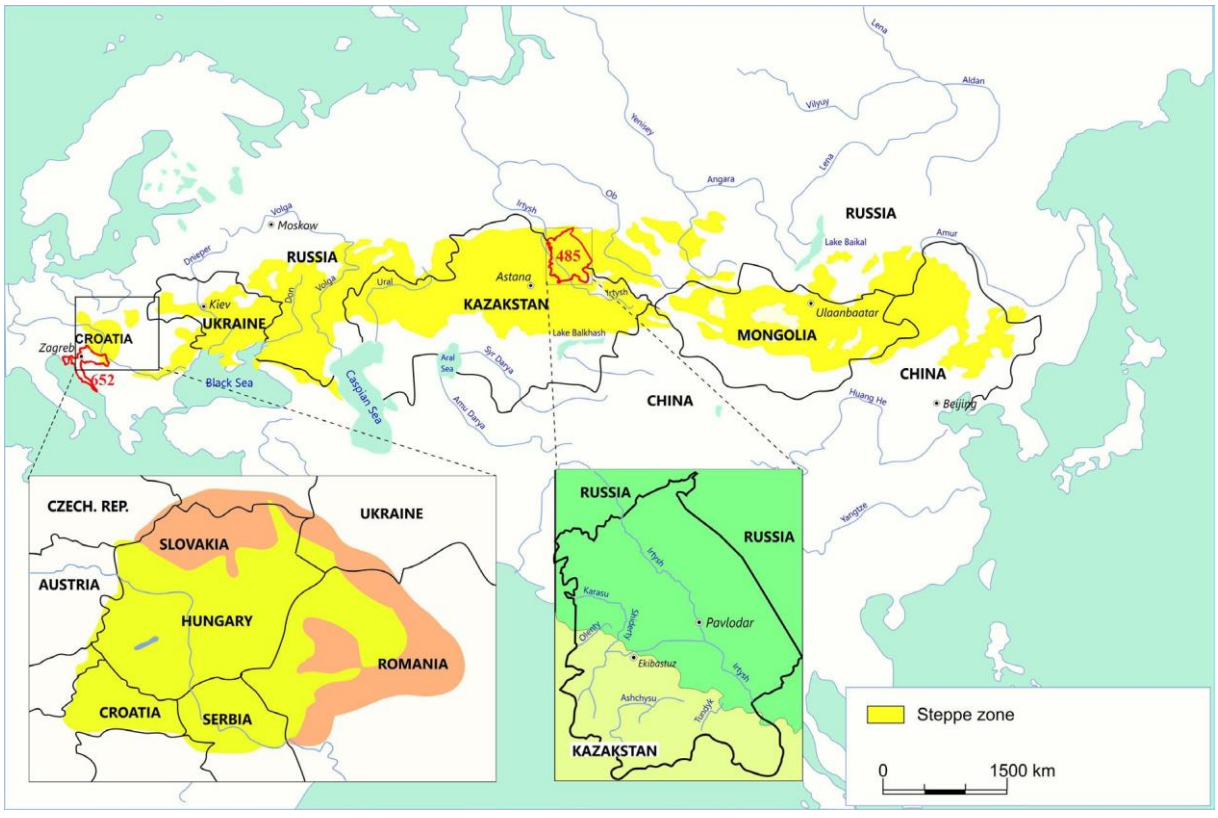

Figure 40. Borders and location of the Pavlodar region of Kazakhstan and Croatia in the Euro-Asian steppe region. (The map is based on the source Dúbravková & Hajnalová, 2012).

The taxonomic structure of the Noctuoidea fauna of Croatia consists of 4 Families, 31 Subfamilies, 48 Tribes, 28 Subtribes, 287 Genera, 81 Subgenera and 652 Species (Fig. 41). The taxonomic structure of the Noctuoidea fauna of the Pavlodar region of Kazakhstan consists of 3 Families, 27 Subfamilies, 45 Tribes, 25 Subtribes, 221 Genera, 68 Subgenera and 485 Species (Fig. 41).

The results of the comparison of the taxonomic composition of the fauna of Croatia and Pavlodar region of Kazakhstan show the percentage of the similarity: at the level of species – 23.57%, at the level of subgenus – 35.37%, at genus level – 32.14%, at subtribe – 40.74%, at the level tribe – 44.08%, at subfamily level – 46.55%, at the family level – 42.85%. Families of Croatia that are not found in the fauna of the Pavlodar region of Kazakhstan is family Euteliidae.

Common families for Croatia and the Pavlodar region are: Erebidae, Nolidae and Noctuidae. In Croatia was found family Euteliidae, which is not registrated in Pavlodar region. For Pavlodar and Croatia 27 subfamilies are common (Appendix 10). Five subfamilies in Croatia (Hypenodinae, Aventiinae, Euteliinae, Bagisarinae, Dilobinae) are missing in the Pavlodar fauna of the Noctuoidea (Appendix 10).

Thus, we see a slight similarity between the faunas of the Pavlodar region and Croatia at taxonomic levels. The highest similarity is observed at the level of species 23.57%. For the area of Pavlodar and Croatia we found 268 common species of the Noctuoidea (Appendix 10).

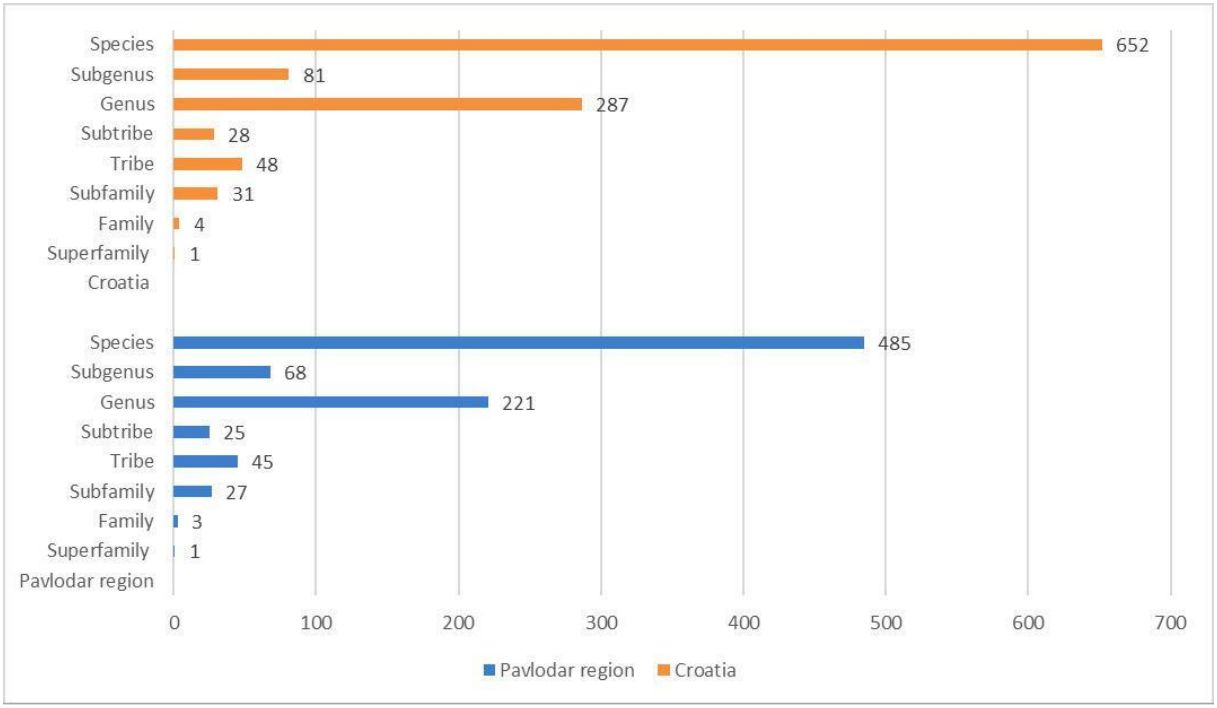

Figure 41. Taxonomic structure of the Noctuoidea fauna of Croatia and the Pavlodar region.

6. DISCUSSION

Faunistic features. Based on the results of the research and the hypothesis stablished, the following conclusions are drawn:

The Noctuoidea fauna of the Pavlodar region currently includes 485 species belonging to 3 families: Erebidae, with 11 subfamilies, 16 tribes, 7 subtribes, 57 genera, 5 subgenera and 101 species; Nolidae, with 2 subfamilies, 4 tribes, 3 subtribes, 4 genera and 8 species; and Noctuidae, with 14 subfamilies, 24 tribes, 27 subtribes, 160 genera, 62 subgenera and 376 species. My research added 411 species to the fauna list known by previous publications (74 species).

During my research 2 species new for science were discovered. 73 species are rare for the region.

For the Noctuoidea fauna of the Pavlodar region, 14 biominical groups are present. The dominating groups are mesophilous species (159 species, 32.72%) and xerophilic species (125 species, 25.72%).

The Noctuoidea fauna of the Pavlodar region has a similar quantitative distribution in the main morphological landscapes of the region. In the landscape of the West Siberian Plain, there are 394 species, in the Kazakh Upland – 366 species.

The faunistic features at the level of the geobotanical areas are not shown in this paper, since they have a high similarity with the dominant and specific types of landscape biotope groups.

Below is the structure of the Noctuoidea fauna in the geomorphological and landscape biotope groups of the Pavlodar region with data on the quantitative capacity of dominant and specific species.

In addition to the data on the taxonomic structure and species composition of the Noctuoidea fauna of the Pavlodar region given earlier in the chapter "Taxonomic diversity of the Noctuoidea fauna of the Pavlodar region", data were obtained reflecting its features in the form of quantitative data of the studied taxonomic groups in the analysis of fauna at the level of geobotanical areas and landscape biotope groups (Fig. 42).

In the taxonomic structure of geobotanical areas, the two areas, Bayanaul-Karaganda geobotanical area and Pavlodar geobotanical area, occupy a dominant position. The following similarities are observed among the Chaglinsko-Seletinsko-Karasuk geobotanical area the Semipalatinsk geobotanical area. Arkalyk-Chingiz geobotanical area has the lowest quantitative indicators (Fig. 42).

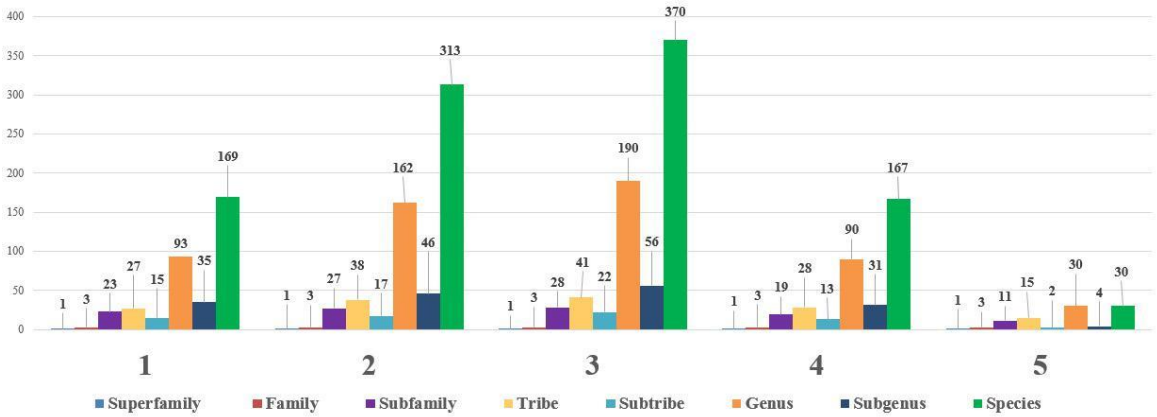

Figure 42. Taxonomic structure of the Noctuoidea fauna in the geobotanical areas of the Pavlodar region of Kazakhstan. 1 – Chaglinsko-Seletinsko-Karasuk geobotanical area, 2 – Pavlodar geobotanical area, 3 – Bayanaul-Karaganda geobotanical area, 4 – Semipalatinsk geobotanical area, 5 – Arkalyk-Chingiz geobotanical area.

The taxonomic structure of landscape biotope groups has a general relative homogeneity, except for groups that have no natural origin or groups with strong anthropogenic impact. Such groups include Agrocenosis and Deserted wormwood-feather grass steppes landscape-biotopic groups.

In addition to the data on the composition of Noctuoidea fauna of the Pavlodar region given earlier in the chapter "Fauna of Noctuoidea of the Pavlodar region of Kazakhstan", the data reflecting its features were obtained: the ratio of dominant and specific species in geomorphological and landscape biotope groups (Figs 43–44).

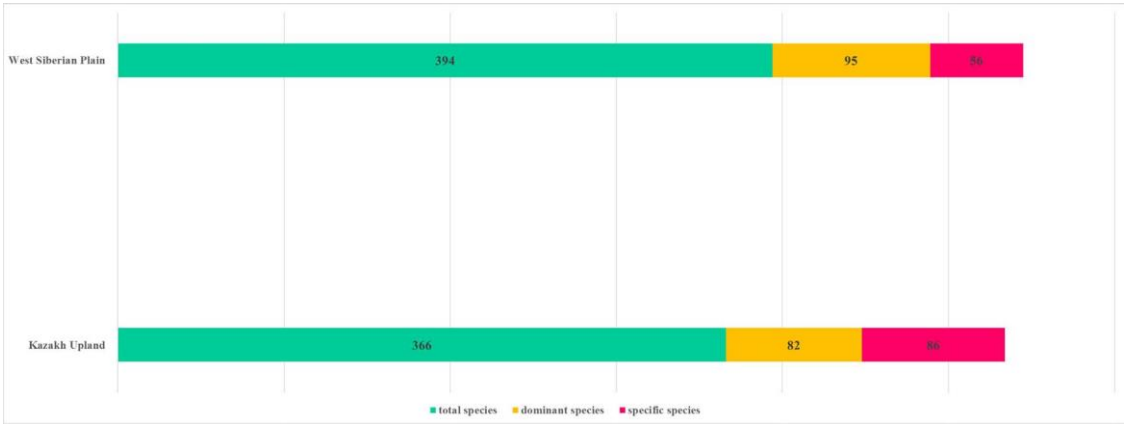

Figure 43. The structure of the Noctuoidea fauna in the main geomorphological landscapes of the Kazakh Upland (366 species) and the West Siberian Plain (394 species) in the Pavlodar region.

An analysis of the composition of the fauna showed that the West Siberian Plain geomorphological landscape is the largest group in terms of the number of its species, 394, of which 95 species are dominant and 56 specific. In Kazakh Upland, the geomorphological landscape includes 366 species, 82 dominant and 86 specific species. Thus, with a greater variety of common and dominant species, the West Siberian Plain has a lower number of specific species, and the Kazakh Upland geomorphological landscape is more compact and capacious in terms of specific species of territory.

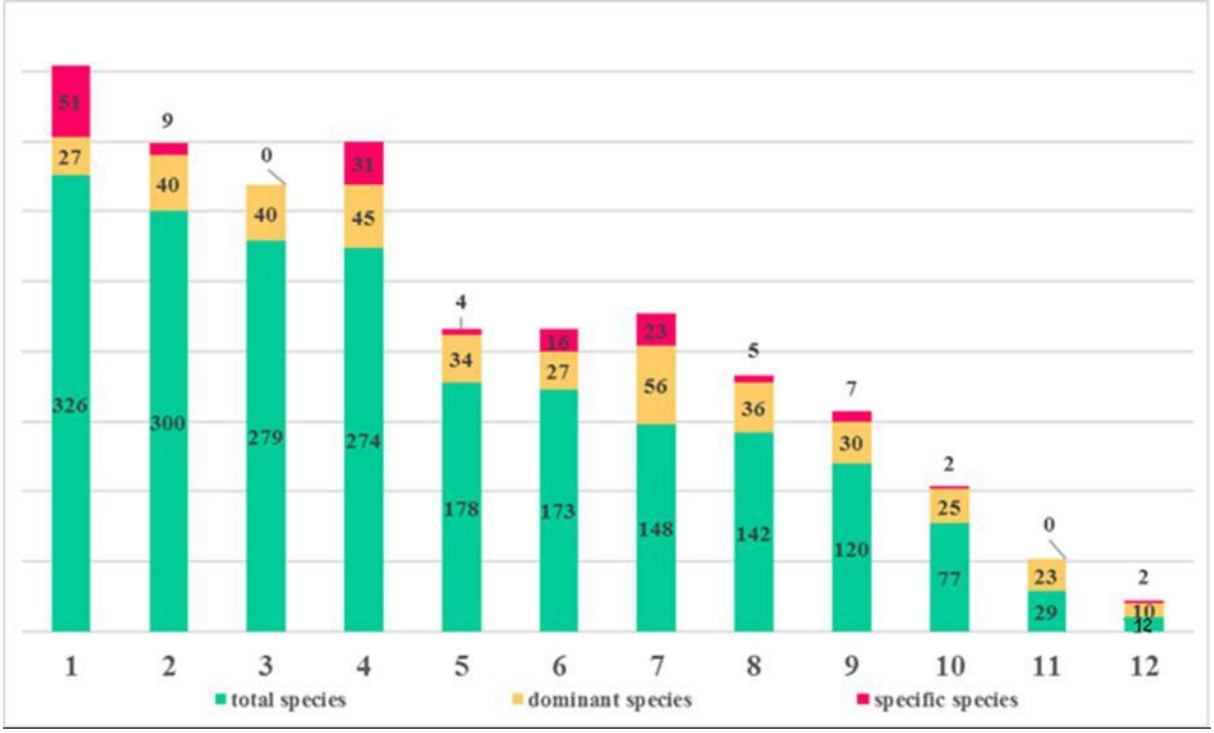

Figure 44. Quantitative structure of dominant, specific and general species in landscape-biotopic groups of the Noctuoidea fauna of the Pavlodar region of Kazakhstan. 1 – Shrubby mountain steppes, 2 – Floodplain forests of the Irtysh river, 3 – Residential landscape, 4 – Mixed forests of the Kazakh Upland, 5 – Floodplain forests of the Kazakh Uplands, 6 – Birch-aspen forests of the west Siberian Plain, 7 – Fescue-feather grass steppe, 8 – Saline and alkali soils of salt lakes, 9 – Pine relic of the West Siberian Plain, 10 – Birch-aspen forests of the Kazakh Uplands, 11 – Agrocenosis, 12 – Deserted wormwood-feather grass steppes.

Biogeographic features of Noctuoidea fauna of Pavlodar region of Kazakhstan

Pavlodar region, located on the Asian subcontinent (Northern Asia, Western Siberia) of the Eurasian continent lying within the Palaearctic in the Western Palearctic region (Emelyanov, 1974), on the border of two zoogeographical regions, the Boreal region and the Paratetis region (Kryzhanovsky, 2002; Zhirkov, 2017) in the Eurasian steppe region (Kryzhanovsky, 2002) of the Kazakhstan province, the East Kazakhstan subprovince (Lavrenko, 1947).

Geomoprphological landscapes

The Pavlodar region is in the junction zone of two geomorphological landscapes, the Kazakh Upland and the West Siberian Plain (Khamzina, 2013). In the territory of two geomorphological landscapes, three subzones of the steppe and five geobotanical districts, 12 landscape-biotopic groups are distinguished: Birch-aspen forests of the West Siberian Plain, Floodplain forests of the Irtysh river, Floodplain forests of the Kazakh Uplands, Pine relic forests of the West Siberian Plain, Mixed forests of the Kazakh Uplands, Birch-aspen forests of the Kazakh Uplands, Deserted wormwood-feather grass steppes, Fescue-feather grass steppes, Saline and alkali soils of salt lakes, Shrubby mountain steppe, Agrocenoses and Residential landscapes.

In the Kazakh Upland geomorphological landscape there are 5 landscape-biotopic groups: the Floodplain forests of the Kazakh Uplands, the Birch-aspen forests of the Kazakh Uplands, the Saline and the alkali soils of the salt lakes, Shrubby mountain steppe. In the West Siberian Plain geomorphologic landscape there are 8 landscape-biotopic groups: Birch-aspen forests of the West Siberian Plain, Floodplain forests of the Irtysh river, Floodplain forests of the Kazakh Uplands, Pine relics of the West Siberian Plains, Mixed forests of the Kazakh Uplands , Birch-aspen forests of the Kazakh Uplands, Deserted wormwood-feather grass steppes, Fescue-feather grass steppe, Saline and alkali soils of salt lakes, Shrubby mountain steppe, Agrocenosis, Residential landscape (Fig. 45).

Natural zoning and geobotanical districts

Pavlodar region is entirely located in the steppe zone, divided into three subzones containing 5 geobotanical areas (Fig. 46): I. Subzone of mixed herbs-fescue-feather grass steppes (Chaglinsko-Seletinsko-Karasuk geobotanical area); II. Subzone of fescue-feather grass steppes (Pavlodar geobotanical area, Semipalatinsk geobotanical area, Bayanaul-Karaganda geobotanical area); III. Subzone of wormwood-fescue-feather grass steppes (Arkalyk-Chingiz geobotanical

area). The largest faunistic richness of Noctuoidea is noted in the subzone of the fescue-feather grass steppes in the Bayanaul-Karaganda geobotanical area (368 species) and the Pavlodar geobotanical area (314 species) (Fig. 46).

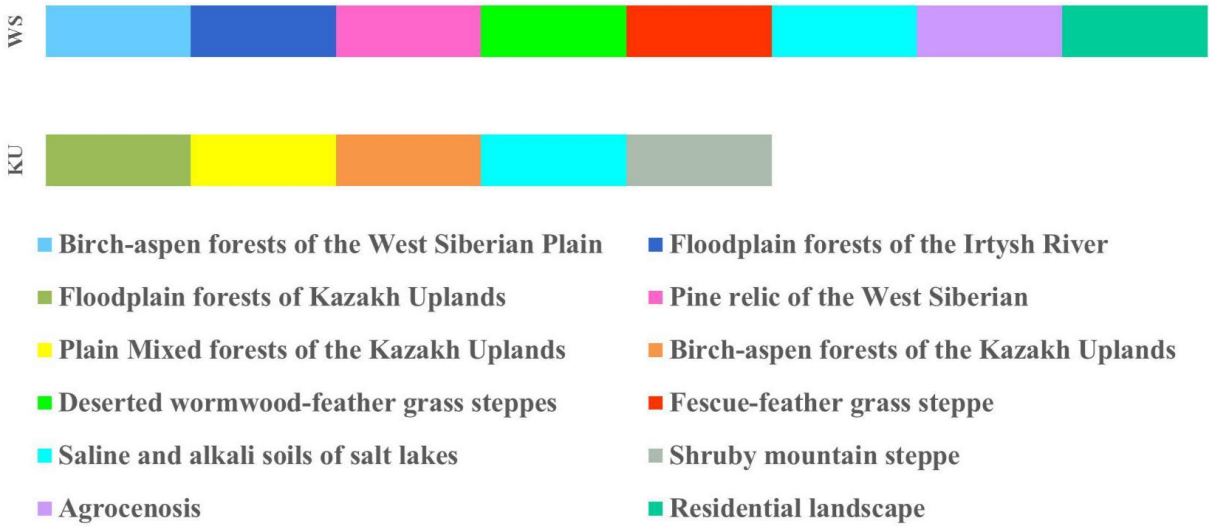

Figure 45. The presence of landscape-biotopic groups in the geomorphological landscapes of the Pavlodar region Kazakh Upland (KU) and West Siberian Plain (WS).

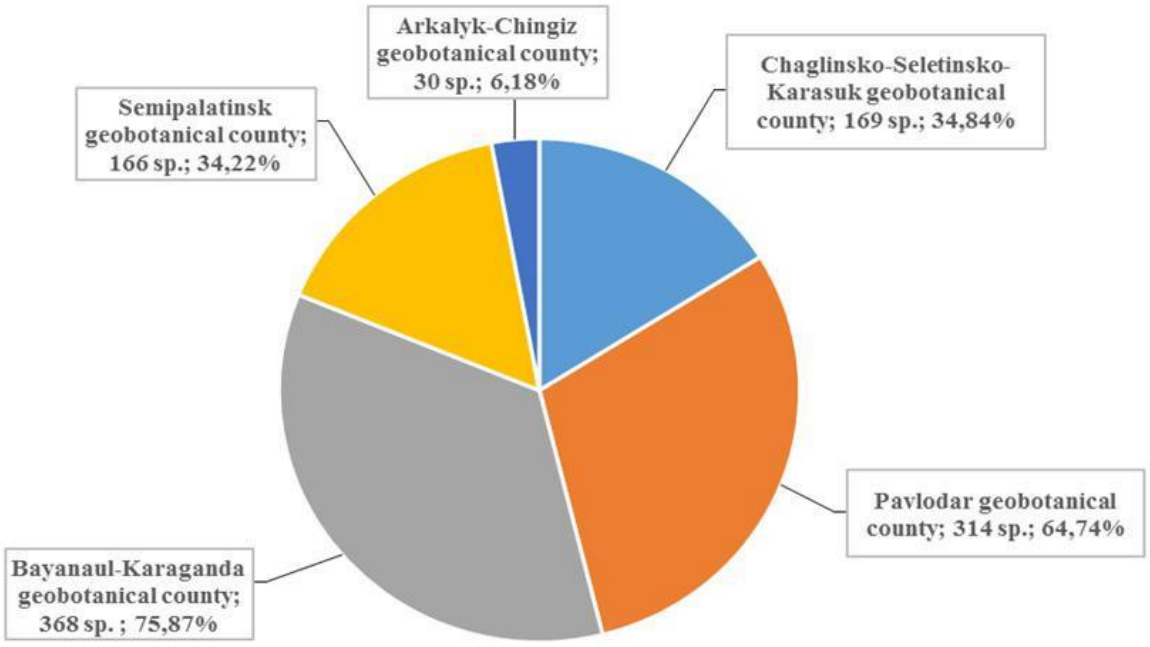

Figure 46. Richness of Noctuoidea species in the geobotanical regions of the Pavlodar region.

Bionomical structure

The bionomical structure of geobotanical areas is dominated by mesophilous species: Pavlodar geobotanical area – 114 species, Bayanaul-Karaganda geobotanical area – 106 species (Fig. 47).

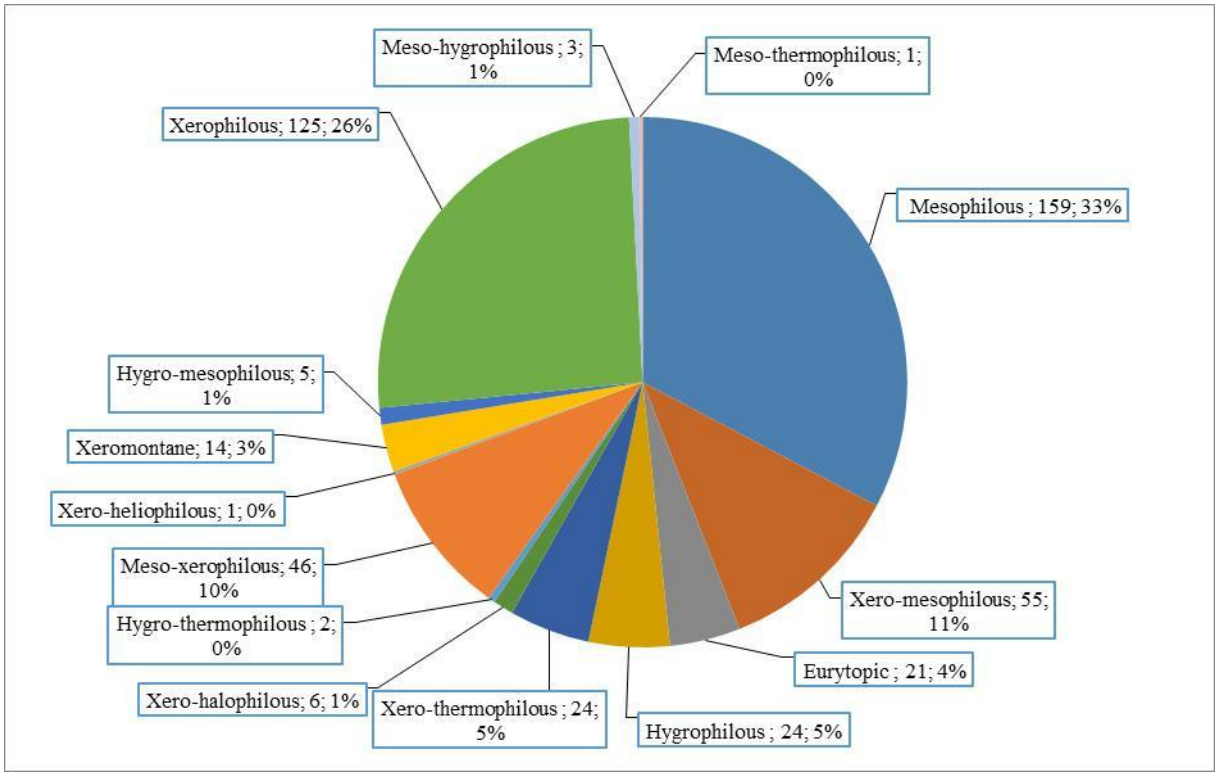

Figure 47. Bionomic groups in the Noctuoidea fauna of the Pavlodar region.

The high content of mesophilous (106 species) in the Bayanaul-Karaganda geobotanical area is associated with a wide hydrographic network of the district water bodies: the Shiderty, Olenta, Shidertinskoye reservoir, steppe and mountain lakes with snow and ground feeding. In the mountains of Bayanaul there are fresh lakes Toraigyr, Zhasybay, Sabyndykol, Birzhankol, many streams. The majority of steppe lakes are saline, with fresh groundwater recharge.

The high content of mesophilous (114 species) in the Pavlodar geobotanical area is due to the presence of the Irtysh River (the largest river in Kazakhstan), with its wide floodplain. The space in which the Bayanaul-Karaganda geobotanical area and the Pavlodar geobotanical area are characterized as a “steppe belt” or a subzone of the arid steppe, but this steppe has sufficient moisture which is the reason that the proportion of mesophilous species predominates.

Landscape-biotopic groups

Birch-aspen forests of the West Siberian Plain. This landscape-biotopic group is located in the north of the Pavlodar region. The vegetation period in this territory is 167 days, the amount of hours of sunshine is 2300 hours (Insebaev, 2017). The sum of temperatures and growth of vegetation has a direction vector from south to north. Species from the southern part of their distribution areal, characteristic for desert zones and desert steppes, sometimes penetrate into favorable warm years far to the north. To such species, probably refers the *Acantholipes regularis* (Hübner, 1813) marked in the region by one specimen, in June 2016 (Titov et al., 2017) and on the same dates noted even more north, in the Omsk region of Russia (Knyazev, 2016). This species was not recorded earlier in the Pavlodar region of Kazakhstan, as well as in the Omsk region of Russia.

The characteristic boreal species, which inhabit this landscape-biotopic group are not observed in other areas of the Pavlodar region. For example, *Brachionycha nubeculosa* (Esper, 1785) trophically confined to birch forests growing in the northeast of the Pavlodar region. Birch forests are distributed throughout the region unevenly and locally, but this species occurs only in the northeast of the region, in the Chaglinsko-Seletinsko-Karasuk geobotanical area. It is in the north of the region that forest landscapes have the most humid climate and a lower amount of annual positive temperatures.

Floodplain forests of the Irtysh river. This landscape-biotopic group is a part of the intrazonal system of the Irtysh River, which crosses all the subzones of the steppes of the Pavlodar region in the form of poplar-willow forests bringing in them from the south through plant associations elements of the biota characteristic of the Altai mountainous country or the deserts of Central Asia. Also, some species penetrate the valley of the Irtysh River and to the north, or from the north to the south, which is observed less often. For example, the European-Central Asian subboreal species *Catocala deducta* Eversmann 1843, which is widely distributed in the south and east of Kazakhstan, has been steadily recorded in recent years in the Pavlodar region mainly in the floodplain forests of the Irtysh River, having a limit of its distribution in the vicinity of the city of Pavlodar. North, this species is not observed, which is confirmed by many years of my research and the results of studies of Russian entomologists conducted down the flow of the Irtysh, on the territory of Russia in the Omsk region for more than a hundred years. The Irtysh River is of great importance in shaping the fauna in the Pavlodar region and beyond.

Floodplain forests of Kazakh Uplands. This landscape-biotopic group is part of another intrazonal river system, which entirely passes through the territory of the Kazakh Upland in the form of *Salix* floodplain forests of such rivers as Shiderty and Olenti. The distribution of species through such forests occurs in the west-east direction. So a whole spectrum of species penetrates from the steppes of the Southern Urals to the steppes of the Pavlodar region. Such species include *Catocala lupina* Herrich-Schäffer, 1851 registered in the floodplain forests of the Kazakh Upland and in the south of the Pavlodar region in Irtysh region, where the territory of the West Siberian Plain and the Kazakh Upland have the greatest territorial proximity.

Pine relic of the West Siberian Plain. This landscape-biotopic group is located in the southeast of the Pavlodar region. Pine forest ribbons are present in the territory of the Pavlodar region at the western limit of their distribution (not counting the pine forests of the Kazakh Upland). The forest area tends to disappear due to periodic fires and poaching wood. Pine forests as a regular intrazonal system are helps in enriching the steppe fauna of the Pavlodar region, with a spectrum of specific and rare species, such as the Euro-Siberian, subboreal species *Cucullia magnifica* (Freyer, 1839), Western Palaearctic, subboreal species *Eublemma polygramma* (Duponchel, 1842), European-Central Asian, subboreal species of *Egira anatolica* (Hering, 1933).

Mixed forests of the Kazakh Upland and Birch-aspen forests of the Kazakh Upland. These landscape-biotopic groups are located in the south-west of the Pavlodar region on the territory of Bayanaul mountain range and Kyzyltau mountains in Bayanaul state national nature park. These groups have a high faunistic resemblance to the Shrubby mountain landscape-biotope grouping in connection with the general location of these groups on the territory of the Kazakh Upland. The smallest species richness among these groups is noted in the Birch-aspen forests of the Kazakh Uplands.

Shrubby mountain steppe. This landscape-biotopic group occupies a dominant position in the species richness of the Noctuoidea fauna in the Pavlodar region due to a complex of factors, to which, first of all, the geographic location of the group in the southwest of the Pavlodar region can be attributed. This group occupies the entire north-eastern part of the Kazakh Upland within the Pavlodar region. The climate is generally milder in this area, the winters are warmer, the complex nature of the mountain steppe part has its own microclimate, during the growing season, numerous rock massifs accumulate solar energy and create a favorable temperature background for the stable activity of insects in the dark, deep gorges and caves in the hot time of day keep lower temperature, allowing the species to survive the heat.

Also, such shelters are used by the lepidopterous autumn-spring phenological group for estivation and hibernation. It should be noted also the presence of high floral diversity in this group, which has a great impact on the richness of fauna. In the mountains of Bayanaul Park, *Alnus glutinosa* is a relict species of dendroflora, which is a modern refugium for the species *Lithophane furcifera* (Hufnagel, 1766), at the trophic level. The species was found in the format of this study as new for the fauna of Kazakhstan (Titov et al., 2016).

Deserted wormwood-feather grass steppes. This landscape-biotopic group is located in the extreme south of the Pavlodar region. On its territory, the duration of the vegetation period is 178 days, the sum of the sunshine is 2400 hours (Insebaev, 2017). The group is poorly studied, which is connected with its location on the territory of the former Semipalatinsk test site. In the past, during the Soviet period, nuclear weapons tests were conducted at the site. The natural habitats of insects were disturbed by nuclear impact. At present, the danger in the affected areas remains. The landfill still has a radiation hazard for humans, since the radiation background in some of its places exceeds the permissible norm. Therefore, the data available to us are not sufficient. Presumably, this group in this territory has a high degree biodiverity, due to its zonal location, a high amount of positive annual temperatures and a specific floral diversity in the subzone of the desert steppe. This landscape needs a separate and special study.

Fescue-feather grass steppe. The steppes of this landscape-biotopic group occupy the main territory and the central place on the geobotanical regionalization of the Pavlodar region. The relief in this landscape has a disturbance only in the valley of the Irtysh River, otherwise the relief is represented by a homogeneous plain steppe. This landscape is completely within the borders of the Pavlodar geobotanical area (Lavrenko, 1947). The territory of this group is represented by a typical plain steppe. The peculiarity of this steppe is its secondary nature. In the middle of the 20th century, vast areas of the steppe of the Pavlodar region were plowed up for sowing grain crops. Half a century after the completion of large-scale cultivating of lands known as “tselina”, the steppes in a state of prolonged non disturbance could be restored. At present, the steppes in this group have high species richness.

Saline and alkali soils of salt lakes. This landscape-biotopic group is dispersed throughout the territory of Pavlodar region in the form of numerous salt lakes and solonchaks. Such landscapes are of great scientific interest, being extreme landscapes inhabited by specific halophilic and meso-hygrophilous species. Sometimes such habitats inhabit species characteristic of other extreme landscapes, for example, deserts and desert steppes. Thus, these species expand the areas of their distribution, mastering the oppressed landscapes outside the main distribution

area. The termination of the functioning of hydrological systems in the past formed a system of solonchaks and solonetzes in the places of ancient watercourses. Studying the geological age of the formation of these landscapes, one can determine the time of faunogenesis and trace the phylogenetic relationships between related species. In the fauna of the Pavlodar region such species include *Leiometopon simyrides* Staudinger, 1888, *Hydraecia osseola* (Staudinger, 1882), *Pseudohadena argyllostigma* (Varga & L. Ronkay, 1991), *Anarta vaciva* (Püngeler, 1906).

Agrocenoses. Agrocenoses nowadays occupy small area of the Pavlodar region (Fig. 48). At present, the agricultural sector has a tendency to renew and expand in the region after a long interruption of the collapse of the USSR. This trend in case of renewal of the agricultural sector in the region represents a danger for biodiversity. The Republican Methodological Center for Phytosanitary Diagnostics and Forecasts has been conducting annual work throughout the territory of Kazakhstan and in the Pavlodar region for many years. This organization monitors quarantine species in agrocenoses. In the primitive traps placed in the fields, a mass of species that do not have economic significance fall into, but which are of great importance for the knowledge of the fauna of the region. The data that this organization receives on the composition of fauna raises doubts, because the organization uses a morally outdated, primitive and inefficient method (Figs 48–50). When catching lepidopteran insects, this organization uses only odorous lures, the basis of which is sweet molasses. The use of such a method is in most cases not only inefficient, but also practically useless in the subsequent determination of species. Soaked in sweet molasses, insects are very difficult to determine. Unfortunately this method continues to be used. The work carried out by the author of this work on finding out the actual composition of fauna with the help of modern techniques remains the only one not only in the Pavlodar region, but throughout Kazakhstan.

Residential landscape. This landscape-biotopic group is similar in species richness to the Floodplain forests of the Irtysh river as the city of Pavlodar and many rural buildings in this group have a boundary position, on the one hand they are located on the bank of the Irtysh River in the immediate vicinity of the floodplain forest, on the other in steppe landscapes, biotopic groups, where a large territory is Fescue-feather grass steppe.

The natural activity of insects or “drift” as a rule covers large areas. Urban and rural buildings are not an obstacle to the movement of insects, and in this connection they cross the territory of buildings many times throughout the vegetative season. Sometimes insects linger in the residential area in connection with the light emanating from the settlements.

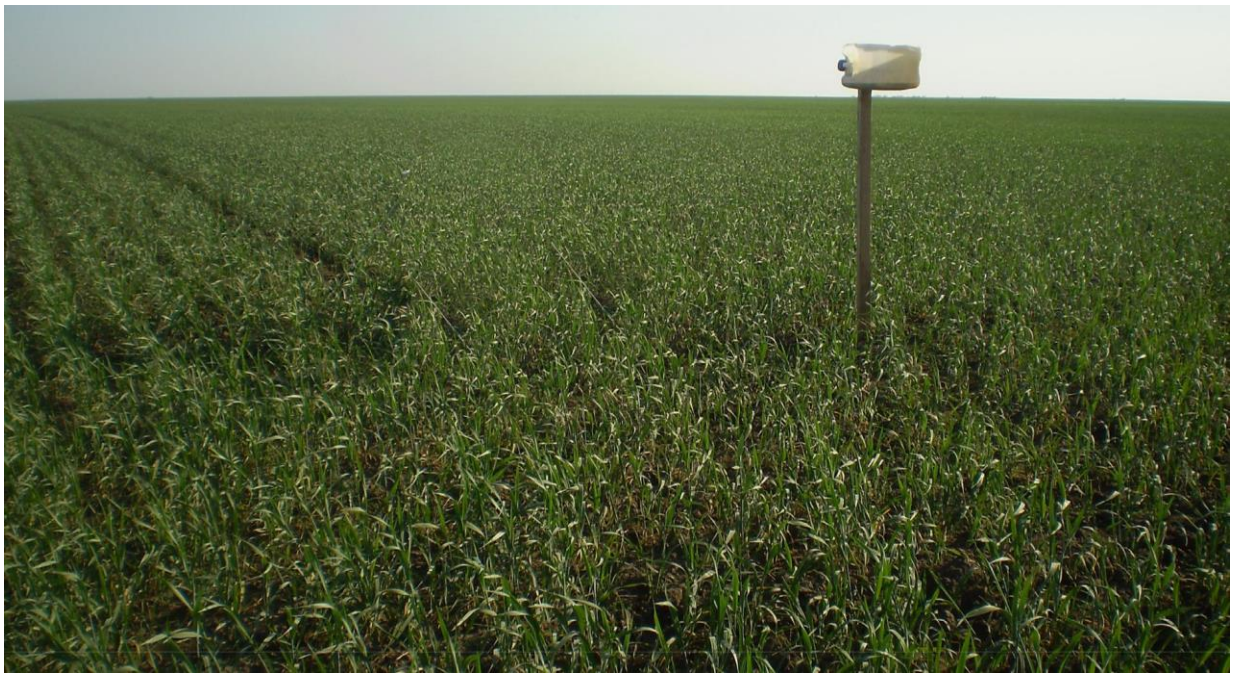

Figure 48. The trap with an odorous bait based on sweet molasses established on the cereal field by the Center of phytosanitary diagnostics and forecasts.

Figure 49. Refilling of trap with molasses.

Figure 50. Insects attracted by attractant.

Thus, residential buildings fulfill the negative role of an artificial collector, accumulating a part of biodiversity from natural landscapes. Chemical pollution, mechanical impact on the soil and nutritional deficiencies in different primitive stages make the residential landscape not suitable for the natural life cycle of insects in most cases. This negative process has a dynamic to increase such impact, as urban development is gradually expanding.

Anthropogenic impact on rural development can not be considered lower than in urban development, due to a specific impact, such as overgrazing, the impact of urea livestock on the chemical composition of the soil, seasonal arson (fires), cutting forests, plowing steppe. Big impact on the the biota of the landscapes of towns and villages probably have the concentration of the industrial complexes, the influence of which has not yet been reliably known.

Latitudinal areals.

The dominant latitudinal group of areals in the Noctuoidea fauna of the Pavlodar region is the Subboreal group – 296 species (61.03%) (Fig. 51). The next dominant group is the Temperate group of species – 136 species (28.04%) (Fig. 51). These faunal features are conditioned by the position of Pavlodara and Karakhstana and the climatic and vegetational features of these areas.

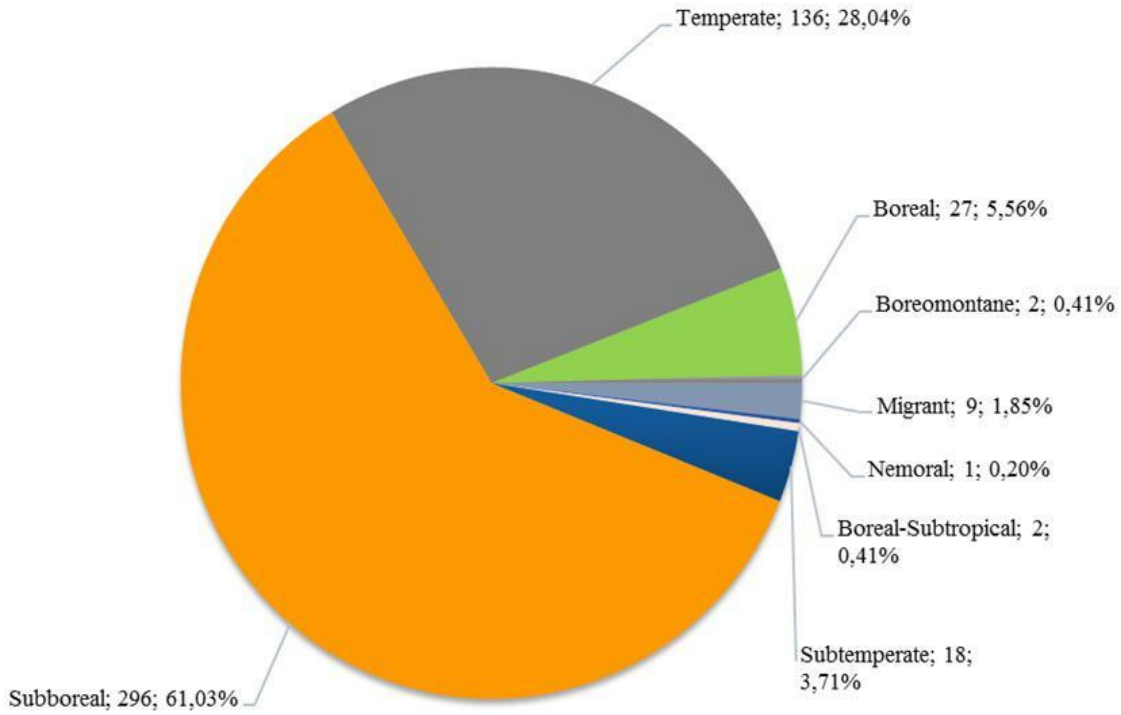

Figure 51. Ratio of groups with latitudinal distribution areal in the Noctuoidea fauna of Northeast Kazakhstan.

Longitudinal areals

The dominant position in the fauna of the Noctuoidea of the Pavlodar region have the Transpalearctic species group – 257 species (52.98%), together with the Eurasiatic Palaearctic species, which are widespread in the Palearctic, excluding North Africa – 163 species (33.54%) (Fig. 58). The subdominant groups are the West Palearctic species 121species (24.66%) and the European-Central Asian group of species is 57 species (11.75%) with a wide areal of distribution in Europe and Central Asia (Fig. 52). Species with such distribution have high ecological plasticity and often belong to temperate species – 136 species (27.87%). Another large group is the West Palaearctic one – 46 species (9.47%) (Fig. 52), distributed from the western part of the Palaearctic to Western Mongolia and parts of Eastern Siberia. Usually, species of this group are included in the largest group of the latitudinal line, subboreal species (296 species, 60.66%). Significant participation in the formation of the Noctuoidea fauna of the Pavlodar Region two subgroups of longitude line species have: the Transpalearctic (257 species, 52.89%) and the West Palearctic (121species, 24.66%). Thus, the groups European-Siberian (9.26%), European-Central Asian (11.70%), West Palaearctic (9.47%) and Trans-Palaearctic (8.44%) are relatively similar in numerical values relative to each other and have a major influence on the faunogenesis of the region. The Central Asian group (35 species, 7,2%) with its Central Asian species (25 species, 5.14%) in the areal of the latitudinal distribution line consists almost entirely of subboreal species.

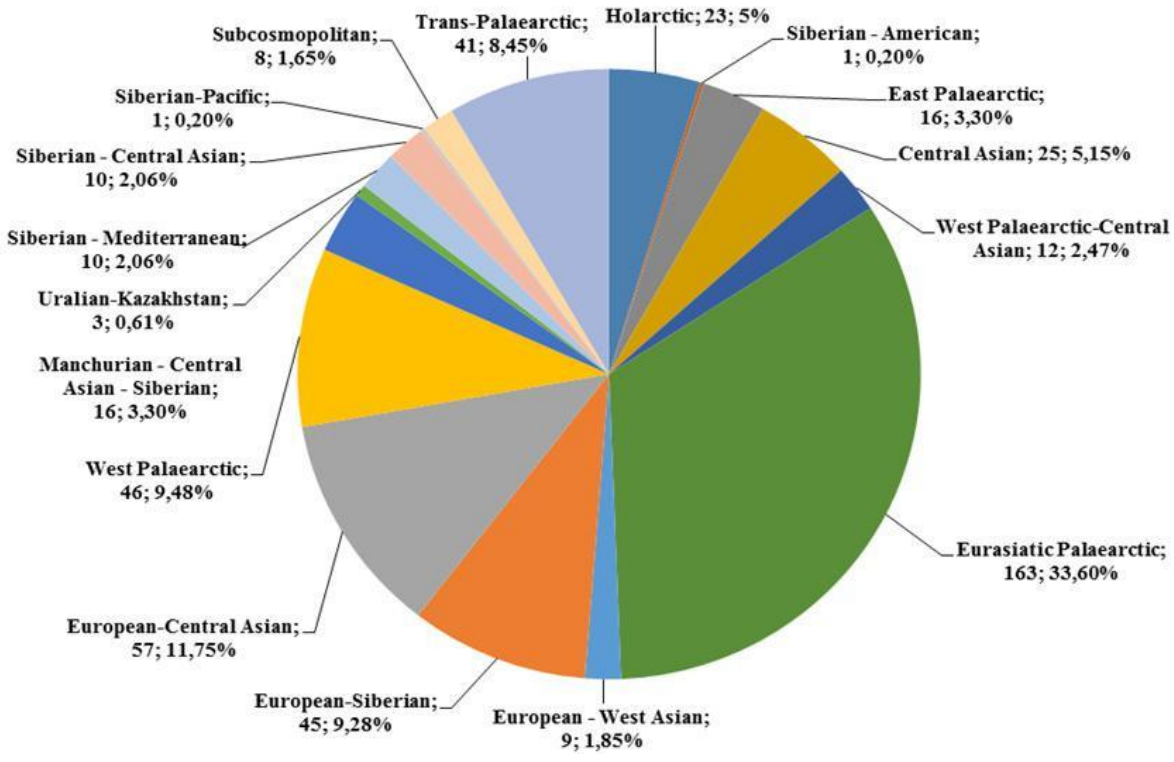

Figure 52. The biogeographic types in the fauna Noctuoidea of the Pavlodar Region.

The Holarctic subgroup (24 species, 4.94%) with its group of the same name Holarctic species (23 species, 4.73%) (Fig. 52) included in the latitudinal distribution are mostly represented by temperate species. The East Palaearctic species overrides the abundance of large arealogical associations in the fauna of the Pavlodar Region The percentage of other supragroups and groups of distributional areas is small.

Phenology of imago of the Noctuoidea fauna of the Pavlodar region

The largest phenotype in the fauna of the Pavlodar region is the early-summer phenological group: 256 species (52.78%). The second group is the late-summer phenological group: 160 species (32.99%) (Fig. 53).

The timing of the activity of species from different phenological groups is related only to the dynamics of the cycles of metoclimate conditions. In the mountainous regions adjacent to the Pavlodar region, the high altitude zone has a major factor in the phenological activity of the species, but since the relief of the Pavlodar region is mainly a steppe plain, and the mountain ranges of the Kazakh Upland have insignificant altitude for the formation of high-altitude belts, therefore the decisive factor is only meteoclimate conditions and growth of vegetation in a direction from the south to the north. In this aspect, there are differences in the fauna, as the phenological groups begin their activity later in the north of the region than in the south, but at the same time the phenological difference shrinks rapidly with increasing sum of temperatures.

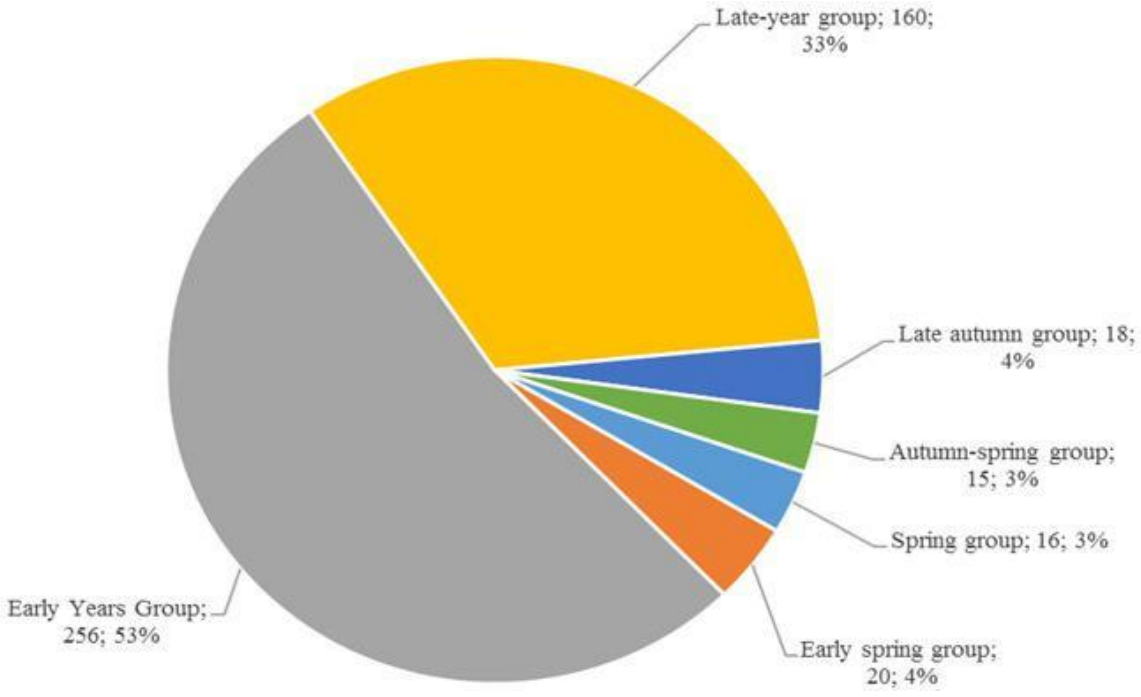

Figure 53. Phenological groups of Noctuoidea of the Pavlodar Region.

Phytophagous Noctuoidea have close trophic connections with host plants. This relationship determines the distribution of species. The boundaries of distribution areas of species often coincide with the boundaries of characteristic phytocenosis, especially it corresponds to the monophagous and narrow oligophagous species. The distribution of species is also influenced by terrain, landscapes, climate, temperature and humidity, which vary throughout the continent.

For the main system of classification of Noctuoidea species distribution areals of North-East Kazakhstan, with minor modifications, a classification according to Kononenko (2005) and Volynkin (2012) based on Gorodkov (1984) was adopted for Pavlodar and Croatia – composition of the faunas. A considerable part of the territory of the Western Palearctic lies within the territory occupied by the Paratethys ocean, in the Early Cenozoic period. In modern times, steppes and deserts dominate in this area. The steppe part of this vast space is known as the Eurasian steppe region, stretching from Eastern Mongolia, the Dauria Shallow-hills in the east to the Danube plains of Europe in the west (Bykov, 1979; Chibilev, 1992).

The territories of the Pavlodar region of Kazakhstan and Croatia are situated in the West Palearctic and cover different types of natural landscapes. The Pavlodar region of Kazakhstan is located in the subboreal (steppe) landscape. Croatia has a more complex polyzonal structure of natural landscapes than the Pavlodar region. On its territory there are Mediterranean, alpine, continental and steppe (Pannonian) landscapes (Plavac, 2006), or West Pontic floristic province. (Willner et al., 2017). The territory of Croatia occupies 56.594 km^2, (Kovač, 2011), and the Pavlodar region of Kazakhstan occupies 124.800 km^2 (Insebaev, 2017).

The sharply continental climate predominates in the territory of the Pavlodar region (Insebaev, 2017), whereas in Croatia predominates the subtropical Mediterranean and temperate continental climate (Kovač, 2010).

The results of the comparison of the taxonomic composition of the faunas of Croatia and the Pavlodar region of Kazakhstan (Fig. 54 a–b) on the basis of the quantitative method of the Jaccard formula showed that the greatest similarity between the faunas of the two countries is observed at the level of species 23.57%. 268 species are common for both regions (Appendix 10). There is no noticeable similarity at the level of longitudinal groups of areals. The common species that are included in the wide arealogical groups of the Palearctic, which cover extensive areas and constitute a species background in the fauna of many countries, prevail.

Figure 54. a) Republic of Kahzakhstan

Figure 54. b) Republic of Croatia.

Thus, with a small taxonomic and faunistic similarity between the faunas of the Pavlodar region of Kazakhstan and Croatia, there is a relatively small (Appendix 10) similarity in the level of arealogical groups, especially species from latitudinal groups of areals. Similarity at the bionomical level is observed among the mesophilous and xerophilous species. Obviously, the confluence of many common species and groups in the fauna of the Pavlodar region of Kazakhstan and Croatia is associated with the Pontic-Pannonian steppe enclave, the space in northern Croatia and the neighboring countries of Central and South-Eastern Europe. These local steppe spaces represent the westernmost steppes of the Eurasian steppe region. The steppe part of northern Croatia does not occupy a large space in relation to the rest of its territory, which makes it necessary to carry out a special study and comparison of the territory of Croatia and neighboring countries with data on the composition of the fauna of the Pavlodar region in order to obtain the most accurate results of similarities in faunas and communications of biota of steppes in the space of the Eurasian steppe region.

7. CONCLUSIONS

Based on the results of the research and the hypothesis established, the following conclusions are drawn:

The Noctuoidea fauna of the Pavlodar region currently includes 485 species belonging to 3 families: Erebidae, with 11 subfamilies, 16 tribes, 7 subtribes, 57 genera, 5 subgenera and 101 species; Nolidae, with 2 subfamilies, 4 tribes, 3 subtribes, 4 genera and 8 species; and Noctuidae, with 14 subfamilies, 24 tribes, 27 subtribes, 160 genera, 62 subgenera and 376 species. My research added 411 species to the fauna list known by previous publications (74 species).

During my research 2 species new for science were discovered. 73 species are rare for the region.

Species of the Noctuoidea fauna of the Pavlodar region belong to 8 altitudinal groups of areals and to 6 supergroups and 17 groups of longitudinal areals. Among altitudinal groups, the subboreal one dominates (296 species, 60.66%); among longitudinal groups, the Transpalearctic group dominates (257 species, 52.89%).

The landscape-biotope structure of Pavlodar region is conditionally divided into 12 landscape-biotopic groups, 4 groups are present in Kazakh Upland and 8 groups are present in West Siberian Plain.

For the Noctuoidea fauna of the Pavlodar region, 14 biominical groups are present. The dominating groups are mesophilous species (159 species, 32.72%) and xerophilic species (125 species, 25.72%).

Among the geomorphological landscapes, the Noctuoidea fauna of the Kazakh Upland includes 366 species (75.46%), 82 species dominate, 86 species are specific. In the West Siberian Plain, 394 species (81.23%) were found, among them, 95 species are dominant and 56 species are specific. The most species-rich kind of landscape-biotopic groups is shruby mountain steppes (326 species, 67.21%).

The Noctuoidea fauna of the Pavlodar region is distributed in 3 steppe subzones and 5 geobotanical districts. The most species-rich subzone is fescue-feather grass steppes distribute in the Bayanaul-Karaganda geobotanical area (367 species, 75.67%) and Pavlodar geobotanical area (314 species, 64.74%).

There are 6 phenological groups in the Noctuoidea fauna of the Pavlodar region. The dominant is the early summer phenological group: 256 species (52.78%). The subdominant is the late summer phenological group: 160 species (32.99%).

The boundaries of distribution areas of species often coincide with the boundaries of characteristic phytocenosis, especially it corresponds to the monophagous and narrow oligophagous species. The distribution of species is also influenced by terrain, landscapes, climate, temperature and humidity, which vary throughout the continent.

The similarity between the Noctuoidea fauna in Croatia and Pavlodar region of Kazakhstan is observed at the species level: 23.57%, 268 species.

These research were conducted on the territory of the Pavlodar region, including the following specially protected natural territories: Bayanaul State National Nature Park, Kyzyltau State Nature Reserve, Zoological Natural Reserve “Ertis zhalaluy” and State Forest Natural Reserve "Ertis Ormany". The results will be introduced to these nature protection structures, to preserve the richness of the Lepidoptera fauna of the specially protected areas of the Pavlodar region, which is important for the Kazakhstan and the world. The work conducted is important because it was made for the first time.

8. LITERATURE

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9. CURRICULUM VITAE

Personal data

I was born on 19.05.1980 in the city of Vichuga in the Ivanovo region, Russia. Since 1985, I live in Kazakhstan.

Education

In 2006, I graduated from the Pavlodar State Pedagogical Institute, specializing in “Biology”, then entered the magistracy on specialty 6N0113 – “Biology” at the Pavlodar State Pedagogical Institute, which I graduated from in 2009.

In 2015 I started PhD study in Faculty of Science, University of Zagreb in Croatia. PhD topic: Faunistic, taxonomic and biogeographical features of superfamily Noctuoidea (Insecta, Lepidoptera) in North-Eastern Kazakhstan (Pavlodar region).

Employment

15.09.1997–15.09.1998 he began work as a zoologist at the Museum of Nature at the Department of Zoology, Botany and Physiology of Pavlodar State University named after S. Toraigyrov.

From 2002 to 2007 specialist of the highest qualification level of the Educational and Museum Complex of the Pavlodar State Pedagogical Institute.

Since January 2007, I work for the Research Environmental Centre “Monitoring” (Pavlodar State University) as a junior researcher.

Major projects

1) During three years (2010–2013), I was engaged in an international research project "Forest regeneration and biodiversity at the forest-steppe border of the Altay and Khangay Mountains under contrasting developments of livestock numbers in Kazakhstan and Mongolia", where I conducted entomological studies.

2) "Study, systematization and preservation of natural (paleontological) heritage of Pavlodar region".

List of scientific papers

1. Dubatolov, V.V. & **Titov, S.V.** (2011). Discovery of *Acherontia atropos* L. (Lepidoptera, Sphingidae) in north-east Kazakhstan. *Amurian Zoological Journal*, 3 (1): 58–59. [in English and Russian]

2. Yakovlev, R.V., **Titov S.V.** & Egorov P.V. (2011). New subspecies of *Parnassius nomion* from Northern Kazakhstan. *Nota Lepidopterologica*, 34 (1): 87–80.

3. **Titov, S.** & Volynkin, A. (2013). *Cucullia tiefi* Tshetverikov, 1956 (Insecta: Lepidoptera: Noctuidae): New data on the distribution. *Check List*, 9 (4): 838–839.

4. Volynkin A.V. & **Titov S.V.** (2014). A new species of *Orthosia* Ochsenheimer, 1816 from North-East Kazakhstan (Lepidoptera, Noctuidae). *Zootaxa*, 3753 (5): 494–500.

5. Volynkin A.V., **Titov S.V.** & Ivanova, M.S. (2014). A new species of *Euchalcia* Hübner, [1821] from Kazakhstan (Lepidoptera, Noctuidae). *Zootaxa*, 3784 (4): 493–497.

6. Hauck, M., Dulamsuren, C., Bayartogtokh, B., Ulykpan, K., Burkitbaeva, U.D., Otgonjargal, E., **Titov, S.V.**, Enkhbayar, T., Sundetpaev, A.K., Beket, U. & Leuschner, C. (2014). Relationships between the diversity patterns of vascular plants, lichens and invertebrates in the Central Asian forest-steppe ecotone. *Biodiversity Conservation*, 23 (5):1105–1117.

7. Volynkin A.V., **Titov S.V.** & Knyazev S.A. (2014) A new *Perigrapha* Lederer, 1857 from South Kazakhstan (Lepidoptera, Noctuidae). *Zootaxa*, 3856 (2): 292–296.

8. Volynkin, A.V., Egorov, P.V., Rakhimov, R.D. & Titov, S.V. (2015). Description of male of *Dasypolia volynkini* Ronkay, Ronkay, Gyulai & Pekarsky, 2014 with data on bionomics of the species. *Zootaxa*, 3936 (2): 296–300.

9. Yakovlev, R.V.; Gus'kova, E.V.; Doroshkin, V.V. & **Titov, S. V**. Sphingidae of the Mongolian Altai (Lepidoptera: Sphingidae). *SHILAP. Revista de Lepidopterologia*, 43 (171): 467–478.

10. Ustjuzhanin P., **Titov S.**, Kovtunovich V. & Akhmetov K. (2016). The Pterophorideae Fauna (Lepidoptera) of Pavlodar region. *Biological Bulletin of Bogdan Chmelnitskiy Melitopol State Pedagogical University*, 6 (3): 73–79.

11. Volynkin A.V., **Titov S.V.** & Černila M. (2016). Check list Of Noctuid Moths (Lepidoptera: Noctuidae and Erebidae excluding Lymantriinae and Arctiinae) from the Saur Mountains (East Kazakhstan and North-East China) *Biological Bulletin of Bogdan Chmelnitskiy Melitopol State Pedagogical University*, 6 (2): 87–97.

12. Volynkin A.V. & **Titov S.V.** (2016). Description of female of *Thargelia leucostigma* Varga & l. Ronkay, 1991 with new data on distribution of the species (Lepidoptera: Noctuidae). *Biological Bulletin of Bogdan Chmelnitskiy Melitopol State Pedagogical University*, 6 (2): 124–128.

13. Volynkin A.V. & **Titov S.V.** (2016). First record of *Caradrina monssacralis* (Varga & L. Ronkay, 1991) (Insecta: Lepidoptera, Noctuidae) from Kazakhstan. *Check List*, 12 (3), Article 1905: 1–4.

14. **Titov S. V. &** Volynkin A.V. (2016). First record of *Pseudohadena argyllostigma* (Varga & Ronkay, 1991) for Kazakhstan, with a catalogue of the genus Pseudohadena Alphéraky, 1889 of Kazakhstan (Lepidoptera, Noctuidae). *Biological Bulletin of Bogdan Chmelnitskiy Melitopol State Pedagogical University*, 6 (1): 319–325.

15. **Titov**, S., Volynkin, A., Kamkin, V. & Černila, M. (2016). *Lithophane furcifera* (Hufnagel, 1766) in Northeastern Kazakhstan (Lepidoptera, Noctuidae). *Biological Bulletin of Bogdan Chmelnitskiy Melitopol State Pedagogical University*, 6 (1): 409–415.

16. Volynkin A.V. & **Titov S.V.** (2016). New data on eastern limits of ranges of *Egira anatolica* (M. Hering, 1933) and *Egira conspicillaris* (Linnaeus, 1758) (Lepidoptera: Noctuidae). *Biological Bulletin of Bogdan Chmelnitskiy Melitopol State Pedagogical University*, 6 (2): 119–123.

17. **Titov, S.**, Volynkin, A. & Černila, M. (2017). New data on the distribution of some Erebidae and Noctuidae species in Kazakhstan. *Ukrainian Journal of Ecology*, 7 (2): 137–141.

18. **Titov S.V.**, Volynkin, A.V., Dubatolov, V.V., Černila, M., Reznichenko, S.M. & Bychkov, V.S. (2017) Noctuoid moths (Lepidoptera: Erebidae, Nolidae, Noctuidae) of North-East Kazakhstan (Pavlodar Region). *Ukrainian Journal of Ecology*, 7 (2): 142–164.

19. Volynkin, A., **Titov, S.** & Černila, M. (2017) First record of the genus *Shargacucullia* G. Ronkay & L. Ronkay, 1992 (Insecta, Lepidoptera, Noctuidae) from the Altai Mountains. *Check List*, 13 (6): 733–738.

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APPENDIX 1. Details on the studied localities.

Zhelezinsky district – Z

Z1 – vic. of Mikhailovka vill.

Year of research: 2010, 2011, 2012, 2013; 2017.

Month of study: IV, V, VI, VII, VIII.

53°50.029'N; 76°30.136'E; subzone of mixed-grass fescue-feather grass steppes, birch solitary forests *Betula pendula* together with *Populus tremula*, saltwort vegetation along the shores of saline lakes, on disturbed soils and slopes of ravines *Hippophae rhamnoides*, *Elaeagnus commutata*. Small-scale rural development.

Z2 – vic. of Krasnovka vill.

Year of research: 2011, 2012, 2013.

Month of study: IV, V, VI, VII, VIII.

53°43'44.54"N; 76°56'34.36"E; subzone of mixed-grass fescue-feather grass steppes, birch solitary forests *Betula pendula* together with *Populus tremula*, saltwort vegetation along the shores of saline lakes, on disturbed soils and slopes of ravines *Hippophae rhamnoides*, *Elaeagnus commutata*. Small-scale rural development.

Z3 – vic. of Zhelezinka vill.

Year of research: 2010, 2011.

Month of study: V, VII, VIII.

53°31'39.40"N 75°18'29.58"E; subzone of the fescue-feather grass steppes, the Irtysh River valley: the lower terrace is a floodplain forest with poplar-willow communities *Salix* sp., *Populus tremula*, and moist meadows, the upper terrace is the steppe, sparse birch solitary forests (*Betula pendula*) together with (*Populus tremula*), at the base of ravine *Hippophae rhamnoides*. Large-scale rural development.

Z4 – vic. of Moiseevka vill.

Year of research: 2011, 2013, 2017.

Month of study: V, VII, VIII.

53°26.902' N 75°28.131'E; subzone of the fescue-feather grass steppes, the Irtysh River valley: the lower terrace is a floodplain forest with poplar-willow communities *Salix* sp., *Populus tremula*, and moist meadows, the upper terrace is the steppe, sparse birch solitary forests (*Betula pendula*) together with (*Populus tremula*), at the base of ravine *Hippophae rhamnoides*. Large-scale rural development.

Z5 – vic. of Slavyanovka vill.

Year of research: 2012.

Month of study: VI.

53°53.747'N; 76°22.59'E; subzone of mixed-grass fescue-feather grass steppes, birch solitary forests *Betula pendula* together with *Populus tremula*, forest plantations of *Pinus sylvestris*.

Z6 – vic. of Novokuzminka vill.

Year of research: 2013.

Month of study: VII.

54°11'11.38"N 76°24'0.11"E; subzone of mixed-grass fescue-feather grass steppes, birch solitary forests *Betula pendula* together with *Populus tremula*, freshwater lakes, rural development.

Z7 – Kyzyl-tuz lake.

Year of research: 2013.

Month of study: VI, VII.

53°45'38.24"N 76°47'29.04"E; subzone of mixed-grass fescue-feather grass steppes, birch solitary forests *Betula pendula* together with *Populus tremula*, saltwort vegetation along the shores of salt lakes, on disturbed soils and slopes of ravines *Hippophae rhamnoides*, *Elaeagnus commutata*, geothermal well.

Z8 – vic. of Pyateryzhsk vill.

Year of research: 2009.

Month of study: VII, VIII.

53°23'29.86"N 75°30'13.04"E; subzone of fescue-feather grass steppes, the valley of the Irtysh river: the lower terrace is a floodplain forest with poplar-willow communities *Salix* sp., *Populus tremula*, and moist meadows, the upper terrace is the steppe, birch solitary forests *Betula pendula* together with *Populus tremula*, the outskirts of ravines *Hippophae rhamnoides*, small-scale rural development.

Irtysh district – I

I9 – Seletyteniz Lake.

Year of research: 2006, 2007.

Month of study: VII.

53°17'27.03"N 73°28'55.75"E; subzone of mixed-grass fescue-feather grass steppes, saltwort vegetation along the shores of saline lakes.

Kachiry district – K

K10 – vic. of Terenkol vill.

Year of research: 2011, 2012, 2013.

Month of study: VI, VII.

53°3'59.30"N 76°6'7.85"E; subzone of fescue-feather grass steppes, the valley of the Irtysh River: the lower terrace is a floodplain forest with poplar-willow communities *Salix* sp., *Populus tremula*, and moist meadows, the upper terrace is a steppe, large-scale rural development.

K11 – vic. of Baykonys vill.

Year of research: 2013.

Month of study: VII.

52°57'1.88"N 76°25'34.54"E; subzone of fescue-feather grass steppes, the valley of the Irtysh River: the lower terrace is a floodplain forest with poplar-willow communities *Salix* sp.,

Populus tremula, and moist meadows, the upper terrace is a steppe, large-scale rural development.

Pavlodar district – P

P11 – Pavlodar city.

Year of research: 2003, 2006, 2008, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017.

Month of study: V, VI, VII, VIII, IX, X.

52°15'20.07"N; 76°57'50.41"E; subzone of fescue-feather grass steppes, the valley of the Irtysh River: the lower terrace is a floodplain forest with poplar-willow communities *Salix* sp., *Populus tremula*, and moist meadows, the upper terrace is a steppe, large-scale urban development, artificial plantings of *Populus balsamifera, Populus nigra, Populus alba, Salix alba, Ulmus pinnatoramosa, Acer negundo, Betula pendula, Pinus sylvestris, Rosa sp., Syringa vulgaris, Elytrigia repens*.

P12 – vic. of Pavlodarskoe vill.

Year of research: 2003, 2006, 2008, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017.

Month of study: V, VI, VII, VIII, IX, X.

52°22.084'N 76°52.161'E; the subzone of fescue-feather grass steppes, the valley of the Irtysh river: the lower terrace is a floodplain forest with poplar-willow communities *Salix* sp., *Populus tremula*, and wet meadows, the upper terrace is steppe, large-scale rural development, plantings of *Populus balsamifera, P. nigra, P. alba, Salix alba, Acer negundo, Betula pendula, Rosa sp.*, private and industrial buildings of the petrochemical complex.

P13 – vic. of Rozovka vill.

Year of research: 2010.

Month of study: IV, V, VI, VII, VIII.

52°35'59.80"N 77°24'59.90"E; subzone of fescue-feather grass steppes, saltwort vegetation along the shores of saline lakes, small-scale rural development.

P14 – vic. of Kenzhekol vill.

Year of research: 2010, 2012.

Month of study: V, VII.

52°7'59.97"N 76°58'59.97"E; the fescue-feather grass steppe subzone, the Irtysh river valley: the lower terrace is a floodplain forest with poplar-willow communities *Salix* sp., *Populus tremula,* and moist meadows.

P15 – vic. of Efremovka vill.

Year of research: 2010.

Month of study: IX.

52°32'8.89"N 77°21'43.09"E; subzone of fescue-feather grass steppes, saltwort vegetation along the shores of saline lakes, small-scale rural development.

P16 – vic. of Sychevka vill.

Year of research: 2008, 2011.

Month of study: IV, V, VII.

52°36'30.2"N 76°44'23.2"E; subzone of fescue-feather grass steppes, valley of Irtysh river: lower terrace – flood-plain forest with poplar-willow communities *Salix* sp., *Populus tremula*, upper terrace – steppe, plantations of melon, watermelon, large-scale rural development, plantings of *P. nigra, P. alba, Salix alba, Acer negundo, Betula pendula, Rosa* sp.

P17 – vic. of Koryakovka Lake.

Year of research: 2011, 2017.

Month of study: V.

52°26.369"N 77°09.183'E; subzone of fescue-feather grass steppes, pine forest border (forest plantations) *Pinus sylvestris* and steppes in the vicinity of the lake Koryakovka.

P19 – vic. of Zhertumsyk vill.

Year of research: 2016, 2017.

Month of study: VI, VIII.

52°1'58.67"N 77°11'29.98"E; subzone fescue-feather grass steppes, sandy inflatable dunes with sparse plantings of *Pinus sylvestris*, in the vicinity of small-scale rural development.

P20 – vic. of Leninsky vill.

Year of research: 2008.

Month of study: VI.

52°16'7.82"N 76°47'50.94"E; subzone fescue-feather grass steppes, residential sector, large-scale rural development.

P22 – vic. of Baydala vill.

Year of research: 2016.

Month of study: VI.

52°8'0.57"N 77°3'48.97"E; the subzone of the fescue-feather grass steppes, the valley of the Irtysh River, the border of moist floodplain meadows and steppes, large-scale rural development.

P23 – vic. of Zhetekshi vill.

Year of research: 2012, 2015, 2016.

Month of study: IV, VII, VIII.

52°18'31.94"N 77° 7'23.21"E; subzone of fescue-feather grass steppes, saltwort vegetation along the shores of saline lakes, small-scale rural development.

P24 – vic. of Dolgoye vill.

Year of research: 2017.

Month of study: VIII, IX.

52° 7'14.37"N 77° 3'30.85"E; the subzone of the fescue-feather grass steppes, the valley of the Irtysh River, the border of moist floodplain meadows and steppes, large-scale rural development.

Sharbakty district – S

S18 – Maraldy lake

Year of research: 2012.

Month of study: VI, VII, IX.

52°20.485"N 77°48.653'E; the subzone of the fescue-feather grass steppes, the shore of the bitter-salt lake, the salt-wort vegetation on the banks of fresh streams flowing into the lake, groups of *Salix* sp. *Betula pendula*.

S20 – vic. of Shaldai vill.

Year of research: 2007, 2012.

Month of study: VI, VII, VIII.

51°55'24.56"N 78°50'9.13"E; the subzone of fescue-feather grass steppes, border of steppe and relic pine forest *Pinus sylvestris*, neighborhood of large-scale rural development.

S21 – vic. of Galkino vill.

Year of research: 1990.

Month of study: VI.

52°12'0.07"N 78°24'60.00"E; subzone of fescue-feather grass steppes, relic pine forest *Pinus sylvestris*, neighborhood of small-scale rural development.

S22 – SW vic. of May Karagay vill.

Year of research: 2014.

Month of study: VI, VII.

51°35'59.36"N 78°46'59.52"E; subzone of fescue-feather grass steppes, relic pine forest *Pinus sylvestris*.

S23 – vic. of Sharbakty vill.

Year of research: 2007, 2014, 2015.

Month of study: VI, VII, VIII.

52°28'11.39"N 78°9'56.72"E; subzone fescue-feather grass steppes, dry steppe, plantings of pine forest *Pinus sylvestris*, large-scale rural development.

S24 – vic. of Georgievka vill.

Year of research: 2007.

Month of study: VII.

52°43'55.93"N 78°12'5.94"E; subzone fescue-feather grass steppes, plantings of *Caragana arborescens* between dry steppe and wheat field, agrocenosis.

Lebyazhye district – L

L24 – Tuz Lake.

Year of research: 2011, 2015.

Month of study: V, VII, VIII, IX.

51°17'58.24"N 78°37'57.06"E; subzone of fescue-feather grass steppes, dry steppe, shore of bitter salt lake in pine relic forest *Pinus sylvestris*.

L25 – highway M-38 near the border of Pavlodar and East Kazakhstan Regions.

Year of research: 2013.

Month of study: VI.

51°15'58.61"N 78°32'43.73"E; subzone of fescue-feather grass steppes, steppe on the border of plantation with *Populus balsamifera*.

L26 – vic. of Sharbakty vill.

Year of research: 2013, 2014.

Month of study: VI, VIII.

51°24'8.19"N 78°21'11.01"E; subzone of fescue-feather grass steppes, relic pine forest *Pinus sylvestris*.

L27 – Borly Lake.

Year of research: 2013.

Month of study: VI, VII.

51°49'28.32"N 77°56'42.45"E; the subzone of the fescue-feather grass steppes, the shore of the salt lake, local flooded associations containing *Betula pendula, Salix* sp., *Populus tremula*, surrounded by marsh from the dominant *Carex acuta* and *C. cespitosa*.

L28 – vic. of Akku vill.

Year of research: 2015, 2017

Month of study: IV, VI, VII, VIII.

51°49'28.32"N 77°56'42.45"E; subzone fescue-feather grass steppes, the Irtysh river valley, the upper terrace large-scale rural development, plantings of *P. nigra, P. alba, Salix alba, Acer negundo, Betula pendula, Rosa* sp.

Bayanaul district – B

B29 – Bayanaul Mts., Birzhankol Lake.

Year of research: 2008, 2009, 2017.

Month of study: VI, VII, VIII.

50°49'9.97"N 75°20'52.44"E; subzone of fescue-feather grass steppes, mountains, on the heights the *Pinus sylvestris*, in the lowlands along the streams the *Alnus glutinosa, Populus tremula, Spiraea crenata, Salix* sp., *Betula pendula*, on the granite remains *Cotoneaster melanocarpus*, on the steppe slopes the *Caragana pumila, Spiraea hypericifolia.*

B30 – Bayanaul Mts., Kurkeli natural landmark

Year of research: 2012, 2013, 2014, 2016.

Month of study: IV, V, VI, VII, VIII.

50°44'34.00"N 75°38'16.80"E; foothills of the fescue-feather grass steppes, mountains, on the heights the *Pinus sylvestris*, in the lowlands along the streams the *Alnus glutinosa, Populus tremula, Spiraea crenata, Salix* sp., *Betula pendula*, on the granite remains *Cotoneaster melanocarpus*, on the steppe slopes the *Caragana pumila, Spiraea hypericifolia, arborescens*.

B31 – Bayanaul Mts., vic. of Shonai vill.

Year of research: 2012, 2013, 2014.

Month of study: IV, V, VI, VIII, IX.

50°48'53.88"N 75°44'22.45"E; subzone of fescue-feather grass steppes, mountains, on the heights the Pinus sylvestris, in lowlands along the streams the *Alnus glutinosa, Populus tremula, Spiraea crenata, Salix* sp., *Betula pendula*, on the granite remains *Cotoneaster melanocarpus*, on the steppe slopes the *Caragana pumila, Spiraea hypericifolia*, sites with *Iris scariosa, Iris halophita, Iris lactea, Artemisia frigida*, small-scale rural development.

B32 – Bayanaul Mts., vic. of Kempirtas Mt.

Year of research: 2007, 2008, 2013, 2014, 2015, 2016.

Month of study: IV, V, VI, VII, VIII.

50°51'24.65"N 75°34'37.21"E; subzone of fescue-feather grass steppes, mountains, large-blocky granite remains, on the heights the *Pinus sylvestris, Sorbus sibirica*, in the lowlands along the streams the *Alnus glutinosa, Populus tremula, Spiraea crenata, Betula pendula*, on granite remains *Cotoneaster melanocarpus*, on the steppe slopes the *Caragana pumila, Spiraea hypericifolia*, extensive steppe areas with *Iris scariosa, Iris halophita, Iris lactea, Artemisia frigida*.

B33 – Bayanaul Mts., vic. of Toraighyr Lake.

Year of research: 2013, 2014, 2016, 2017.

Month of study: VI, VII, VIII.

50°51'54.01"N 75°40'21.29"E; subzone of fescue-feather grass steppes, mountains, on the heights the Pinus sylvestris, in lowlands along the streams the *Alnus glutinosa, Populus tremula, Spiraea crenata, Betula pendula*, on the granite remains *Cotoneaster melanocarpus*, on the steppe slopes the *Caragana pumila, Spiraea hypericifolia*, extensive steppe areas with *Iris scariosa, Iris halophita, Iris lactea, Artemisia frigida*.

B34 – Bayanaul Mts., Kirgichi natural landmark.

Year of research: 2013.

Month of study: VI.

50°50'26.05"N 75°44'15.03"E; subzone of fescue-feather grass steppes, mountains, on the heights the *Pinus sylvestris*, in the lowlands along the creeks the *Populus tremula, Betula pendula,* on the forest edges, extensive thickets of *Glycyrrhiza uralensis*, in open spaces the *Spiraea crenata,* on the granite remains *Cotoneaster melanocarpus*, on the steppe slopes the *Caragana pumila, Spiraea hypericifolia*.

B35 – Kyzyltau Mts., vic. of Zhana Zhosaly vill.

Year of research: 2006, 2014, 2015, 2016, 2017.

Month of study: IV, V, VI, VII, VIII, IX, X, XI.

50°23.357"N 76°10.903'E; subzone of fescue-feather grass steppes, treeless mountains, in lowlands along the streams the *Populus tremula, Salix* sp.*, Betula pendula,* on southern slopes of the mountains and in the steppe the *Spiraea hypericifolia*, extensive steppe areas with *Iris scariosa, Iris halophita, Iris lactea*.

B36 – Kyzyltau Mts., vic. of Dulga Tas Mt.

Year of research: 2014.

Month of study: VI, VII.

50°28.251"N 76°15.056'E; subzone of fescue-feather grass steppe, coarse-granular granite remains, with *Cotoneaster melanocarpus*, in the steppe *Caragana pumila, Spiraea hypericifolia*.

B37 – Bayanaul Mts., Zhasybai Lake.

Year of research: 1999, 2003, 2011, 2013, 2017.

Month of study: V, VII, VIII.

50°48'55.50"N 75°36'39.71"E; subzone of fescue-feather grass steppes, mountains, on the heights the Pinus sylvestris, in lowlands along streams the *Alnus glutinosa, Populus tremula, Spiraea crenata, Salix* sp., *Betula pendula,* on the granite remains the *Cotoneaster melanocarpus,* large-scale tourist development.

B38 – Bayanaul Mts., Zhumbak natural landmark.

Year of research: 1999, 2016.

Month of study: IV, VIII.

050°47'53"N 075°33'45"E; subzone of fescue-feather grass steppes, mountains, on the heights the *Pinus sylvestris*, in lowlands along the streams the *Populus tremula*, *Spiraea crenata*, *Salix* sp., *Betula pendula*, on the granite remains the *Cotoneaster melanocarpus*.

B39 – Bayanaul Mts., Moldybulak natural landmark.

Year of research: 2015.

Month of study: VIII.

50°51.218"N 75°48.125’E; subzone of fescue-feather grass steppes, mountains, on the heights the *Pinus sylvestris*, in lowlands along the streams the *Populus tremula*, *Spiraea crenata*, on the granite remains the *Cotoneaster melanocarpus*, on the slopes the *Caragana pumila*, *Spiraea hypericifolia*.

B40 – Bayanaul Mts., vicinity of the Konyr Auliye cave.

Year of research: 2017.

Month of study: IX.

50°48'41.72"N 75°29'31.22"E; subzone of fescue-feather grass steppes, mountains, on the heights the *Pinus sylvestris*, in lowlands along streams the *Alnus glutinosa*, *Populus tremula*, *Spiraea crenata*, *Salix* sp., *Betula pendula*, on granite remains *Cotoneaster melanocarpus*.

B41 – Bayanaul Mts., Konyr Auliye cave.

Year of research: 2017.

Month of study: X.

50°48'30.89"N 75°30'35.25"E; subzone of fescue-feather grass steppes, mountains, cave on the western exposition of the mountain, on the heights the *Pinus sylvestris*, in the lowlands along the streams the *Alnus glutinosa, Populus tremula*, *Spiraea crenata*, *Salix* sp., *Betula pendula*, on the granite remains the *Cotoneaster melanocarpus*.

Maysky district – M

M37 – vic. of Karasor Lake.

Year of research: 2010.

Month of study: V, VII.

51°6'59.82"N 77°34'0.23"E; subzone of wormwood-fescue-feather grass steppes, shore of salt lake, groups of bushes of *Spiraea hypericifolia, Halimodendron halodendron*.

M38 – vic. of Zhamantuz Lake.

Year of research: 2010.

Month of study: V, VII.

50°32'56.70"N 77°52'43.68"E; subzone of wormwood-fescue-feather grass steppes, shore of salt lake, group of bushes of *Spiraea hypericifolia, Halimodendron halodendron*.

M39 – vic. of Koktobe vill.

Year of research: 2010, 2012, 2014.

Month of study: V, VII.

51°35'7.42"N 77°25'56.65"E; subzone of wormwood-fescue-feather grass steppes, valley of the Irtysh River: lower terrace – floodplain forest with poplar-willow communities *Salix* sp., *Populus tremula* and moist meadows, upper terrace – steppe.

M40 – Kalmykyrgan Mts., vic. of Old Akshiman vill.

Year of research: 2012, 2014.

Month of study: V, VII.

50°43.632"N 76°41.981'E; subzone of wormwood-fescue-feather grass steppes, mountains, in the lowlands the *Betula pendula, Populus tremula*, on the granite remains the *Cotoneaster melanocarpus*, on the steppe slopes of *Caragana pumila, Spiraea hypericifolia*.

M41 – the former Semipalatinsk nuclear test site.

Year of research: 2010, 2014.

Month of study: V, VII.

50°16"N 77°57'E; subzone of wormwood-fescue-feather grass steppes, on the granite remains the *Cotoneaster melanocarpus*, on the steppe slopes the *Caragana pumila, Spiraea hypericifolia*.

Aksu district – A

A42 – Zholpak river duct.

Year of research: 2007, 2008, 2016, 2017.

Month of study: IV, VI, VII, VIII.

52°20'36.28"N 76°42'44.53"E; subzone of fescue-feather grass steppes, valley of the Irtysh River: floodplain forest with communities of *Populus nigra, P. alba, P. balsamifera, Salix alba, Crataegus sanguinea, Padus avium, Rosa acicularis, R. laxa, R. pisiformis Humulus lupulus, Calystegia sepium, Echinocystis lobata, Clematis glauca, C. orientalis, Cuscuta lupuliformis, Rubus caesius* and *Solanum dulcamara*.

A43 – vic. of Rebrovka vill.

Year of research: 2008.

Month of study: VII.

52°27'27.22"N 76°47'52.09"E; subzone of fescue-feather grass steppes, valley of the Irtysh River: floodplain forest with communities of *Populus nigra, P. alba, P. balsamifera, Salix alba, Crataegus sanguinea, Padus avium, Rosa acicularis, R. laxa, R. pisiformis Humulus lupulus, Calystegia sepium, Echinocystis lobata, Clematis glauca, C. orientalis, Cuscuta lupuliformis, Rubus caesius* and *Solanum dulcamara*.

A44 – Kishi Kalkaman Lake.

Year of research: 2010.

Month of study: V, VII.

52°4'13.83"N 76°31'30.63"E; the subzone of the fescue-feather grass steppes, the northern shore of the bitter salt lake, in the steppe the *Spiraea hypericifolia, Nitraria sibirica* near the water of the group is saltwort vegetation.

A45 – vic. of the old road bridge over Irtysh River.

Year of research: 2009, 2015.

Month of study: V, VII, IX.

52°18'54.95"N 76°52'53.63"E; subzone of fescue-feather grass steppes, valley of Irtysh river: lower terrace – floodplain forest with poplar-willow communities *Salix* sp., *Populus tremula* and moist meadows, upper terrace – steppe, large-scale rural development, plantings of *Populus balsamifera, P. nigra, P. alba, Salix alba, Acer negundo, Betula pendula, Rosa sp., hydro constructions*, urban development.

A46 – Kurkol vill.

Year of research: 2016, 2017.

Month of study: VI, VII, VIII.

51°50'18.37"N 77°10'10.12"E; the subzone of the fescue-feather grass steppes, the boundary between the floodplain forests of the Irtysh River and the poplar-willow communities *Salix* sp., *Populus tremula*, moist meadows and dry steppe with local elements of salt-loving vegetation *Nitraria sibirica*, small-scale rural development with ruderal vegetation.

A47 – Kalkaman vill.

Year of research: 2016.

Month of study: VII.

51°57'59.85"N 76°1'42.21"E; subzone of fescue-feather grass steppes, *Spiraea hypericifolia*, large-scale rural development.

A48 – Western shore of the Kudaykol Lake.

Year of research: 1998, 2007, 2016.

Month of study: IV, V, VI, VII, VIII, IX, X, XI.

51°52'36.85"N 75°56'12.70"E; the subzone of the fescue-feather grass steppes, the northern shore of the bitter salt lake, in the steppe the *Spiraea hypericifolia, Nitraria sibirica* near the water the group of saltwort vegetation.

Ekibastuz district – E

E46 – Zhartas natural landmark.

Year of research: 1994, 1995, 2003, 2007, 2008, 2009, 2012, 2015, 2016, 2017.

Month of study: IV, V, VI, VII, VIII.

51°38'7.49"N 74°39'54.86"E; subzone of fescue-feather grass steppes, shallow hils composed from different formations of large clods of metamorphic shales up to 15 meters high to shallow limestone along the shoreline, shore of brackish Shiderty river, shrubby mountain steppe with *Caragana pumila, Spiraea hypericifolia* and *Spiraea trilobata, Elaeagnus sp., Rosa* sp .. along the river *Phragmites australis* and *Salix caspica, Glycyrriza uralensis*, over dry and warm lowlands and at foothills of the hills the *Artemisia lacinata, Artemisia sauntolinifolia, Potentilla bifurca*.

E47 – vic. of Karazhar vill.

Year of research: 2007, 2008, 2009, 2011.

Month of study: VI, VIII, IX.

52°12'18.64"N 74°42'48.51"E; subzone of the fescue-feather grass steppes, the delta of the Shiderty and Olenta rivers, a group of fresh and saline lakes with saline soils, with predominance of *Nitraria schoberi, N. sibirica, Salicornia europaea, Kaludium foliatum, Chenopodium verriciferra, Limonium gmelinii Lasiagrostis splendens* at the boundaries of saline soils is massively represented *Glycyrriza uralensis*.

E48 – vic. of Shiderty vill. 7th. hydrounit of Kanysh Satpaev channel.

Year of research: 2012, 12017.

Month of study: IV, VI, VIII.

51°47'59.99"N 74°36'59.78"E; subzone of the fescue-feather grass steppes, shallow hills, shore of the Shidertinsky reservoir, shrub steppe with the participation of *Caragana pumila, Spiraea hypericifolia, Spiraea trilobata, Elaeagnus* sp., *Rosa* sp., along the river *Phragmites australis* and *Salix caspica, Glycyrriza uralensis*, on dry and warm lowlands and at the foothills of the hills *Artemisia lacinata, Artemisia sauntolinifolia, Potentilla bifurca*.

E49 – Shiderty reservoir, water pump №11.

Year of research: 2013.

Month of study: V, VI.

51°15'25.76"N 74°10'33.26"E; subzone of the fescue-feather grass steppes, shallow hills, shore of the Shidertinsky reservoir, shrub steppe with the participation of *Caragana pumila, Spiraea hypericifolia* and *Spiraea trilobata, Elaeagnus sp., Rosa* sp .. along the river *Phragmites australis* and *Salix caspica, Glycyrriza uralensis*, on dry and warm lowlands and at the foothills of the hills *Artemisia lacinata, Artemisia sauntolinifolia, Potentilla bifurca*.

E50 – Olenty river valley.

Year of research: 2013, 2014.

Month of study: VI, VII, VIII.

52°3'2.22"N 74°19'44.97"E; subzone of the fescue-feather grass steppes, shallow hills, the bank of the Olenta River, large crumbly blocks of sandstone, shrubby stony steppe with the participation of *Caragana pumila, Spiraea hypericifolia* and *Spiraea trilobata, Elaeagnus sp., Rosa* sp .. along the river *Phragmites australis* and *Salix caspica, Glycyrriza uralensis*.

E51 – Ulken Ak-Zhar cretaceous slope.

Year of research: 2014, 2015, 2016, 2017.

Month of study: IV, VII, VIII, X.

51°54'25"N 074°47'24"E; subzone of fescue-feather grass steppes, shallow hills, Shiderty river bank, chalk slope of ancient marine origin with high steep walls up to 10 meters, gently heavily eroded limestone deposits near the shoreline, shore of brackish Shiderty river, shrub steppe with *Caragana pumila, Spiraea hypericifolia* and *Spiraea trilobata*, *Elaeagnus* sp. and *Rosa* sp.; *Phragmites australis* and *Salix caspica* along the river, over dry and warmed lowlands and at the soles of the hills of *Artemisia lacinata, Artemisia sauntolinifolia*, *Potentilla bifurca*, *Glycyrriza uralensis*.

E53 – West shore of Shiderty reservoir.

Year of research: 2012, 2017.

Month of study: IV.

51°48'2.09"N 74°35'26.55"E; subzone of the fescue-feather grass steppes, shallow hills, shore of the Shidertinsky reservoir, plantation of *Ulmus pumila*, shrubby steppe with *Caragana*

pumila, Spiraea hypericifolia and *Spiraea trilobata, Elaeagnus sp., Rosa* sp .. along the river *Phragmites australis* and *Salix caspica, Glycyrriza uralensis*, on dry and warm lowlands and at the footfills of the hills the *Artemisia lacinata, Artemisia sauntolinifolia, Potentilla bifurca*.

E54 – Ulken-Koyandy Mt.

Year of research: 2016.

Month of study: VIII.

51°40'59.09"N 73°58'3.38"E; subzone of fescue-feather grass steppes, shallow hills, dry shrubby steppe with *Caragana pumila, Spiraea hypericophylia, Elaeagnus* sp., *Rosa* sp.

E52 – Bozshakol Lake.

Year of research: 2010.

Month of study: V.

51°49'55.47"N 74°18'4.22"E; subzone of fescue-feather grass steppes, shallow hills, dry shrubby stony steppe with the participation of *Caragana pumila, Spiraea hypericifolia, Elaeagnus* sp., *Rosa* sp., extensive industrial copper deposit, flooded open pit, repositories.

Uspenka district – U

U52 – vic. of Lozovoye vill.

Year of research: 2016.

Month of study: VI.

53°17'42.31"N 77°45'29.92"E; subzone fescue-feather grass steppes, a vast area occupied by groups of salt lakes and agrocenoses of wheat fields, sparse birch solitary forests *Betula pendula*, large-scale rural development.

U53 – Borly Lake.

Year of research: 2016.

Month of study: VI.

53°17'17.67"N 77°41'54.46"E; the subzone of the fescue-feather grass steppes, the shore of a salt lake with a large-scale growth of *Glycyrriza uralensis*.

U54 – Big Azhbulat Lake.

Year of research: 2016

Month of study: VII.

53°20'6.63"N 77°24'14.18"E; the subzone of the fescue-feather grass steppes, the shore of a salt lake with a large-scale growth of *Glycyrriza uralensis*.

U56 – 1.5 km. E of the Steklyannoye Lake.

Year of research: 2016.

Month of study: VII.

53°17'0.20"N 77°37'35.83"E; Subzone of fescue-feather grass steppes, agrocenosis, local birch solitary forest *Betula pendula* among extensive wheat fields.

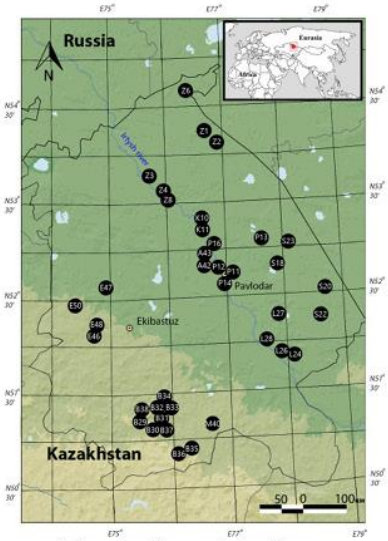
U57 – ruins of uninhabited village Vesely Klin.

Year of research: 2016.

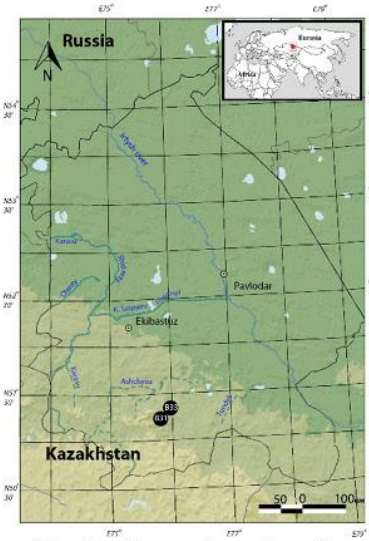
Month of study: VII.

53°16'39.92"N 77°53'20.91"E; Subzone of fescue-feather grass steppes, steppe space between the basins of saline lakes, *Spiraea hypericifolia,* rarely bushes *Tamarix hispida*.

APPENDIX 2. Distributional maps of Noctuoidea species in North-East Kazakhstan.

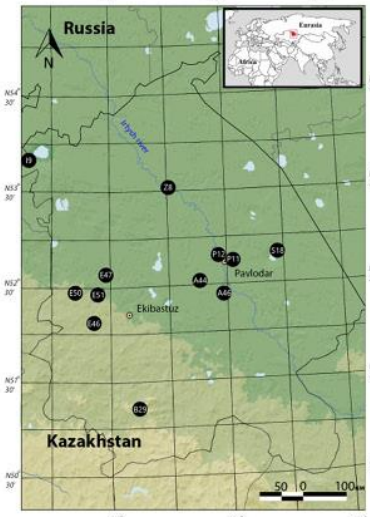


Map 1. *Lymantria dispar*



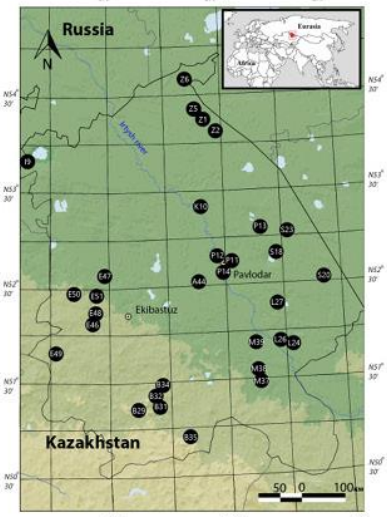
Map 2. *Gynaephora fascelina*

Map 3. *Gynaephora pumila*

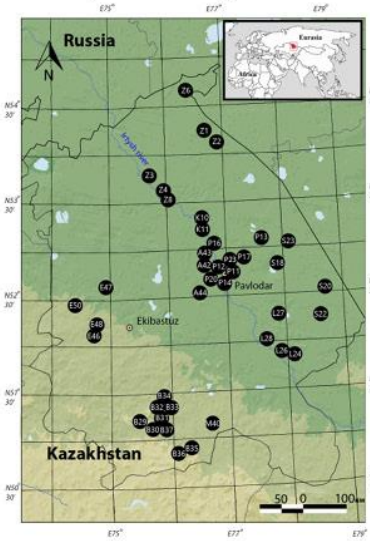


Map 4. *Clethrogyna dubia*

Map 5. *Thylacigyna antiquoides*



Map 6. *Leucoma salicis*



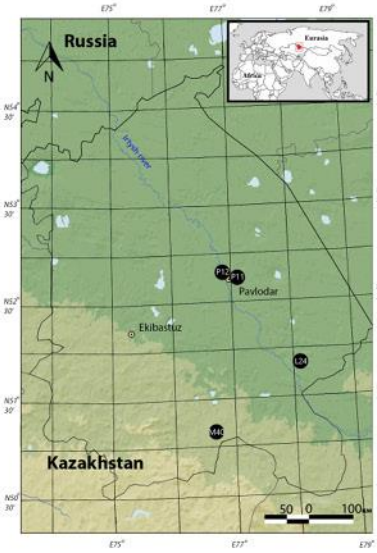
Map 7. *Euproctis kargalika*

Map 8. *Sphrageidus similis*

Map 9. *Cybosia mesomella*

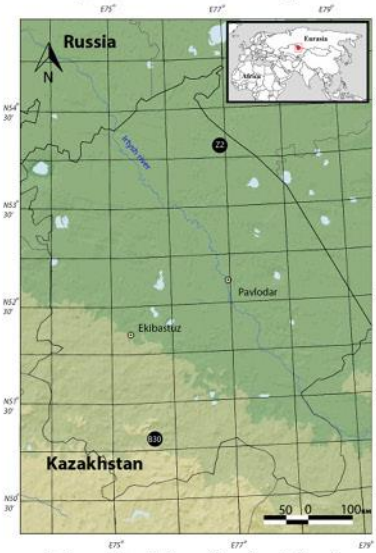
Map 10. *Manulea palliatella*

Map 11. *Manulea complana*

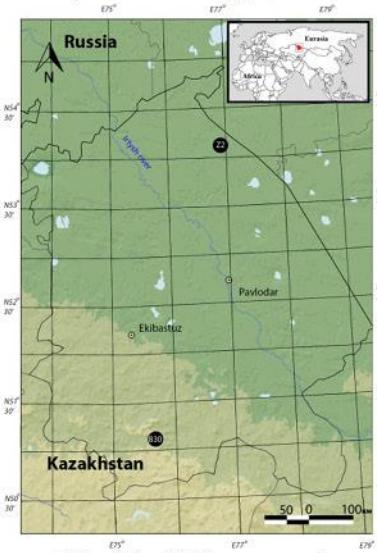


Map 12. *Manulea pygmaeola*

Map 13. *Manulea lutarella*



Map 14. *Manulea lurideola*

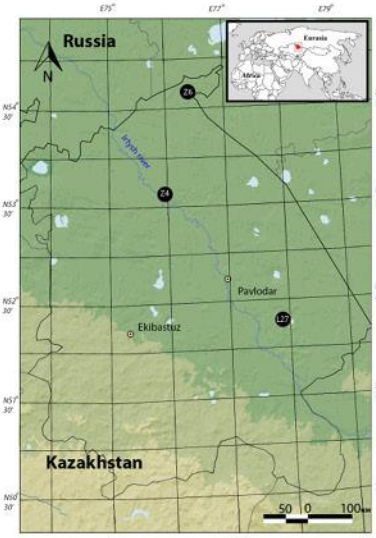


Map 15. *Wittia sororcula*

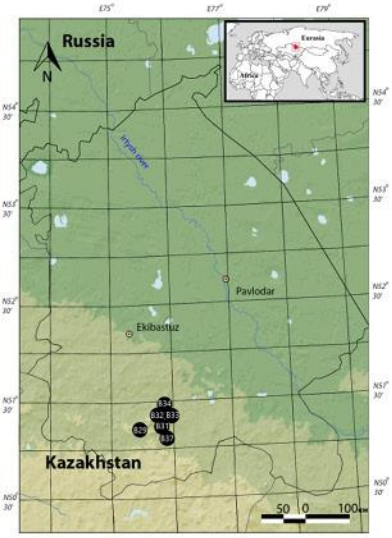
Map 16. *Collita griseola*

Map 17. *Atolmis rubricollis*

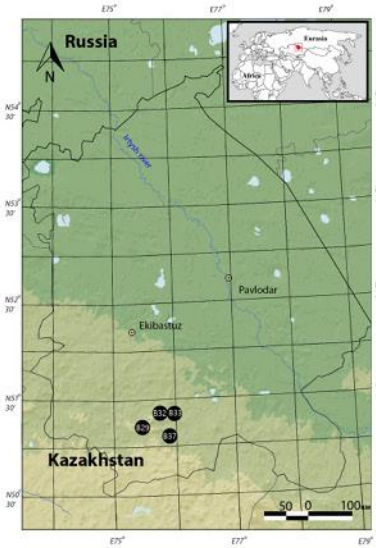
Map 18. *Pelosia muscerda*



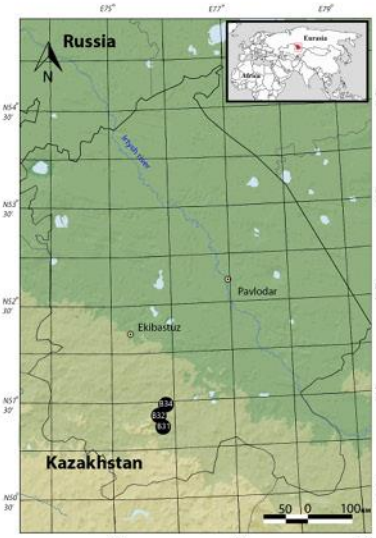
Map 19. *Pelosia obtusa*



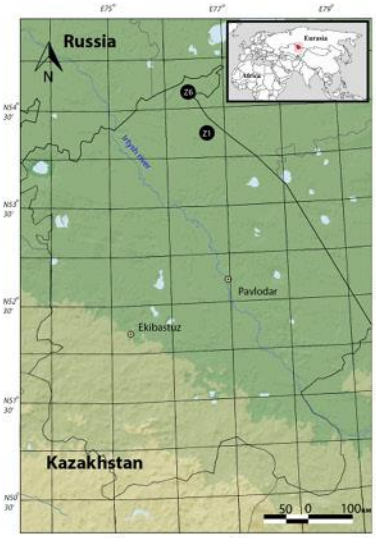
Map 20. *Stigmatophora flava*



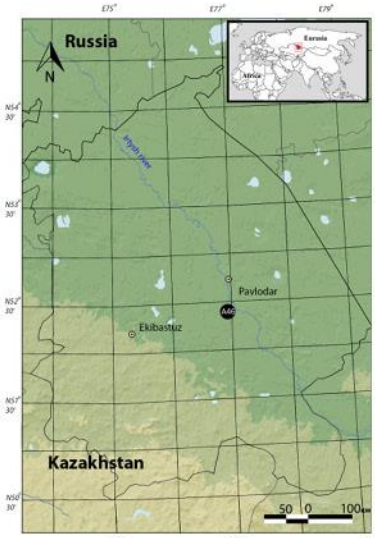
Map 21. *Stigmatophora micans*



Map 22. *Setina irrorella*

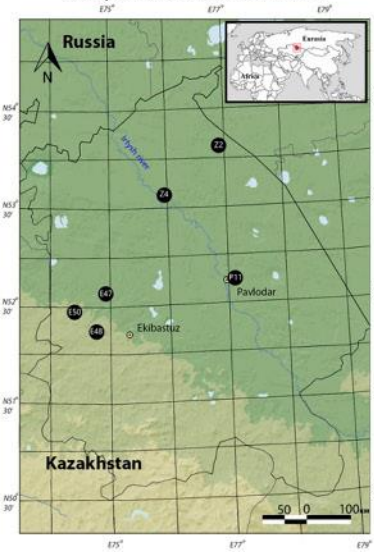


Map 23. *Setina roscida*

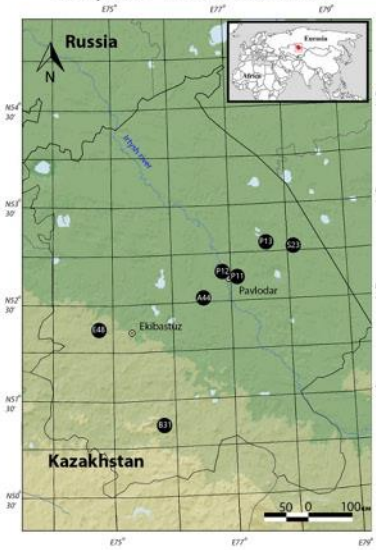


Map 24. *Thumatha senex*

Map 25. *Miltochrista miniata*

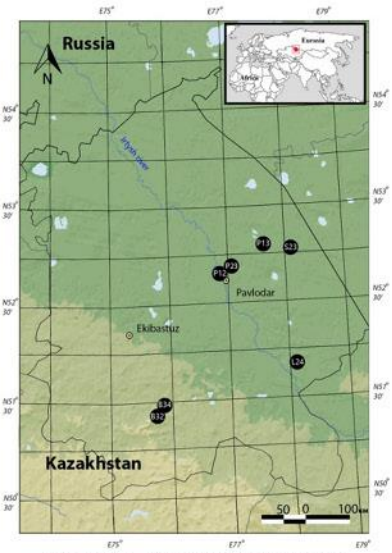


Map 26. *Tyria jacobaeae*

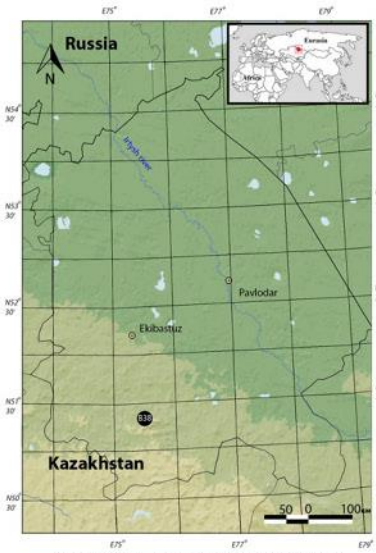


Map 27. *Lacydes spectabilis*

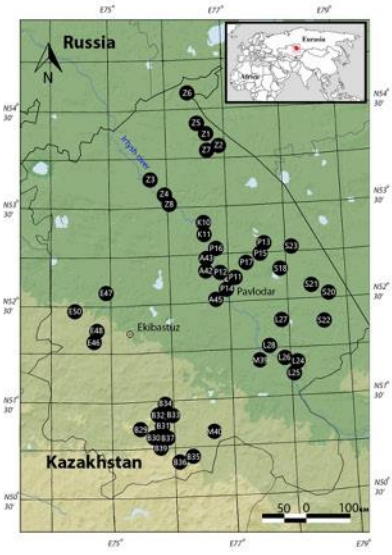
Map 28. *Spiris striata*



Map 29. *Coscinia cribraria*

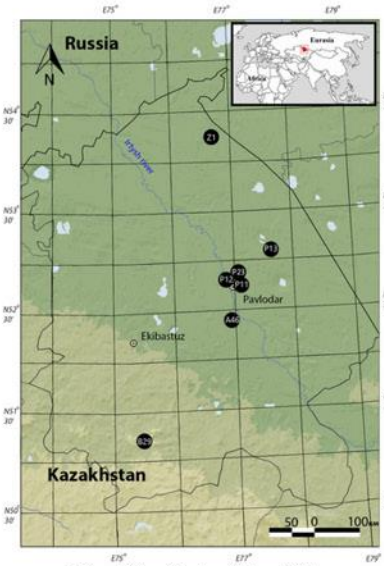


Map 30. *Hyphoraia aulica*

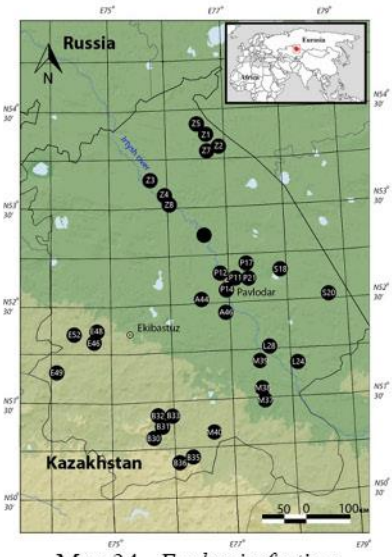


Map 31. *Arctia caja*

Map 32. *Arctia flavia*

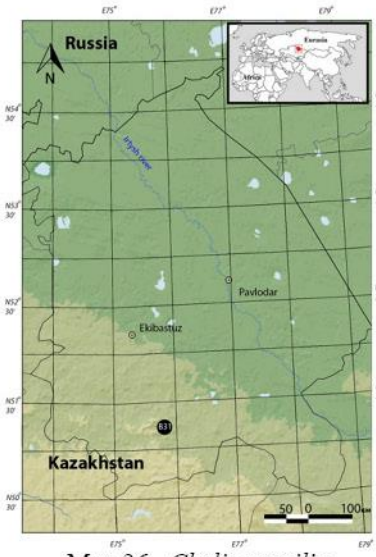


Map 33. *Epicallia villica*

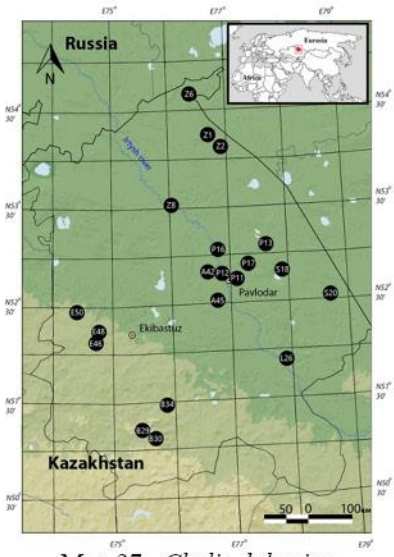


Map 34. *Eucharia festiva*

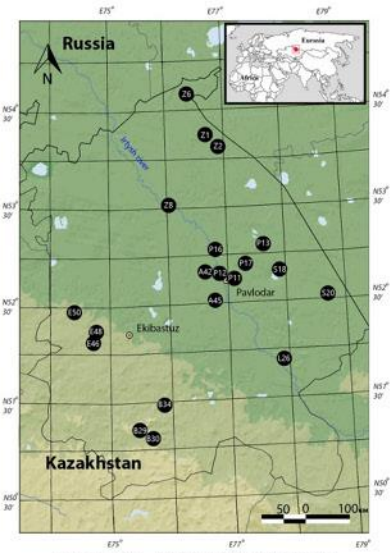
Map 35. *Chelis maculosa*



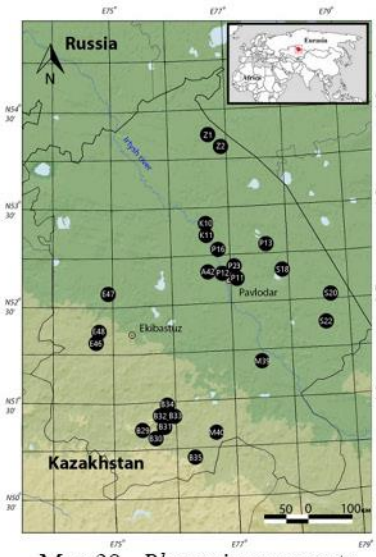
Map 36. *Chelis caecilia*



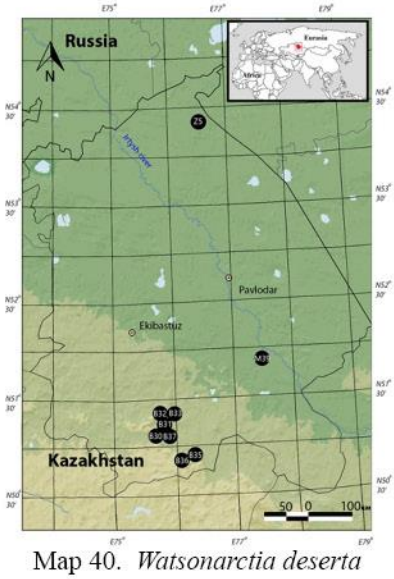
Map 37. *Chelis dahurica*



Map 38. *Diacrisia sannio*



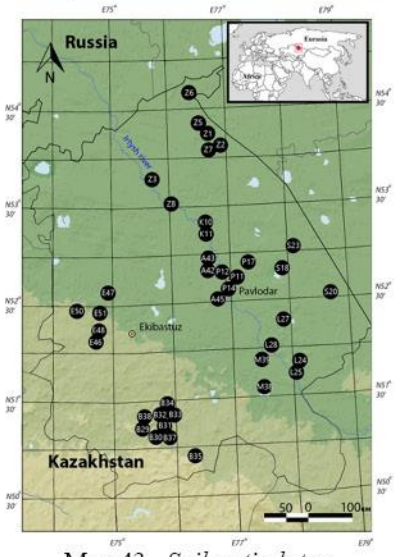
Map 39. *Rhyparia purpurata*



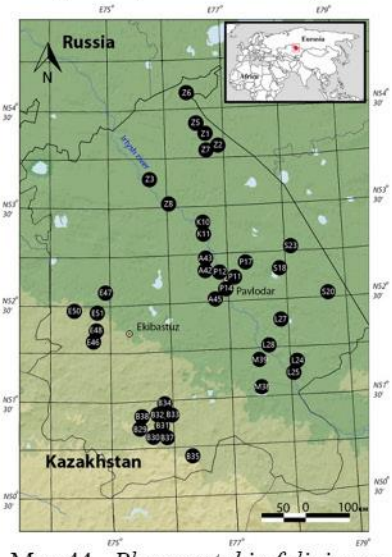
Map 40. *Watsonarctia deserta*

Map 41. *Spilosoma lubricipeda*

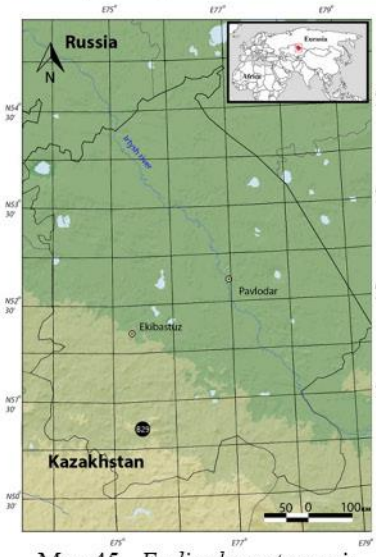
Map 42. *Spilosoma urticae*



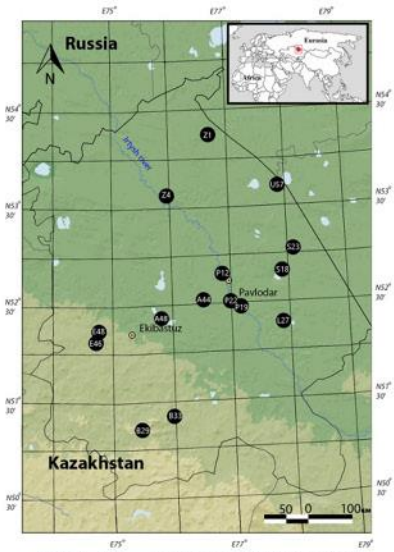
Map 43. *Spilarctia lutea*



Map 44. *Phragmatobia fuliginosa*

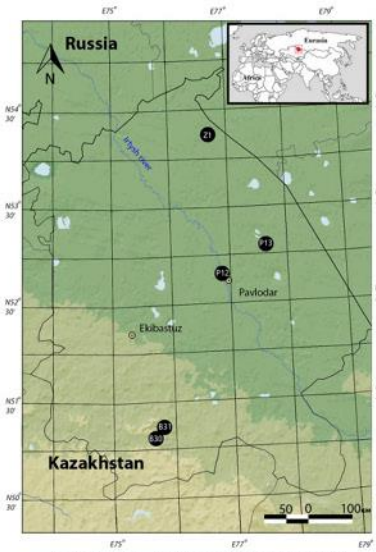


Map 45. *Eudiaphora turensis*



Map 46. *Amata transcaspica*

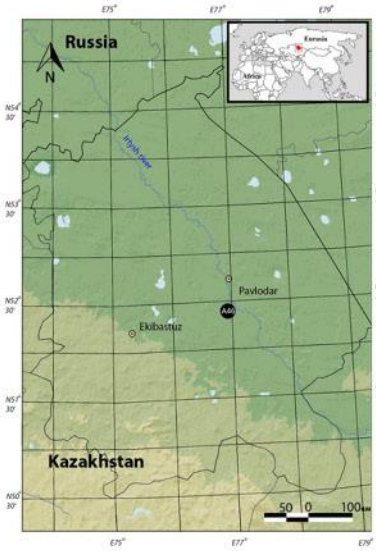
Map 47. *Amata caspia*



Map 48. *Simplicia rectalis*

Map 49. *Paracolax tristalis*

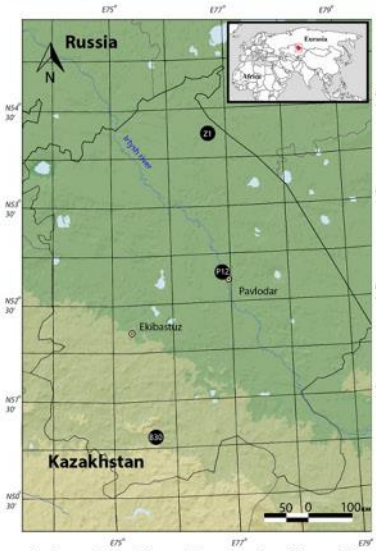
Map 50. *Herminia tenuialis*



Map 51. *Herminia tristriga*

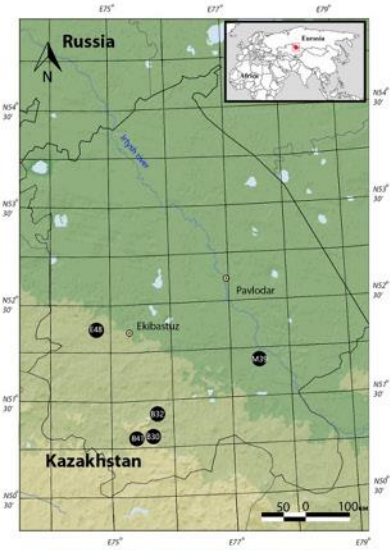
Map 52. *Polypogon tentacularia*

Map 53. *Pechipogo strigilata*

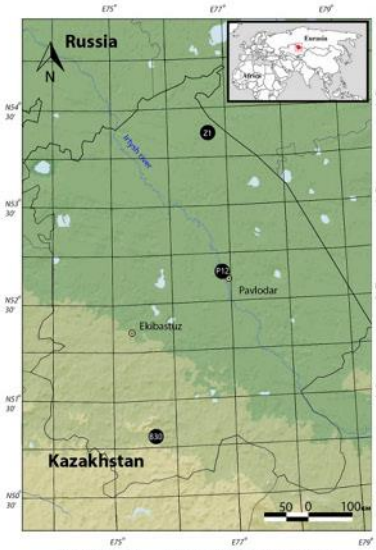


Map 54. *Zanclognatha lunalis*

Map 55. *Zekelita ravularis*



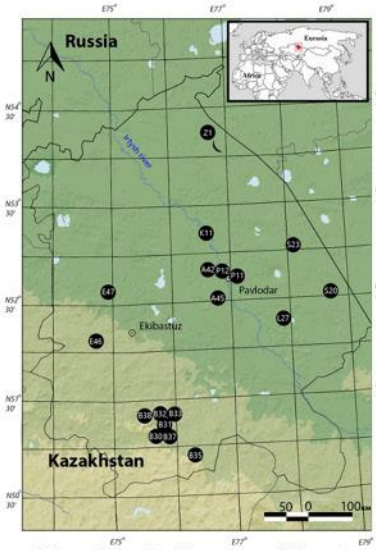
Map 56. *Hypena rostralis*



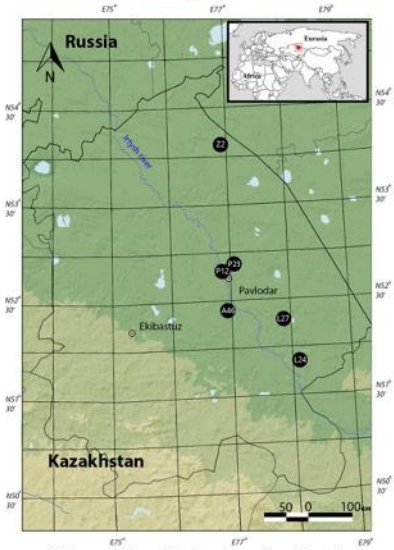
Map 57. *Hypena obesalis*

Map 58. *Hypena tristalis*

Map 59. *Rivula sericealis*

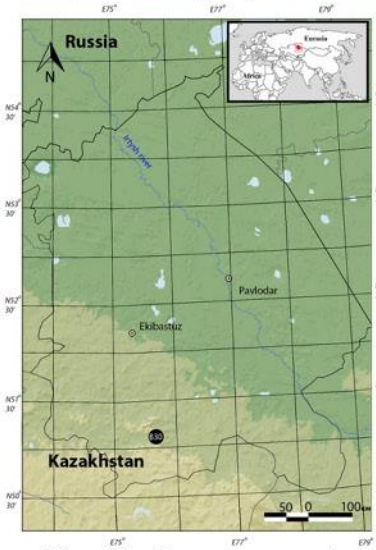


Map 60. *Scoliopteryx libatrix*



Map 61. *Calyptra thalictri*

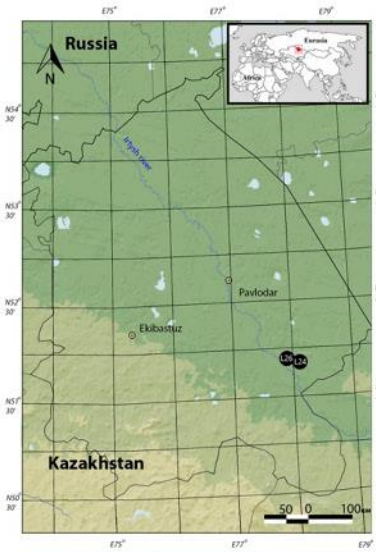
Map 62. *Parascotia fuliginaria*



Map 63. *Paragona cognata*

Map 64. *Odice arcuinna*

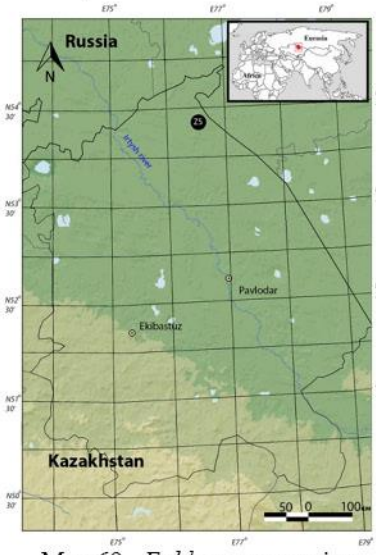
Map 65. *Eublemma minutata*



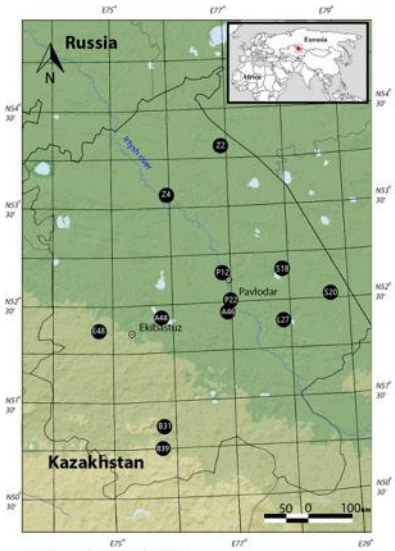
Map 66. *Eublemma ostrina*

Map 67. *Eublemma porphyrinia*

Map 68. *Eublemma panonica*

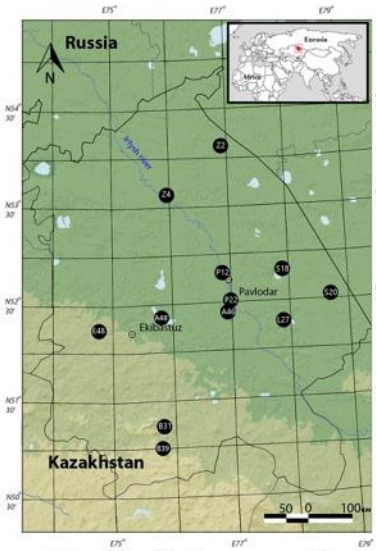


Map 69. *Eublemma amasina*



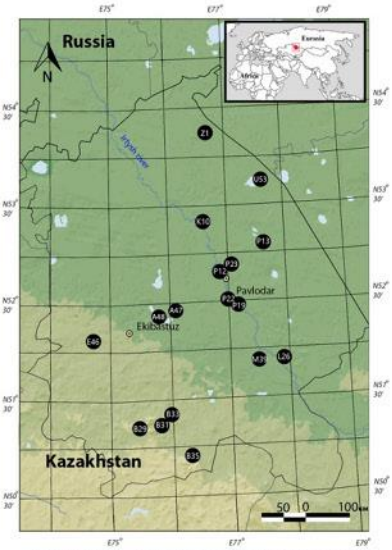
Map 70. *Eublemma purpurina*

Map 71. *Eublemma pallidula*

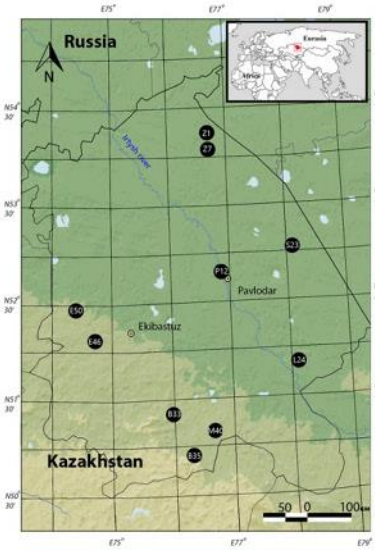


Map 72. *Eublemma pusilla*

Map 73. *Eublemma polygramma*



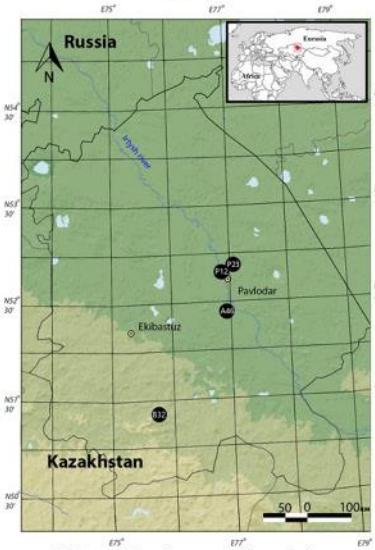
Map 74. *Phytometra viridaria*



Map 75. *Lygephila lubrica*

Map 76. *Lygephila ludicra*

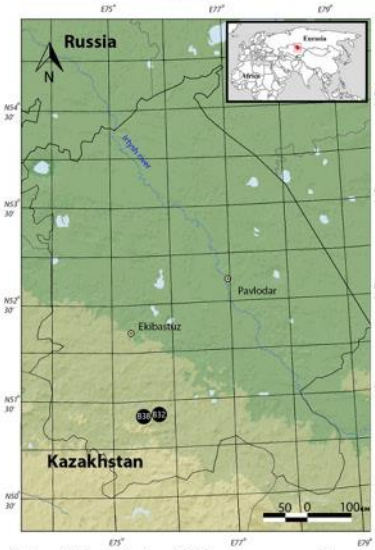
Map 77. *Lygephila pastinum*



Map 78. *Lygephila viciae*

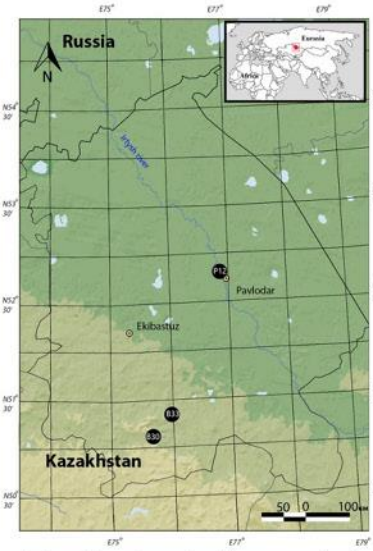
Map 79. *Lygephila craccae*

Map 80. *Lygephila asiatica*



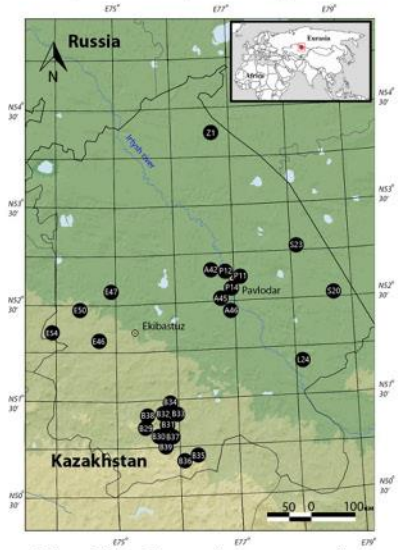
Map 81. *Autophila chamaephanes*

Map 82. *Autophila vespertalis*

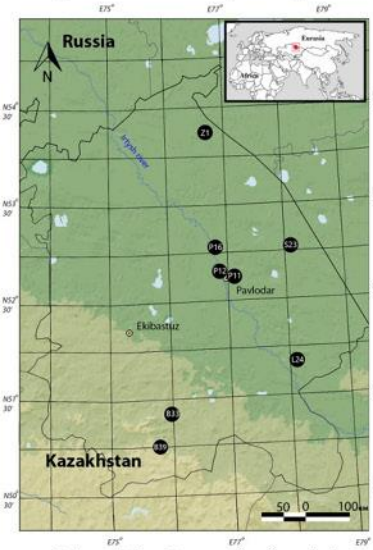


Map 83. *Acantholipes regularis*

Map 84. *Catocala fulminea*



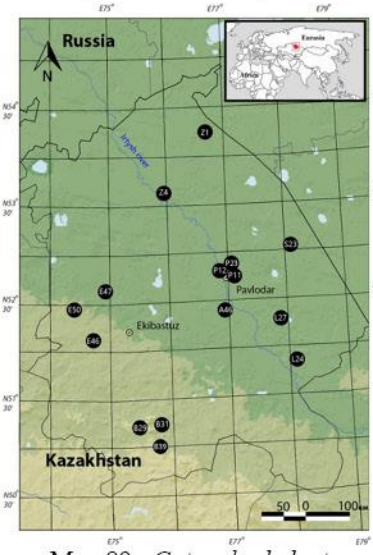
Map 85. *Catocala neonympha*



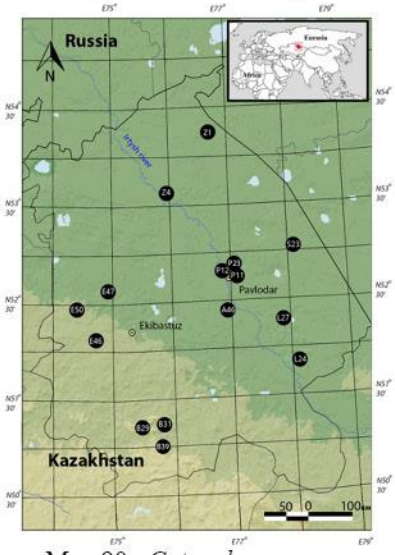
Map 86. *Catocala fraxini*

Map 87. *Catocala nupta*

Map 88. *Catocala adultera*



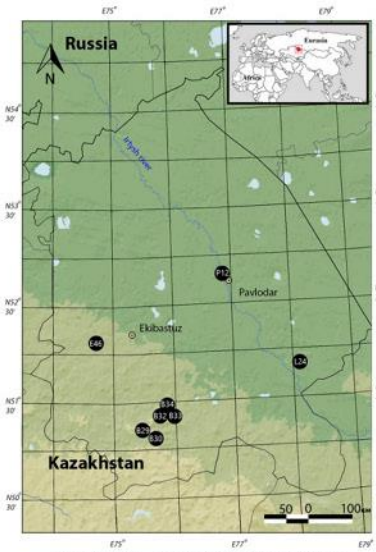
Map 89. *Catocala deducta*



Map 90. *Catocala puerpera*

Map 91. *Catocala lupina*

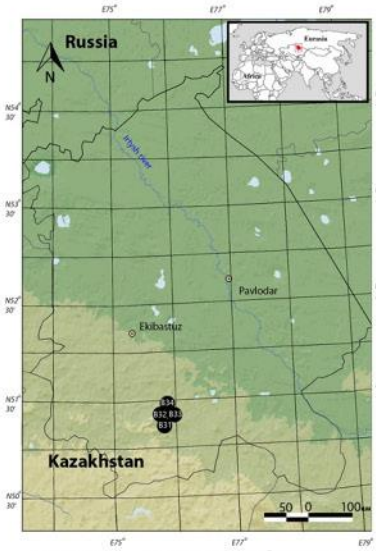
Map 92. *Catocala pacta*



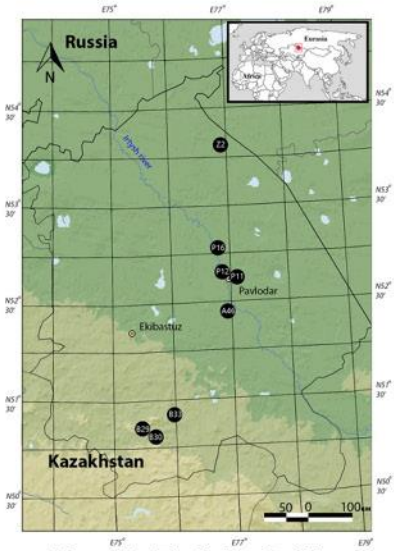
Map 93. *Drasteria cailino*

Map 94. *Drasteria rada*

Map 95. *Drasteria christophi*

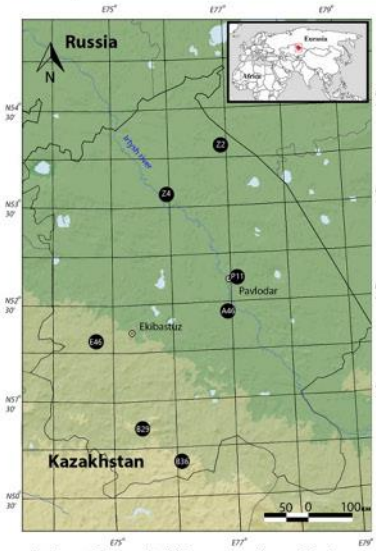


Map 96. *Drasteria obscurata*

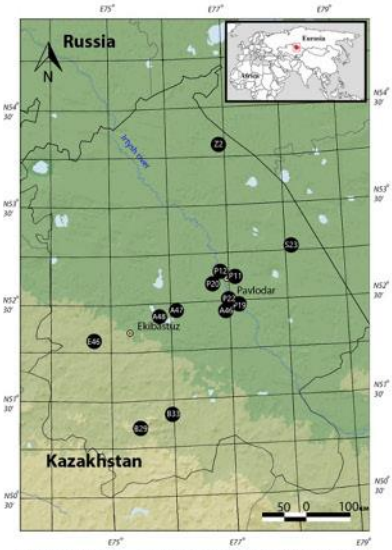


Map 97. *Euclidia glyphica*

Map 98. *Callistege mi*

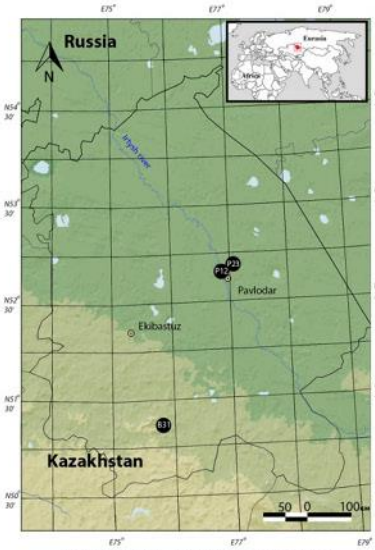


Map 99. *Callistege fortalitium*



Map 100. *Gonospileia triquetra*

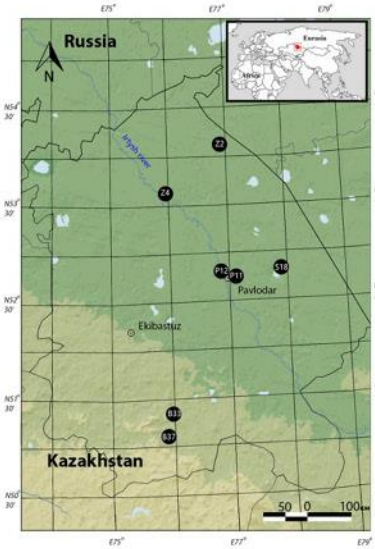
Map 101. *Gonospileia munita*



Map 102. *Nola aerugula*

Map 103. *Nola crambiformis*

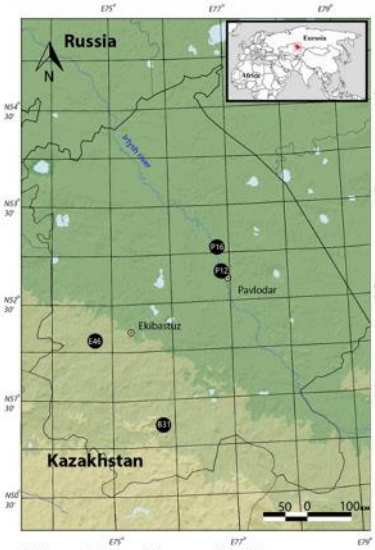
Map 104. *Nola confusalis*



Map 105. *Earias clorana*

Map 106. *Pseudoips prasinana*

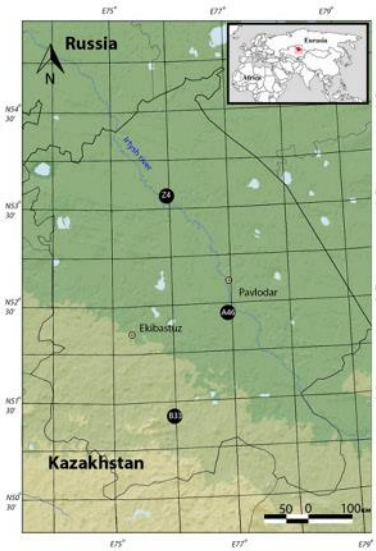
Map 107. *Nycteola eremostola*



Map 108. *Nycteola degenerana*

Map 109. *Nycteola asiatica*

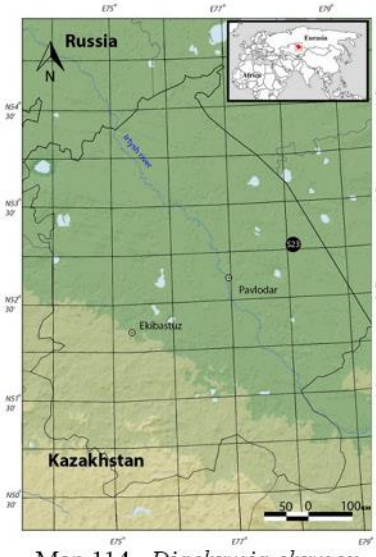
Map 110. *Abrostola triplasia*



Map 111. *Abrostola tripartita*

Map 112. *Trichoplusia ni*

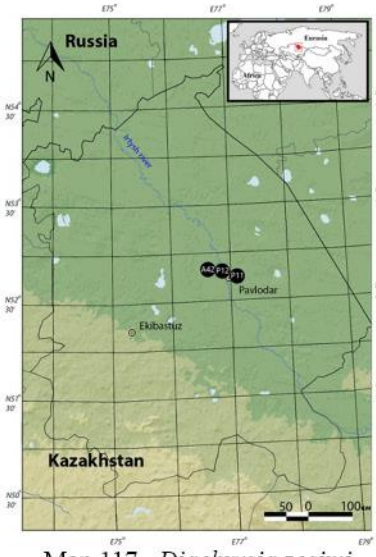
Map 113. *Macdunnoughia confusa*



Map 114. *Diachrysia chryson*

Map 115. *Diachrysia chrysitis*

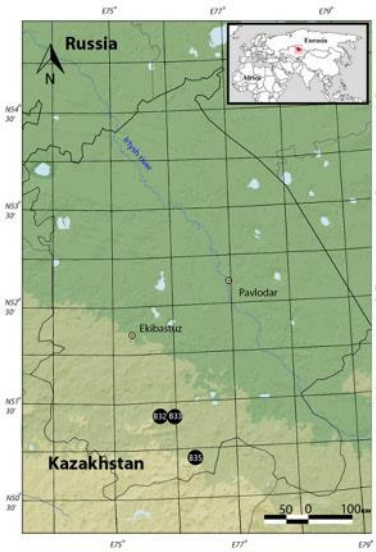
Map 116. *Diachrysia stenochrysis*



Map 117. *Diachrysia zosimi*

Map 118. *Euchalcia consona*

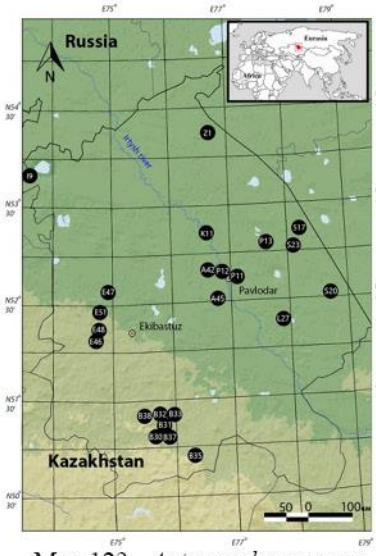
Map 119. *Polychrysia esmeralda*



Map 120. *Panchrysia deaurata*

Map 121. *Lamprotes c-aureum*

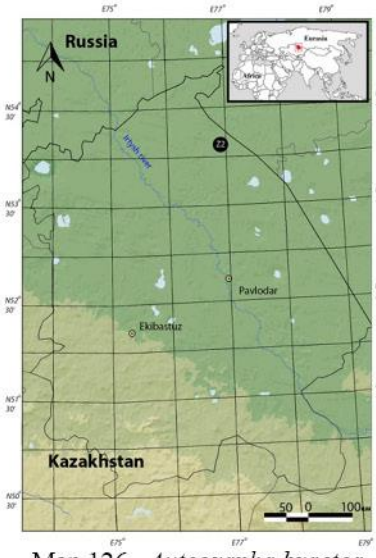
Map 122. *Plusidia cheiranthi*



Map 123. *Autographa gamma*

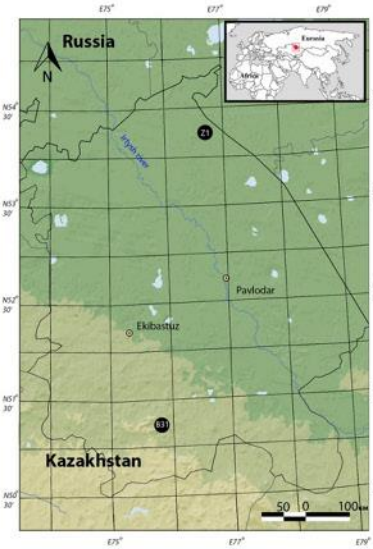
Map 124. *Autographa buraetica*

Map 125. *Autographa mandarina*

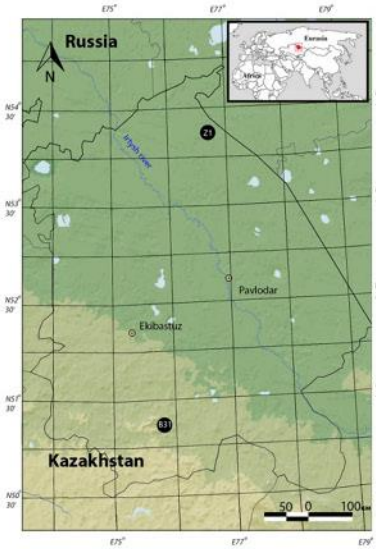


Map 126. *Autographa bractea*

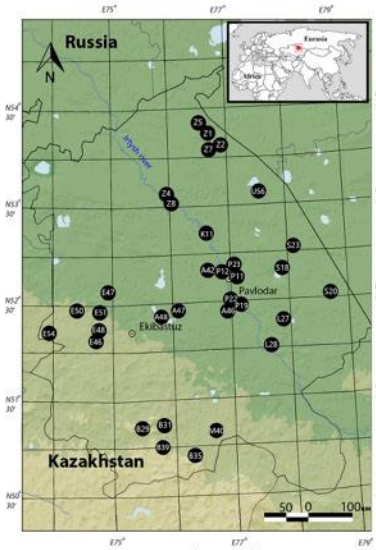
Map 127. *Autographa excelsa*



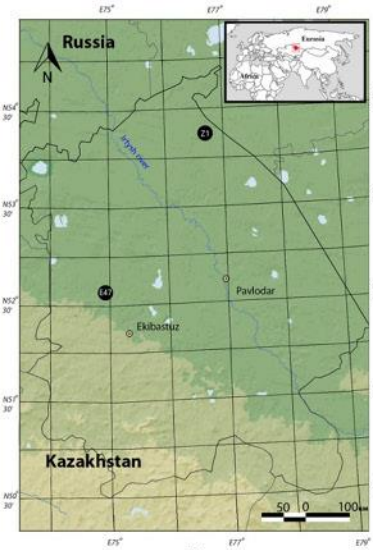
Map 128. *Cornutiplusia circumflexa*



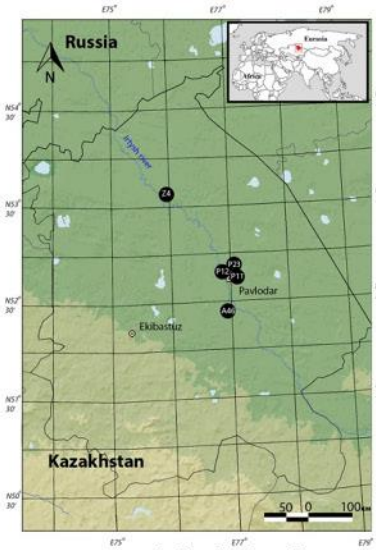
Map 129. *Syngrapha interrogationis*



Map 130. *Plusia festucae*

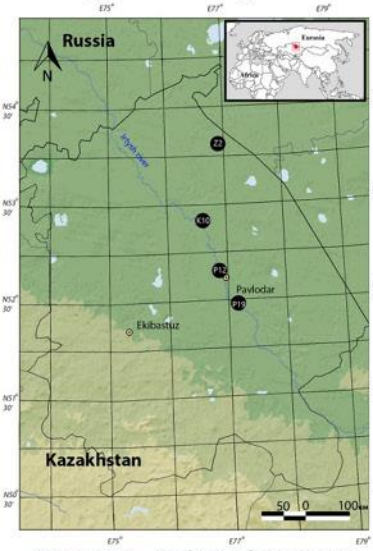


Map 131. *Plusia putnami*

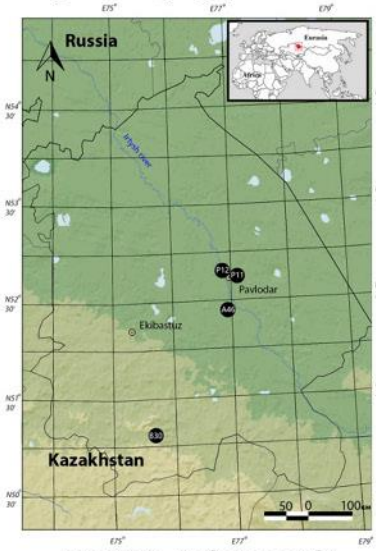


Map 132. *Phyllophyla obliterata*

Map 133. *Deltote pygarga*



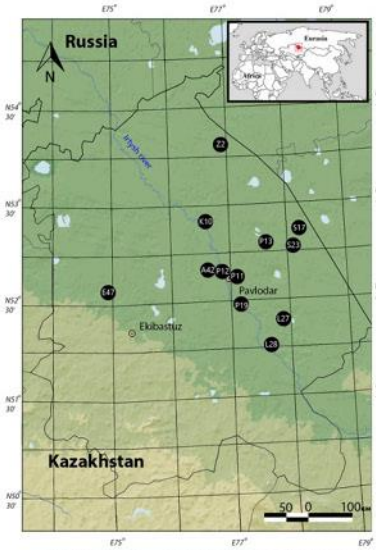
Map 134. *Deltote deceptoria*



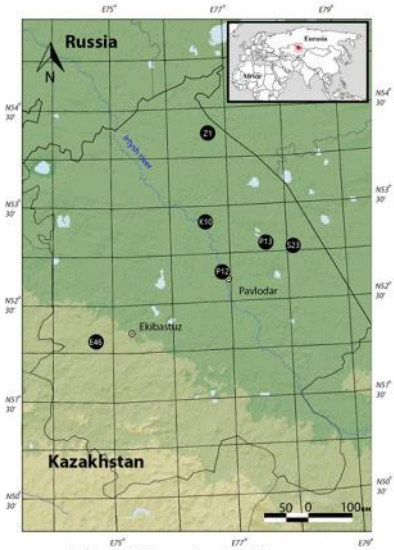
Map 135. *Deltote uncula*

Map 136. *Deltote bankiana*

Map 137. *Acontia lucida*

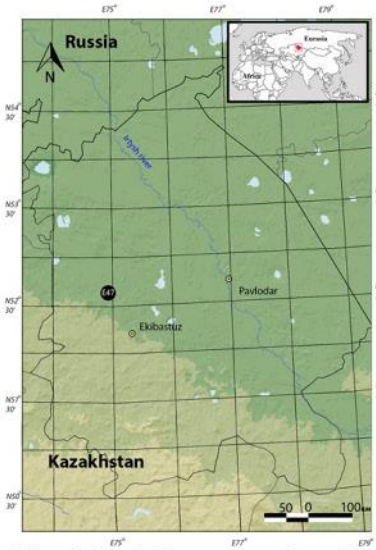


Map 138. *Acontia trabealis*



Map 139. *Aedia funesta*

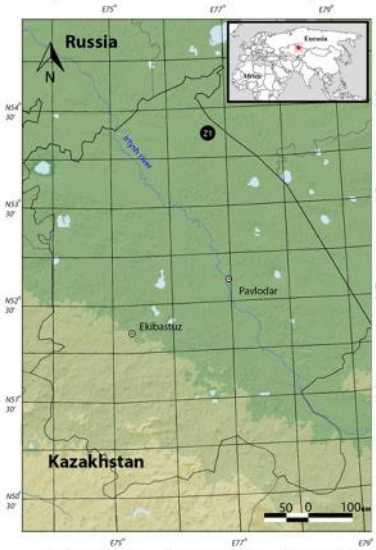
Map 140. *Colocasia coryli*



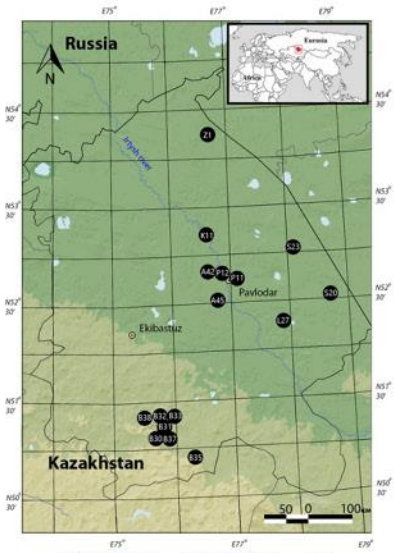
Map 141. *Leiometopon simyrides*

Map 142. *Acronicta alni*

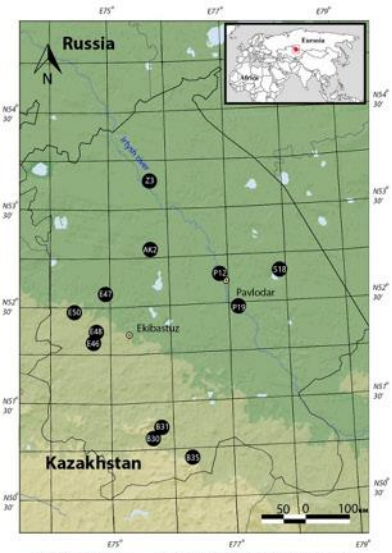
Map 143. *Acronicta cuspis*



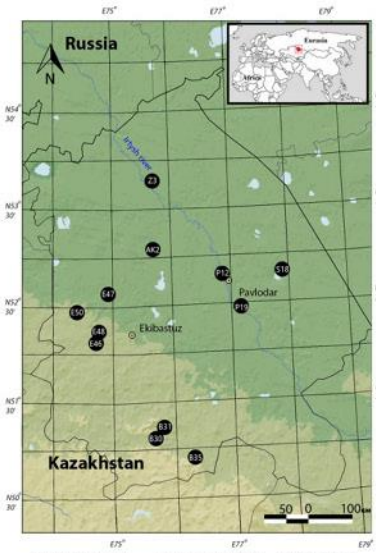
Map 144. *Acronicta tridens*



Map 145. *Acronicta psi*



Map 146. *Acronicta auricoma*



Map 147. *Acronicta rumicis*

Map 148. *Acronicta cinerea*

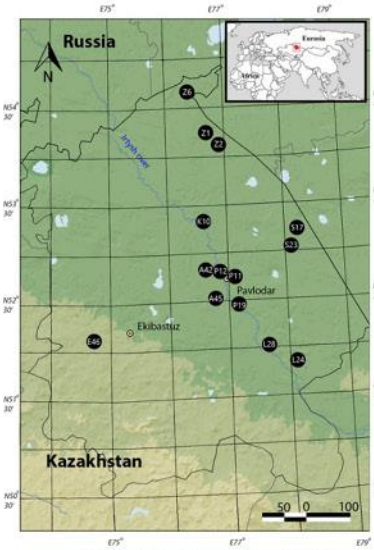
Map 149. *Acronicta nervosa*

Map 150. *Acronicta albovenosa*

Map 151. *Acronicta dentinosa*

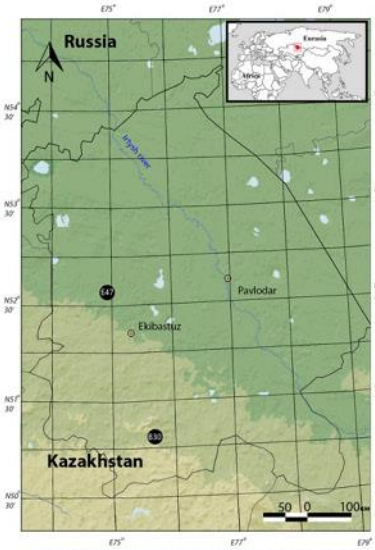
Map 152. *Acronicta megacephala*

Map 153. *Mycteroplus puniceago*

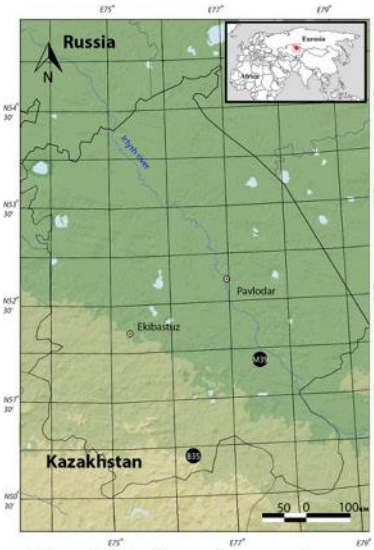


Map 154. *Tyta luctuosa*

Map 155. *Cucullia tiefi*

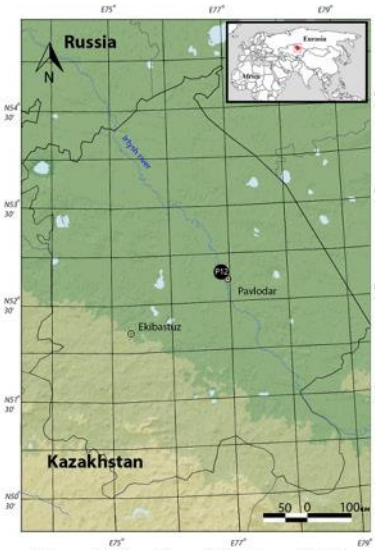


Map 156. *Cucullia praecana*



Map 157. *Cucullia propinqua*

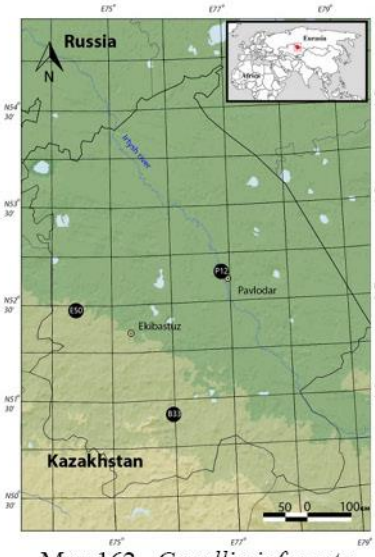
Map 158. *Cucullia scopariae*



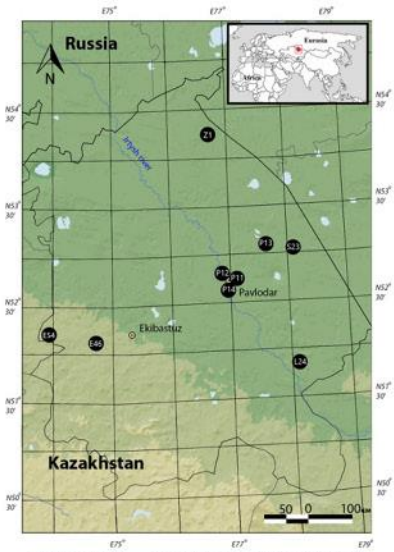
Map 159. *Cucullia fraudatrix*

Map 160. *Cucullia absinthii*

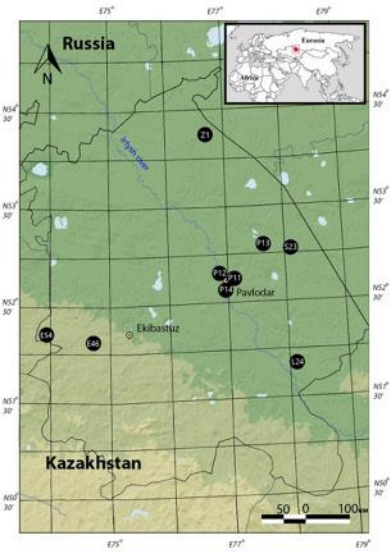
Map 161. *Cucullia argentea*



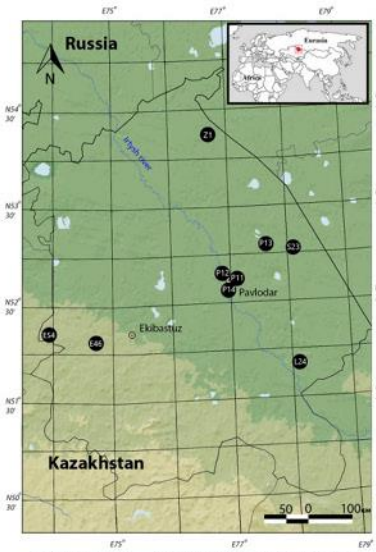
Map 162. *Cucullia infuscata*



Map 163. *Cucullia artemisiae*



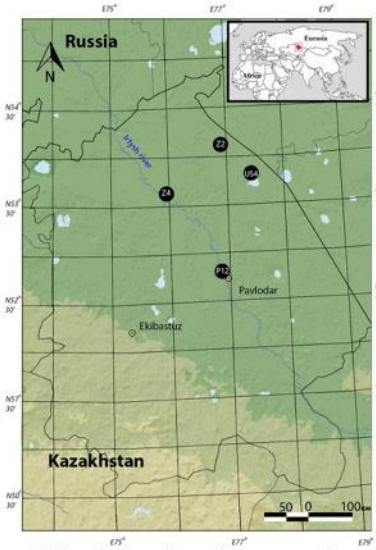
Map 164. *Cucullia humilis*



Map 165. *Cucullia splendida*

Map 166. *Cucullia gnaphalii*

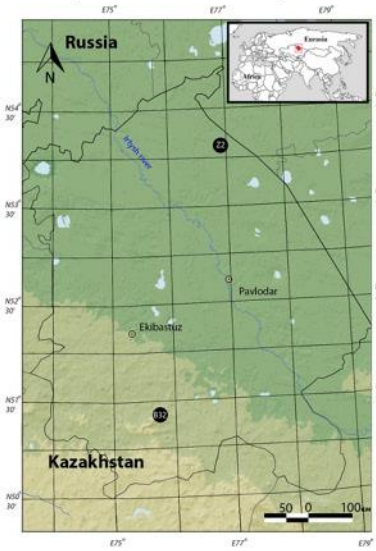
Map 167. *Cucullia magnifica*



Map 168. *Cucullia argentina*

Map 169. *Cucullia biradiata*

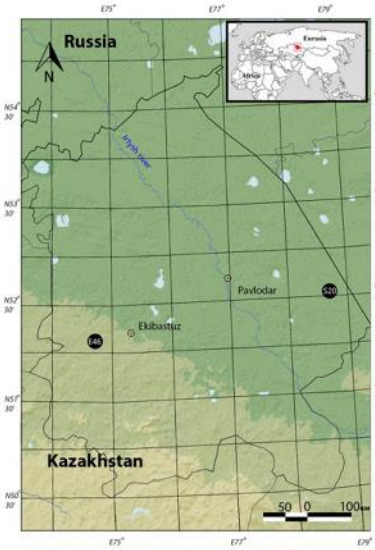
Map 170. *Cucullia pustulata*



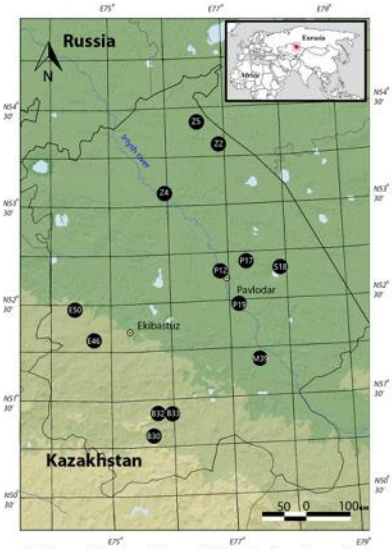
Map 171. *Cucullia lucifuga*

Map 172. *Cucullia umbratica*

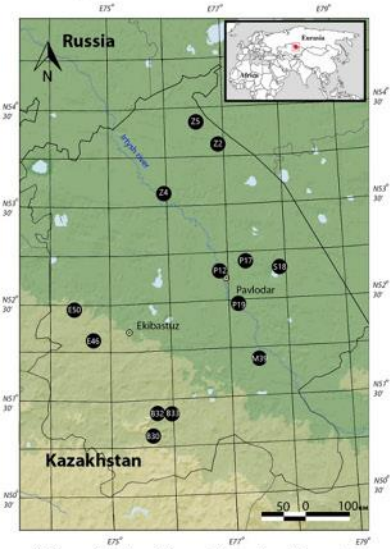
Map 173. *Cucullia biornata*



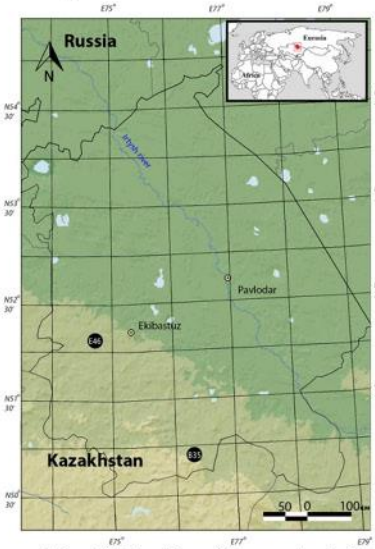
Map 174. *Cucullia balsamitae*



Map 175. *Cucullia inderiensis*



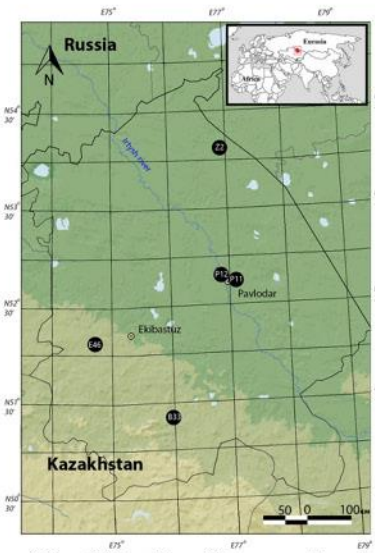
Map 176. *Cucullia duplicata*



Map 177. *Cucullia santonici*

Map 178. *Cucullia lactea*

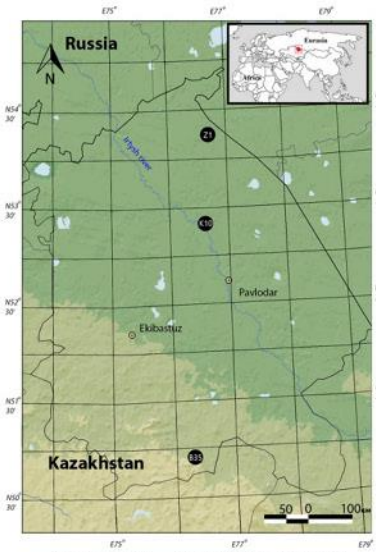
Map 179. *Cucullia mixta*



Map 180. *Cucullia xeranthemi*

Map 181. *Cucullia virgaureae*

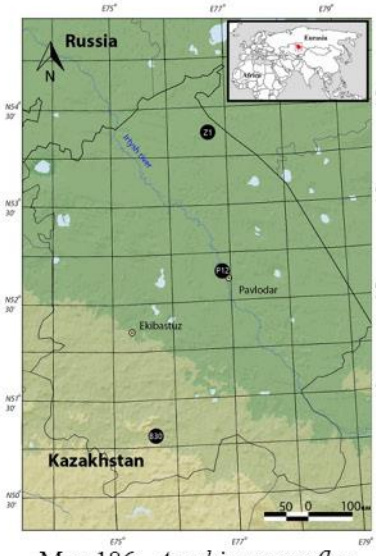
Map 182. *Cucullia amota*



Map 183. *Cucullia asteris*

Map 184. *Cucullia tanaceti*

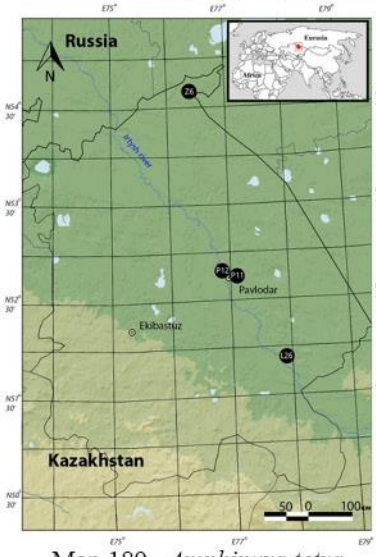
Map 185. *Amphipyra pyramidea*



Map 186. *Amphipyra perflua*

Map 187. *Amphipyra livida*

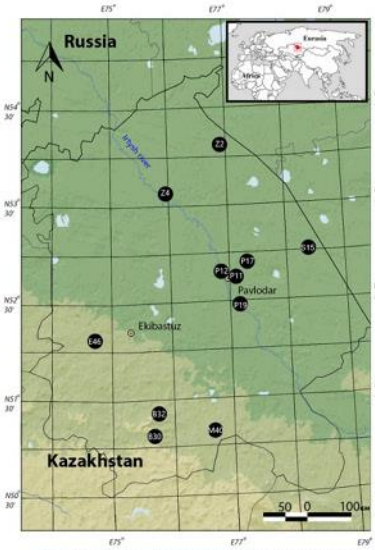
Map 188. *Amphipyra tragopoginis*



Map 189. *Amphipyra tetra*

Map 190. *Amphipyra sergei*

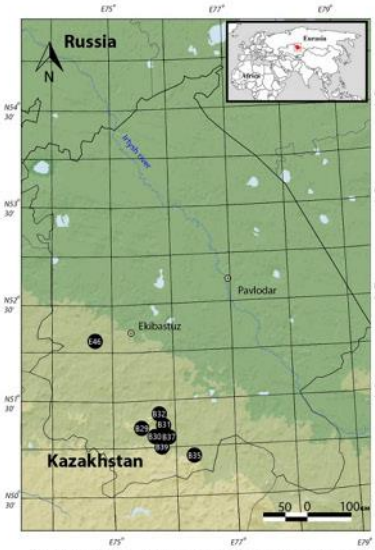
Map 191. *Brachionycha nubeculosa*



Map 192. *Calophasia lunula*

Map 193. *Calophasia opalina*

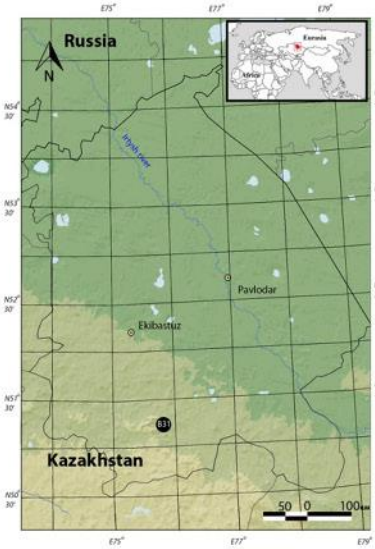
Map 194. *Sympistis strioligera*



Map 195. *Sympistis campicola*

Map 196. *Sympistis exacta*

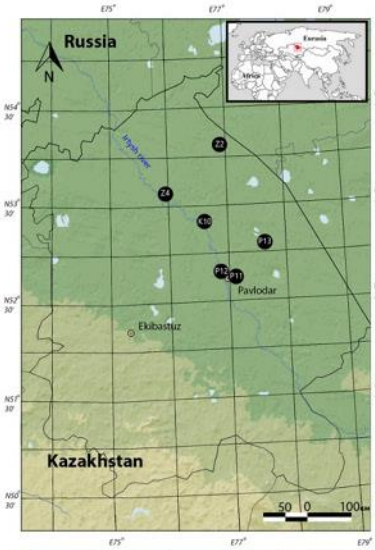
Map 197. *Sympistis nigricula*



Map 198. *Sympistis senica*

Map 199. *Lophoterges centralasiae*

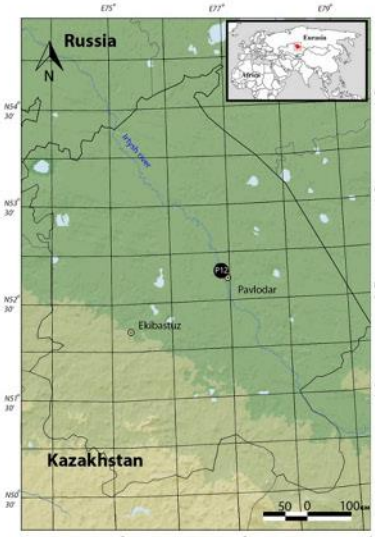
Map 200. *Epimecia ustula*



Map 201. *Phidrimana amurensis*

Map 202. *Acosmetia caliginosa*

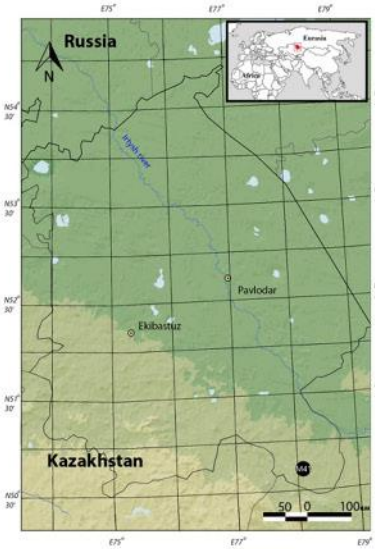
Map 203. *Eucarta virgo*



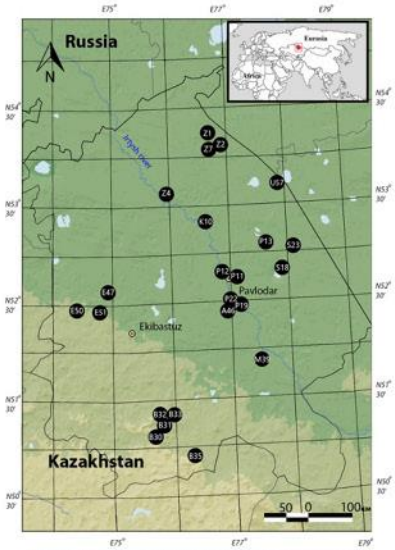
Map 204. *Eucarta amethystina*

Map 205. *Pyrrhia umbra*

Map 206. *Pyrrhia exprimens*

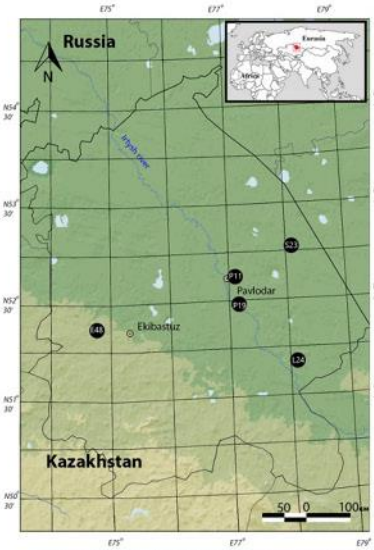


Map 207. *Schinia cognata*



Map 208. *Protoschinia scutosa*

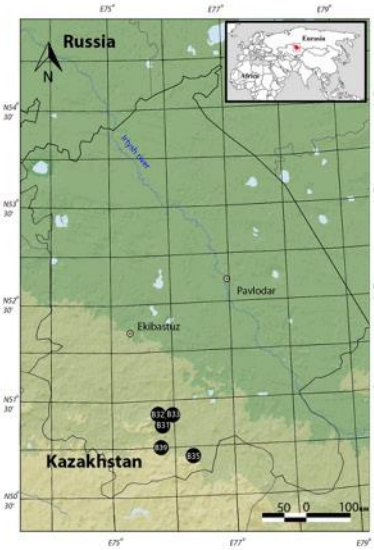
Map 209. *Heliothis peltigera*



Map 210. *Heliothis viriplaca*

Map 211. *Heliothis adaucta*

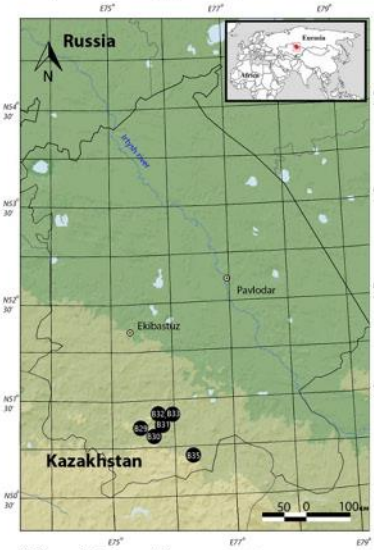
Map 212. *Helicoverpa armigera*



Map 213. *Cryphia fraudatricula*

Map 214. *Bryophila orthogramma*

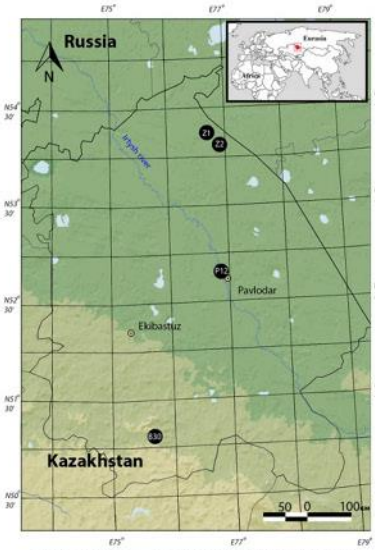
Map 215. *Victrix akbet*



Map 216. *Athaumasta expressa*

Map 217. *Pseudeustrotia candidula*

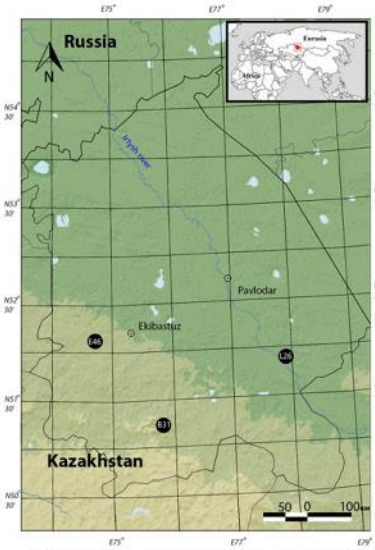
Map 218. *Spodoptera exigua*



Map 219. *Elaphria venustula*

Map 220. *Caradrina morpheus*

Map 221. *Caradrina terrea*



Map 222. *Caradrina montana*

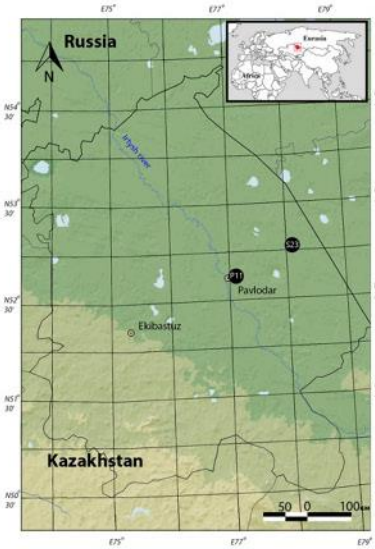
Map 223. *Caradrina albina*

Map 224. *Caradrina petraea*

Map 225. *Caradrina monssacralis*

Map 226. *Caradrina wullschlegeli*

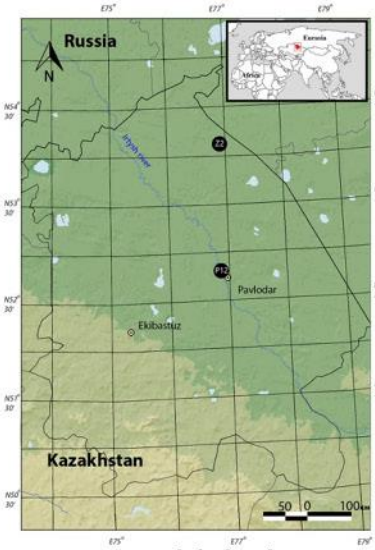
Map 227. *Caradrina clavipalpis*



Map 228. *Hoplodrina octogenaria*

Map 229. *Hoplodrina blanda*

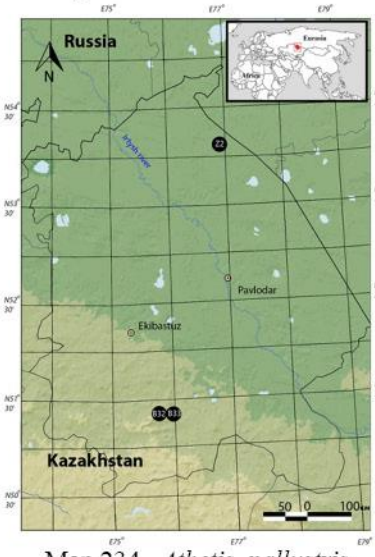
Map 230. *Chilodes maritima*



Map 231. *Chilodes distracta*

Map 232. *Charanyca ferruginea*

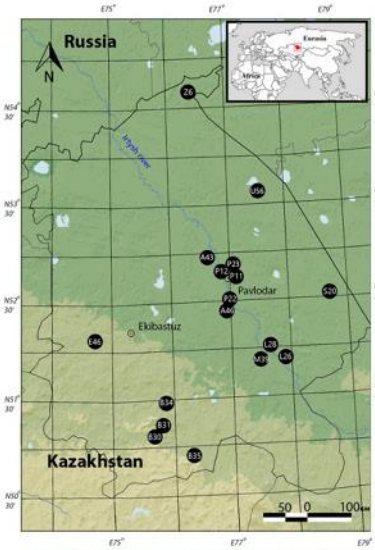
Map 233. *Athetis furvula*



Map 234. *Athetis pallustris*

Map 235. *Athetis lepigone*

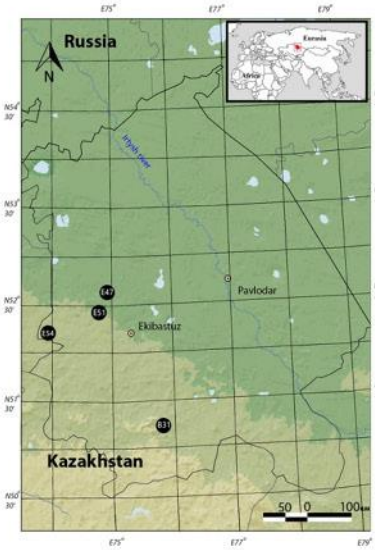
Map 236. *Athetis correpta*



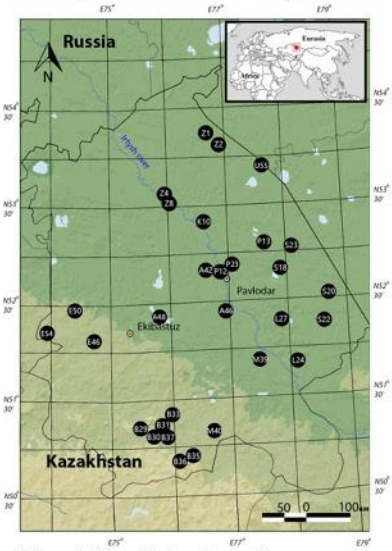
Map 237. *Dypterygia scabriuscula*

Map 238. *Trachea atriplicis*

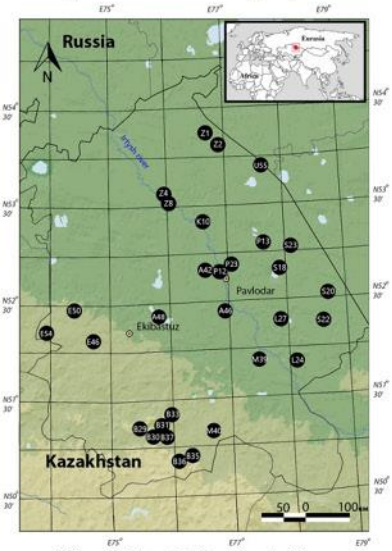
Map 239. *Actinotia polyodon*



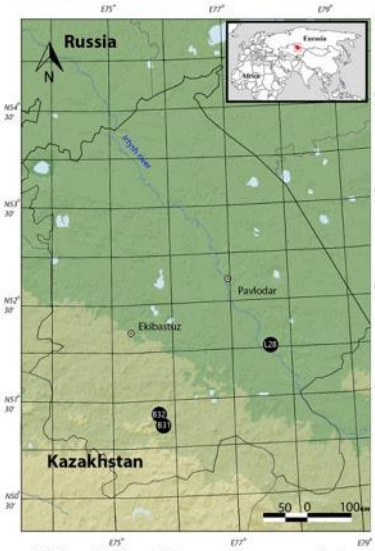
Map 240. *Oxytripia orbiculosa*



Map 241. *Sidemia spilogramma*



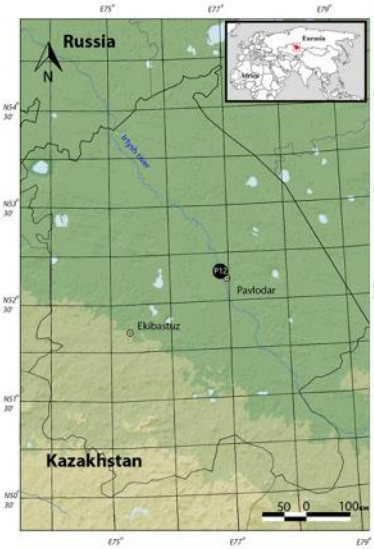
Map 242. *Calamia tridens*



Map 243. *Staurophora celsia*

Map 244. *Helotropha leucostigma*

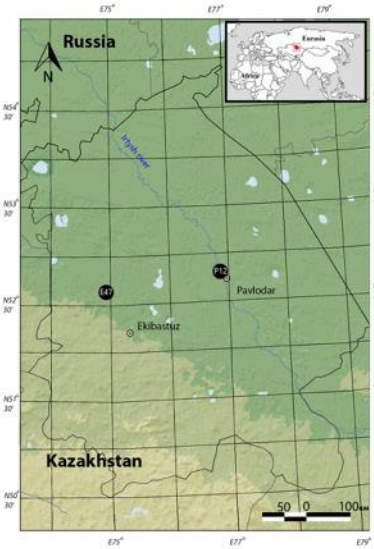
Map 245. *Celaena haworthii*



Map 246. *Hydraecia micacea*

Map 247. *Hydraecia ultima*

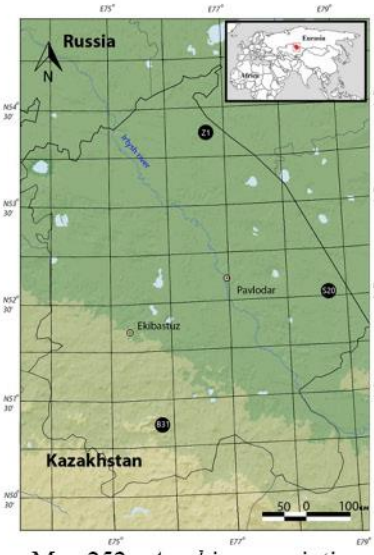
Map 248. *Hydraecia mongoliensis*



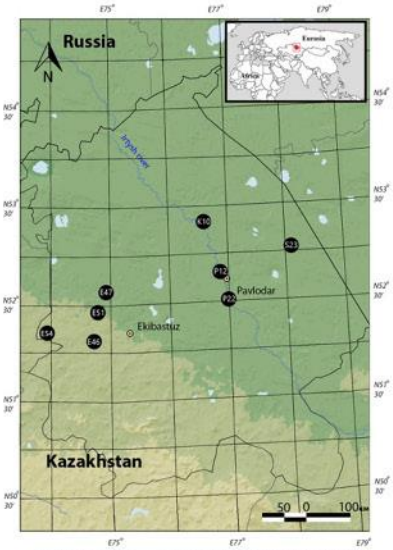
Map 249. *Hydraecia osseola*

Map 250. *Amphipoea fucosa*

Map 251. *Amphipoea ochreola*

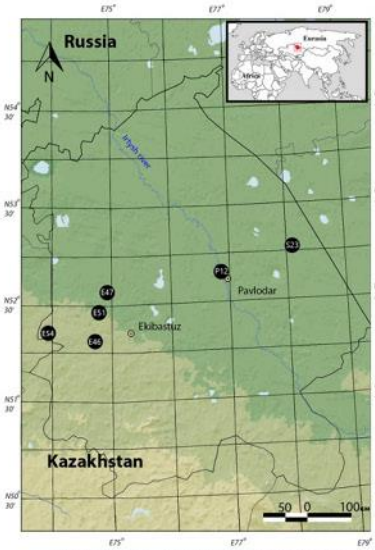


Map 252. *Amphipoea asiatica*



Map 253. *Fabula zollikoferi*

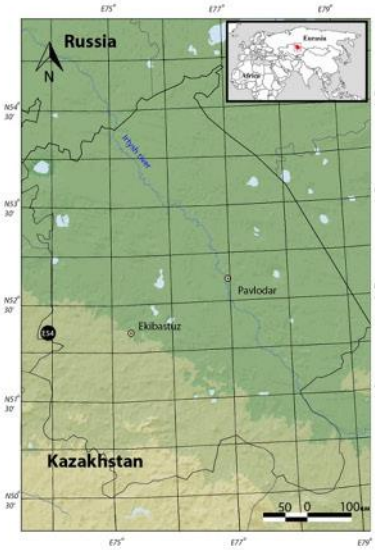
Map 254. *Rhizedra lutosa*



Map 255. *Nonagria typhae*

Map 256. *Longalatedes elymi*

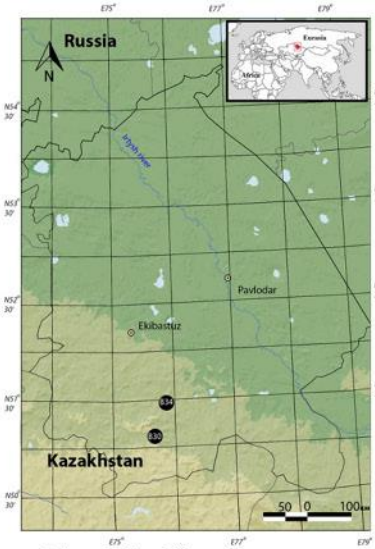
Map 257. *Archanara dissoluta*



Map 258. *Denticucullus pygmina*

Map 259. *Hypocoena stigmatica*

Map 260. *Photedes fluxa*



Map 261. *Photedes extrema*

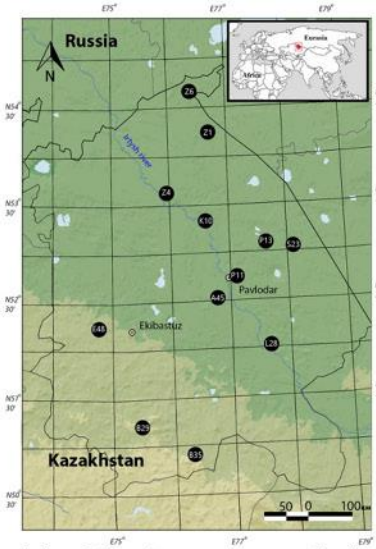
Map 262. *Ogilia leuconephra*

Map 263. *Protarchanara brevilinea*

Map 264. *Globia sparganii*

Map 265. *Globia algae*

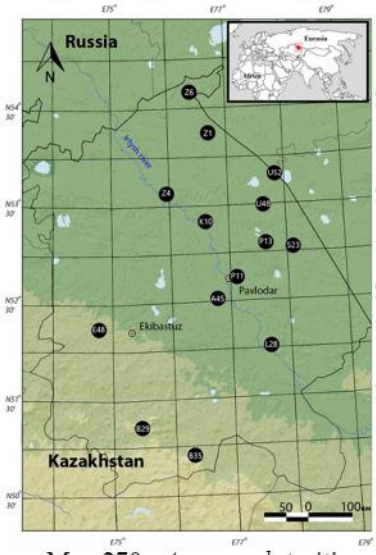
Map 266. *Pabulatrix pabulatricula*



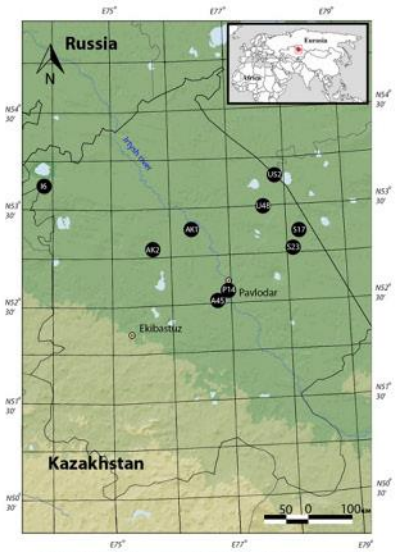
Map 267. *Apamea monoglypha*

Map 268. *Apamea ferrago*

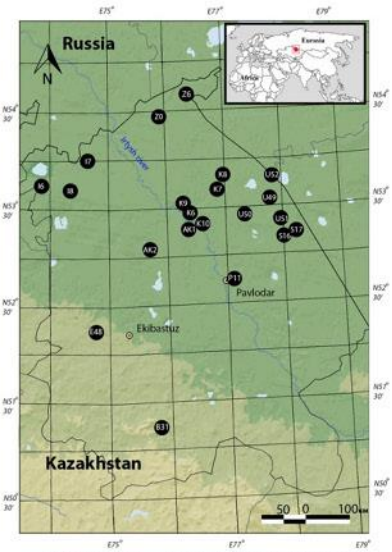
Map 269. *Apamea furva*



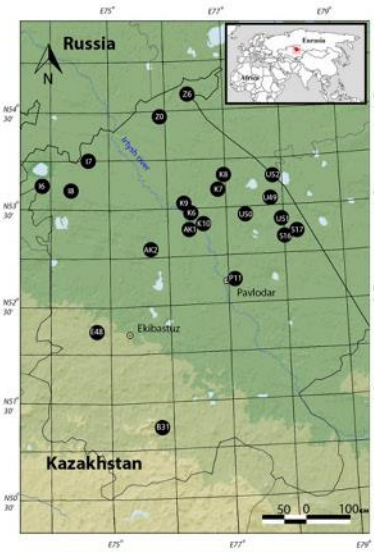
Map 270. *Apamea lateritia*



Map 271. *Apamea oblonga*



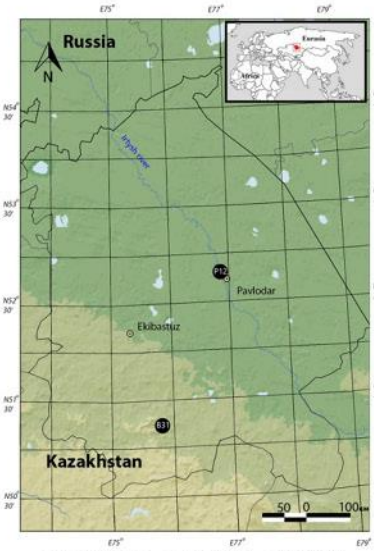
Map 272. *Apamea sordens*



Map 273. *Apamea anceps*

Map 274. *Apamea leucodon*

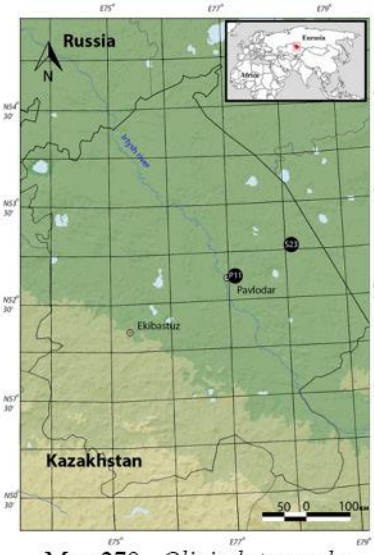
Map 275. *Apamea remissa*



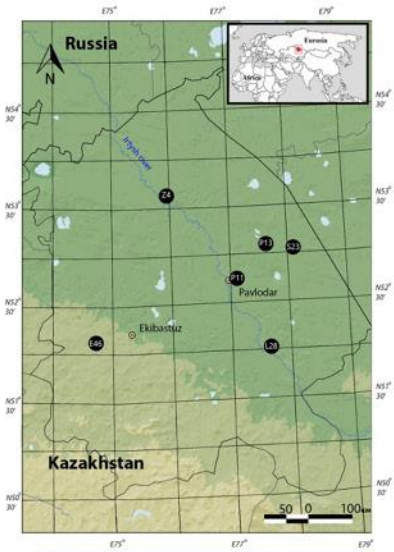
Map 276. *Apamea crenata*

Map 277. *Apamea unanimis*

Map 278. *Apamea illyria*

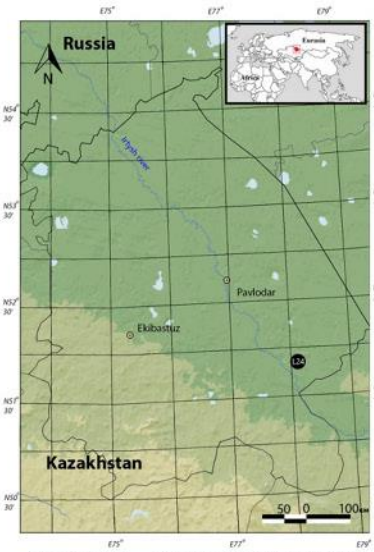


Map 279. *Oligia latruncula*



Map 280. *Mesoligia furuncula*

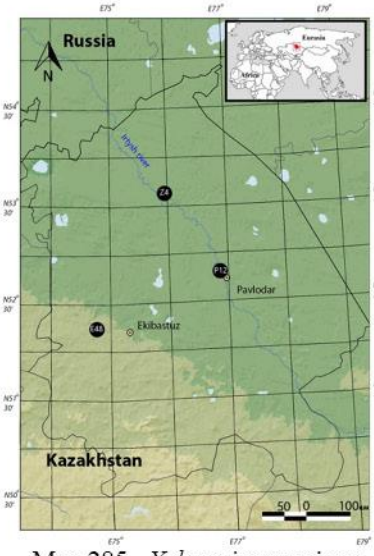
Map 281. *Litoligia literosa*



Map 282. *Mesapamea secalis*

Map 283. *Mesapamea moderata*

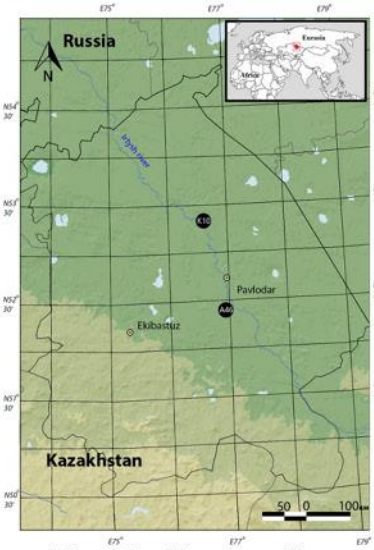
Map 284. *Resapamea hedeni*



Map 285. *Xylomoia graminea*

Map 286. *Episema tersa*

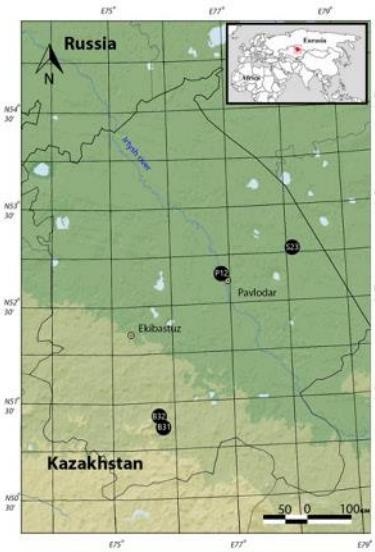
Map 287. *Leucochlaena fallax*



Map 288. *Hyppa rectilinea*

Map 289. *Parastichtis suspecta*

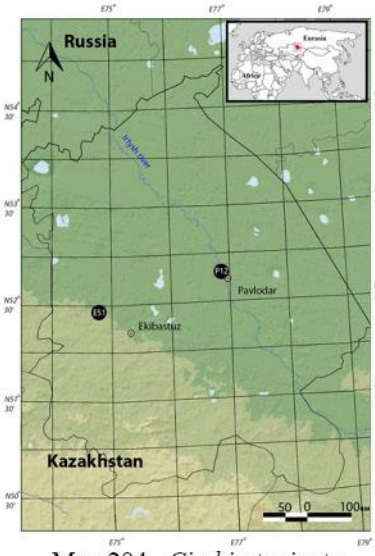
Map 290. *Apterogenum ypsillon*



Map 291. *Xanthia togata*

Map 292. *Cirrhia icteritia*

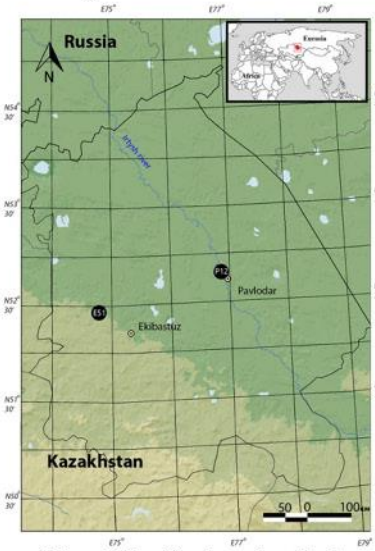
Map 293. *Cirrhia ocellaris*



Map 294. *Cirrhia tunicata*

Map 295. *Mesogona acetosellae*

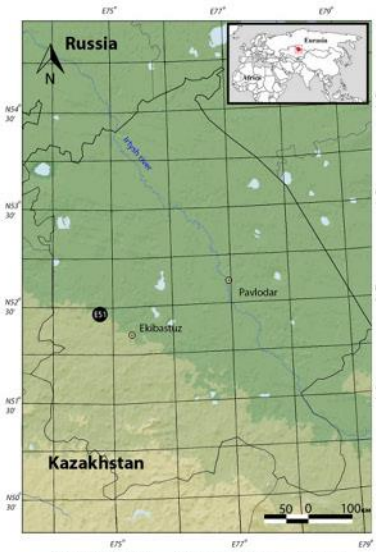
Map 296. *Mesogona oxalina*



Map 297. *Sunira circellaris*

Map 298. *Agrochola vulpecula*

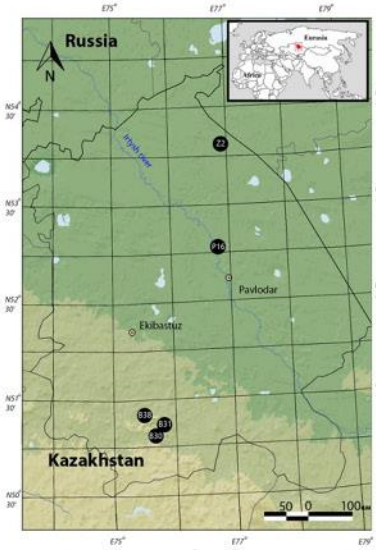
Map 299. *Agrochola helvola*



Map 300. *Agrochola lota*

Map 301. *Conistra vaccinii*

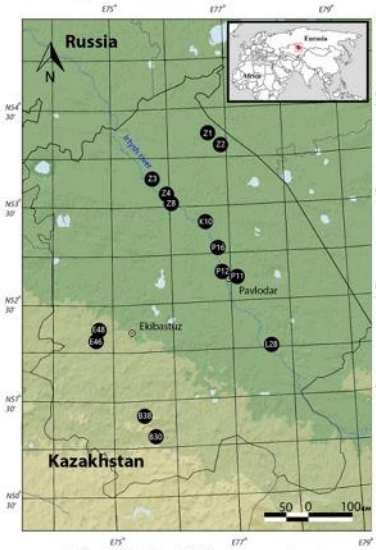
Map 302. *Conistra rubiginea*



Map 303. *Lithophane socia*

Map 304. *Lithophane furcifera*

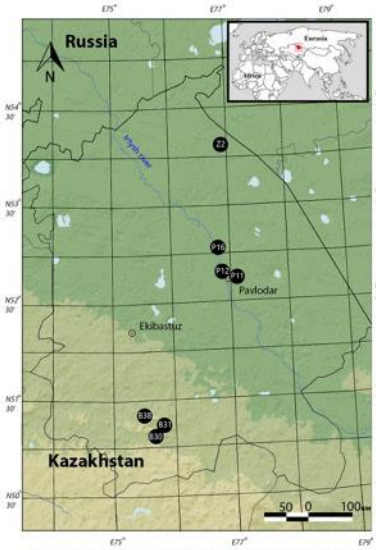
Map 305. *Xylena exsoleta*



Map 306. *Xylena vetusta*

Map 307. *Xylena solidaginis*

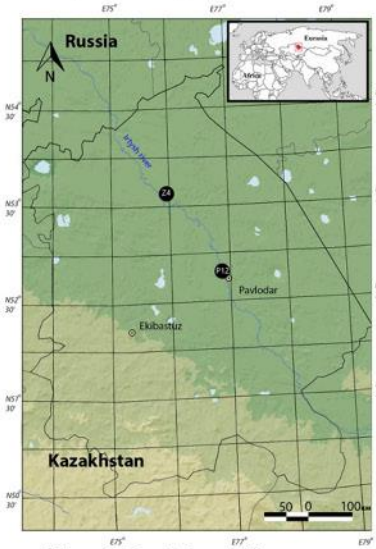
Map 308. *Orbona fragariae*



Map 309. *Eupsilia transversa*

Map 310. *Enargia paleacea*

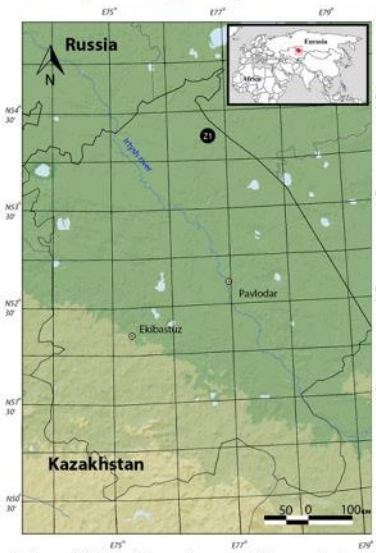
Map 311. *Enargia abluta*



Map 312. *Ipimorpha retusa*

Map 313. *Ipimorpha subtusa*

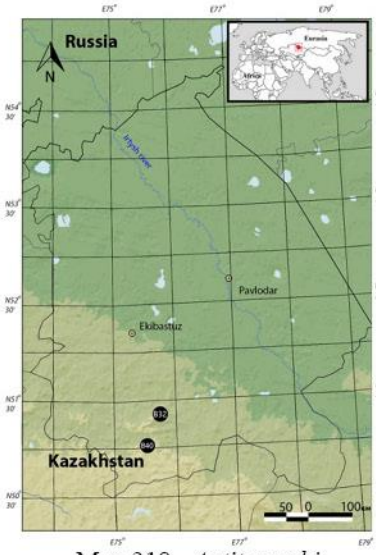
Map 314. *Cosmia affinis*



Map 315. *Brachyxanthia zelotypa*

Map 316. *Pseudohadena argyllostigma*

Map 317. *Eremohadena immunda*



Map 318. *Antitype chi*

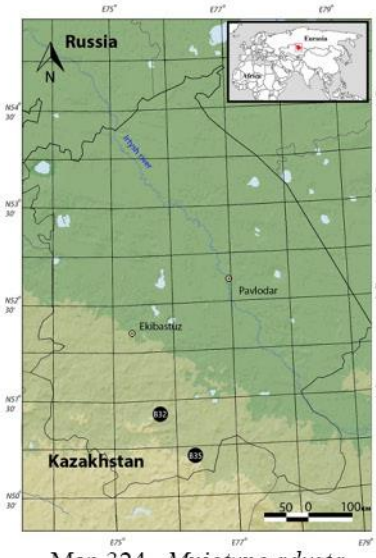
Map 319. *Ammoconia caecimacula*

Map 320. *Dasypolia templi*

Map 321. *Dasypolia timoi*

Map 322. *Dasypolia murina*

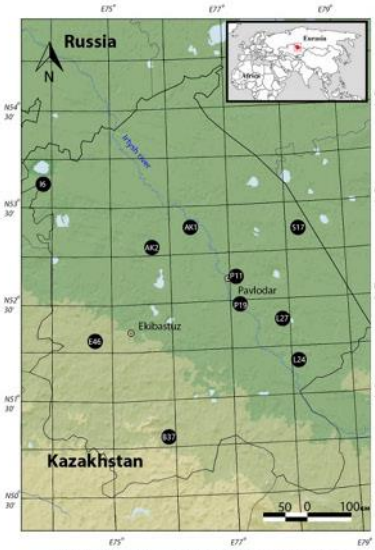
Map 323. *Blepharita amica*



Map 324. *Mniotype adusta*

Map 325. *Mniotype satura*

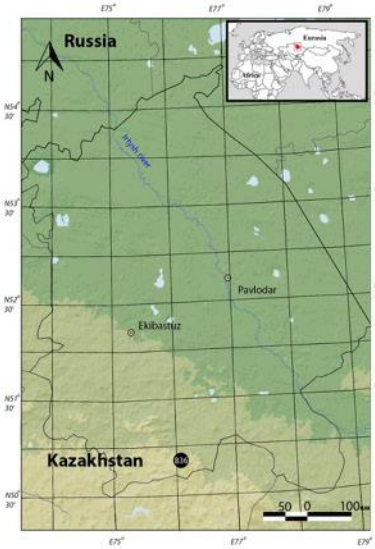
Map 326. *Actebia praecox*



Map 327. *Actebia squalida*

Map 328. *Dichagyris musiva*

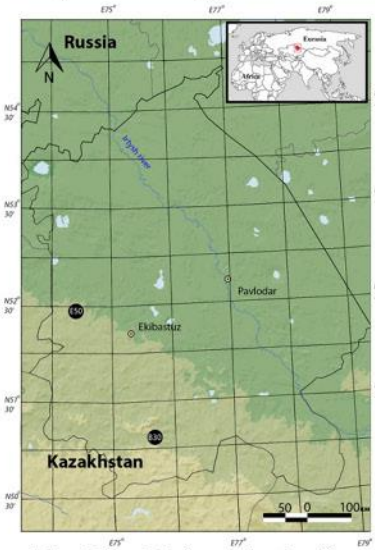
Map 329. *Dichagyris flammatra*



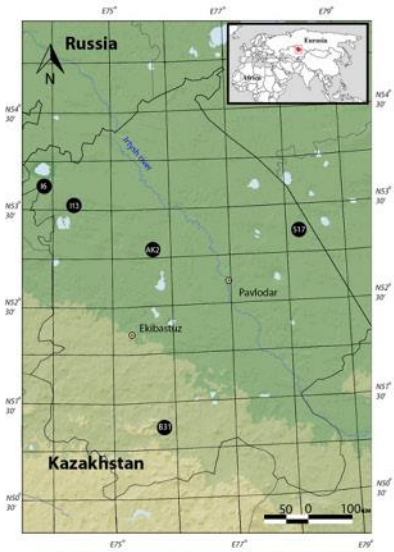
Map 330. *Dichagyris vallesiaca*

Map 331. *Dichagyris lutescens*

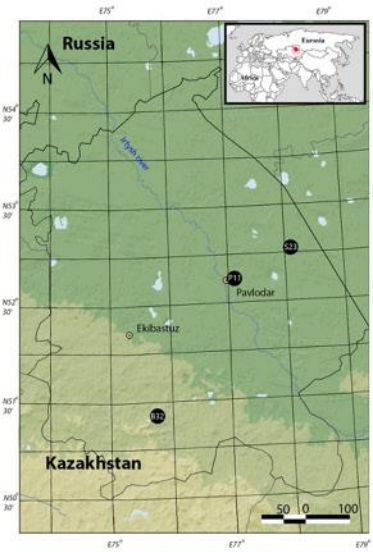
Map 332. *Dichagyris truculenta*



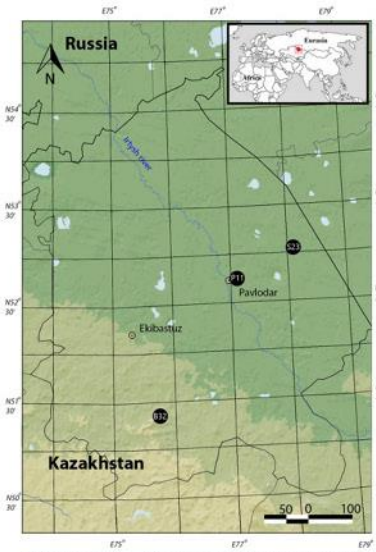
Map 333. *Dichagyris signifera*



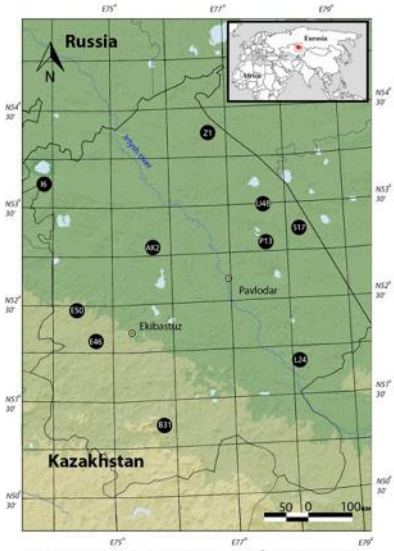
Map 334. *Euxoa adumbrata*



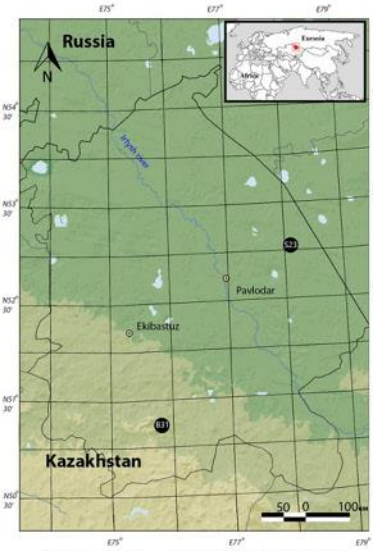
Map 335. *Dichagyris orientis*



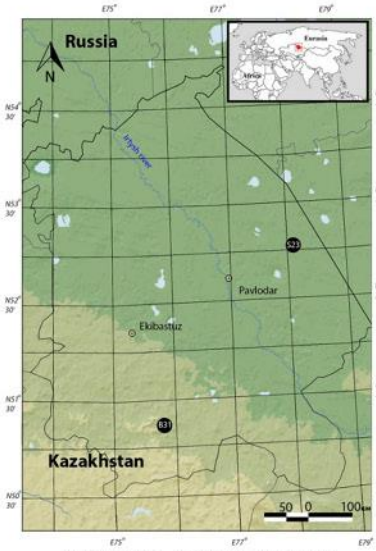
Map 336. *Dichagyris latipennis*



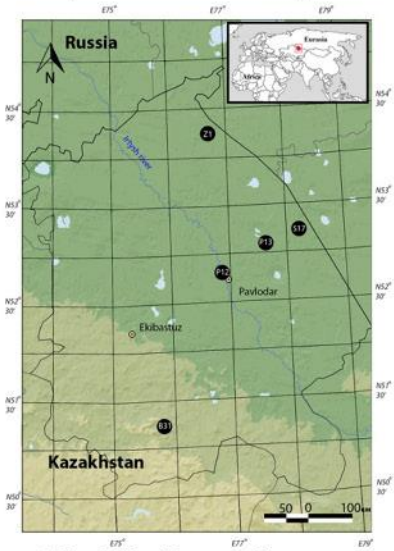
Map 337. *Euxoa ochrogaster*



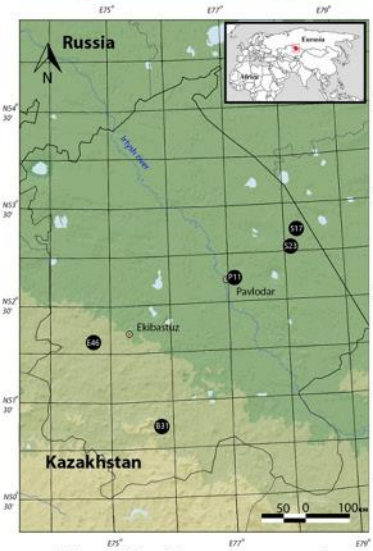
Map 338. *Euxoa conspicua*



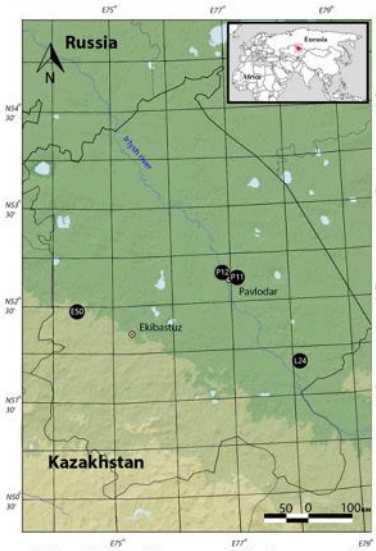
Map 339. *Euxoa temera*



Map 340. *Euxoa phantoma*



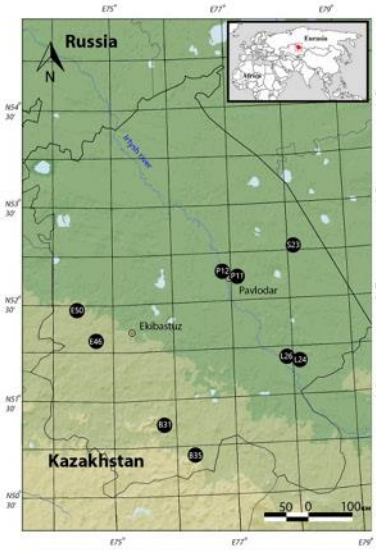
Map 341. *Euxoa cursoria*



Map 342. *Euxoa distinguenda*

Map 343. *Euxoa obelisca*

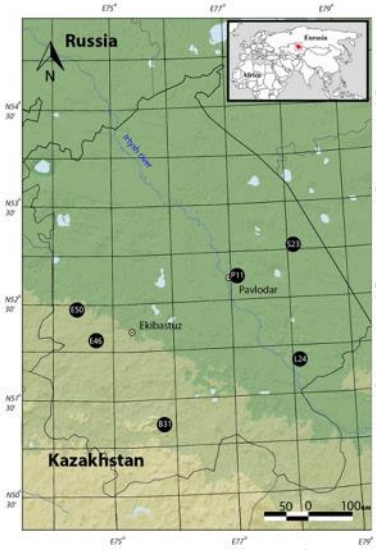
Map 344. *Euxoa segnilis*



Map 345. *Euxoa nigrofusca*

Map 346. *Euxoa eruta*

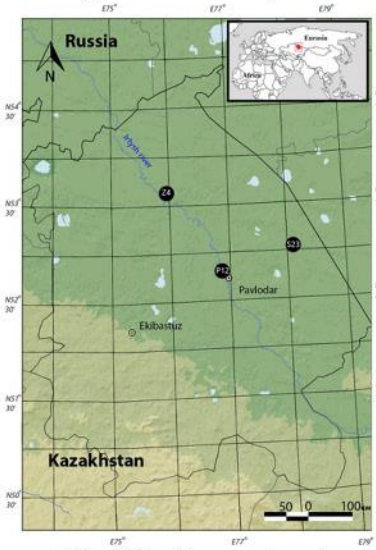
Map 347. *Euxoa nigricans*



Map 348. *Euxoa aquilina*

Map 349. *Euxoa basigramma*

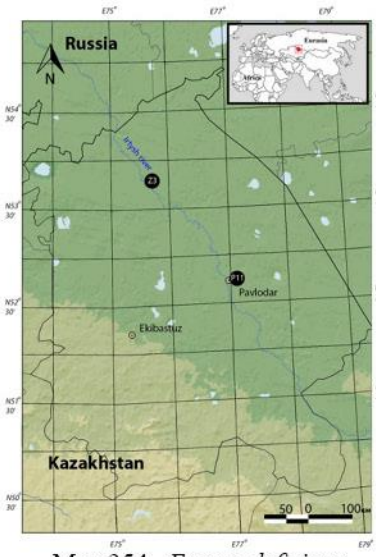
Map 350. *Euxoa fallax*



Map 351. *Euxoa deserta*

Map 352. *Euxoa recussa*

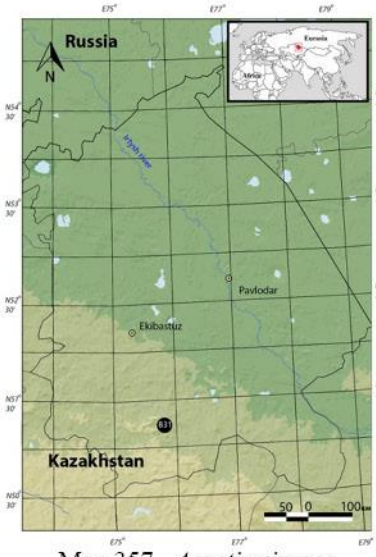
Map 353. *Euxoa tristis*



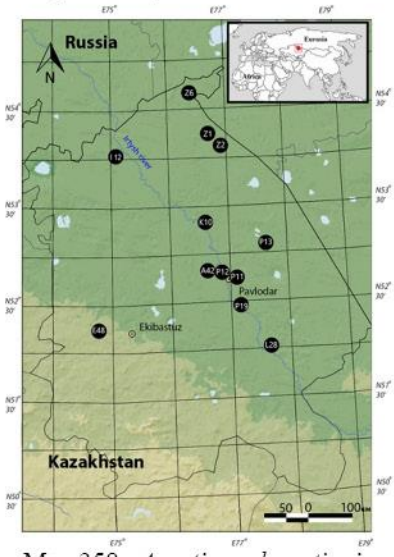
Map 354. *Euxoa deficiens*

Map 355. *Agrotis characteristica*

Map 356. *Agrotis trifurca*

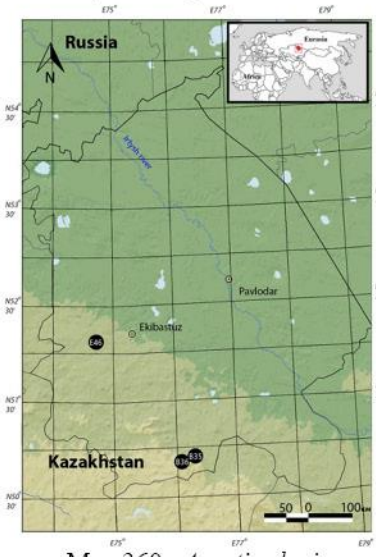


Map 357. *Agrotis cinerea*

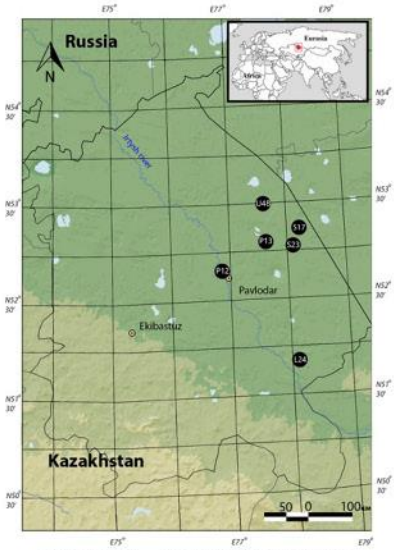


Map 358. *Agrotis exclamationis*

Map 359. *Agrotis segetum*

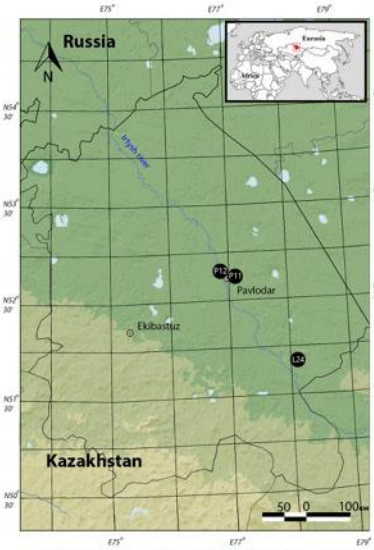


Map 360. *Agrotis clavis*



Map 361. *Agrotis vestigialis*

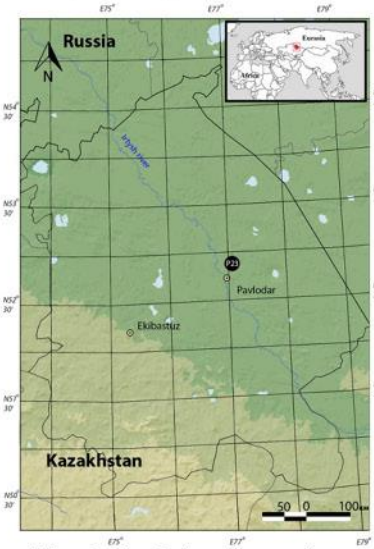
Map 362. *Agrotis ripae*



Map 363. *Agrotis desertorum*

Map 364. *Agrotis ipsilon*

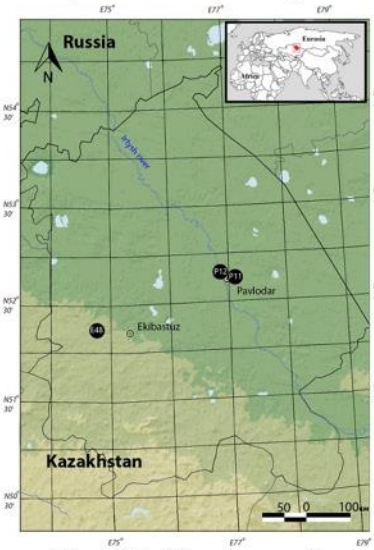
Map 365. *Axylia putris*



Map 366. *Ochropleura plecta*

Map 367. *Diarsia dahlii*

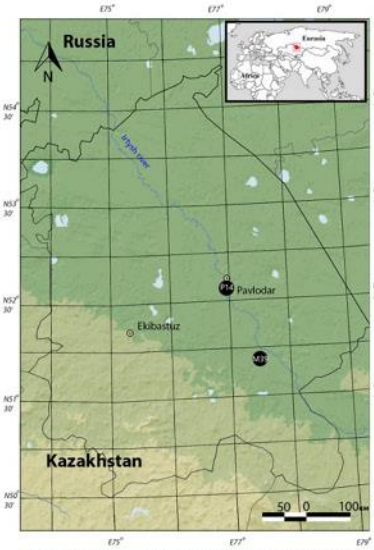
Map 368. *Diarsia brunnea*



Map 369. *Diarsia mendica*

Map 370. *Sineugraphe exusta*

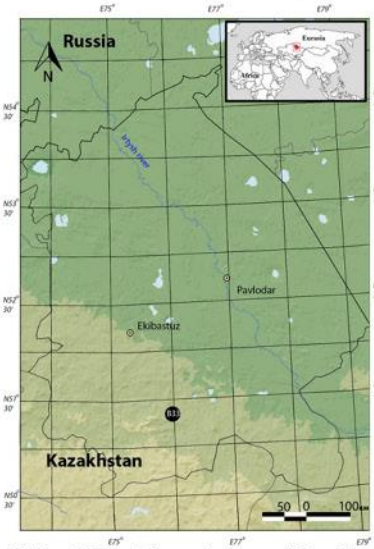
Map 371. *Cerastis rubricosa*



Map 372. *Cerastis leucographa*

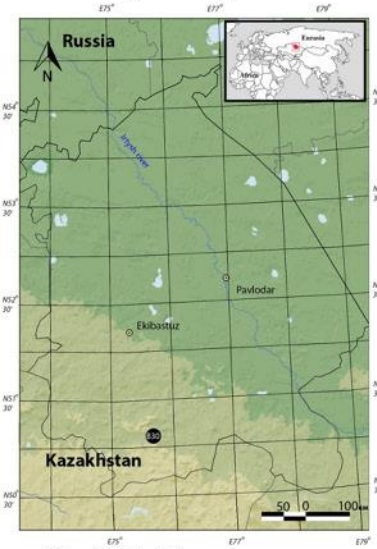
Map 373. *Paradiarsia punicea*

Map 374. *Netrocerocora quadrangula*

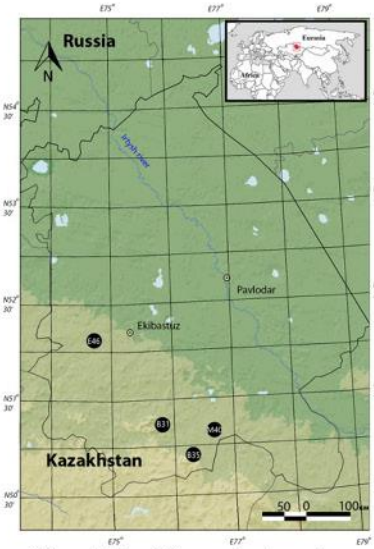


Map 375. *Rhyacia caradrinoides*

Map 376. *Rhyacia simulans*



Map 377. *Rhyacia arenacea*

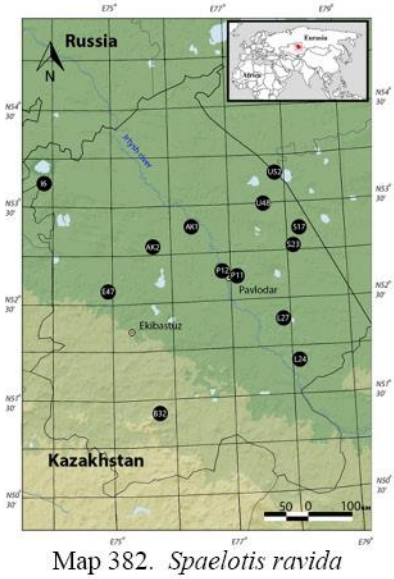


Map 378. *Chersotis transiens*

Map 379. *Chersotis elegans*

Map 380. *Chersotis margaritacea*

Map 381. *Noctua interposita*



Map 382. *Spaelotis ravida*

Map 383. *Spaelotis deplorata*

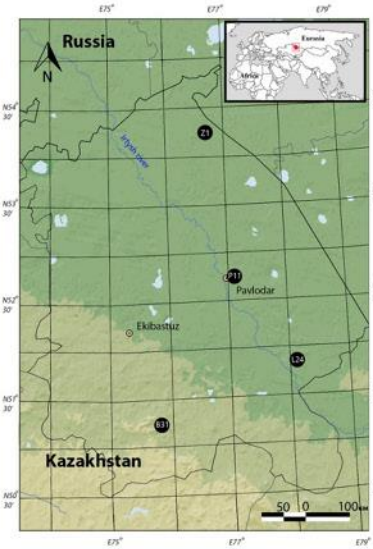
Map 384. *Spaelotis senna*

Map 385. *Opigena polygona*

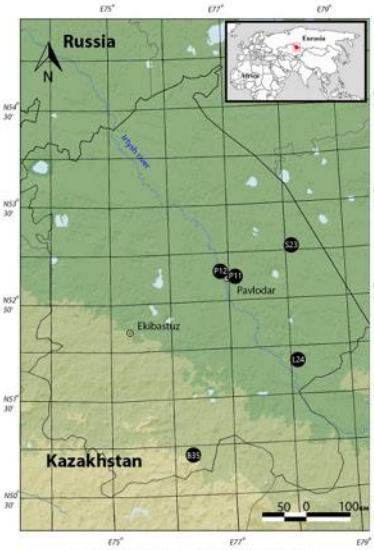
Map 386. *Eurois occulta*

Map 387. *Graphiphora augur*

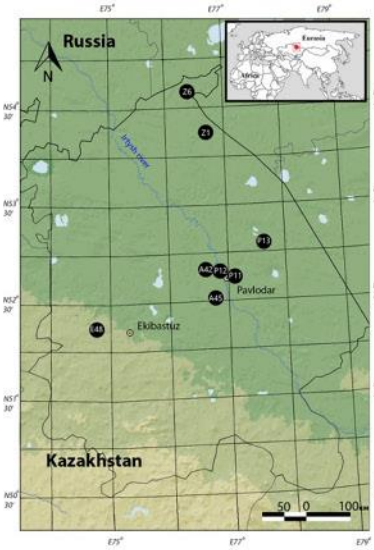
Map 388. *Anaplectoides prasina*



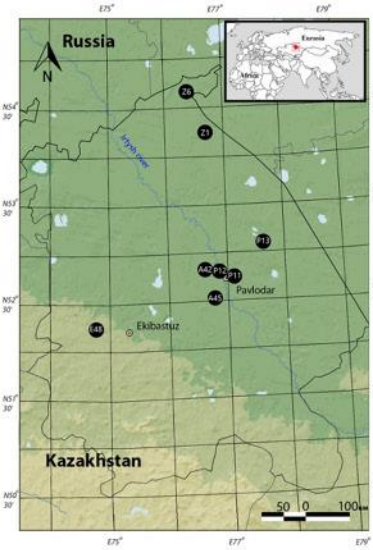
Map 389. *Pseudohermonassa melancholica*



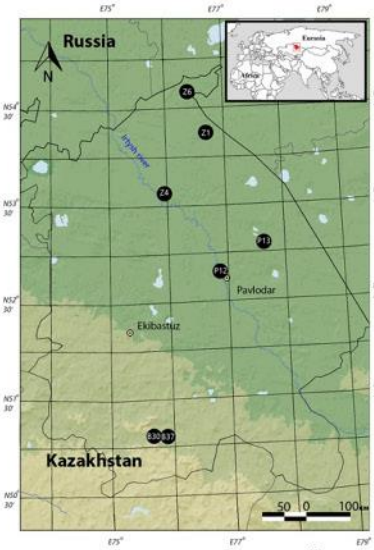
Map 390. *Xestia baja*



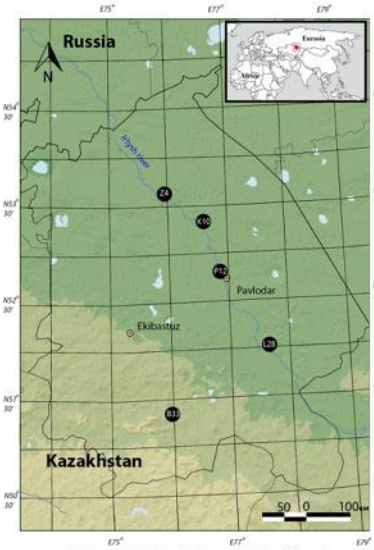
Map 391. *Xestia c-nigrum*



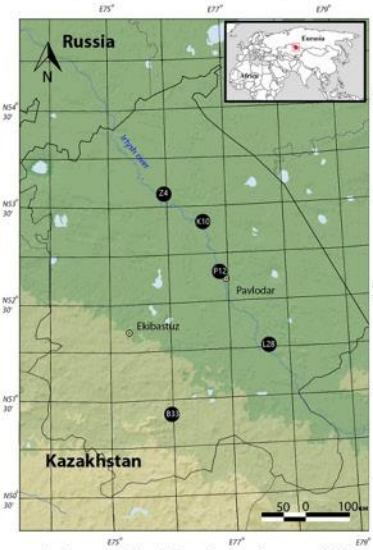
Map 392. *Xestia ditrapezium*



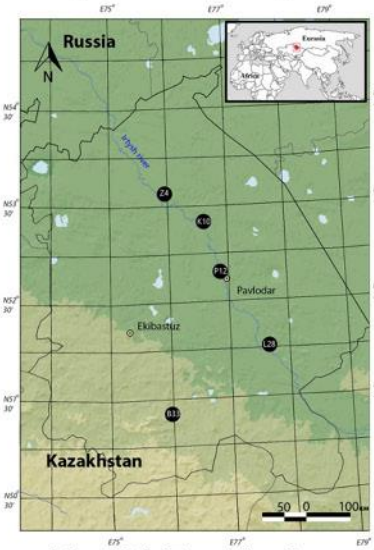
Map 393. *Xestia triangulum*



Map 394. *Xestia kollari*

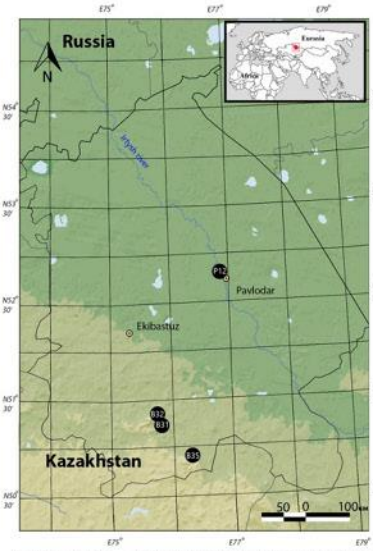


Map 395. *Xestia ashworthii*

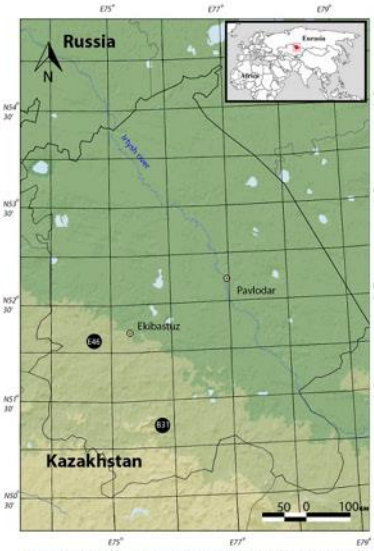


Map 396. *Eugraphe sigma*

Map 397. *Coenophila subrosea*

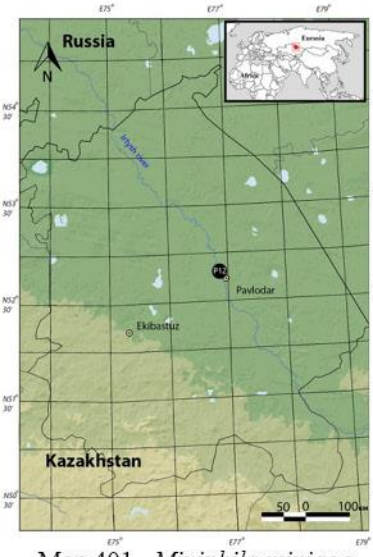


Map 398. *Eugnorisma ignoratum*

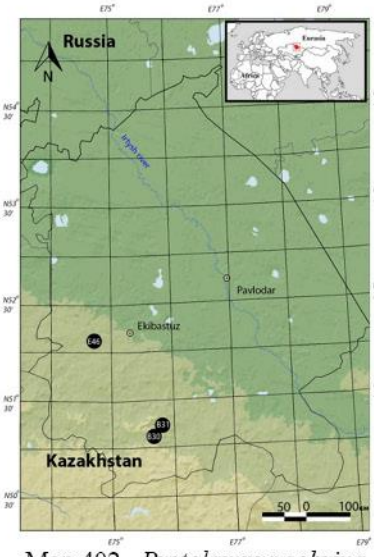


Map 399. *Eugnorisma insignata*

Map 400. *Eugnorisma eminens*



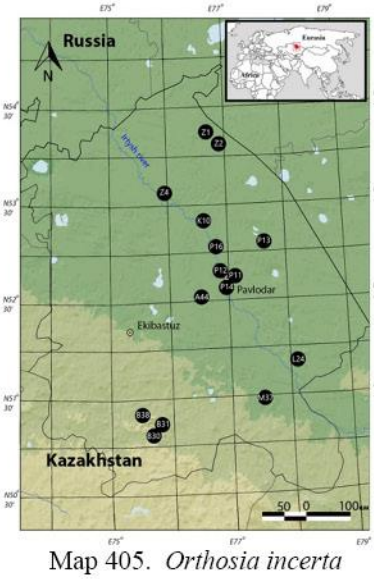
Map 401. *Miniphila miniago*



Map 402. *Protolampra sobrina*

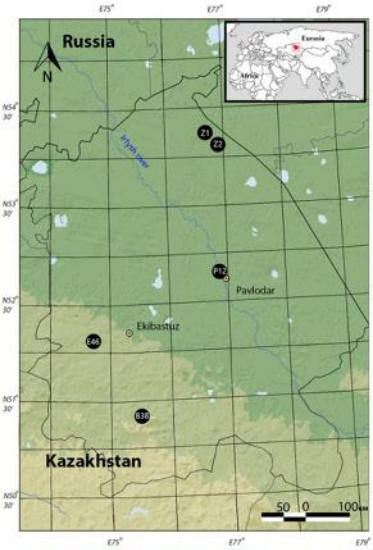
Map 403. *Nyssocnemis eversmanni*

Map 404. *Panolis flammea*

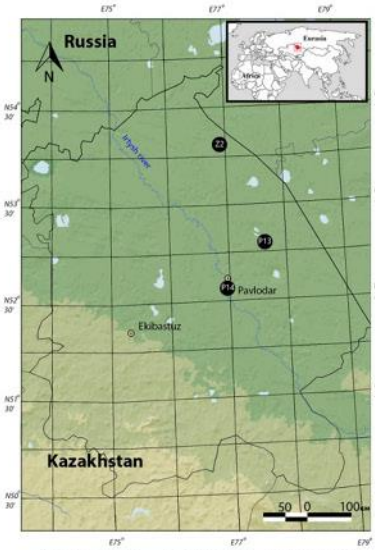


Map 405. *Orthosia incerta*

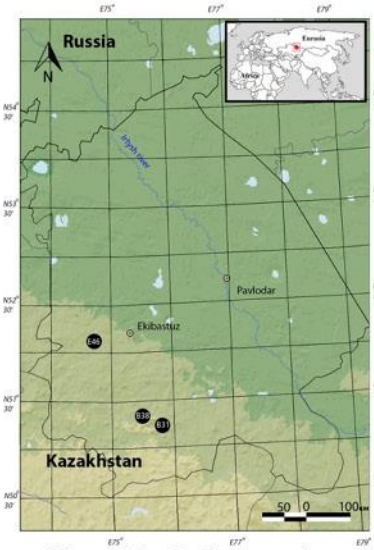
Map 406. *Orthosia ronkayorum*



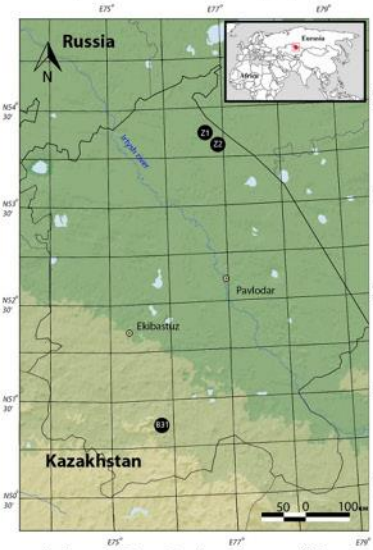
Map 407. *Orthosia populeti*



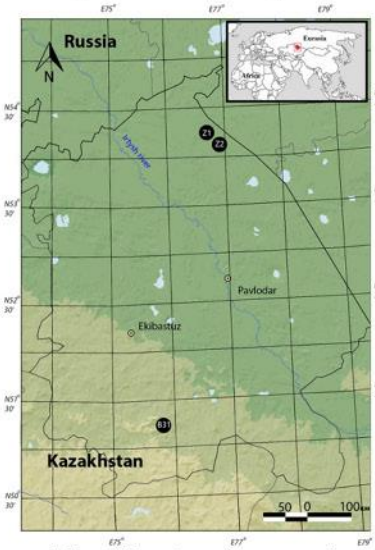
Map 408. *Orthosia gracilis*



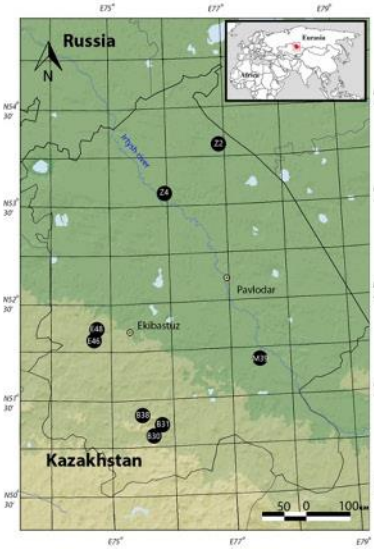
Map 409. *Orthosia opima*



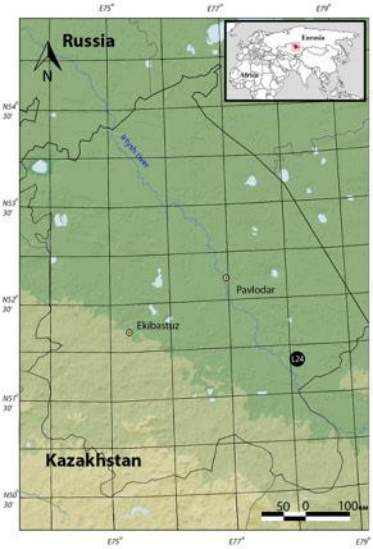
Map 410. *Orthosia gothica*



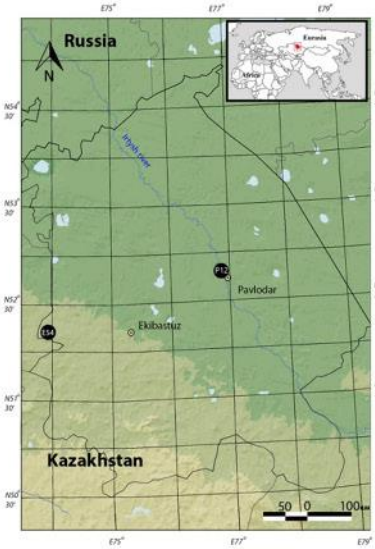
Map 411. *Anorthoa munda*



Map 412. *Perigrapha circumducta*



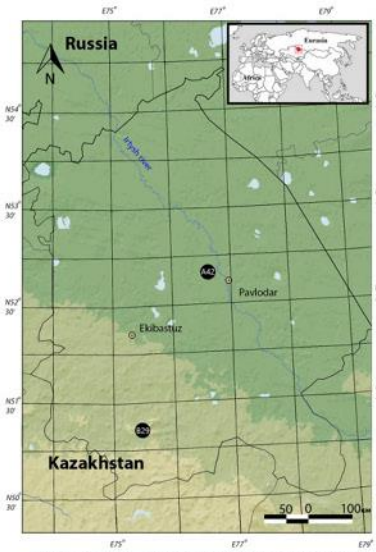
Map 413. *Egira anatolica*



Map 414. *Tholera cespitis*

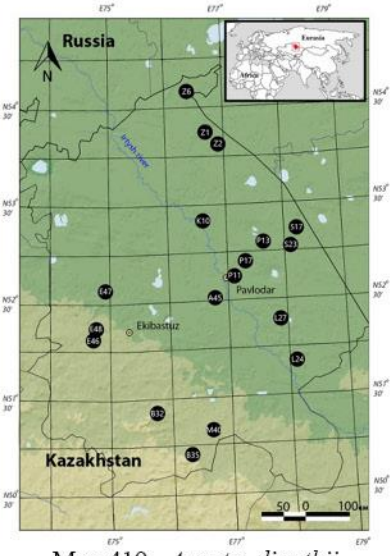
Map 415. *Tholera decimalis*

Map 416. *Tholera hilaris*

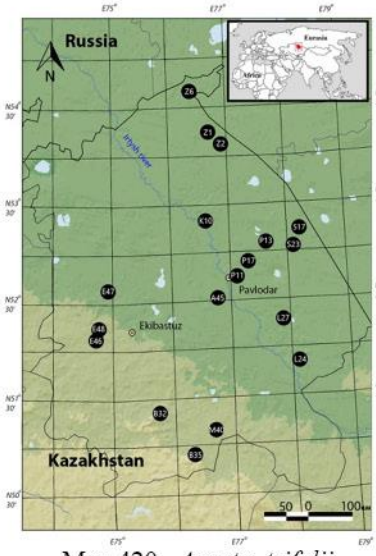


Map 417. *Cerapteryx graminis*

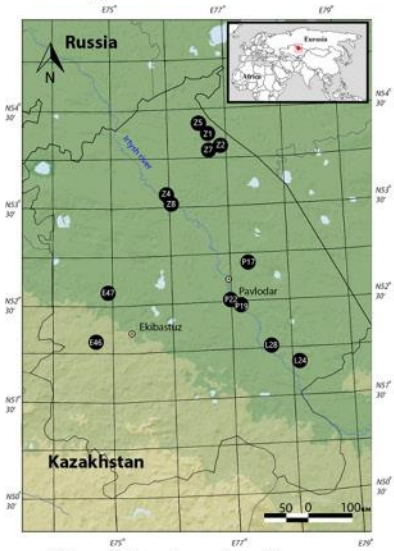
Map 418. *Anarta vaciva*



Map 419. *Anarta dianthii*

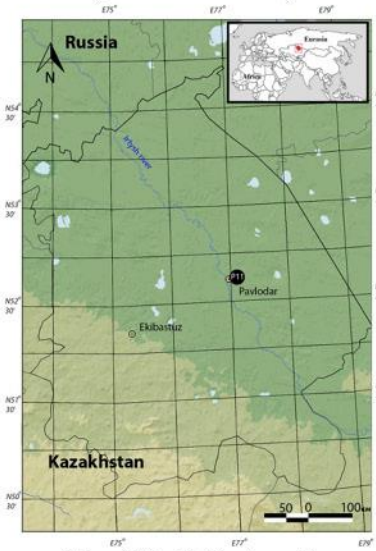


Map 420. *Anarta trifolii*

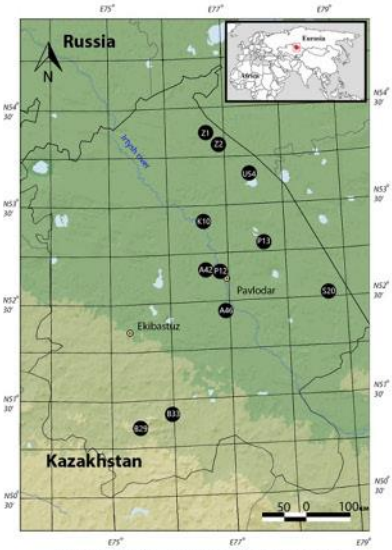


Map 421. *Anarta stigmosa*

Map 422. *Polia bombycina*

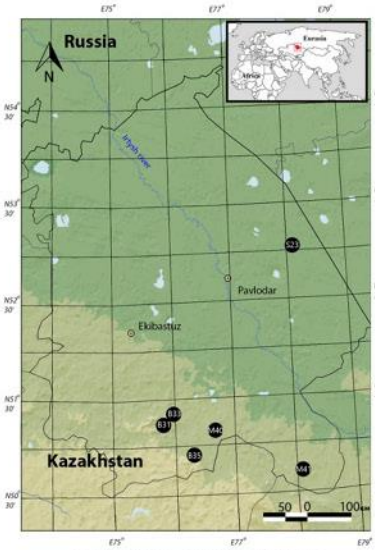


Map 423. *Polia hepatica*



Map 424. *Polia nebulosa*

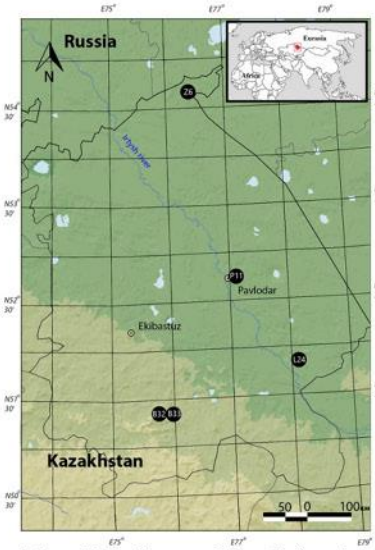
Map 425. *Polia serratilinea*



Map 426. *Polia altaica*

Map 427. *Pachetra sagittigera*

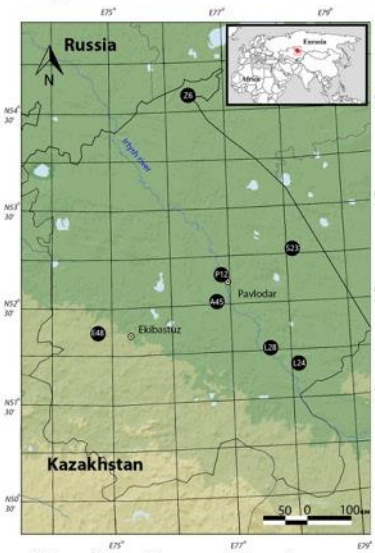
Map 428. *Lacanobia w-latinum*



Map 429. *Lacanobia thalassina*

Map 430. *Lacanobia suasa*

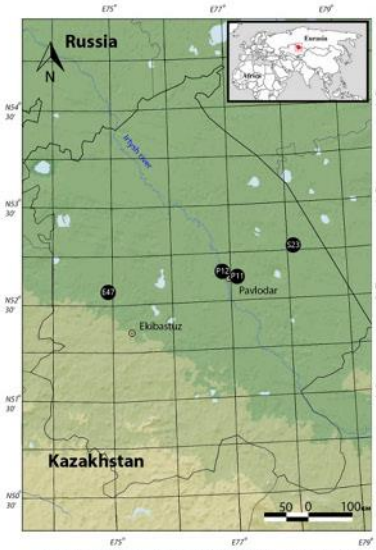
Map 431. *Lacanobia contigua*



Map 432. *Lacanobia oleracea*

Map 433. *Lacanobia splendens*

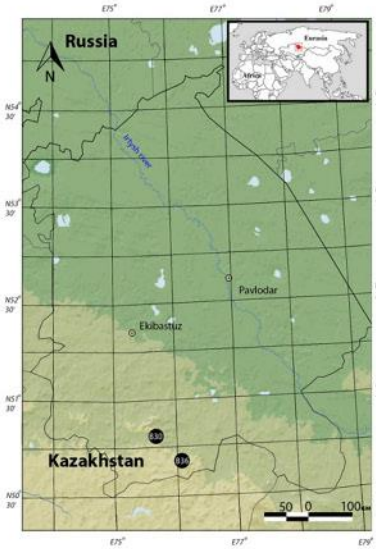
Map 434. *Lacanobia aliena*



Map 435. *Lacanobia blenna*

Map 436. *Melanchra persicariae*

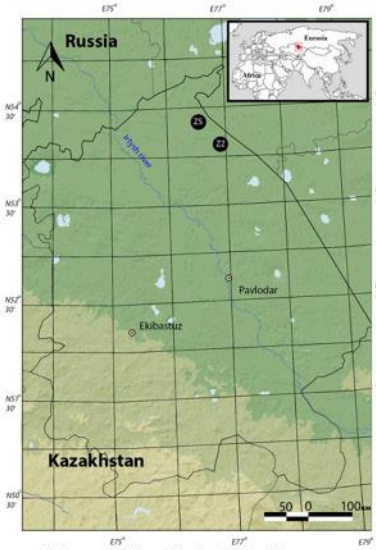
Map 437. *Ceramica pisi*



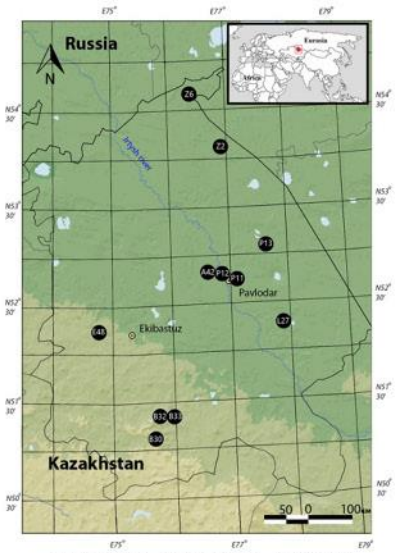
Map 438. *Hada plebeja*

Map 439. *Hyssia cavernosa*

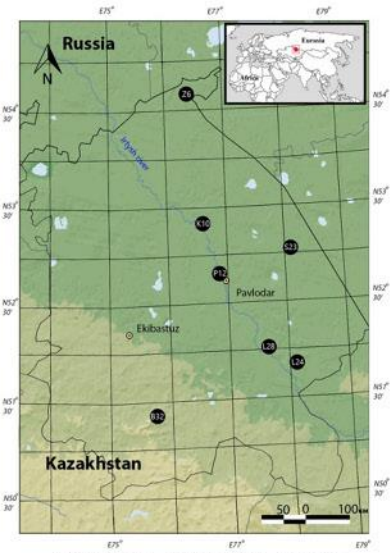
Map 440. *Mamestra brassicae*



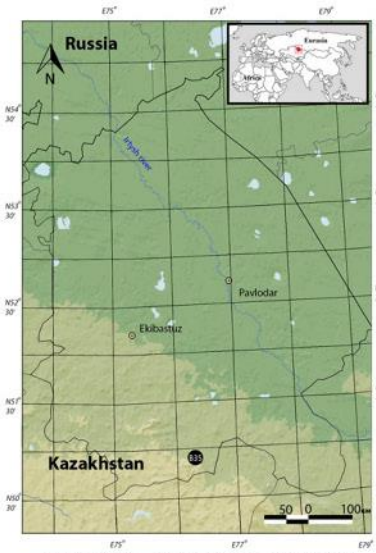
Map 441. *Sideridis lampra*



Map 442. *Sideridis turbida*



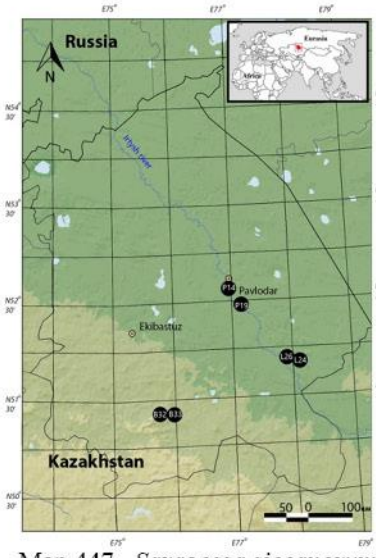
Map 443. *Sideridis egena*



Map 444. *Sideridis rivularis*

Map 445. *Heliophobus unicolor*

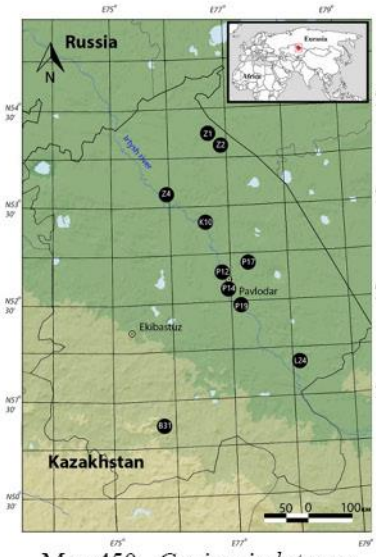
Map 446. *Heliophobus mongoliensis*



Map 447. *Saragossa siccanorum*

Map 448. *Saragossa porosa*

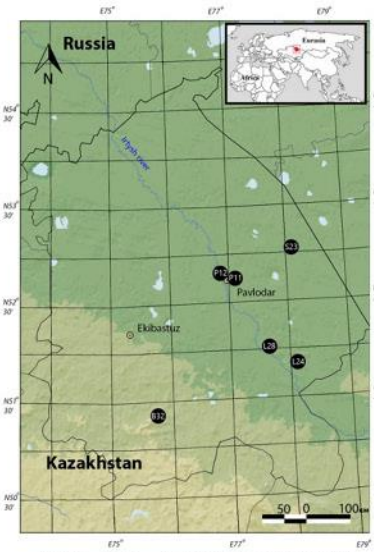
Map 449. *Conisania leineri*



Map 450. *Conisania luteago*

Map 451. *Conisania literata*

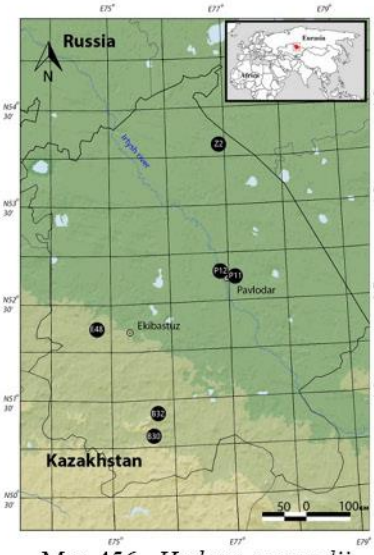
Map 452. *Hecatera bicolorata*



Map 453. *Hecatera dysodea*

Map 454. *Enterpia picturata*

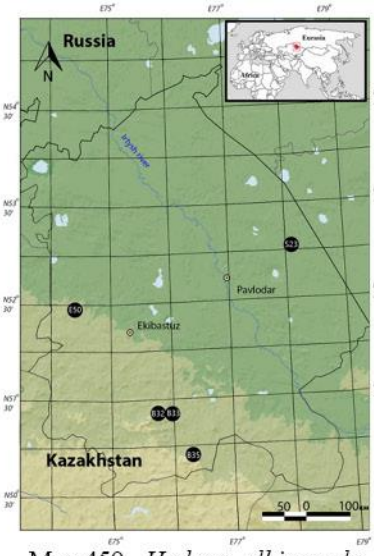
Map 455. *Hadena capsincola*



Map 456. *Hadena magnolii*

Map 457. *Hadena compta*

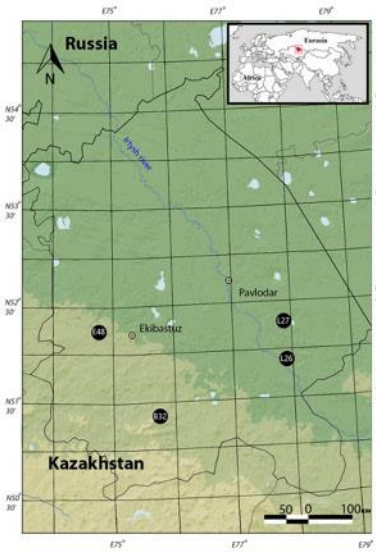
Map 458. *Hadena variolata*



Map 459. *Hadena albimacula*

Map 460. *Hadena dsungarica*

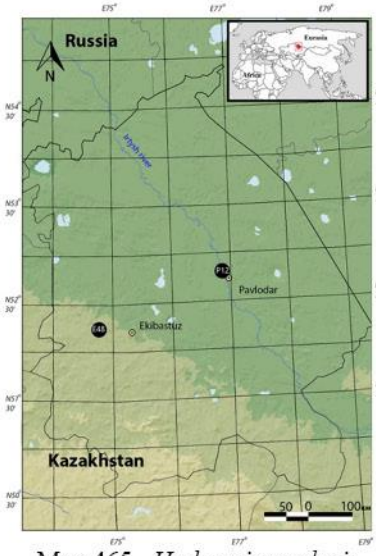
Map 461. *Hadena persimilis*



Map 462. *Hadena filograna*

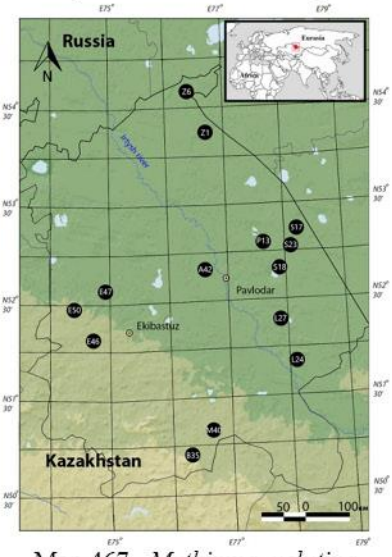
Map 463. *Hadena perplexa*

Map 464. *Hadena christophi*

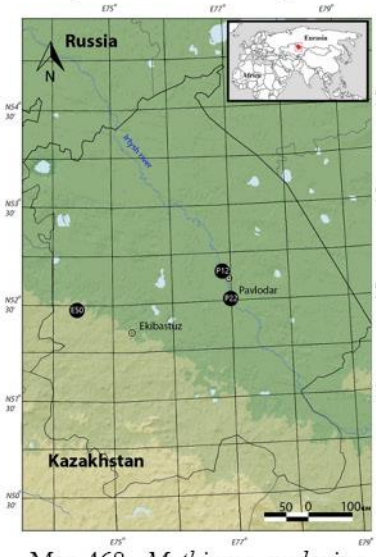


Map 465. *Hadena irregularis*

Map 466. *Mythimna turca*

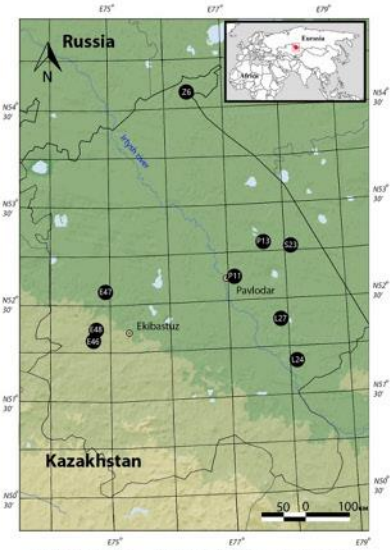


Map 467. *Mythimna velutina*

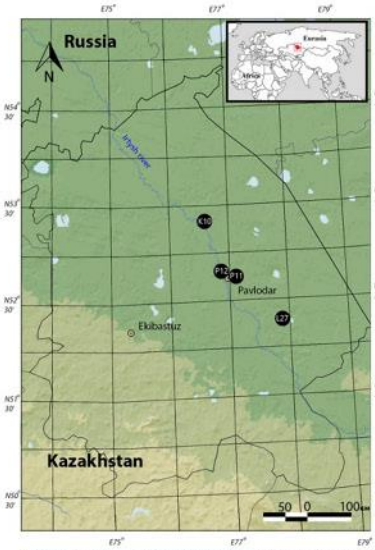


Map 468. *Mythimna pudorina*

Map 469. *Mythimna conigera*



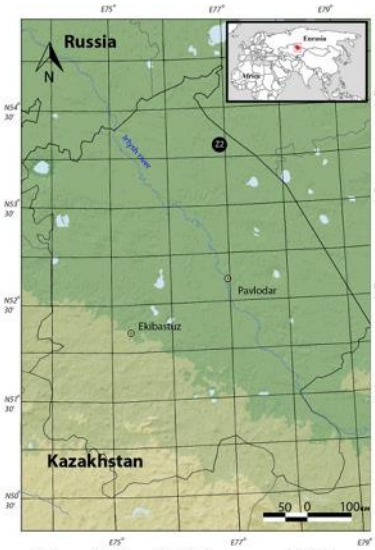
Map 470. *Mythimna pallens*



Map 471. *Mythimna deserticola*

Map 472. *Mythimna impura*

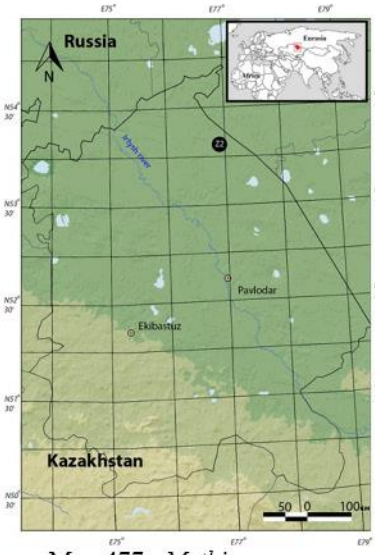
Map 473. *Mythimna straminea*



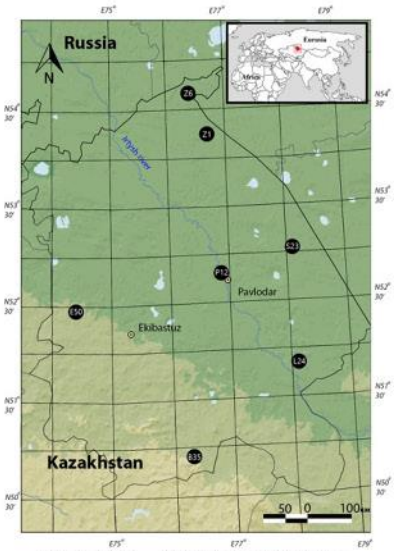
Map 474. *Mythimna vitellina*

Map 475. *Mythimna andereggi*

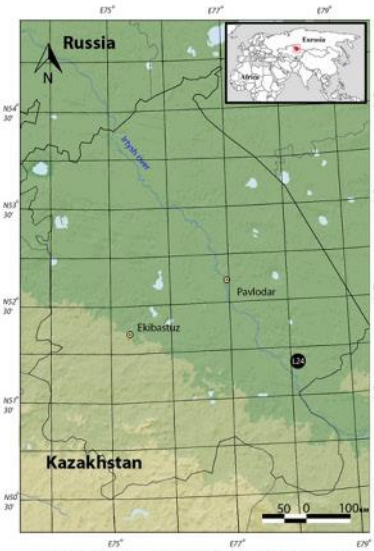
Map 476. *Mythimna albiradiosa*



Map 477. *Mythimna opaca*



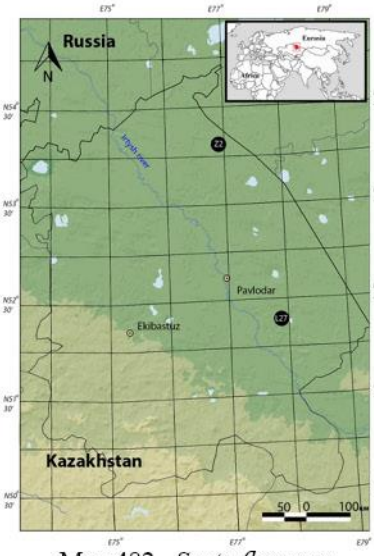
Map 478. *Mythimna ferrago*



Map 479. *Mythimna l-album*

Map 480. *Leucania comma*

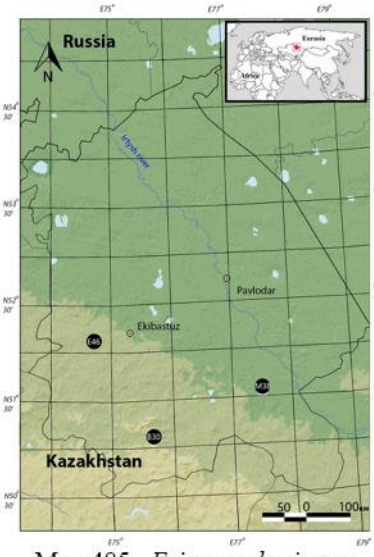
Map 481. *Leucania obsoleta*



Map 482. *Senta flammea*

Map 483. *Lasionhada proxima*

Map 484. *Eriopygodes imbecilla*



Map 485. *Eriopygodes impar*

APPENDIX 3. Zonal characteristic and composition of the Noctuoidea fauna in the steppe zone and geobotanical districts of the Pavlodar region

Noctuoidea species in subzone of mixed grass - fescue - feather grass steppes

Lymantria dispar, Gynaephora fascelina, Clethrogyna dubia, Leucoma salicis, Euproctis kargalika, Sphrageidus similis, Wittia sororcula, Pelosia obtuse, Setina roscida, Tyria jacobaeae, Arctia flavia, Epicallia villica, Eucharia festiva, Chelis dahurica, Rhyparia purpurata, Watsonarctia deserta, Spilarctia lutea, Phragmatobia fuliginosa, Amata transcaspica, A, caspia, Simplicia rectalis, Paracolax tristalis, Herminia tenuialis, Polypogon tentacularia, Zanclognatha lunalis, Zekelita ravulalis, Hypena obesalis, Rivula sericealis, Scoliopteryx libatrix, Eublemma amasina, E. pusilla, Phytometra viridaria, Lygephila lubrica, Catocala neonympha, C. fraxini, C. nupta, C. adultera C. puerperal, C. pacta, Euclidia glyphica, Callistege mi, C. fortalitium, Gonospileia triquetra, Earias clorana, Macdunnoughia confusa, Diachrysia stenochrysis, Plusidia cheiranthi, Autographa gamma, A. bractea, A. excelsa, Syngrapha interrogationis, Plusia festucae, P. putnami, Deltote deceptoria, Acontia trabealis, Aedia funesta, Acronicta tridens, A. psi, A. megacephala, Mycteroplus puniceago, Tyta luctuosa, Cucullia argentea, C. splendida, C. gnaphalii, C. argentina, C. biradiata, C. lucifuga, C. umbratica, C. biornata, C. inderiensis, C. duplicata, C. mixta, C. xeranthemi, C. asteris, Amphipyra perflua, A. livida, A. tragopoginis, A. tetra, Brachionycha nubeculosa, Calophasia lunula, Phidrimana amurensis, Protoschinia scutosa, Elaphria venustula, Caradrina morpheus, C. terrea, C. albina, Chilodes distracta, Athetis pallustris, A. lepigone, A. correpta, Dypterygia scabriuscula, Calamia tridens, Amphipoea fucosa, A. asiatica, Apamea monoglypha, Apamea farrago, A. furva, A. lateritia, A. oblonga, A. sordens, A. anceps, A. remissa, Resapamea hedeni, Conistra vaccinii, Lithophane socia, Xylena exsoleta, X. vetusta, X. solidaginis, E. transversa, Cosmia affinis, Brachyxanthia zelotypa, Orthosia incerta, O. populeti, O. gracilis, O. gothica, Anorthoa munda, Perigrapha circumducta, Anarta trifoli, A. stigmosa, Polia bombycina, P. nebulosa, P. serratilinea, Lacanobia w-latinum, L. thalassina, L. suasa, L. contigua, L. oleracea, L. splendens, L. aliena, Hyssia cavernosa, Sideridis lampra, S. turbida, S. egena, Heliophobus mongoliensis, Conisania luteago, C. literata , Hecatera bicolorata, Hadena capsincola, Hadena magnolia, H. christophi, Mythimna velutina, M. conigera, M. pallens, M. straminea, M. vitellina, M. anderreggi, M. albiradiosa, M. opaca, M. farrago, Leucania comma, L. obsoleta, Senta flammea, Actebia squalida, Euxoa adumbrata, E. ochrogaster, E. phantoma, E. nigrofusca, E.

nigricans, Agrotis exclamationis, A. segetum, A. ripae, Netrocerocora quadrangular, Spaelotis ravida, Eurois occulta, Pseudohermonassa melancholica, Xestia c-nigrum, X, ditrapezium, X. triangulum.

Noctuoidea species in subzone of fescue-feather grass steppes - Pavlodar geobotanical area

Lymantria dispar, Gynaephora fascelina, Clethrogyna dubia, Thylacigyna antiquoides, Leucoma salicis, Euproctis kargalika, Sphrageidus similis, Manulea palliatella, M. pygmaeola, M. lutarella, Atolmis rubricollis, Pelosia muscerda, P. obtusa, Thumatha senex, Tyria jacobaeae, Lacydes spectabilis, Spiris striata, Coscinia cribraria A. caja A, flavia Epicallia villica, Eucharia festiva, Chelis maculosa, Rhyparia purpurata, Spilosoma lubricipeda, S. urticae, Phragmatobia fuliginosa, Amata transcaspica, A. caspia, Simplicia rectalis, Paracolax tristalis, Herminia tristriga, Polypogon tentacularia, Pechipogo strigilata, Zanclognatha lunalis, Zekelita ravulalis, Hype-na obesalis, Rivula sericealis, Scoliopteryx libatrix, Calyptra thalictri, Parascotia fuliginaria, Odice arcuinna, Eublemma minutata, E. ostrina, E. purpurina, E. pallidula, E. pusilla, Phytometra viridaria, Lygephila lubrica, L. ludicra, L. pastinum, L. viciae, Acantholipes regularis, Catocala fulminea, C. neonympha, C. fraxini, C. nupta, C. adultera, C. deducta, C. puerpera, C. pacta, Drasteria cailino, Euclidia glyphica, Callistege fortalitium, Gonospileia triquetra, G. munita, Nola aerugula, N. crambiformis, Earias clorana, Nycteola degenerana, Nycteola asiatica, Abrostola tripartite, Macdunnoughia confuse, Diachrysia chrysitis, D. stenochrysis, D. zosimi, Euchalcia consona, Polychrysia esmeralda, Lamprotes c-aureum, Plusidia cheiranthi, Autographa gamma, Plusia festucae, Phyllophyla obliterate, Deltote pygarga, D. deceptoria, D. uncula, D. bankiana, Acontia lucida, A. trabealis, Aedia funesta, Colocasia coryli, Acronicta alni, A. cuspis, A. psi, A. rumicis, A. cinerea, A. nervosa, A. albovenosa, A. dentinosa, A. megacephala, Mycteroplus puniceago, Tyta luctuosa, Cucullia scopariae, C. fraudatrix, C. absinthii, C. argentea, C. infuscata, C. artemisiae, C. splendida, C. argentina, C. pustulata, C. umbratica, C. biornata, C. inderiensis, C. duplicata, C. xeranthemi, C. virgaureae, C. amota, C. asteris, C. tanaceti, Amphipyra pyramidea, A. perflua, A. livida, A. tragopoginis, A. tetra, A. sergei, Brachionycha nubeculosa, Calophasia lunula, C. opalina, Phidrimana amurensis, Eucarta virgo, E. amethystine, Pyrrhia umbra, P. exprimens, Protoschinia scutosa, Heliothis viriplaca, H. adaucta, Helicoverpa armigera, Pseudeustrotia candidula, Elaphria venustula, Caradrina morpheus, C. montana, C. albina, C. petraea, C. wullschlegeli, C. clavipalpis, Hoplodrina octogenaria, H. blanda, Chilodes maritima, Athetis

furvula, A. correpta, Dypterygia scabriuscula, Trachea atriplicis, Actinotia polyodon, Sidemia spilogramma, Calamia tridens, Staurophora celsia, Helotropha leucostigma, Celaena haworthii, Hydraecia micacea, H, ultima, H. mongoliensis, H. osseola, Amphipoea fucosa, A. ochreola, Fabula zollikoferi, Rhizedra lutosa, Nonagria typhae, Longalatedes elymi, Hypocoena stigmatica, Photedes fluxa, Protarchanara brevilinea, Globia algae, Pabulatrix pabulatricula, Apamea monoglypha, A. farrago, A. furva, A. lateritia, A. oblonga, A. sordens, A. anceps, A. leucodon, A. remissa, A. crenata A. unanimis, A. Illyria, Oligia latruncula, Mesoligia furuncula, Litoligia literosa, Resapamea hedeni, Xylomoia graminea, Leucochlaena fallax, Hyppa rectilinea, Parastichtis suspecta, Apterogenum ypsillon, Xanthia togata, Cirrhia icteritia, Cirrhia ocellaris, Cirrhia tunicata, Mesogona acetosellae, Mesogona oxalina, Sunira circellaris, Agrochola vulpecula, Conistra vaccinia, Lithophane socia, Xylena vetusta, Eupsilia transversa, Enargia paleacea, Enargia abluta, Ipimorpha retusa, I. subtusa, Eremohadena immunda, Mniotype satura, Orthosia incerta, O. populeti, O. gracilis, O. gothica, Perigrapha circumducta, Tholera cespitis, T. decimalis, T. hilaris, Cerapteryx graminis, Anarta dianthi, A. trifolii, A. stigmosa Polia bombycina, P. hepatica, P. nebulosa, P. serratilinea, Lacanobia w-latinum, L. thalassina, L. suasa, L. contigua, L. oleracea, L. aliena, L. blenna, Melanchra persicariae, Ceramica pisi, Hyssia cavernosa, Mamestra brassicae, Sideridis turbida, S. egena, Heliophobus unicolor, Heliophobus mongoliensis, Saragossa siccanorum, S. porosa, Conisania leineri, C. luteago, Conisania literata, Hecatera bicolorata, H. dysodea, Enterpia picturata, Hadena magnolia, H. persimilis, H. filograna, H. christophi, H. irregularis, Mythimna velutina, M. pudorina, M. pallens, M. deserticola, M. impure, M. albiradiosa, M. farrago, Leucania comma, L. obsoleta, Senta flammea, Eriopygodes imbecilla, Actebia praecox, A. squalida, Dichagyris musiva, D. lutescens, D. truculenta, D. orientis, D. latipennis, Euxoa adumbrata, E. ochrogaster, E. phantoma, E. cursorial, E. distinguenda, E. obelisca, E. segnilis E. nigrofusca, E. nigricans, E. aquilina, E. basigramma, E. deserta, E. deficiens, A. trifurca, A. exclamationis, A. segetum A. vestigialis, A. ripae, A. desertorum, Axylia putris, Ochropleura plecta, Diarsia dahlii, D. mendica, Cerastis leucographa, Paradiarsia punicea, Netrocerocora quadrangular, Rhyacia simulans, Noctua interposita, Spaelotis ravida, Eurois occulta, Anaplectoides prasina, Pseudohermonassa melancholica, Xestia baja, X. c-nigrum, X. ditrapezium, X. triangulum, Eugraphe sigma, Eugnorisma ignoratum, Miniphila miniago.

Noctuoidea species in Semipalatinsk geobotanical area (S)

Lymantria dispar, Gynaephora fascelina, Thylacigyna antiquoides, Leucoma salicis, Euproctis kargalika, Sphrageidus similis, Manulea palliatella, M. pygmaeola, M. lutarella, Collita griseola, Spiris striata, Coscinia cribraria, Arctia caja, Eucharia festiva, Rhyparia purpurata, Spilosoma lubricipeda, Phragmatobia fuliginosa, Amata transcaspica, A. caspia, Zekelita ravulalis, Hypena obesalis H. tristalis, Scoliopteryx libatrix, Calyptra thalictri, Parascotia fuliginaria, Eublemma ostrina, E. porphyrinia, E. panonica, E. purpurina, E. pusilla, E. polygramma, Lygephila lubrica, L. ludicra, L. craccae, Catocala neonympha, C. fraxini, C. nupta, C. adultera, C. deducta, C. puerperal, C. lupine. Drasteria cailino, D. rada, Gonospileia triquetra, Macdunnoughia confuse, Diachrysia chryson, D. stenochrysis, Euchalcia consona, Autographa gamma, A. buraetica, A. mandarina, Plusia festucae, Acontia lucida, A. trabealis, Aedia funesta, Colocasia coryli, Acronicta alni, A. psi, A. albovenosa, Tyta luctuosa, Cucullia scopariae, C. absinthii, C. Splendida, C. magnifica, C. pustulata, C. umbratica, C. biornata, C. balsamitae, C. tanaceti, Amphipyra sergei, Calophasia lunula, Sympistis strioligera, S. nigricula, Pyrrhia exprimens, Protoschinia scutosa, Heliothis viriplaca, H. adaucta, Helicoverpa armigera, Caradrina morpheus, C. terrea, C. montana, C. albina, Hoplodrina octogenaria, H. blanda, Athetis furvula, Dypterygia scabriuscula, Sidemia spilogramma, Calamia tridens, Amphipoea fucosa, A. asiatica, Fabula zollikoferi, Nonagria typhae, Ogilia leuconephra, Apamea monoglypha, A. furva. A. lateritia, A. oblonga, A. anceps, A. remissa, Oligia latruncula, Mesoligia furuncula, Litoligia literosa, Mesapamea secalis, Resapamea hedeni, Cirrhia icteritia, Enargia paleacea, E. abluta, Panolis flammea, Orthosia incerta, Egira anatolica, Tholera hilaris, Anarta dianthi, A. trifolii, A. stigmosa, Polia nebulosi, P. altaica, Lacanobia thalassina, L. suasa, L. oleracea, L. aliena, L. blenna, Mamestra brassicae, Sideridis turbida, S. egena, Heliophobus mongoliensis, Saragossa siccanorum, Conisania (Luteohadena) luteago, Hecatera bicolorata, H. dysodea, Hadena albimacula, H. perplexa, Mythimna velutina, M. pallens, M. impure, M. anderreggi, M. farrago, M. l-album, Eriopygodes imbecilla, Actebia praecox, A. squalida, Dichagyris orientis, D. latipennis, Euxoa adumbrata, E. conspicua, E. temera, E. phantoma, E. cursorial, E. distinguenda, E. segnilis, E. nigrofusca, E. nigricans, E. aquilina, E. basigramma, E. fallax, E. deserta, E. tristis, Agrotis trifurca, A. segetum, A. vestigialis, Noctua interposita, Pseudohermonassa melancholica, Xestia baja, X. c-nigrum

Noctuoidea species in Bayanaul-Karaganda geobotanical area (B.K)

Lymantria dispar, Gynaephora fascelina, G. pumila, Clethrogyna dubia, Leucoma salicis, Euproctis kargalika, Sphrageidus similis, Cybosia mesomella, M. palliatella, M. pygmaeola, M. lutarella, M. lurideola, Wittia sororcula, Atolmis rubricollis, Stigmatophora flava, S, micans, Setina irrorella, Thumatha senex, Miltochrista miniata, Tyria jacobaeae, Lacydes spectabilis, Coscinia cribraria, Hyphoraia aulica, Arctia caja, A. flavia, Epicallia villica, Eucharia festiva, Chelis maculosa, C. caecilia, Rhyparia purpurata, Watsonarctia deserta, Spilosoma lubricipeda, S. urticae, Phragmatobia fuliginosa, Eudiaphora turensis, Amata transcaspica, A. caspia, Simplicia rectalis, Paracolax tristalis, Herminia tenuialis, Polypogon tentacularia, Zanclognatha lunalis, Zekelita ravulalis, Hypena rostralis, H. tristalis, Rivula sericealis, Scoliopteryx libatrix, Calyptra thalictri, Paragona cognata, Odice arcuinna, Eublemma minutata, E. porphyrinia, E. purpurina, E. pusilla, Phytometra viridaria, Lygephila lubrica, L. ludicra, L. pastinum, L. viciae, L. craccae, L. asiatica, Autophila chamaephanes, A. vespertalis, Catocala fulminea, C. neonympha, C. fraxini, C. nupta, C. puerperal, C. lupina, C. pacta, Drasteria cailino, D. rada, D. obscurata, Euclidia glyphica, Callistege fortalitium, Gonospileia triquetra, G. munita, Nola aerugula, N. crambiformis, N. confusalis, Earias clorana, Pseudoips prasinana, Nycteola eremostola, N. degenerana, N. asiatica, Abrostola triplasia, A. tripartite, Trichoplusia ni, Macdunnoughia confuse, Diachrysia chrysitis, D. stenochrysis, Polychrysia esmeralda, Panchrysia deaurata, Plusidia cheiranthi, Autographa gamma, A. buraetica, Cornutiplusia circumflexa, Syngrapha interrogationis, Plusia festucae, Deltote uncula, D. bankiana, Acontia lucida, A. trabealis, Aedia funesta, Colocasia coryli, Leiometopon simyrides, Acronicta alni, A. psi, A. auricoma, A. rumicis, A. cinerea, A. nervosa, A. albovenosa, A. dentinosa, A. megacephala, Tyta luctuosa, Cucullia tiefi, C. praecana, C. propinqua, C. scopariae, C. absinthii, C. argentea, C. infuscate, C. artemisiae, C. humilis, C. splendid, C. gnaphalii, C. umbratica, C. biornata, C. balsamitae, C. inderiensis, C. duplicate, Cucullia santonici, C. lacteal, C. mixta, C. xeranthemi, C. virgaureae. C. amota, C. asteris, Amphipyra perflua, A. livida, A. tragopoginis, Calophasia lunula, Sympistis strioligera, Sympistis campicola, S. exacta, S. nigricula, S. senica, Lophoterges centralasiae, Epimecia ustula, Phidrimana amurensis, Acosmetia caliginosa, Pyrrhia umbra, Protoschinia scutosa, Heliothis peltigera, H. viriplaca, H. adaucta, Helicoverpa armigera, Cryphia fraudatricula, Bryophila orthogramma, Victrix akbet, Athaumasta expressa, Pseudeustrotia candidula, Spodoptera exigua, Elaphria venustula, Caradrina terrea, C. montana, C. albina, C.

monssacralis, C. wullschlegeli, C. clavipalpis, Hoplodrina blanda, Chilodes maritime, Charanyca ferruginea, Athetis furvula, Athetis pallustris, Dypterygia scabriuscula, Actinotia polyodon, Oxytripia orbiculosa, Sidemia spilogramma, Calamia tridens, Staurophora celsia, Helotropha leucostigma, Celaena haworthii, Hydraecia mongoliensis, H. osseola, Amphipoea fucosa, A. ochreola, A. asiatica, Fabula zollikoferi Rhizedra lutosa, Nonagria typhae, Longalatedes elymi, Archanara dissolute, Denticucullus pygmina, Photedes fluxa, P. extrema, Globia sparganii, G. algae, Pabulatrix pabulatricula, Apamea monoglypha, A. farrago, A. furva, A. lateritia, A. anceps, A. leucodon, A. remissa, A. crenata, A. unanimis, Mesoligia furuncula, Litoligia literosa, Mesapamea moderata, Resapamea hedeni, Xylomoia graminea, Episema tersa, Leucochlaena fallax, Parastichtis suspecta, Xanthia togata, Cirrhia icteritia, C. ocellaris, C. tunicata, Mesogona acetosellae, M. oxalina, Sunira circellaris, Agrochola helvola, A. lota, Conistra vaccinii, C. rubiginea, Lithophane social, L. furcifera, Xylena exsoleta, X. vetusta, Orbona fragariae, Eupsilia transversa, Enargia paleacea, Pseudohadena argyllostigma, Eremohadena immunda, Antitype chi, Ammoconia caecimacula, Dasypolia templi, D. timoi, D. murina, Blepharita amica, Mniotype adusta, Panolis flammea, Orthosia incerta, O. ronkayorum, O. populeti, O. opima, O. gothica, Perigrapha circumducta, Tholera cespitis, T. decimalis, T. hilaris, Cerapteryx graminis, Anarta vaciva, A. dianthi, A. trifolii, A. stigmosa, Polia bombycina, P. nebulosi, P. serratilinea, P. altaica, Lacanobia w-latinum, L. thalassina, L. suasa, L. contigua, L. oleracea, L. aliena, L. blenna, Melanchra persicariae, Ceramica pisi, Hada plebeja, Sideridis turbida, S. egena, S. rivularis, Heliophobus mongoliensis, Saragossa siccanorum, S. porosa, Conisania leineri, C. luteago, Hecatera bicolorata, H. dysodea, Enterpia picturata, Hadena capsincola, H. magnolia, H. compta, H. variolata, H. albimacula, H. dsungarica, H. filograna, H. perplexa, H. irregularis, Mythimna turca, M. velutina, M. pudorina, M. conigera, M. pallens, M. impure, M. anderreggi, M. albiradiosa, M. farrago, Leucania comma, L, obsoleta, Lasionhada proxima, Eriopygodes imbecilla, E. impar, Actebia squalida, Dichagyris musiva, D. flammatra, D. vallesiaca, D. truculenta, D. signifera, D. orientis, D. latipennis, Euxoa adumbrata, E. temera, E. ochrogaster, E, phantoma, E. cursorial, E. distinguenda, E. obelisca, E. segnilis, E. nigrofusca, E. eruta, E. nigricans, E. aquilina, E. basigramma, E. recussa, Agrotis characteristica, A. trifurca, A. cinerea, A. exclamationis, A. clavis, A. ripae, A. ipsilon, Diarsia brunnea, D. mendica, Sineugraphe exusta, Cerastis rubricosa, Rhyacia caradrinoides, R. simulans, R. arenacea, Chersotis transiens, C. elegans, C. margaritacea, Noctua interposita, Spaelotis ravida, S. senna, Opigena polygona, Eurois occulta, Graphiphora augur, Pseudohermonassa melancholica, Xestia baja, X. c-nigrum, X. ditrapezium, X.

triangulum, X. kollari, X. ashworthii, Eugraphe sigma, Coenophila subrosea, Eugnorisma ignoratum E. insignata, E. eminens, Protolampra sobrina, Nyssocnemis eversmanni

Noctuoidea species in subzone of wormwood-fescue-feather grass steppes, Arkalyk-Chingiz geobotanical area (A. Ch)

Gynaephora fascelina, Euproctis kargalika, Arctia caja, Eucharia festiva, Rhyparia purpurata, Watsonarctia deserta, Phragmatobia fuliginosa, Amata caspia, Zekelita ravulalis, Hypena rostralis, Calyptra thalictri, Eublemma purpurina, Phytometra viridaria, Catocala pacta, Drasteria rada, D. christophi, Acronicta albovenosa, Cucullia propinqua, C. duplicata, Protoschinia scutosa Dypterygia scabriuscula, Calamia tridens, Orthosia incerta, Perigrapha circumducta, Polia altaica, Hadena christophi, Mythimna anderreggi, Eriopygodes impar, Cerastis leucographa.

APPENDIX 4. Ecological analysis of the Noctuoidea fauna in the Pavlodar region

Temperate species

Lymantria dispar, Leucoma salicis, Sphrageidus similis, Manulea complana, Coscinia cribraria, Hyphoraia aulica, Arctia flavia, Diacrisia sannio, Zanclognatha lunalis, Scoliopteryx libatrix, Calyptra thalictri, Parascotia fuliginaria, Catocala fulminea, C. neonympha, C. fraxini, C. nupta, C. adultera, Euclidia glyphica, Callistege mi, Macdunnoughia confusa, Diachrysia chryson, D. chrysitis, D. stenochrysis, D. zosimi, Autographa gamma, A. mandarina, A. bractea, A.excels, Plusia festucae, P. putnami, Colocasia coryli, Acronicta alni, A. tridens, A. psi, A. rumicis, A. cinerea, Amphipyra perflua, A. livida, Brachionycha nubeculosa, Epimecia ustula, Eucarta virgo, Eucarta amethystine, Pyrrhia umbra, Protoschinia scutosa, Pseudustrotia candidula, Elaphria venustula, Caradrina montana, Charanyca ferruginea, Athetis pallustris, Dypterygia scabriuscula, Trachea atriplicis, Actinotia polyodon, Calamia tridens, Staurophora celsia, Helotropha leucostigma, Celaena haworthii, Hydraecia micacea, Hydraecia ultima, Amphipoea fucosa, Nonagria typhae, Longalatedes elymi, Hypocoena stigmatica, Pabulatrix pabulatricula, Apamea monoglypha, A. lateritia, Apamea sordens, Apamea anceps, Apamea crenata, Mesapamea secalis, Resapamea hedeni, Hyppa rectilinea, Parastichtis suspecta, Apterogenum ypsillon, Xanthia togata, Cirrhia icteritia, C. ocellaris, Mesogona oxalina, Sunira circellaris, Conistra vaccinii, C. rubiginea, Lithophane socia, Xylena exsoleta, X. vetusta, Eupsilia transversa, Enargia paleacea, Ipimorpha retusa, I. subtusa, Cosmia affinis, Antitype chi, Dasypolia templi, Blepharita amica, Mniotype adusta, M. satura, Panolis flammea, Orthosia incerta, O.gracilis, O. gothica, Anorthoa munda, Perigrapha circumducta, Tholera decimalis, Cerapteryx graminis, Anarta trifolii, Polia bombycina, P. nebulosa, Lacanobia suasa, L. contigua, L. oleracea, L. splendens, L. aliena, Melanchra persi cariae, Ceramica pisi, Mamestra brassicae, Hecatera bicolorata, Hadena compta, Mythimna conigera, M. pallens, M. impura, M. straminea, Lasionhada proxima, Eriopygodes imbecilla, Euxoa adumbrata, E. ochrogaster, E. nigrofusca, E. nigricans, Agrotis exclamationis, A. segetum, A. clavis, A. ipsilon, Axylia putris, Ochropleura plecta, Sineugraphe exusta, Paradiarsia punicea, Xestia baja, X. c-nigrum, X. ditrapezium, Eugraphe sigma.

Boreal species

Polypogon tentacularia, Pechipogo strigilata, Hypena rostralis, H. obesalis, H. tristalis, Rivula sericealis, Paragona cognata, Phytometra viridaria, Pseudoips prasinana, Nycteola degenerana, N. asiatica, Polychrysia esmeralda, Autographa buraetica, Acronicta auricoma, A. megacephala, Pyrrhia exprimens, Xylena solidaginis, Hada plebeja, Diarsia dahlii, D. brunnea, D. mendica, Spaelotis ravida, Eurois occulta, Graphiphora augur, Anaplectoides prasina, Coenophila subrosea, Protolampra sobrina.

Subtemperate species

Acantholipes regularis, Drasteria cailino, D. christophi, Acronicta albovenosa, Cucullia balsamitae, C. inderiensis, C. santonici, C. lactea, C. tanaceti, Calophasia opalina, Schinia cognata, Victrix akbet, Archanara dissoluta, Protarchanara brevilinea, Xylomoia graminea, Episema tersa, Eremohadena immunda, Dichagyris latipennis.

Boreomontane species

Syngrapha interrogationis and *Polia hepatica.*

Nemoral species

Lithophane furcifera.

Boreal-Subtropical species

Phragmatobia fuliginosa and *Arctia caja*.

Subboreal species

Gynaephora fascelina, G. pumila, Clethrogyna dubia, Thylacigyna antiquoides, Euproctis kargalika, Cybosia mesomella, Manulea palliatella, M. pygmaeola, M. lutarella, M. lurideola, Wittia sororcula, Collita griseola, Pelosia muscerda, P. obtusa, Stigmatophora flava, S. micans, Setina irrorella, S. roscida, Thumatha senex, Miltochrista miniata, Tyria jacobaeae, Lacydes spectabilis, Spiris striata, Epicallia villica, Eucharia festiva, Chelis maculosa, C. caecilia, C. dahurica, Rhyparia purpurata, Watsonarctia deserta, Spilosoma lubricipeda, S. urticae, Spilarctia lutea, Eudiaphora turensis, Amata transcaspica, A. caspia, Simplicia rectalis, Paracolax tristalis, Herminia tenuialis, H. tristriga, Zekelita ravulalis, Odice arcuinna, Eublemma minutata, E. ostrina, E. porphyrinia, E. panonica, E. amasina, E. purpurina, E.

pallidula, E. pusilla, E. polygramma, Lygephila lubrica, L. ludicra, L. pastinum, L. viciae, L. craccae, L. asiatica, Autophila chamaephanes, A. vespertalis, Catocala deducta, C. puerpera, C. lupina, C. pacta, Drasteria rada, D. obscurata, Callistege fortalitium, Gonospileia triquetra, G. munita, Nola aerugula, N. crambiformis, N. confusalis, Earias clorana, Nycteola eremostola, Abrostola triplasia, A. tripartita, Euchalcia consona, Panchrysia deaurata, Lamprotes c-aureum, Plusidia cheiranthi, Cornutiplusia circumflexa, Phyllophyla obliterata, Deltote pygarga, D. deceptoria, D. uncula, D. bankiana, Acontia lucida, A. trabealis, Aedia funesta, Leiometopon simyrides, Acronicta cuspis, A. nervosa, A. dentinosa, Mycteroplus puniceago, Tyta luctuosa, Cucullia tiefi, C. praecana, C. propinqua, C. scopariae, C. fraudatrix, C. absinthii, C. argentea, C. infuscata, C. artemisiae, C. humilis, C. splendida, C. gnaphalii, C. magnifica, C. argentina, C. biradiata, C. pustulata, C. lucifuga, C. umbratica, C. biornata, C. duplicata, C. mixta, C. xeranthemi, C. virgaureae, C. amota, C. asteris, Amphipyra pyramidea, A. tragopoginis, A. tetra, A. sergei, Calophasia lunula, Sympistis strioligera, S. campicola, S. exacta, S. nigricula, S. senica, Lophoterges centralasiae, Phidrimana amurensis, Acosmetia caliginosa, Heliothis viriplaca, H. adaucta, Cryphia fraudatricula, Bryophila orthogramma, Athaumasta expressa, Caradrina morpheus, C. terrea, C. albina, C. petraea, C. monssacralis, C. wullschlegeli, C clavipalpis, Hoplodrina octogenaria, H. blanda, Chilodes maritima, C. distracta, Athetis furvula, A. lepigone, A. correpta, Oxytripia orbiculosa, Sidemia spilogramma, Hydraecia mongoliensis, H. osseola, Amphipoea ochreola, A. asiatica, Fabula zollikoferi, Rhizedra lutosa, Denticucullus pygmina, Photedes fluxa, P. extrema, Ogilia leuconephra, Globia sparganii, G. algae, Apamea ferrago, A. furva, A. oblonga, A. leucodon, A. remissa, A. unanimis, A. illyria, Oligia latruncula, Mesoligia furuncula, Litoligia literosa, Mesapamea moderata, Leucochlaena fallax, Cirrhia tunicata, Mesogona acetosellae, Agrochola vulpecula, A. helvola, A. lota, Lithophane furcifera, Orbona fragariae, Enargia abluta, Brachyxanthia zelotypa, Pseudohadena argyllostigma, Ammoconia caecimacula, Dasypolia timoi, D. murina, Orthosia ronkayorum, O. populeti, O. opima, Egira anatolica, Tholera cespitis, T. hilaris, Anarta vaciva, A. dianthi, A. stigmosa, Polia serratilinea, P. altaica, Pachetra sagittigera, Lacanobia w-latinum, L. thalassina, L. blenna, Hyssia cavernosa, Sideridis lampra, S. turbida, S. egena, S. rivularis, Heliophobus unicolor, H. mongoliensis, Saragossa siccanorum, S. porosa, Conisania leineri, C. luteago, C. literata, Hecatera dysodea, Enterpia picturata, Hadena capsincola, H. magnolia, H. variolata, H. albimacula, H. dsungarica, H. persimilis, H. filograna, H. perplexa, H. christophi, H. irregularis, Mythimna turca, M. velutina, M. pudorina, M deserticola, M. vitellina, M. andereggi, M. albiradiosa, M. opaca, M. farrago, M. l-album, Leucania comma, L.

obsoleta, Senta flammea, Eriopygodes impar, Actebia praecox, A. squalida, Dichagyris musiva, D. flammatra, D. vallesiaca, D. lutescens, D. truculenta, D. signifera, D. orientis, Euxoa conspicua, E. temera, E. phantoma, E. cursorial, E. distinguenda, E. obelisca, E. segnilis, E. eruta, E. aquilina, E. basigramma, E. fallax, E. deserta, E. recussa, E. tristis, E. deficiens, Agrotis characteristic, A. trifurca, A. cinerea, A. vestigialis, A. ripae, A. desertorum, Cerastis rubricosa, C. leucographa, Netrocerocora quadrangula, Rhyacia caradrinoides, R. simulans, R. arenacea, Chersotis transiens, C. elegans, C. margaritacea, Noctua interposita, Spaelotis deplorata, S. senna, Opigena polygona, Pseudohermonassa melancholica, Xestia triangulum, X. kollari, X. ashworthii, Eugnorisma ignoratum, E. insignata.

Migrant species

Trichoplusia ni, Autographa gamma, Cornutiplusia circumflexa, Agrotis segetum, A. ipsilon, Ochropleura plecta, Xestia c-nigrum, Spodoptera exigua, Helicoverpa armigera.

APPENDIX 5. Bionomics groups of the Noctuoidea fauna in the Pavlodar region

Mesophilous species

Leucoma salicis, Sphrageidus similis, Cybosia mesomella, Wittia sororcula, Atolmis rubricollis, Pelosia muscerda, Pelosia obtusa, Thumatha senex, Rhyparia purpurata, Spilosoma lubricipeda, S. urticae, Simplicia rectalis, Paracolax tristalis, Herminia Tenuialis, H. tristriga, Polypogon tentacularia, Pechipogo strigilata, Zanclognatha lunalis, Hypena rostralis, H. obesalis, H. tristalis, Rivula sericealis, Scoliopteryx libatrix, Calyptra thalictri, Parascotia fuliginaria, Phytometra viridaria, Lygephila pastinum, L. viciae, Catocala fulminea, C. neonympha, C. fraxini, C. nupta, C. adultera, C. deducta, C. puerpera, C. lupina, C. pacta, Euclidia glyphica, Callistege mi, Nola aerugula, N. confusalis, Earias clorana, Pseudoips prasinana, Nycteola degenerana, Abrostola triplasia, Diachrysia chrysitis, D. stenochrysis, D. zosimi, Euchalcia consona, Plusidia cheiranthi, Autographa man darina, A. bractea, A. excels, Syngrapha interrogationis, Plusia festucae, P. putnami, Deltote pygarga, D. deceptoria, D. uncula, Acontia trabealis, Aedia funesta, Colocasia coryli, Acronicta alni, A. cuspis, A. tridens, A. psi, A. auricoma, A. megacephala, Tyta luctuosa, Cucullia scopariae, Amphipyra pyramidea, A. perflua, A. livida, Brachionycha nubeculosa, Calophasia lunula, Acosmetia caliginosa, Pyrrhia umbra, P. exprimens, Cryphia fraudatricula, Pseudustrotropia candida, Elaphria venustula, Caradrina clavipalpis, Hoplodrina octogenarian, Charanyca ferruginea, Trachea atriplicis, Actinotia polyodon, Hydraecia micacea, Amphipoea fucosa, Ogilia leuconephra, Apamea oblonga, A. illyria, Oligia latruncula, Mesoligia furuncula, Mesapamea secalis, M. moderata, Hyppa rectilinea, Parastichtis suspecta, Apterogenum ypsillon, Xanthia togata, Cirrhia icteritia, C. ocellaris, C. tunicata, Mesogona acetosellae, M. oxalina, Agrochola vulpecula, A. helvola, A. lota, Conistra vaccinii, C. rubiginea, Lithophane socia, L. furcifera, Xylena exsoleta, X. solidaginis, Orbona fragariae, Eupsilia transversa, Enargia paleacea, E. abluta, Ipimorpha retusa, I. subtusa, Cosmia affinis, Brachyxanthia zelotypa, Blepharita amica, Mniotype satura, Panolis flammea, incerta, Orthosia ronkayorum, O. populeti, O. gracilis, Anorthoa munda Egira anatolica, Tholera decimalis Polia hepatica, P. nebulosa, Lacanobia contigua, L. oleracea, L. splendens, L. aliena, Melanchra persicariae, Ceramica pisi, Mamestra brassicae, Sideridis rivularis, Hadena capsincola, Mythimna turca, Eriopygodes imbecilla, Actebia praecox Agrotis trifurca, Axylia putris, Ochropleura plecta, Diarsia dahlia, D. brunnea, D. mendica,

Sineugraphe exusta, Cerastis rubricosa, C. leucographa, Paradiarsia punicea, Graphiphora augur, Anaplectoides prasina, Eugraphe sigma.

Xerophilous species

Acontia lucida, Acronicta cinerea, A. nervosa, Cucullia tiefi, C. praecana, C. argentea, C. splendid, C. argentina, C. biradiata, C. balsamitae, C. inderiensis, C. duplicata, C. santonici, C. lactea, C. mixta C. xeranthemi C. virgaureae, C. amota, C. tanaceti, Amphipyra tetra, Calophasia opalina, Sympistis strioligera, S. nigricula, Bryophila orthogramma, Caradrina montana, C albina, C. petraea, C. wullschlegeli, Oxytripia orbiculosa, Sidemia spilogramma, Hydraecia mongoliensis, Apamea farrago, A. furva, A. leucodon, A. remissa, Leucochlaena fallax, Eremohadena immunda, Perigrapha circumducta, Tholera cespitis, T. hilaris, Anarta dianthi, A. stigmosa, Polia serratilinea, Pachetra sagittigera, Hyssia cavernosa, Sideridis lampra, S. egena, Saragossa porosa, Conisania leineri, C. literata, Hecatera bicolorata, Enterpia picturata, Hadena magnolii, H. dsungarica, H. persimilis, H. filograna, H. christophi, Mythimna velutina, M. deserticola, M. vitellina, M. anderreggi, M. albiradiosa M. opaca, M. l-album, Eriopygodes impar, Dichagyris musiva, D. vallesiaca, D. lutescens, D. truculent, D. signifera, D. orientis, D. latipennis, Euxoa temera, E. phantom, E. cursoria, E. distinguenda, E. obelisca, E. segnilis, E. basigramma, E. fallax, E. deserta, E recussa, E. tristis, E. deficiens, Agrotis characteristica, A. cinerea, A. clavis, A. vestigialis, A. ripae, A. desertorum, Netrocerocora quadrangula, Rhyacia caradrinoides, R. arenacea, Chersotis transiens, C. elegans, Spaelotis deplorata, Opigena polygona, Xestia kollari, X. ashworthii, Eugnorisma ignoratum, E. insignata, E. eminens, Miniphila miniago.

Xero-mesophilous species

Spiris striata, Coscinia cribraria, Hyphoraia aulica, Abrostola tripartite, Polychrysia esmeralda, Cucullia pustulata, C. lucifuga, C. umbratica, C. biornata, Phidrimana amurensis, Eucarta virgo, E. amethystina Heliothis viriplaca, H. adaucta, Victrix akbet, Caradrina terrea, Hoplodrina blanda, Athetis lepigone, A. correpta, Dypterygia scabriuscula, Calamia tridens, Staurophora celsia, Amphipoea asiatica, Pabulatrix pabulatricula, Apamea monoglypha, A. lateritia, A. anceps, A. crenata, Xylena vetusta, Antitype chi, Ammoconia caecimacula, Dasypolia templi, Mniotype adusta, Orthosia opima, O. gothica, Hada plebeja, Heliophobus unicolor, Hecatera dysodea, Hadena variolata, H. albimacula, H. perplexa, H. irregularis, Mythimna pallens, M. farrago, Leucania comma, L. obsoleta, Lasionhada proxima, Dichagyris

flammatra, Spaelotis ravida, Pseudohermonassa melancholica, Xestia ditrape zium, X. triangulum, Protolampra sobrina, Nyssocnemis eversmanni.

Meso-xerophilous species

Gynaephora fascelina, Manulea complana, M. lutarella, M. lurideola, Setina irrorella, Arctia caja, A. flavia, Chelis dahurica, Paragona cognata, Eublemma amasina, Lygephila craccae, Nola crambiformis, Panchrysia deaurata, Phyllophyla obliterata, Cucullia propinqua, C. fraudatrix, C. absinthii, C. infuscata, C. artemisiae, C. humilis C. gnaphalii C. asteris, Amphipyra tragopoginis, A. sergei, Sympistis campicola, Epimecia ustula, Athaumasta expressa, Spodoptera exigua, Caradrina morpheus, Athetis furvula, Fabula zollikoferi, Hypocoena stigmatica, Apamea sordens, Lacanobia w-latinum, L. blenna, Sideridis turbida, Conisania luteago, Euxoa nigrofusca, E. eruta, E. nigricans, E. aquilina, Rhyacia simulans, Noctua interposita.

Xero-thermophilous species

Manulea pygmaeola, Watsonarctia deserta, Eublemma minutata, E. ostrina, E. porphyrinia, E. purpurina, E. polygramma, Lygephila ludicra, Autophila chamaephanes, Drasteria cailino, D. rada, D. christophi, Callistege fortalitium, Gonospileia triquetra, G. munita, Deltote bankiana, Acronicta dentinosa, Mycteroplus puniceago, Cucullia magnifica, Sympistis exacta, Lophoterges centralasiae, Heliothis peltigera, Episema tersa, Heliophobus mongoliensis.

Hygrophilous species

Diacrisia sannio, Diachrysia chryson, Chilodes maritime, C. distracta, Celaena haworthii, Hydraecia ultima, H. osseola, Amphipoea ochreola, Rhizedra lutosa, Nonagria typhae, Longalatedes elymi, Archanara dissolute, Denticucullus pygmina, Photedes fluxa, P. extrema, Protarchanara brevilinea, Globia sparganii, G. algae, Apamea unanimis, Xylomoia graminea, Mythimna pudorina, M. straminea, Senta flammea, Coenophila subrosea.

Eurytopic species

Lymantria dispar, Spilarctia lutea, Phragmatobia fuliginosa, Trichoplusia ni, Macdunnoughia confusa, Anarta trifolii, Polia bombycina, Lacanobia thalassina, L. suasa, Hadena compta, Mythimna conigera, Actaea squalida, Euxoa adumbrata, E. conspicua, E. ochrogaster, Agrotis exclamationis, A. segetum, A. ipsilon, Eurois occulta, Xestia baja, X. c-nigrum.

Xeromontane species

Gynaephora pumila, Stigmatophora flava, Stigmatophora micans, Chelis caecilia, Eudiaphora turensis, Autophila chamaephanes, Autophila vespertalis, Drasteria obscurata, Sympistis senica, Caradrina monssacralis, Dasypolia timoi, D. murina, Chersotis margaritacea, Spaelotis senna.

Xero-halophilous species

Clethrogyna dubia, Thylacigyna antiquoides, Leiometopon simyrides, Pseudohadena argyllostigma, Anarta vaciva, Saragossa siccanorum.

Hygro-mesophilous species

Athetis pallustris, Helotropha leucostigma, Cerapteryx graminis, Mythimna impura, Autographa buraetica.

Meso-hygrophilous species

Nycteola asiatica, Sunira circellaris, Lamprotes c-aureum.

Hygro-thermophilous species

Nycteola eremostola, Acronicta albovenosa.

Xero-heliophilous species

Schinia cognata.

Meso-thermophilous species

Lygephila asiatica.

APPENDIX 6. Bionomic groups of the Noctuoidea fauna of the Kazakh Upland geomorphological landscape

Mesophilous species

Leucoma salicis, Sphrageidus similis, Cybosia mesomella, Wittia sororcula, Atolmis rubricollis, Pelosia muscerda, Thumatha senex, Rhyparia purpurata, Spilosoma lubricipeda, S. urticae, Simplicia rectalis, Paracolax tristalis, Herminia tenuialis, Polypogon tentacularia, Zanclognatha lunalis, Hypena rostralis, H. tristalis, Rivula sericealis, Scoliopteryx libatrix, Calyptra thalictri, Parascotia fuliginaria, Phytometra viridaria, Lygephila pastinum, L. viciae, Catocala fulminea, C. neonympha, C. fraxini, C. nupta, C. puerpera, C. lupina, C. pacta, Euclidia glyphica, Nola aerugula, N. confusalis, Earias clorana, Pseudoips prasinana, Nycteola degenerana, Abrostola triplasia, Diachrysia chrysitis, D. stenochrysis, Plusidia cheiranthi, Syngrapha interrogationis, Plusia festucae, P. putnami, Deltote uncula, Acontia trabealis, Aedia funesta, Acronicta alni, A. psi, A. auricoma, A. rumicis, A. megacephala, Tyta luctuosa, Cucullia scopariae, Amphipyra perflua, A. livida, Calophasia lunula, Acosmetia caliginosa, Pyrrhia umbra, Cryphia fraudatricula, Pseudeustrotia candidula, Elaphria venustula, Caradrina clavipalpis, Charanyca ferruginea, Actinotia polyodon, Amphipoea fucosa, Mesoligia furuncula, Mesapamea moderata, Parastichtis suspecta, Xanthia togata, Cirrhia icteritia, C. ocellaris, C. tunicata, Mesogona acetosellae, M. oxalina, Agrochola helvola, A. lota, Conistra vaccinii, C. rubiginea, Lithophane socia, L. furcifera, Xylena exsoleta, Orbona fragariae, Eupsilia transversa, Enargia paleacea, Blepharita amica, Panolis flammea, Orthosia incerta, O. ronkayorum, O. populeti, Anorthoa munda, Tholera decimalis, Polia nebulosa, Lacanobia contigua, L. oleracea, L. aliena, Melanchra persicariae, Ceramica pisi, Hadena capsincola, Mythimna turca, Eriopygodes imbecilla, Agrotis trifurca, Diarsia brunnea, D. mendica, Sineugraphe exusta, Cerastis rubricosa, Graphiphora augur, Eugraphe sigma.

Xerophilous species

Euproctis kargalika, Manulea palliatella, Collita griseola, Setina roscida, Tyria jacobaeae, Lacydes spectabilis, Epicallia villica, Eucharia festiva, Chelis maculosa, Amata transcaspica, A. caspia, Odice arcuinna, Eublemma pusilla, Lygephila lubrica, Cornutiplusia circumflexa, Acontia lucida, A. cinerea, A. nervosa, Cucullia tiefi, C. praecana, C. argentea, C. splendida, C. balsamitae, C. inderiensis, C. duplicata, C. santonici, C. lactea, C C. mixta, C. xeranthemi, C. virgaureae, C. amota, Sympistis strioligera, S. nigricula, Protoschinia scutosa, Helicoverpa

armigera, Bryophila orthogramma, Caradrina montana, C. albina, C. wullschlegeli, Oxytripia orbiculosa, Sidemia spilogramma, Hydraecia mongoliensis, Apamea ferrago, A. leucodon, A. remissa, Leucochlaena fallax, Eremohadena immunda, Perigrapha circumducta, Anarta dianthii, A. stigmosa, Polia serratilinea, Sideridis egena, Saragossa porosa, Conisania leineri, Hecatera bicolorata, Enterpia picturata, Hadena magnolii, H. dsungarica, H. filograna, H. christophi, Mythimna velutina, M. andereggi, M. albiradiosa, Eriopygodes impar, Dichagyris musiva, D. vallesiaca, D. truculenta, D. signifera, D. latipennis, Euxoa temera, E. phantoma, E. cursoria, E. distinguenda, E. obelisca, E. segnilis, E. basigramma, E. recussa, Agrotis characteristica, A. cinerea, A. clavis, A. ripae, Rhyacia caradrinoides, R. arenacea, Chersotis transiens, C. elegans, Spaelotis deplorata, Opigena polygona, Xestia kollari, X. ashworthii, Eugnorisma ignoratum, E. insignata, E. eminens.

Xero-mesophilous species

Spiris striata, Coscinia cribraria, Hyphoraia aulica, Abrostola tripartita, Polychrysia esmeralda, Autographa gamma, Cucullia lucifuga, C. umbratica, C. biornata, Heliothis viriplaca, H. adaucta, Victrix akbet, Caradrina terrea, Hoplodrina blanda, Dypterygia scabriuscula, Calamia tridens, Staurophora celsia, Amphipoea asiatica, Apamea monoglypha, A. lateritia, A. anceps, A. crenata, Xylena vetusta, Antitype chi, Ammoconia caecimacula, Dasypolia templi, Mniotype adusta, Orthosia opima, O gothica, Hada plebeja, Hecatera dysodea, Hadena variolata, H. albimacula, H. perplexa, H. irregularis, Mythimna pallens, M. ferrago, Leucania comma, L. obsoleta, Lasionhada proxima, Dichagyris flammatra, Spaelotis ravida, Pseudohermonassa melancholica, Xestia ditrapezium, X. triangulum, Protolampra sobrina, Nyssocnemis eversmanni.

Meso-xerophilous species

Gynaephora fascelina, Manulea complana, M. lutarella, M. lurideola, Setina irrorella, Arctia caja, A. flavia, Paragona cognata, Lygephila craccae, Nola crambiformis, Panchrysia deaurata, Phyllophyla obliterata, Cucullia propinqua, C. infuscata, C. artemisiae, C. humilis, C. gnaphalii, Amphipyra tragopoginis, Sympistis campicola, Epimecia ustula, Athaumasta expressa, Spodoptera exigua, Fabula zollikoferi, Litoligia literosa, Resapamea hedeni, Polia altaica, Lacanobia w-latinum, L blenna, Sideridis turbida, Conisania luteago, Euxoa nigrofusca, E. eruta, E. nigricans, E. aquilina, Rhyacia simulans, Noctua interposita.

Xero-thermophilous species

Manulea pygmaeola, Watsonarctia deserta, Eublemma minutata, E. ostrina, E. purpurina, Lygephila ludicra, Autophila chamaephanes, Drasteria cailino, D. rada, D. christophi, Callistege fortalitium, Gonospileia triquetra, G. munita, Deltote bankiana, Acronicta dentinosa, Sympistis exacta, Lophoterges centralasiae, Heliothis peltigera, Episema tersa, Heliophobus mongoliensis.

Hygrophilous species

Diacrisia sannio, Chilodes maritima, Celaena haworthii, Hydraecia osseola, Amphipoea ochreola, Rhizedra lutosa, Nonagria typhae, Longalatedes elymi, Archanara dissoluta, Denticucullus pygmina, Photedes fluxa, P. extrema, Globia sparganii, G. algae, Apamea unanimis, Xylomoia graminea, Mythimna pudorina, Coenophila subrosea.

Eurytopic species

Lymantria dispar, Phragmatobia fuliginosa, Trichoplusia ni, Macdunnoughia confusa, Anarta trifolii, Polia bombycina, Lacanobia thalassina, L. suasa, Hadena compta, Mythimna conigera, Actebia squalida, Euxoa adumbrata, E. ochrogaster, Agrotis exclamationis, A. ipsilon, Eurois occulta, Xestia c-nigrum.

Xeromontane species

Gynaephora pumila, Stigmatophora flava, S. micans, Chelis caecilia, Eudiaphora turensis, Autophila chamaephanes, A. vespertalis, Drasteria obscurata, Sympistis senica, Caradrina monssacralis, Dasypolia timoi, D. murina, Chersotis margaritacea, Spaelotis senna.

Xero-halophilous species

Clethrogyna dubia, Thylacigyna antiquoides, Leiometopon simyrides, Pseudohadena argyllostigma, Anarta vaciva, Saragossa siccanorum.

Hygro-mesophilous species

Autographa buraetica, Athetis pallustris, Helotropha leucostigma, Cerapteryx graminis, Mythimna impura.

Hygro-thermophilous species

Nycteola eremostola, Acronicta albovenosa.

Meso-hygrophilous species

Nycteola asiatica, Sunira circellaris.

Xero-heliophilous species

Schinia cognata.

Meso-thermophilous species

Lygephila asiatica.

APPENDIX 7. Bionomic groups of the Noctuoidea fauna of the geomorphological landscape West Siberian Plain

Mesophilous species

Leucoma salicis, Sphrageidus similis, Wittia sororcula, Atolmis rubricollis, Pelosia muscerda, P. obtusa, Thumatha senex, Rhyparia purpurata, Spilosoma lubricipeda, S. urticae, Simplicia rectalis, Paracolax tristalis, Herminia tenuialis, H. tristriga, Polypogon tentacularia, Pechipogo strigilata, Zanclognatha lunalis, Hypena rostralis, H. obesalis, H. tristalis, Rivula sericealis, Scoliopteryx libatrix, Calyptra thalictri, Phytometra viridaria, Lygephila pastinum, L. viciae, Catocala fulminea, C. neonympha, C. fraxini, C. nupta, C. adultera, C. deducta, C. puerpera, C. lupina, C. pacta, Euclidia glyphica, Callistege mi, Nola aerugula, Earias clorana, Pseudoips prasinana, Nycteola degenerana, Diachrysia chrysitis, D. stenochrysis, D. zosimi, Euchalcia consona, Plusidia cheiranthi, Autographa mandarina, A. bractea, A. excelsa, Syngrapha interrogationis, Plusia festucae, P. putnami, Deltote pygarga, D. deceptoria, D. uncula, Acontia trabealis, Aedia f unesta, Colocasia coryli, Acronicta alni, A. cuspis, A. tridens, A. psi, A. rumicis, A. megacephala, Tyta luctuosa, Cucullia scopariae, Amphipyra pyramidea, A. perflua, A. livida, Brachionycha nubeculosa, Calophasia lunula, Pyrrhia umbra, P. exprimens, Cryphia fraudatricula, Pseudeustrotia candidula, Elaphria venustula, Caradrina clavipalpis, Hoplodrina octogenaria, Trachea atriplicis, Actinotia polyodon, Hydraecia micacea, Amphipoea fucosa, Ogilia leuconephra, Apamea oblonga, A. illyria, Oligia latruncula, Mesoligia furuncula, Mesapamea secalis, Hyppa rectilinea, Parastichtis suspecta, Apterogenum ypsillon, Xanthia togata, Cirrhia icteritia, C. ocellaris, C. tunicata, Mesogona acetosellae, Agrochola vulpecula, Conistra vaccinii, Lithophane socia, Xylena exsoleta, X. solidaginis, Eupsilia transversa, Enargia paleacea, E. abluta, Ipimorpha retusa, I. subtusa, Cosmia affinis, Brachyxanthia zelotypa, Mniotype satura, Panolis flammea, Orthosia incerta, O. populeti, O. gracilis, Anorthoa mu nda, Egira anatolica, Tholera decimalis, Polia hepatica, P. nebulosa, Lacanobia contigua, L. oleracea, L. splendens, L. aliena, Melanchra persicariae, Ceramica pisi, Mamestra brassicae, Sideridis rivularis, Hadena capsincola, Eriopygodes imbecilla, Actebia praecox, Agrotis trifurca, Axylia putris, Ochropleura plecta, Diarsia dahlii, D. mendica, Cerastis leucographa, Paradiarsia punicea, Anaplectoides prasina, Eugraphe sigma.

Xerophilous species

Manulea palliatella, Collita griseola, Miltochrista miniata, Tyria jacobaeae, Lacydes spectabilis, Epicallia villica, Eucharia festiva, Chelis maculosa, Amata transcaspica, A. caspia, Zekelita ravularis, Odice arcuinna, Eublemma panonica, E. pallidula, E. pusilla, Lygephila lubrica, Acantholipes regularis, Acontia lucida, Acronicta cinerea, A. nervosa, Cucullia argentea, C. splendida, C. argentina, C. biradiata, C. balsamitae, C. inderiensis, C. duplicata, C. santonici, C. mixta, C. xeranthemi, C. virgaureae, C. amota, C. tanaceti, Amphipyra tetra, Calophasia opalina, Sympistis strioligera, S. nigricula, Protoschinia scutosa, Helicoverpa armigera, C. montana, C. albina, C petraea, C. wullschlegeli, Sidemia spilogramma, Hydraecia mongoliensis, Apamea ferrago, A. furva, A. leucodon, A. remissa, Leucochlaena fallax, Eremohadena immunda, Perigrapha circumducta, Tholera cespitis, T. hilaris, Anarta dianthii, A. stigmosa, Polia serratilinea, Pachetra sagittigera, Hyssia cavernosa, Sideridis lampra, S. egena, Saragossa porosa, Conisania leineri, C. literata, Hecatera bicolorata, Enterpia picturata, Hadena magnolii, H. persimilis, H. filograna, H. christophi, Mythimna velutina, M. deserticola, M. vitellina, M. andereggi, M. albiradiosa, M. opaca, M. l-album, Dichagyris musiva, D. lutescens, D. truculenta, D. orientis, D. latipennis, Euxoa temera, E. phantoma, E. censoria, E. distinguenda, E. obelisca, E. segnilis, E. basigramma, E. fallax, E. deserta, E. tristis, E. deficiens, Agrotis clavis, A. vestigialis, A. ripae, A. desertorum, Netrocerocora quadrangula, Chersotis transiens, C. elegans, Eugnorisma ignoratum, Miniphila miniago.

Xero-mesophilous species

Spiris striata, Coscinia cribraria, Abrostola tripartita, Polychrysia esmeralda, Autographa gamma, Cucullia pustulata, C. lucifuga, C. umbratica, C. biornata, Phidrimana amurensis, Eucarta virgo, E. amethystina, Heliothis viriplaca, H. adaucta, Caradrina terrea, Hoplodrina blanda, Athetis lepigone, Athetis correpta, Dypterygia scabriuscula, Calamia tridens, Staurophora celsia, Amphipoea asiatica, Pabulatrix pabulatricula, Apamea monoglypha, A. lateritia, A. anceps, A. crenata, Xylena vetusta, Mniotype adusta, Orthosia gothica, Heliophobus unicolor, Hecatera dysodea, Hadena albimacula, H. perplexa, H. irregularis, Mythimna pallens, M. ferrago, Leucania comma, L. obsoleta, Lasionhada proxima, Spaelotis ravida, Pseudohermonassa melancholica, Xestia ditrapezium, X. triangulum.

Eurytopic species

Lymantria dispar, Spilarctia lutea, Phragmatobia fuliginosa, Macdunnoughia confusa, Anarta trifolii, Polia bombycina, Lacanobia thalassina, L. suasa, Hadena compta, Mythimna conigera, Actebia squalida, Euxoa adumbrata, E. conspicua, E. ochrogaster, Agrotis exclamationis, A. segetum, A. ipsilon, Eurois occulta, Xestia baja, X. c-nigrum.

Hygrophilous species

Diacrisia sannio, D. chryson, Chilodes maritima, C. distracta, Celaena haworthii, Hydraecia ultima, H. osseola, Amphipoea ochreola, Rhizedra lutosa, Nonagria typhae, Longalatedes elymi, Photedes fluxa, Protarchanara brevilinea, Globia algae, Apamea unanimis, Xylomoia graminea, Mythimna pudorina, M. straminea, Senta flammea.

Xero-thermophilous species

Manulea pygmaeola, Watsonarctia deserta, Eublemma minutata, E. ostrina, E. porphyrinia, E. purpurina, E. polygramma, Lygephila ludicra, Drasteria cailino, D. rada, Callistege fortalitium, Gonospileia triquetra, G. munita, Deltote bankiana, Acronicta dentinosa, Mycteroplus puniceago, Cucullia magnifica, Heliophobus mongoliensis.

Xero-halophilous species

Clethrogyna dubia, Thylacigyna antiquoides, Saragossa siccanorum.

Hygro-thermophilous species

Acronicta albovenosa.

Meso-xerophilous species

Gynaephora fascelina, Manulea complana, M. lutarella, M. lurideola, Arctia caja, A. flavia, Chelis dahurica, Eublemma amasina, Lygephila craccae, Nola crambiformis, Phyllophyla obliterata, Cucullia propinqua, C. fraudatrix, C. absinthii, C. infuscata, C. artemisiae, C. gnaphalii, C. asteris, Amphipyra tragopoginis, A. sergei, Sympistis campicola, Athaumasta expressa, Caradrina morpheus, Athetis furvula, Fabula zollikoferi, Hypocoena stigmatica, Apamea sordens, Litoligia literosa, Resapamea hedeni, Polia altaica, Lacanobia w-latinum, L. blenna, Sideridis turbida, Conisania luteago, Euxoa nigrofusca, E. nigricans, E. aquilina, Noctua interposita.

Hygro-mesophilous species

Autographa buraetica, Athetis pallustris, Helotropha leucostigma, Cerapteryx graminis, Mythimna impura.

Meso-hygrophilous species

Nycteola asiatica, Lamprotes c-aureum, Sunira circellaris.

Meso-thermophilous species

Acronicta albovenosa.

APPENDIX 8. Imago phenology of Noctuoidea fauna of the Pavlodar region

Spring group of Noctuoidea species

Eudiaphora turensis, Acronicta dentinosa, Cucullia tiefi, Brachionycha nubeculosa, Panolis flammea, Orthosia incerta, O. ronkayorum, O. populeti, O. gracilis, O. opima, O. gothica, Anorthoa munda, Perigrapha circumducta, Egira anatolica, Cerastis rubricosa, C. leucographa.

Spring-summer group of Noctuoidea species

Clethrogyna dubia, Manulea complana, M. lutarella, Phragmatobia fuliginosa, Zekelita ravulalis, Phytometra viridaria, Nycteola degenerana, N. asiatica, Acronicta auricoma, A. rumicis, A. nervosa, A. albovenosa, Protoschinia scutosa, Actinotia polyodon, Xestia c-nigrum.

Early-year group of Noctuoidea species

Gynaephora fascelina, Leucoma salicis, Euproctis kargalika, Sphrageidus similis, Cybosia mesomella, Manulea lurideola, Wittia sororcula, Atolmis rubricollis, Pelosia muscerda, P. obtusa, Stigmatophora flava, S. micans, Setina irrorella, S. roscida, Thumatha senex, Coscinia cribraria, Hyphoraia aulica, Arctia caja, A. flavia, Epicallia villica, Chelis maculosa, C. caecilia, C.dahurica Rhyparia purpurata, Spilosoma lubricipeda, S. urticae, Spilarctia lutea, Amata transcaspica, A. caspia, Simplicia rectalis, Paracolax tristalis, Herminia tenuialis, H. tristriga, Polypogon tentacularia, Pechipogo strigilata, Zanclognatha lunalis, Hypena obesalis, Rivula sericealis, Calyptra thalictri, Parascotia fuliginaria, Paragona cognata Odice arcuinna Eublemma minutata, E. porphyrinia, E. panonica, E amasina, E. purpurina, E. pallidula, E. pusilla, E. polygramma, Lygephila lubrica, L. ludicra, L. pastinum, L. viciae, L. asiatica, Acantholipes regularis, Catocala fulminea, C. neonympha, Drasteria cailino, D. rada, D. christophi, D. obscurata, Euclidia glyphica, Callistege mi, C. fortalitium, Gonospileia triquetra, G. munita, Nola aerugula, N. crambiformis, N. confusionis, Earias clorana, Pseudoips prasinana, Nycteola eremostola, Abrostola triplasia, Macdunnoughia confuse, Diachrysia zosimi, Panchrysia deaurata, Plusidia cheiranthi, Autographa gamma, A. buraetica, Plusia festucae, P. putnami, Phyllophyla obliterate, Deltote pygarga, D. deceptoria, D. uncula, D. bankiana, Acontia lucida, A. trabealis, Aedia funesta, Colocasia coryli, Leiometopon simyrides, Acronicta alni, A. cuspis, A. cinerea, A. albovenosa, Tyta luctuosa, Cucullia praecana, C.

scopariae, C artemisiae, C. gnaphalii, C. argentina C. biradiata, C. lucifuga, C. umbratica, C. biornata, C. inderiensis, C. duplicata, Cucullia santonici, C. lactea, C. mixta, C. xeranthemi, C. virgaureae, C. amota, C. asteris, C. tanaceti, Calophasia lunula, C. opalina, Sympistis exac ta, Lophoterges centralasiae, Epimecia ustula, Acosmetia caliginosa, Eucarta virgo, E. amethystine, Pyrrhia umbra Heliothis peltigera, H. viriplaca, H. adaucta, Cryphia fraudatricula, Bryophila orthogramma, Victrix akbet, Athaumasta expressa, Pseudustrotia candidula, Elaphria venustula Caradrina morpheus C. albina, C. petraea, C. wullschlegeli, C. clavipalpis, Chilodes maritima, C. distracta, Charanyca ferruginea, Athetis pallustris, A. lepigone, A. correpta, Dypterygia scabriuscula, Trachea atriplicis, Longalatedes elymi, Hypocoena stigmatica, Photedes fluxa, P. extrema, Apamea monoglypha, A. farrago, A. furva, A. lateritia, A. oblonga, A. sordens, A. anceps, A. leucodon, A. remissa, A. crenata, A. unanimis, A. Illyria, Mesapamea moderata, Resapamea hedeni, Xylomoia graminea, Hyppa rectilinea Apterogenum ypsillon, Eremohadena immunda, Mniotype adusta, Cerapteryx graminis, Anarta vaciva, A. dianthi, A. trifolii, A. stigmosa, Polia bombycina, P. hepatica, P nebulosi, P. serratiline a, P. altaica, Pachetra sagittigera, Lacanobia w-latinum, L. thalassina L. suasa, L. contigua, L. oleracea, L. splendens, L. aliena, L. blenna, Melanchra persicariae, Ceramica pisi, Hada plebeja, Hyssa cavernosa, Mamestra brassicae, Sideridis lampra, S. turbida, S. egena, S. rivularis Heliophobus unicolor, H. mongoliensis, Saragossa siccanorum, Saragossa porosa, Conisania leineri, C. luteago, C. literata, Hecatera bicolorata, H. dysodea, Hadena magnolii, H. compta, H. variolata, H. albimacula, H. dsungarica, H. persimilis, H. filograna, H. perplexa, H. christophi, H. irregularis, Mythimna velutina, M. pudorina, M. conigera, M. pallens, M. deserticola, M. impure, M. straminea, M. vitelline, M. anderreggi, M. albiradiosa, M. opaca, M. farrago, Leucania comma, Senta flammea, Lasionhada proxima Eriopygodes imbecilla, Eriopygodes impar, Actebia squalida, Dichagyris musiva, D. flammatra D. vallesiaca, D. orientis, Agrotis exclamationis, A. segetum, Axylia putris, Ochropleura plecta, Paradia rsia punicea, Netrocerocora quadrangular, Rhyacia caradrinoides, Spaelotis ravida, S. deplorata, Eurois occulta, Graphiphora augur, Anaplectoides prasina, Pseudohermonassa melancholica, Xestia ditrapezium X. triangulum, Eugraphe sigma, Protolampra sobrina.

Late-summer of Noctuoidea species

Lymantria dispar, Gynaephora pumila, Thylacigyna antiquoides, Manulea palliatella, M., pygmaeola, Collita griseola, Miltochrista miniata, Lacydes spectabilis, Spiris striata, Hypena

tristalis, Eublemma ostrina, Lygephila craccae, Catocala fraxini, C, nupta, C, adultera, C, deducta, C. puerpera, C. lupina, C. pacta, Abrostola tripartite, Trichoplusia ni, Diachrysia chryson, D. chrysitis, D. stenochrysis, Euchalcia consona, Polychrysia Esmeralda, Lamprotes c-aureum, Autographa mandarina, A. bractea, A. excelsa, Cornutiplusia circumflexa, Syngrapha interrogationis Acronicta tridens, A. psi, Mycteroplus puniceago, Cucullia fraudatrix, C. absinthii, C. argentea C. infuscate, C. humilis, C. splendida, C. magnifica, C. pustulata, C. balsamitae, Amphipyra pyramidea, A. perflua, A. livida, A. tragopoginis, A. tetra, A. sergei, Sympistis strioligera, S. campicola, S. nigricula, Phidrimana amurensis, Pyrrhia exprimens, Schinia cognata, Helicoverpa armigera, Spodoptera exigua, Caradrina terrea, C. montana, C. monssacralis, Hoplodrina octogenaria, H. blanda, Athetis furvula, Calamia tridens, Helotropha leucostigma, Hydraecia micacea, H. ultima, H. mongoliensis, Amphipoea fucosa, A. ochreola, A. asiatica, Fabula zollikoferi, Nonagria typhae, Archanara dissoluta Denticucullus pygmina, Ogilia leuconephra, Protarchanara brevilinea, Globia sparganii, G. algae, Pabulatrix pabulatricula, Oligia latruncula, Mesoligia furuncula Litoligia literosa, Mesapamea secalis, Leucochlaena fallax, Parastichtis suspecta, Xanthia togata, Cirrhia icteritia, C. ocellaris, Sunira circellaris, Xylena solidaginis, Enargia paleacea, E. abluta, Ipimorpha retusa, I. subtusa, Cosmia affinis, Brachyxanthia zelotypa, Antitype chi, Tholera cespitis, T. decimalis, T. hilaris, Enterpia picturata, Hadena capsincola, Mythimna turca, M. l-album, Leucania obsoleta, Actebia praecox, Dichagyris lutescens, D. truculenta, D. signifera, D. latipennis, E. adumbrata, Euxoa conspicua, E. temera, E. ochrogaster, E. phantoma, E. cursoria, E. distinguenda, E. obelisca, E. segnilis, E. nigrofusca, E. eruta, E. nigricans, E. aquiline, E. basigramma, E. fallax, E. deserta, E. recussa, E. tristis, E. deficiens, Agrotis characteristica, A. trifurca, A. cinerea, A. clavis, A. vestigialis, A. ripae, A. desertorum, A. ipsilon, Diarsia dahlia, D. brunnea, Diarsia mendica, Sineugraphe exusta, Cerastis rubricosa, Rhyacia simulans, R. arenacea, Chersotis transiens, C. elegans, C. margaritacea, Noctua interposita Spaelotis senna, Opigena polygona Xestia baja, X. kollari, X. ashworthii, Coenophila subrosea, Eugnorisma ignoratum, E. insignata, E. eminens, Miniphila miniago, Nyssocnemis eversmanni.

Autumn group of Noctuoidea species

Sympistis senica, Oxytripia orbiculosa, Sidemia spilogramma, Celaena haworthii, Hydraecia osseola, Rhizenra lutosa, Episema tersa, Cirrhia tunicata, Mesogona acetosellae, M. oxalina,

Agrochola lota, A. vulpecula, A. helvola, Pseudohadena argyllostigma, Staurophora celsia, Ammoconia caecimacul, Blepharita amica, Mniotype satura.

Autumn-spring group of Noctuoidea species

Hypena rostralis, Scoliopteryx libatrix, Autophila chamaephanes, A. vespertalis, Conistra vaccinii, C. rubiginea, Lithophane socia, L. furcifera, Xylena exsoleta, X. vetusta, Orbona fragariae, Eupsilia transversa, Dasypolia templi, D. timoi, D. murina.

APPENDIX 9. Biogeographical analysis of the Noctuoidea fauna in the Pavloda region

Subcosmopolitan species

Trichoplusia ni, Autographa gamma, Cornutiplusia circumflexa, Helicoverpa armigera, Agrotis ipsilon, A. segetum, Ochropleura plecta and *Xestia c-nigrum*

Holarctic species

Lymantria dispar, Arctia caja, Phragmatobia fuliginosa, Scoliopteryx libatrix, Polychrysia Esmeralda, Autographa buraetica, Syngrapha interrogationis, Plusia putnami, Pyrrhia exprimens, Caradrina montana, Hypocoena stigmatica, Apamea remissa, A. unanimis, Parastichtis suspecta, Xanthia togata, Mniotype adusta, Anarta trifolii, Hadena variolata, Euxoa adumbrata, E. ochrogaster, E. cursoria, Eurois occulta, Anaplectoides prasina

Siberian-American species

Hadena variolata

Trans-Palaearctic species

Thylacigyna antiquoides, Leucoma salicis, Sphrageidus similis, Coscinia cribraria, Hyphoraia aulica, Eucharia festiva, Rhyparia purpurata, Spilosoma lubricipeda, S. urticae, Spilarctia lutea, Calyptra thalictri, Phytometra viridaria, Lygephila craccae, Euclidia glyphica, Abrostola triplasia, Plusia festucae, Acontia trabealis, Acronicta cuspis, A. psi, A. rumicis, Caradrina clavipalpis, Apamea anceps, Oligia latruncula, Mesoligia furuncula, Litoligia literosa, Apterogenum ypsillon, Cirrhia icteritia, C. ocellaris, Conistra vaccinii, Xylena exsoleta, X. vetusta, Dasypolia temple, Orthosia incerta, Tholera decimalis, Lacanobia oleracea, Hadena compta, Euxoa nigricans, Agrotis exclamationis, A.clavis, Axylia putris, Xestia baja

Eurasiatic Palaearctic species

Gynaephora fascelina, Manulea lutarella, M. lurideola, Wittia sororcula, Collita griseola, Atolmis rubricollis, Pelosia muscerda, P. obtuse, Miltochrista miniata, Simplicia rectalis, Paracolax tristalis, Herminia tenuialis, Polypogon tentacularia, Pechipogo strigilata, Zanclognatha lunalis, Hypena obesalis, Parascotia fuliginaria, Odice arcuinna, Lygephila lubrica, L. ludicra, L. pastinum, L. viciae, Catocala fulminea, C. fraxini, C. nupta, C.adultera, C.

pacta, Callistege mi, Nola aerugula, N. confusalis, Pseudoips prasinana, Nycteola degenerana, N.asiatica, Abrostola tripartite, Macdunnoughia confuse, Diachrysia chryson, D. chrysitis, D. stenochrysis, D. zosimi, Lamprotes c-aureum, Plusidia cheiranthi, Deltote pygarga, D. deceptoria, D. uncula, Acronicta alni, A. tridens, A. auricoma, A. nervosa, Cucullia scopariae, C. fraudatrix, C. argentea, C. artemisiae, C. splendida, C. pustulata, C. lucifuga, C. umbratica, C. biornata, C. asteris, C. xeranthemi, Amphipyra pyramidea, A. perflua, A. livida, Brachionycha nubeculosa, Calophasia lunula, Eucarta virgo, E. amethystine, Pyrrhia umbra, Protoschinia scutosa, Heliothis adaucta, Bryophila orthogramma, Pseudeustrotia candidula, Elaphria venustula, Caradrina petraea, Hoplodrina octogenarian, Charanyca ferruginea, Athetis furvula, A. pallustris, A. lepigone, A. correpta, Trachea atriplicis, Actinotia polyodon, Oxytripia orbiculosa, Sidemia spilogramma, Staurophora celsia, Helotropha leucostigma, Celaena haworthii, Hydraecia micacea, H. ultima, H. osseola, Amphipoea fucosa, Rhizedra lutosa, Longalatedes elymi, Denticucullus pygmina, Photedes fluxa, Protarchanara brevilinea, Globia sparganii, Pabulatrix pabulatricula, Apamea monoglypha, A. lateritia, A. oblonga, A. sordens, A. leucodon, A. crenata, Resapamea hedeni, Hyppa rectilinea, Lithophane social, Xylena solidaginis, Orbona fragariae, Eupsilia transversa, Enargia paleacea, Ipimorpha retusa, I. subtusa, Cosmia affinis, Antitype chi, Blepharita amica, Mniotype satura, Panolis flammea, Orthosia gracilis, O. gothica, Anorthoa munda, Perigrapha circumducta, Cerapteryx graminis, Polia bombycina, P. hepatica, P. nebulosa, Lacanobia suasa, L. contigua, L. splendens, L. aliena, Melanchra persicariae, Ceramica pisi, Hada plebeja, Hyssia cavernosa, Mamestra brassicae, Sideridis turbida, S. rivularis, Hecatera bicolorata, Mythimna turca, M. pudorina, M. conigera, M. pallens, M. impura, Leucania comma, L. obsoleta, Lasionhada proxima, Actebia praecox, A. squalid, Dichagyris flammatra, Euxoa nigrofusca, Agrotis trifurca, Diarsia dahlii, D. brunnea, D. mendica, Cerastis rubricosa, C. leucographa, Paradiarsia punicea, Spaelotis ravida, Opigena polygona, Graphiphora augur, Xestia ditrapezium, Eugraphe sigma, Coenophila subrosea, Protolampra sobrina.

European-Siberian species

Manulea complana, Chelis dahurica, Diacrisia sannio, Nycteola eremostola, Euchalcia consona, Colocasia coryli, Cucullia praecana, C. propinqua, C. gnaphalii, C. magnifica, C. lacteal, Phidrimana amurensis, Acosmetia caliginosa, Schinia cognata, Cryphia fraudatricula, Dypterygia scabriuscula, Calamia tridens, Archanara dissolute, Photedes extrema, Apamea unanimis, Mesogona acetosellae, M. oxalina, Sunira circellaris, Agrochola helvola, Enargia

abluta, Orthosia populeti, O. opima, Tholera cespitis, Lacanobia w-latinum, L. thalassina, Sideridis lampra, Heliophobus unicolor, Hadena capsincola, H. irregularis, Mythimna straminea, Senta flammea, Eriopygodes imbecilla, Dichagyris musiva, D. vallesiaca, Euxoa distinguenda, E. eruta, Agrotis vestigialis, Noctua interposita, Xestia triangulum, X. ashworthii.

Siberian-Mediterranean species

Arctia flavia, Eublemma porphyrinia, Callistege fortalitium, Panchrysia deaurata, Sympistis strioligera, Apamea farrago, Anarta stigmosa, Euxoa deserta, Netrocerocora quadrangula, Eugnorisma eminens.

West Palaearctic species

Clethrogyna dubia, Manulea pygmaeola, Eublemma ostrina, E. panonica, E. purpurina, E. polygramma, Catocala puerpera, Earias clorana, Acontia lucida, Tyta luctuosa, Cucullia tanaceti, Amphipyra tragopoginis, A. tetra, Calophasia opalina, Heliothis peltigera, H. viriplaca, Caradrina morpheus, C. terrea, C. wullschlegeli, Hoplodrina blanda, Nonagria typhae, Globia algae, Apamea furva, Mesapamea secalis, Agrochola lota, Lithophane furcifera, Ammoconia caecimacula, Anarta dianthi, Polia serratilinea, Pachetra sagittigera, Lacanobia blenna, Conisania luteago, Hecatera dysodea, Hadena magnolii, H. albimacula, H. filograna, H. perplexa, Mythimna vitellina, M. ferrago, M. l-album, Euxoa conspicua, E. temera, E. obelisca, E. aquilina, Agrotis desertorum, Rhyacia simulans.

European-West Asian

Hypena rostralis, Eublemma minutata, Autographa bractea, Aedia funesta, Acronicta cinerea, A. albovenosa, Mycteroplus puniceago, Epimecia ustula, Apamea illyria.

European-Central Asian species

Cybosia mesomella, Manulea palliatella, Setina irrorella, S. roscida, Tyria jacobaeae, Lacydes spectabilis, Spiris striata, Watsonarctia deserta, Eublemma pallidula, E. pusilla, Autophila chamaephanes, A. vespertalis, Acantholipes regularis, Catocala neonympha, C. deducta, C. lupina, Drasteria cailino, D. rada, Gonospileia triquetra, G. munita, Cucullia absinthii, C. argentina, C. balsamitae, C. santonici, C. mixta, C. virgaureae, Caradrina albina, Chilodes maritima, Fabula zollikoferi, Conistra rubiginea, Mesapamea moderata, Episema tersa, Tholera hilaris, Sideridis egena, Saragossa siccanorum, S. porosa, Conisania leineri, C. literata,

Enterpia picturata, Hadena christophi, Mythimna anderreggi, Eriopygodes impar, Euxoa segnilis, E. basigramma, E. fallax, E. recussa, E. tristis, Agrotis cinerea, Rhyacia arenacea, Chersotis elegans, C. margaritacea, Eugnorisma ignoratum, E. insignata, Miniphila miniago.

Uralian-Kazakhstan species

Cucullia tiefi, Leucochlaena fallax, Dasypolia murina.

West Palaearctic-Central Asian species

Thumatha senex, Epicallia villica, Chelis maculosa, Chelis caecilia, Drasteria christophi, Drasteria obscurata, Acronicta dentinosa, Sympistis exacta, Dichagyris truculenta, Dichagyris signifera, Dichagyris orientis, Agrotis ripae.

Central Asian species

Gynaephora pumila, Euproctis kargalika, Eudiaphora turensis, Amata transcaspica, A. caspia, Zekelita ravulalis, Lygephila asiatica, Nola crambiformis, Leiometopon simyrides, Cucullia inderiensis, C. duplicate, Lophoterges centralasiae, Victrix akbet, Caradrina monssacralis, Amphipoea ochreola, Pseudohadena argyllostigma, Eremohadena immunda, Dasypolia timoi, Anarta vaciva, Heliophobus mongoliensis, Hadena dsungarica, Dichagyris latipennis, Euxoa deficiens, Spaelotis deplorata.

Siberian-Central Asian

Cucullia infuscate, Cucullia biradiata, Amphipyra sergei, Athaumasta expressa, Polia altaica, Mythimna deserticola, M. albiradiosa, Dichagyris lutescens, Rhyacia caradrinoides, Chersotis transiens.

East Palaearctic species

Eublemma amasina, Autographa mandarina, A. excelsa, Phyllophyla obliterate, Acronicta megacephala, Cucullia amota, Sympistis campicola, S. nigricula, S. campicola, Chilodes distracta, Amphipoea asiatica, Xylomoia graminea, Cirrhia tunicata, Mythimna velutina, M. opaca, Agrotis characteristica, Sineugraphe exusta.

Manchurian-Central Asian-Siberian species

Stigmatophora flava, S. micans, Herminia tristriga, Deltote bankiana, Cucullia humilis, Sympistis senica, Hydraecia mongoliensis, Ogilia leuconephra, Brachyxanthia zelotypa, Euxoa phantom, Pseudohermonassa melancholica, Xestia kollari, Nyssocnemis eversmanni.

Siberian-Pacific species

Agrochola vulpecula.

APPENDIX 10. Comparison of the Noctuoidea fauna of the Pavlodar region of Kazakhstan and Croatia. Subfamilies level

Subfamily level

Common subfamilies for the fauna of Croatia and the Pavlodar region (27 subfamilies): LYMANTRIINAE, ARCTIINAE, HERMINIINAE, HYPENINAE, RIVULINAE, BOLETOBIINAE, SCOLIOPTERYGINAE, CALPINAE, PHYTOMETRINAE, TOXOCAMPINAE, EREBINAE, NOLINAE, CHLOEPHORINAE, PLUSIINAE, EUSTROTIINAE, ACONTIINAE, PANTHEINAE, ACRONICTINAE, METOPONIINAE, CUCULLIINAE, AMPHIPYRINAE, ONCOCNEMIDINAE, CONDICINAE, HELIOTHINAE, BRYOPHILINAE, NOCTUINAE, HADENINAE.

Tribe level

Common Tribes for the fauna of Croatia and the Pavlodar region of Kazakhstan (41 tribes): Lymantriini, Orgyiini, Aventiini, Lithosiini, Arctiini, Syntomini, Boletobiini, Scoliopterygini, Calpini, Eublemmini, Phytometrini, Catocalini, Melipotini, Euclidiini, Nolini, Eriadini, Chloephorini, Sarrothripini, Abrostolini, Argyrogrammatini, Plusiini, Acontiini, Aediini, Amphipyrini, Psaphidini, Condicini, Noctuini, Pseudeustrotiini, Elaphriini, Caradrinini, Prodeniini, Dypterygiini, Apameini, Actinotiini, Leuconyctini, Xylenini, Episemini, Hadenini, Leucaniini, Eriopygini, Orthosiini.

Tribes from the Pavlodar region of Kazakhstan that are absent from the fauna of Croatia (3 tribes): Leucomini, Nygmiini, Acantholipini.

Tribes from Croatia, absent from the fauna of the Pavlodar region of Kazakhstan (7 tribes): Arctomithina, Leucomina, Nygmiina, Orgyiina, Endrosina, Spilosomatina, Sesamiina.

Subtribe level.

Common Subtribes in the fauna of Croatia and the Pavlodar region of Kazakhstan (21 subtribes): Lithosiina, Nudariina, Spilosomina, Arctiina, Micrarctiina, Eriadina, Chloephorina, Sarrothripina, Autoplusiina, Euchalciina, Plusiina, Psaphidina, Agrotina, Axyliina, Noctuina, Caradrinina, Athetiina, Oxytripiina, Cosmiina, Xylenina, Antitypina. Subtribes in the Pavlodar region of Kazakhstan that are absent from the fauna of Croatia (3 subtribes): Callimorphina, Apameina, Pseudohadenina. Subtribes in Croatia, absent from the fauna of the Pavlodar region

of Kazakhstan (7 Subtribe): Arctomithina, Leucomina, Nygmiina, Orgyiina, Endrosina, Spilosomatina, Sesamiina.

Genus level

Common genera for the fauna of Croatia and the Pavlodar region of Kazakhstan (163 genera): *Leucoma, Lymantria, Euproctis, Sphrageidus, Gynaephora, Cybosia, Manulea, Wittia, Collita, Atolmis, Pelosia, Setina, Thumatha, Miltochrista, Diacrisia, Rhyparia, Watsonarctia, Spilarctia, Phragmatobia, Eucharia, Epicallia, Arctia, Hyphoraia, Chelis, Tyria, Spiris, Coscinia, Simplicia, Paracolax, Herminia, Polypogon, Pechipogo, Zanclognatha, Hypena, Rivula, Parascotia, Scoliopteryx, Calyptra, Odice, Eublemma, Phytometra, Lygephila, Catocala, Drasteria, Euclidia, Callistege, Gonospileia, Nola, Earias, Pseudoips, Nycteola, Abrostola, Trichoplusia, Macdunnoughia, Diachrysia, Panchrysia, Lamprotes, Plusidia, Autographa, Cornutiplusia, Plusia, Phyllophyla, Acontia, Aedia, Colocasia, Acronicta, Tyta, Cucullia, Amphipyra, Brachionycha, Calophasia, Epimecia, Acosmetia, Schinia, Heliothis, Helicoverpa, Protoschinia, Cryphia, Actebia, Euxoa, Agrotis, Axylia, Ochropleura, Diarsia, Noctua, Chersotis, Rhyacia, Spaelotis, Opigena, Graphiphora, Eugnorisma, Xestia, Eugraphe, Cerastis, Anaplectoides, Pseudeustrotia, Elaphria, Caradrina, Hoplodrina, Spodoptera, Chilodes, Athetis, Dypterygia, Trachea, Charanyca, Oxytripia, Actinotia, Eucarta, Ipimorpha, Parastichtis, Apterogenum, Mesogona, Cosmia, Xanthia, Cirrhia, Sunira, Agrochola, Eupsilia, Orbona, Conistra, Dasypolia, Brachylomia, Lithophane, Xylena, Antitype, Ammoconia, Mniotype, Apamea, Oligia, Mesoligia, Mesapamea, Photedes, Denticucullus, Rhizedra, Amphipoea, Hydraecia, Calamia, Staurophora, Helotropha, Nonagria, Archanara, Globia, Anarta, Polia, Pachetra, Lacanobia, Melanchra, Ceramica, Hada, Hyssia, Mamestra, Hecatera, Hadena, Sideridis, Conisania, Mythimna, Leucania, Lasionhada, Panolis, Orthosia, Anorthoa, Egira, Tholera.*

Genera of the Pavlodar region of Kazakhstan that are absent from the fauna of Croatia (45 genera): *Clethrogyna, Stigmatophora, Lacydes, Eudiaphora, Paragona, Acantholipes, Syngrapha, Leiometopon, Mycteroplus, Sympistis, Lophoterges, Phidrimana, Bryophila, Victrix, Athaumasta, Sidemia, Celaena, Fabula, Longaletedes, Hypocoena, Ogilia, Protarchanara, Pabulatrix, Litoligia, Resapamea, Xylomoia, Leucochlaena, Hyppa, Enargia, Pseudohadena, Eremohadena, Blepharita, Cerapteryx, Saragossa, Enterpia, Eriopygodes, Sineugraphe, Paradiarsia, Netrocerocora, Eurois, Pseudohermonassa, Coenophila, Miniphila, Protolampra, Nyssocnemis.*

Genera in Croatia, absent from the fauna of the Pavlodar region of Kazakhstan (112 genera): *Arctornis, Ocneria, Laelia, Calliteara, Penthophera, Katha, Lithosia, Nudaria, Callimorpha, Euplagia, Cymbalophora, Hyphantria, Somatrichia, Rhyparioides, Diaphora, Spilosoma, Parasemia, Pericallia, Utetheisa, Dysauxes, Orectis, Idia, Tristales, Nodaria, Macrochilo, Zebeeba, Colobochyla, Schrankia, Calymma, Laspeyria, Rhypagla, Metachrostis, Exophila, Apopestes, Catephia, Ophiusa, Minucia, Clytie, Dysgonia, Grammodes, Grammodes, Zethes, Tathorynchus, Eutelia, Meganola, Xanthodes, Ctenoplusia, Chrysodeixis, Thysanoplusia, Acontiola, Panthea, Trichosea, Diloba, Moma, Craniophora, Shargacucullia, Asteroscopus, Praestilbia, Omphalophana, Callierges, Teinoptera, Trigonephra, Lamprosticta, Periphanes, Parexarnis, Divaena, Epilecta, Lycophotia, Epipsilia, Naenia, Peridroma, Standfussiana, Haemerosia, Panemeria, Aegle, Synthymia, Atypha, Sesamia, Mormo, Polyphaenis, Thalpophila, Euplexia, Phlogophora, Auchmis, Chloantha, Callopistria, Atethmia, Dicycla, Tiliacea, Jodia, Cleoceris, Ulochlaena, Aporophyla, Scotochrosta, Evisa, Meganephria, Allophyes, Rileyiana, Valeria, Dryobota, Dichonia, Griposia, Dryobotodes, Dichonioxa, Polymixis, Trigonophora, Eremobia, Luperina, Gortyna, Sedina, Arenostola, Oria*.

Subgenus level

Common subgenera for the fauna of Croatia and the Pavlodar region of Kazakhstan (52 Subgenera): *Porthetria, Dicallomera, Cheirophanes, Autophila, Protodeltote, Deltote, Acontia, Emmelia, Jocheaera, Triaena, Viminia, Subacronicta, Cryphia, Caradrina, Platyperigea, Paradrina, Rusina, Athetis, Hydrillula, Proxenus, Apamea, Agrochola, Anchoscelis, Leptologia, Conistra, Dasycampa, Xylena, Ulmia, Dasypolia, Orthosia, Poporthosia, Cororthosia, Semiophora, Calocestra, Lacanobia, Dianobia, Diataraxia, Sideridis, Aneda, Ledaohadena, Hadena, Anepia, Mythimna, Sablia, Hyphilare, Leucania, Actebia, Albocosta, Dichagyris, Euxoa, Xestia, Megasema*.

The subgenera in the Pavlodar region of Kazakhstan absent from the fauna of Croatia (12 subgenera): *Thylacigyna, Bryoleuca, Poliobria, Pseudohadena, Cteipolia, Myxinia, Cardiestra, Conisania, Protexarnis, Chorizagrotis, Orosagrotis, Eugnorisma*.

The subgenera in Croatia, absent from the fauna of the Pavlodar region of Kazakhstan (25 subgenera): *Lymantria, Ocneria, Telochurus, Dysauxes, Ctenoplusia, Thysanoplusia, Acronicta, Propenistra, Dryobotodes, Eumichtis, Polymixis, Bischoffia, Trigonophora, Anarta, Pseudaletia, Acantholeucania, Monima*.

Species level

Common species for the fauna of Croatia and the Pavlodar region of Kazakhstan (268 species): *Leucoma salicis, Lymantria dispar, Euproctis kargalika, Sphrageidus similis, Gynaephora fascelina, Cybosia mesomella, Manulea palliatella, M. complana, M. pygmaeola, M. lutarella, M. lurideola, Wittia sororcula, Collita griseola, Atolmis rubricollis, Pelosia muscerda, P. obtuse, Setina irrorella, S. roscida, Thumatha senex, Miltochrista miniata, Diacrisia sannio, Rhyparia purpurata, Watsonarctia deserta, Spilarctia lutea, Phragmatobia fuliginosa, Eucharia festiva, Epicallia villica, Arctia caja, Hyphoraia aulica, Chelis maculosa, Tyria jacobaeae, Spiris striata, Coscinia cribraria, Simplicia rectalis, Paracolax tristalis, Herminia tenuialis, Polypogon tentacularia, Pechipogo strigilata, Zanclognatha lunalis, Hypena rostralis, H. obesalis, Rivula sericealis, Parascotia fuliginaria, Scoliopteryx libatrix, Calyptra thalictri, Odice arcuinna, Eublemma minutata, E. ostrina, E. purpurina, E. polygramma, Phytometra viridaria, Lygephila pastinum, L. viciae, L. craccae, Catocala fraxini, C. nupta, C. puerpera, C. lupina, C. fulminea, Drasteria cailino, Euclidia glyphica, Callistege mi, Gonospileia triquetra, Nola aerugula, Earias clorana, Pseudoips prasinana, Nycteola degenerana, N. asiatica, Abrostola triplasia, Trichoplusia ni, Macdunnoughia confusa, Diachrysia chryson, D. chrysitis, D. zosimi, Panchrysia deaurata, Lamprotes c-aureum, Plusidia cheiranthi, Autographa gamma, A. bractea, Cornutiplusia circumflexa, Plusia festucae, Phyllophyla obliterate, Acontia lucida, A. trabealis, Aedia funesta, Colocasia coryli, Acronicta alni, A. cuspis, A. tridens, A. psi, A. auricoma, A. rumicis, A. albovenosa, A. megacephala, Tyta luctuosa, Cucullia fraudatrix, C. absinthii, C. argentea, C. xeranthemi, C. lucifuga, C. umbratica, C. tanaceti, Amphipyra pyramidea, A. perflua, A. livida, A. tragopoginis, A. tetra, Brachionycha nubeculosa, Calophasia lunula, C. opalina, Epimecia ustula, Acosmetia caliginosa, Schinia cognate, Heliothis viriplaca, H. peltigera, Helicoverpa armigera, Protoschinia scutosa, Cryphia fraudatricula, Actebia praecox, Euxoa aquilina, E. temera, E. nigricans, E. nigrofusca, E. segnilis, E. obelisca, E. cursoria, A. ipsilon, A. exclamationis, A. clavis, A. segetum, A. vestigialis, A. cinerea, Axylia putris, Ochropleura plecta, Diarsia brunnea, D. mendica, Noctua interposita, Chersotis elegans, C. margaritacea, Rhyacia simulans, Spaelotis ravida, Opigena polygona, Graphiphora augur, Xestia baja, X. c-nigrum, X. ditrapezium, X. triangulum, X. ashworthii, Eugraphe sigma, Cerastis rubricosa, Anaplectoides prasina, Pseudeustrotia candidula, Elaphria venustula, Caradrina morpheus, C. terrea, C. clavipalpis, Hoplodrina octogenaria, H. blanda, Spodoptera exigua, Chilodes maritima, Athetis furvula, A. pallustris, A. lepigone, A. correpta, Dypterygia scabriuscula, Trachea atriplicis,*

Charanyca ferruginea, Oxytripia orbiculosa, Actinotia polyodon, Eucarta virgo, E. amethystina, Ipimorpha retusa, I. subtusa, Parastichtis suspecta, Apterogenum ypsillon, Mesogona acetosellae, M. oxalina, Cosmia affinis, Xanthia togata, Cirrhia icteritia, C. ocellaris, Sunira circellaris, Agrochola lota, A. helvola, Eupsilia transversa, Orbona fragariae, Conistra vaccinii, Dasypolia templi, Lithophane socia, L. furcifera, Xylena vetusta, X. exsoleta, Antitype chi, Ammoconia caecimacula, Mniotype adusta, Apamea monoglypha, A. crenata, A. lateritia, A. furva, A. oblonga, A. remissa, A. illyria, A. anceps, A. sordens, Oligia latruncula, Mesoligia furuncula, Mesapamea secalis, Photedes fluxa, P. extrema, Denticucullus pygmina, Rhizedra lutosa, Amphipoea fucosa, Hydraecia micacea, Calamia tridens, Staurophora celsia, Helotropha leucostigma, Nonagria typhae, Archanara dissoluta, Globia sparganii, G. algae, Anarta trifolii, A. stigmosa, Polia bombycina, P. nebulosa, Pachetra sagittigera, Lacanobia w-latinum, L. splendens, L. blenna, L. oleracea, L. thalassina, L. suasa, L. contigua, Melanchra persicariae, Ceramica pisi, Hada plebeja, Hyssia cavernosa, Mamestra brassicae, Hecatera dysodea, H. bicolorata, Hadena compta, H. albimacula, H. magnolii, H. filograna, H. perplexa, H. irregularis, Sideridis rivularis, S. turbida, Conisania luteago, Mythimna turca, M. conigera, M. vitellina, M. pudorina, M. straminea, M. impura, M. pallens, M. farrago, M. l-album, Leucania comma, L. obsoleta, Lasionhada proxima, Panolis flammea, Orthosia incerta, O. populeti, O. gracilis, O. opima, O. gothica, Anorthoa munda, Tholera decimalis.

Species in the Pavlodar region of Kazakhstan are absent from the fauna of Croatia (205 species): *Gynaephora pumila, Clethrogyna dubia, Thylacigyna antiquoides, Euproctis kargalika, Stigmatophora flava, S. micans, Lacydes spectabilis, Arctia flavia, Chelis caecilia, C. dahurica, Eudiaphora turensis, Amata transcaspica, A. caspia, Herminia tristriga, Zekelita ravularis, Hypena tristalis, Rivula sericealis, Paragona cognata, Eublemma porphyrinia, E. panonica, E. amasina, E. pallidula, E. pusilla, Lygephila lubrica, L. ludicra, L. asiatica, Autophila chamaephanes, . vespertalis, Acantholipes regularis, Catocala neonympha, C. adultera, C. deducta, C. pacta, Drasteria rada, D. christophi, D. obscurata, Callistege fortalitium, Gonospileia munita, Nola crambiformis, Nycteola eremostola, Abrostola tripartite, Diachrysia stenochrysis, Euchalcia consona, Polychrysia esmeralda, Autographa buraetica, A. excelsa, Syngrapha interrogationis, Plusia putnami, Phyllophyla obliterata, Deltote deceptoria, Leiometopon simyrides, Acronicta cinerea, A. nervosa, A. dentinosa, Mycteroplus puniceago, Cucullia tiefi, C. praecana, C. propinqua, C. scopariae, C. infuscata, C. artemisiae, C. humilis, C. splendida, C. gnaphalii, C. magnifica, C. argentina, C. biradiata, C. pustulata, C. biornata,*

C. balsamitae, C. inderiensis, C. duplicata, C. santonici, C lactea, C. mixta, C. virgaureae, C. amota, C. asteris, Amphipyra sergei, Sympistis strioligera, S. campicola, S. exacta, S. nigricula, S. senica, Lophoterges centralasiae, Phidrimana amurensis, Pyrrhia exprimens, Heliothis adaucta, Bryophila orthogramma, Victrix akbet, Athaumasta expressa, Caradrina montana, C. albina, C. petraea, C. monssacralis, C. wullschlegeli, Chilodes distracta, Sidemia spilogramma, Celaena haworthii, Hydraecia ultima, H. mongoliensis, H. osseola, Amphipoea ochreola, A. asiatica, Fabula zollikoferi, Longalatedes elymi, Hypocoena stigmatica, Ogilia leuconephra, Protarchanara brevilinea, Pabulatrix pabulatricula, Apamea ferrago, A. leucodon, A. unanimis, Litoligia literosa, Mesapamea moderata, Resapamea hedeni, Xylomoia graminea, Episema tersa, Leucochlaena fallax, Hyppa rectilinea, Cirrhia tunicata, Agrochola vulpecula, Xylena solidaginis, Enargia paleacea, E. abluta, Brachyxanthia zelotypa, Pseudohadena argyllostigma, Eremohadena immunda, Dasypolia timoi, D. murina, Blepharita amica, Orthosia ronkayorum, Perigrapha circumducta, Egira anatolica, Tholera hilaris, Cerapteryx graminis, Anarta vaciva, A. dianthii, Polia hepatica, P. serratilinea, P. altaica, Lacanobia aliena, Sideridis lampra, S. egena, Heliophobus unicolor, H. mongoliensis, Saragossa siccanorum, S. porosa, Conisania leineri, C. literata, Enterpia picturata, Hadena capsincola, H. variolata, H dsungarica, H. persimilis, H. christophi, Mythimna velutina, M. deserticola, M. andereggi, M. albiradiosa, M. opaca, Eriopygodes imbecilla, E. impar, Actebia squalida, Dichagyris musiva, D. vallesiaca, D. lutescens, D. truculenta, D. signifera, D. latipennis, Euxoa adumbrata, E. conspicua, E. ochrogaster, E. phantoma, E. distinguenda, E. eruta, E. basigramma, E fallax, E. deserta, E. recussa, E. tristis, E. deficiens, Agrotis characteristica, A. trifurca, A. ripae, A. desertorum, Sineugraphe exusta, Paradiarsia punicea, Netrocerocora quadrangular, Rhyacia caradrinoides, R. arenacea, Chersotis transiens, Spaelotis deplorata, S. senna, Eurois occulta, Pseudohermonassa melancholica, Xestia kollari, Coenophila subrosea, Eugnorisma ignoratum, E. insignata, E. eminens, Miniphila miniago, Protolampra sobrina, Nyssocnemis eversmanni.

Species in Croatia that are absent from the fauna of the Pavlodar region of Kazakhstan (375 species): *Arctornis l-nigrum, Lymantria monacha, Ocneria ledereri, O. rubea, O. detrita, O. terebinthi, Euproctis chrysorrhoea, Laelia coenosa, Calliteara pudibunda Orgyia recens, O. antiqua, Penthophera morio, Manulea costalis, M. pseudocomplana, Eilema caniolum, Katha deplana, Lithosia quadra, Nudaria mundane, Callimorpha dominula, Euplagia quadripunctaria, Cymbalophora pudica, Somatrichia parasita, Rhyparioides metelkana, Diaphora mendica, D. luctuosa, Hyphantria cunea, Phragmatobia placida, Parasemia plantaginis, Pericallia ma-*

tronula, Spiris slovenica, Utetheisa pulchella, Amata phegea, A, marjana, Dysauxes ancilla, D, famula, D, punctate, Orectis proboscidata, Idia calvaria, Trisateles emortualis, Nodaria nodosalis, Macrochilo cribrumalis, Herminia tarsipennalis, H, tarsicrinalis, H, grisealis, H, zelleralis, Polypogon plumigeralis, Pechipogo plumigeralis, Zekelita antiqualis, Hypena proboscidalis, H, obsitalis, H, palpalis, H, lividalis, H, crassalis, Zebeeba falsalis, Colobochyla salicalis, Schrankia costaestrigalis, S, taenialis, Odice suava, O. jucunda, Calymma communimacula, Eublemma scitula, E. viridula, E. elychrysi, E. candidana, E. parva, E. rosina, E. respersa, E. himmighoffeni, E.ragusana, Laspeyria flexula, Rhypagla lacernaria, Metachrostis velox, M. dardouini, Exophila rectangularis, Lygephila lusoria, L. procax, Apopestes spectrum, Autophila dilucida, A. ligaminosa, A. anaphanes, A. cataphanes, Catocala sponsa, C. dilecta, C. elocata, C. promissa, C. electa, C. conjuncta,C. conversa, C. nymphagoga, C. hymenaea, C. nymphaea, C. disjuncta, C. eutychea, C. diversa, Catephia alchymista, Ophiusa tirhaca, Minucia lunaris, Clytie illunaris, C. syriaca, Dysgonia algira, D. torrida, Grammodes bifasciata, G. stolida, Zethes insularis, Tathorhynchus exsiccate, Euclidia glyphica, Callistege mi, Gonospileia triquetra, Eutelia adulatrix, E. adoratrix, Meganola albula, M. strigula, Nola cicatricalis, N. aerugula, N. cucullatella, N. cristatula, N. chlamitulalis, Earias vernana, Pseudoips fagana, Nycteola revayana, N. columbana, N. siculana, Xanthodes albago, Abrostola asclepiades, A. trigemina, A. agnorista, Ctenoplusia accentifera, Chrysodeixis chalcites, Diachrysia nadeja, Thysanoplusia orichalcea, Euchalcia variabilis, E. modestoides, E. siderifera, Polychrysia moneta, Panchrysia v-argenteum, Autographa pulchrina, A. jota, Acontiola moldavicola, Aedia leucomelas, Panthea coenobita, Trichosea ludifica, Diloba caeruleocephala, Moma alpium, Acronicta aceris, A. leporine, A. strigose, A. menyanthidis, A. euphorbiae, A. orientalis, Craniophora ligustri, Cucullia formosa, C. lactucae, C. chamomillae, C. caninae, Shargacuculia blataariae, S. scrophulariae, S. thapsiphaga,S. lychnitis, S. verbasci, S. prenanthis, Amphipyra berbera, A. cinnamomea, A. effuse, Asteroscopus sphinx, Calophasia platyptera, Praestilbia armeniaca, Omphalophana antirrhinii, Callierges ramose, Copiphana olivine, Trigonephra dalmatica, Lamprosticta culta, Schinia cardui, Heliothis maritima, H. ononis, H. nubigera, H. incarnate, Periphanes delphinii, Cryphia receptricula, C. algae, C. ravula, C. ereptricula, C. tephrocharis, C. rectilinea, C. raptricula, C. domestica, C. muralis, C. amasina, Actebia fugax, Dichagyris melanura, D. flavina, D. nigrescens, D. forcipula, Euxoa birivia, E. decora, E. cos, E. vitta, Agrotis bigramma, A. puta, A. trux, A. spinifera, Ochropleura leucogaster, Diarsia rubi, D. florida, Noctua Orbona, N. comes, N. fimbriata, N. tirrenica, N. janthina, N. tertia, N. interjecta, Divaena haywardi, Epilecta linogrisea, Lycophotia erythrina, L. porphyria, Chersotis

multangular, C. cuprea, Rhyacia lucipeta, Epipsilia latens, Eugnorisma depuncta, Xestia rhomboidea, X. castanea, X. xanthographa, X. cohaesa, Cerastis faceta, Naenia typical, Peridroma saucia, Standfussiana dalmata, S. nictymera, Haemerosia renalis, Panemeria tenebrata, Aegle vespertinalis, A. kaekeritziana, Synthymia fixa, Caradrina aspersa, C. kadenii, C. selini, C. suscianja, C. noctivaga, Caradrina flavirena, C. gilva, Hoplodrina superstes, H. respersa, H. ambigua, Atypha pulmonaris, Sesamia nonagrioides, S. cretica, Athetis gluteosa, A. hospes, Charanyca trigrammica, Mormo maura, Polyphaenis sericata, Thalpophila matura, Euplexia lucipara, Phlogophora meticulosa, P. scita, Auchmis detersa, Actinotia radiosa, Chloantha hyperici, Callopistria juventina, Callopistria latreillei, Atethmia centrago, A. ambusta, Dicycla oo, Cosmia confinis C. pyralina, C. trapezina, Xanthia castanea, Tiliacea aurago, T. sulphurago, T. citrago, T. cypreago, Cirrhia gilvago, Agrochola lychnidis, A. macilenta, A. nitida, A. humilis, A. wolfsclaegeri, Agrochola litura, A. laevis, Jodia croceago, Conistra ligula, C. veronicae, C. rubiginosa, C. erythrocephala, Episema glaucina, Cleoceris scoriacea, Ulochlaena hirta, Dasypolia ferdinandi, Brachylomia viminalis, Aporophyla australis, A. lutulenta, A. nigra, A. canescens, Lithophane semibrunnea, L. ornitopus, L. leautieri, L. lapidea, Scotochrosta pulla, Evisa schawerdai, Meganephria bimaculosa, Allophyes oxyacanthae, Rileyiana fovea, Valeria oleagina, V. jaspidea, Dryobota labecula, Dichonia aeruginea, D. convergens, Griposia aprilina, Dryobotodes eremita, D. monochrome, D. carbonis, D. roboris, Dichonioxa tenebrosa, Polymixis lichenea, P. polymita, P. serpentine, P. flavicincta, P. rufocincta, P. culoti, Antitype jonis, Ammoconia senex, Trigonophora flammea, Mniotype solieri, Apamea sicula, A. lithoxylaea, A. sublustris, A. characterea, A. rubrirena, A. platinea, A. scolopacina, A. ophiogramma, Oligia strigilis, O. versicolor, O. fasciuncula, Mesapamea didyma, Photedes captiuncula, P. minima, Eremobia ochroleuca, Luperina testacea, L. kruegeri, L. rubella, L. dumerilii, Amphipoea oculea, Hydraecia petasitis, Gortyna flavago, G. moesiaca, G. puengeleri, Archanara neurica, Sedina buettneri, Arenostola phragmitidis, Oria musculosa, Anarta odontites, A. myrtilli, Hecatera cappa, Hadena bicruris, H. confusa, H. gueneei, H. caesia, H. luteocincta, H. rivularis, Sideridis reticulate, Mythimna albipuncta, M. congrua, M. sicula, M. alopecuri, M. unipuncta, Leucania zeae, L. putrescens, L. punctosa, Acantholeucania loreyi, Orthosia cruda, O. miniosa, O. cerasi, Egira conspicillaris, Perigrapha i-cinctum.

APPENDIX 11. Bionomical structure of the Noctuoidea fauna of North-East Kazakhstan and its distribution on geomorphological landscapes

Species	Geomorphological landscapes		Bionomical structure												
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Lymantria (*Porthetria*) *dispar* (Linnaeus, 1758)	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Gynaephora (*Dicallomera*) *fascelina* (Linnaeus, 1758	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Gynaephora (*Dicallomera*) *pumila* (Staudinger, 1881)	•	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Clethrogyna dubia (Tauscher, 1806)	•	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Thylacigyna antiquoides (Hübner, [1822])	•	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Leucoma salicis (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Euproctis kargalika (Moore, 1878)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Sphrageidus similis (Fuessly, 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Cybosia mesomella (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Manulea palliatella (Scopoli, 1763)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Manulea complana (Linnaeus, 1758)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Manulea pygmaeola (Doubleday, 1847)	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Manulea lutarella (Linnaeus, 1758)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Manulea lurideola ([Zincken], 1817)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Wittia sororcula (Hufnagel, 1766)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Collita griseola (Hübner, [1803])	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Atolmis rubricollis (Linnaeus, 1758)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Pelosia muscerda (Hufnagel, 1766)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Pelosia obtusa (Herrich-Schäffer, 1847)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Stigmatophora flava (Bremer & Grey, 1852)	•	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Stigmatophora micans (Bremer & Grey, 1852)	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Setina irrorella (Linnaeus, 1758)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Setina roscida ([Denis & Schiffermüller], 1775) –	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Thumatha senex (Hübner, [1808])	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Miltochrista miniata (J.R. Forster, 1771)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Tyria jacobaeae (Linnaeus, 1758)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Lacydes spectabilis (Tauscher, 1806)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Spiris striata (Linnaeus, 1758)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Coscinia cribraria (Linnaeus, 1758)	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Hyphoraia aulica (Linnaeus, 1758)	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Arctia caja (Linnaeus, 1758)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Arctia flavia (Fuessly, 1779)	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Epicallia villica (Linnaeus, 1758)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Eucharia festiva (Hufnagel, 1766)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Chelis maculosa (Gerning, 1780)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Chelis caecilia (Kindermann in Lederer, 1853)	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Chelis dahurica (Boisduval, 1832)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Diacrisia sannio (Linnaeus, 1758)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Rhyparia purpurata (Linnaeus, 1758)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Watsonarctia deserta (Bartel, 1902)	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Spilosoma lubricipeda (Linnaeus, 1758)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Spilosoma urticae (Esper, 1789)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Spilarctia lutea (Hufnagel, 1766)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Phragmatobia fuliginosa (Linnaeus, 1758)	-	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Eudiaphora turensis (Erschoff, 1874)	•	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Amata transcaspica Obraztsov, 1941	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Amata caspia (Staudinger, 1877)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Simplicia rectalis (Eversmann, 1842)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracolax tristalis (Fabricius, 1794)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Herminia temialis (Rebel, 1896)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Herminia tristriga W. Kozhantschikov, 1929	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypogon tentacularia (Linnaeus, 1758)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Pechipogo strigilata (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Zanclognatha lunalis (Scopoli, 1763)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Zekelita ravulalis (Staudinger, 1879)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hypena rostralis (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Hypena obesalis (Treitschke, 1829)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Hypena tristalis Lederer, 1853	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Rivula sericealis (Scopoli, 1763)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Scoliopteryx libatrix (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Calyptra thalictri (Borkhausen, 1790)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Parascotia fuliginaria (Linnaeus, 1761)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Paragona cognata (Staudinger, 1892)	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Odice arcuinna (Hübner, 1790)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Eublemma minutata (Fabricius, 1794)	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Eublemma ostrina (Hübner, [1808])	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Eublemma porphyrinia (Freyer, 1845)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Eublemma panonica (Freyer, 1840)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Eublemma amasina (Eversmann, 1842)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Eublemma purpurina ([Denis & Schiffermüller], 1775)	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Eublemma pallidula (Herrich-Schäffer, 1856)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Eublemma pusilla (Eversmann, 1834)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Eublemma polygramma (Duponchel, 1842)	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Phytometra viridaria (Clerck, 1759)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Lygephila lubrica (Freyer, 1842)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Lygephila ludicra (Hübner, 1790)	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Lygephila pastinum (Treitschke, 1826)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Lygephila viciae (Hübner, [1822])	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Lygephila craccae ([Denis & Schiffermüller], 1775)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Lygephila asiatica Pekarsky, 2016	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Autophila (*Cheirophanes*) *chamaephanes* Boursin, 1940	-	•	-	-	-	-	•	-	-	-	•	-	-	-	-	-
Autophila (*Autophila*) *vespertalis* (Staudinger, 1896)	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Acantholipes regularis (Hübner, 1813)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Catocala fulminea (Scopoli, 1763)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Catocala neonympha (Esper, 1805)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Catocala fraxini (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Catocala nupta (Linnaeus, 1767)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Catocala adultera Ménétriès, 1856	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Catocala deducta Eversmann 1843	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Catocala puerpera (Giorna, 1791)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Catocala lupina Herrich-Schäffer, 1851	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Catocala pacta (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Drasteria cailino (Lefèbvre, 1827)	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Drasteria rada (Boisduval, 1848)	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Drasteria christophi (Alphéraky, 1895)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Drasteria obscurata (Staudinger, 1882)	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Euclidia glyphica (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Callistege mi (Clerck, 1759)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Callistege fortalitium (Tauscher, 1809)	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Gonospileia triquetra ([Denis & Schiffermüller], 1775)	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Gonospileia munita (Hübner, [1818])	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Nola aerugula (Hübner, 1793)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Nola crambiformis Rebel, 1902	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Nola confusalis (Herrich-Schäffer, 1847)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Earias clorana (Linnaeus, 1761)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Pseudoips prasinana (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Nycteola eremostola Dufay, 1961	-	•	-	-	-	-	-	-	•	-	-	-	-	-	-	-
Nycteola degenerana (Hübner, 1799)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Nycteola asiatica (Krulikovsky, 1904)	•	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Abrostola triplasia (Linnaeus, 1758)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Abrostola tripartita (Hufnagel, 1766)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Trichoplusia ni (Hübner, [1803])	-	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Macdunnoughia confusa (Stephens, 1850)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Diachrysia chryson (Esper, 1789)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Diachrysia chrysitis (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Diachrysia stenochrysis (Warren, 1913)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Diachrysia zosimi (Hübner, [1822])	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Euchalcia consona (Fabricius, 1787)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychrysia esmeralda (Oberthür, 1880)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Panchrysia deaurata (Esper, 1787)	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Lamprotes c-aureum (Knoch, 1781)	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-
Plusidia cheiranthi (Tauscher, 1809)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Autographa gamma (Linnaeus, 1758)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Autographa buraetica (Staudinger, 1892)	•	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-
Autographa mandarina (Freyer, 1845)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Autographa bractea ([Denis & Schiffermüller], 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Autographa excelsa (Kretschmar, 1862)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Cormutiplusia circumflexa (Linnaeus, 1767)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Syngrapha interrogationis (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Plusia festucae (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Plusia putnami (Grote, 1873)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Phyllophyla obliterata (Rambur, 1833)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Deltote (*Protodeltote*) *pygarga* (Hufnagel, 1766)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Deltote (*Deltote*) *deceptoria* (Scopoli, 1763)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Deltote (*Deltote*) *uncula* (Clerck, 1759)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Deltote (*Deltote*) *bankiana* (Fabricius, 1775)	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Acontia (*Acontia*) *lucida* (Hufnagel, 1766)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Acontia (*Emmelia*) *trabealis* (Scopoli, 1763)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Aedia funesta (Esper, 1786)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Colocasia coryli (Linnaeus, 1758)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Leiometopon simyrides Staudinger, 1888	-	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Acronicta (*Johaera*) *alni* (Linnaeus, 1767)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Acronicta (*Triaena*) *cuspis* (Hübner, [1813])	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Acronicta (*Triaena*) *tridens* ([Denis & Schiffermüller], 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Acronicta (*Triaena*) *psi* (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Acronicta (*Viminia*) *auricoma* ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Acronicta (*Viminia*) *rumicis* (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Acronicta (*Viminia*) *cinerea* (Hufnagel, 1766)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Acronicta (*Simyra*) *nervosa* ([Denis & Schiffermüller], 1775)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Acronicta (*Simyra*) *albovenosa* (Goeze, 1781)	•	•	-	-	-	-	-	-	•	-	-	-	-	-	-	-
Acronicta (*Simyra*) *dentinosa* Freyer, 1838	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Acronicta (*Subacronicta*) *megacephala* ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Mycterophus puniceago (Boisduval, 1840)	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Tyta luctuosa ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Cucullia tiefi Tshetverikov, 1956	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Cucullia praecana Eversmann, 1843	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia propinqua Eversmann, 1842	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Cucullia scopariae Dorfmeister, 1853	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Cucullia fraudatrix Eversmann, 1837	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Cucullia absinthii (Linnaeus, 1761)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Cucullia argentea (Hufnagel, 1766)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia infuscata Tshetverikov, 1925	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Cucullia artemisiae (Hufnagel, 1766)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Cucullia humilis Boursin, 1941	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Cucullia splendida (Stoll, 1782)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia gnaphalii (Hübner, 1813)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Cucullia magnifica (Freyer, 1839)	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Cucullia argentina (Fabricius, 1787)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia biradiata W. Kozhantshikov, 1925	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia pustulata Eversmann, 1842	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Cucullia lucifuga ([Denis & Schiffermüller], 1775)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Cucullia umbratica (Linnaeus, 1758)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Cucullia biornata Fischer von Waldheim, 1840	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Cucullia balsamitae (Boisduval, 1840)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-

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Cucullia inderiensis Herrich-Schäffer, 1856	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia duplicata Staudinger, 1882	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia santonici (Hübner, [1813])	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia lactea (Fabricius, 1787)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia mixta Freyer, 1841	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia xeranthemi (Boisduval, 1840)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia virgaureae Boisduval, 1840	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia amota Alphéraky, 1887	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia asteris ([Denis & Schiffermüller], 1775)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Cucullia tanaceti ([Denis & Schiffermüller], 1775)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Amphipyra pyramidea (Linnaeus, 1758)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphipyra perflua (Fabricius, 1787)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphipyra livida ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphipyra tragopoginis (Clerck, 1759)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Amphipyra tetra (Fabricius, 1787)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Amphipyra sergei Staudinger, 1888	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Brachionycha nubeculosa (Esper, 1785)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Calophasia lumula (Hufnagel, 1766)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Calophasia opalina (Esper, [1794])	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Sympistis strioligera (Lederer, 1853)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Sympistis campicola (Lederer, 1853)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Sympistis exacta (Christoph, 1887)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Sympistis nigricula (Eversmann, 1856)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Sympistis senica (Eversmann, 1856)	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Lophoterges (*Variterges*) *centralasiae* (Staudinger, 1901)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Epimecia ustula (Freyer, 1835)	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Phidrimana amurensis (Staudinger, 1892)	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Acosmetia caliginosa (Hübner, [1813])	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Eucarta virgo (Treitschke, 1835)	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Eucarta amethystina (Hübner, [1803])	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Pyrrhia umbra (Hufnagel, 1766)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Pyrrhia exprimens (Walker, 1857)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Schinia cognata (Freyer, 1833)	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-
Protoschinia scutosa ([Denis & Schiffermüller], 1775)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Heliothis peltigera ([Denis & Schiffermüller], 1775)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Heliothis viriplaca (Hufnagel, 1766)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Heliothis adaucta Butler, 1878	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Helicoverpa armigera (Hübner, [1808])	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cryphia (*Cryphia*) *fraudatricula* (Hübner, [1803])	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryophila (*Bryoleuca*) *orthogramma* (Boursin, 1954)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Victrix (*P.*) *fabiani* Varga & Ronkay, 1989	-	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Athaumasta expressa (Lederer, 1855)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Pseudeustrotia candidula ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Spodoptera exigua (Hübner, 1808)	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Elaphria venustula (Hübner, 1790)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Caradrina (*Caradrina*) *morpheus* (Hufnagel, 1766)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Caradrina (*Platyperigea*) *terrea* Freyer, 1840	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Caradrina (*Platyperigea*) *montana* Bremer, 1861	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Caradrina (*Platyperigea*) *albina* (Eversmann, 1848)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Caradrina (*Platyperigea*) *petraea* Tengström, 1869	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-

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Caradrina (*Eremodrina*) *monssacralis* (Varga & L. Ronkay, 1991)	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Caradrina (*Paradrina*) *wullschlegeli* Püngeler, 1903	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Caradrina (*Paradrina*) *clavipalpis* (Scopoli, 1763)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Hoplodrina octogenaria (Goeze, 1781)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Hoplodrina blanda ([Denis & Schiffermüller], 1775)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Chilodes maritima (Tauscher, 1806)	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Chilodes distracta (Eversmann, 1848)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Charanyca (*Rusina*) *ferruginea* (Esper, [1787])	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Athetis (*Athetis*) *furvula* (Hübner, [1808])	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Athetis (*Hydrillula*) *pallustris* (Hübner, [1808])	•	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-
Athetis (*Proxenus*) *lepigone* (Möschler, 1860)	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Athetis (*Proxenus*) *correpta* (Püngeler, 1906)	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Dyperygia scabriuscula (Linnaeus, 1758)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Trachea atriplicis (Linnaeus, 1758)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-

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Actinotia polyodon (Clerck, 1759)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxytripia orbiculosa (Esper, 1799)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Sidemia spilogramma (Rambur, 1871)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Calamia tridens (Hufnagel, 1766)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Staurophora celsia (Linnaeus, 1758)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Helotropha leucostigma (Hübner, [1808])	•	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-
Celaena haworthii (Curtis, 1829)	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Hydraecia micacea (Esper, 1789)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydraecia ultima Holst, 1965	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Hydraecia mongoliensis Urbahn, 1967	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hydraecia osseola (Staudinger, 1882)	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Amphipoea fucosa (Freyer, 1830)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphipoea ochreola (Staudinger, 1882)	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Amphipoea asiatica (Burrows, 1911)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Fabula zollikoferi (Freyer, 1836)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Rhizedra lutosa (Hübner, [1803])	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Nonagria typhae (Thunberg, 1784)	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Longalatedes elymi (Treitschke, 1825)	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Archanara dissoluta (Treitschke, 1825)	-	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Denticucullus pygmina (Haworth, 1809)	-	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-

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Hypocoena stigmatica (Eversmann, 1855)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Photedes fluxa (Hübner, 1809)	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Photedes extrema (Hübner, [1809])	-	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Ogilia leuconephra (Hampson, 1908)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Protarchanara brevilinea (Fenn, 1864)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Globia sparganii (Esper, 1790)	-	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Globia algae (Esper, 1789)	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Pabulatrix pabulatricula (Brahm, 1791)	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *monoglypha* (Hufnagel, 1766)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *ferrago* (Eversmann, 1837)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Apamea (*Apamea*) *furva* ([Denis & Schiffermüller], 1775)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Apamea (*Apamea*) *lateritia* (Hufnagel, 1766)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *oblonga* (Haworth, 1809)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *sordens* (Hufnagel, 1766)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Apamea (*Apamea*) *anceps* ([Denis & Schiffermüller], 1775)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-

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Apamea (*Apamea*) *leucodon* (Eversmann, 1837)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Apamea (*Apamea*) *remissa* (Hübner, [1809])	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Apamea (*Apamea*) *crenata* (Hufnagel, 1766)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *unanimis* (Hübner, [1813])	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *illyria* Freyer, 1846	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Oligia latruncula ([Denis & Schiffermüller], 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Mesoligia furuncula ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Litoligia literosa (Haworth, 1809)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Mesapamea secalis (Linnaeus, 1758)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Mesapamea moderata (Eversmann, 1843)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Resapamea hedeni (Graeser, [1889])	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Xylomoia graminea (Graeser, [1889])	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Episema tersa ([Denis & Schiffermüller], 1775)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Leucochlaena (*Furcochlaena*) *fallax* (Staudinger, 1870)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hyppa rectilinea (Esper, 1788)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Parastichtis suspecta (Hübner, [1817])	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Apterogenum ypsillon ([Denis & Schiffermüller], 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Xanthia togata (Esper, 1788)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Cirrhia icteritia (Hufnagel, 1766).	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Cirrhia ocellaris (Borkhausen, 1792)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Cirrhia tunicata (Graeser, 1890)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Mesogona acetosellae ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Mesogona oxalina (Hübner, [1803])	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunira circellaris (Hufnagel, 1766)	•	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-
Agrochola (*Agrochola*) *vulpecula* (Lederer, 1853)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Agrochola (*Anchoscelis*) *helvola* (Linnaeus, 1758)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Agrochola (*Leptologia*) *lota* (Clerck, 1759)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Conistra (*Conistra*) *vaccinii* (Linnaeus, 1761)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Conistra (*Dasycampa*) *rubiginea* ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithophane (*Lithophane*) *socia* (Hufnagel, 1766)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Lithophane (*Lithophane*) *furcifera* (Hufnagel, 1766)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylena (*Xylena*) *exsoleta* (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylena (*Xylena*) *vetusta* (Hübner, [1813])	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Xylena (*Lithomoia*) *solidaginis* (Hübner, 1803)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Orbona fragariae (Vieweg, 1790)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Eupsilia transversa (Hufnagel, 1766)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Enargia paleacea (Esper, 1788)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Enargia abluta (Hübner, 1808)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Ipimorpha retusa ([Denis & Schiffermüller], 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Ipimorpha subtusa ([Denis & Schiffermüller], 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Cosmia (*Ulmia*) *affinis* (Linnaeus, 1767)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Brachyxanthia zelotypa (Lederer, 1853)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Pseudohadena argyllostigma (Varga & L. Ronkay, 1991)	-	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Eremohadena immunda (Eversmann, 1842)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Antitype chi (Linnaeus, 1758)	-	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-

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Ammoconia caecimacula ([Denis & Schiffermüller], 1775)	-	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Dasypolia (*Dasypolia*) *templi* (Thunberg, 1792)	-	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Dasypolia (*Dasypolia*) *timoi* Fibiger & Nupponen, 2006	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Dasypolia (*Cteipolia*) *murina* (Ménétriés, 1848)	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Blepharita amica (Treitschke, 1825)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Mniotype adusta (Esper, 1790)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Mniotype satura ([Denis & Schiffermüller], 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Panolis flammea ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Orthosia (*Orthosia*) *incerta* (Hufnagel, 1766)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Orthosia (*Orthosia*) ronkayorum Volynkin & Titov, 2014	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Orthosia (*Poporthosia*) *populeti* (Fabricius, 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Orthosia (*Cororthosia*) *gracilis* ([Denis & Schiffermüller], 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Orthosia (*Cororthosia*) *opima* (Hübner, [1809])	-	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-

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Orthosia (*Semiophora*) *gothica* (Linnaeus, 1758)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Anorthoa munda ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Perigrapha (*Perigrapha*) *circumducta* (Lederer, 1855)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Egira anatolica (Hering, 1933)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Tholera cespitis ([Denis & Schiffermüller], 1775)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Tholera decimalis (Poda, 1761)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Tholera hilaris (Staudinger, 1901)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cerapteryx graminis (Linnaeus, 1758)	•	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-
Anarta (*Cardiestra*) *vaciva* (Püngeler, 1906)	-	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Anarta (*Calocestra*) *dianthi* (Tauscher, 1809)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Anarta (*Calocestra*) *trifolii* (Hufnagel, 1766)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Anarta (*Calocestra*) *stigmosa* (Christoph, 1887)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Polia bombycina (Hufnagel, 1766)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Polia hepatica (Clerck, 1759)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Polia nebulosa (Hufnagel, 1766)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-

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Polia serratilinea (Treitschke, 1825)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Polia altaica (Lederer, 1853)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Pachetra sagittigera (Hufnagel, 1766)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Lacanobia (*Lacanobia*) *w-latinum* (Hufnagel, 1766)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Lacanobia (*Dianobia*) *thalassina* (Hufnagel, 1766)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Dianobia*) *suasa* ([Denis & Schiffermüller], 1775)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Dianobia*) *contigua* ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Diataraxia*) *oleracea* (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Diataraxia*) *splendens* (Hübner, [1803–1808])	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Diataraxia*) *aliena* (Hübner, [1808])	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Diataraxia*) *blemna* (Hübner, [1824])	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Melanchra persicariae (Linnaeus, 1761)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Ceramica pisi (Linnaeus, 1758)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Hada plebeja (Linnaeus, 1761)	-	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Hyssia cavernosa (Eversmann, 1842)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-

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Mamestra brassicae (Linnaeus, 1758)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Sideridis (*Sideridis*) *lampra* (Schawerda, 1913)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Sideridis (*Sideridis*) *turbida* (Esper, 1790)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Sideridis (*Sideridis*) *egena* (Lederer, 1853)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Sideridis (*Aneda*) *rivularis* (Fabricius, 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Heliophobus unicolor (Alphéraky, 1889)	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Heliophobus mongoliensis Simonyi, 2015	•	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Saragossa siccanorum (Staudinger, 1870)	•	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Saragossa porosa (Eversmann, 1854)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Conisania (*Conisania*) *leineri* (Freyer, 1836)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Conisania (*Luteohadena*) *luteago* ([Denis & Schiffermüller], 1775)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Conisania (*Luteohadena*) *literata* (Fischer von Waldheim, 1840)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hecatera bicolorata (Hufnagel, 1766)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hecatera dysodea ([Denis & Schiffermüller], 1775)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-

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Enterpia picturata (Alphéraky, 1882)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hadena (*Hadena*) *capsincola* ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Hadena (*Hadena*) *magnolii* (Boisduval, 1829)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hadena (*Hadena*) *compta* ([Denis & Schiffermüller], 1775)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Hadena (*Hadena*) *variolata* (Smith, 1888)	-	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Hadena (*Hadena*) *albimacula* (Borkhausen, 1792)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Hadena (*Hadena*) *dsungarica* Hacker, 1996	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hadena (*Hadena*) *persimilis* Hacker, 1996	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hadena (*Hadena*) *filograna* (Esper, [1788])	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hadena (*Anepia*) *perplexa* ([Denis & Schiffermüller], 1775)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Hadena (*Anepia*) *christophi* (Möschler, 1862)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Hadena (*Anepia*) *irregularis* (Hufnagel, 1766)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Mythimna (*Mythimna*) *turca* (Linnaeus, 1761)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-

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Mythimna (*Mythimna*) *velutina* (Eversmann, 1846)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Mythimna (*Mythimna*) *pudorina* ([Denis & Schiffermüller], 1775)	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Mythimna (*Mythimna*) *conigera* ([Denis & Schiffermüller], 1775)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Mythimna (*Mythimna*) *pallens* (Linnaeus, 1758)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Mythimna (*Mythimna*) *deserticola* (Bartel, 1902)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Mythimna (*Mythimna*) *impura* (Hübner, [1808])	•	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-
Mythimna (*Mythimna*) *straminea* (Treitschke, 1825)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Mythimna (*Mythimna*) *vitellina* (Hübner, [1808])	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Mythimna (*Sablia*) *anderreggi* (*Boisduval, 1840*)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Mythimna (*Sablia*) *albiradiosa* (Eversmann, 1852)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Mythimna (*Sablia*) *opaca* (Staudinger, 1900)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Mythimna (*Hyphilare*) *ferrago* (Fabricius, 1787)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-

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Mythimna (*Hyphilare*) *l-album* (Linnaeus, 1767)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Leucania (*Leucania*) *comma* (Linnaeus, 1761)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Leucania (*Leucania*) *obsoleta* (Hübner, 1803)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Senta flammea (Curtis, 1828)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Lasionhada proxima (Hübner, [1808])	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Eriopygodes imbecilla (Fabricius, 1794)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Eriopygodes impar (Staudinger, 1870)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Actebia (*Actebia*) *praecox* (Linnaeus, 1758)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Actebia (*Protexarnis*) *squalida* (Guenée, 1852)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Dichagyris (*Albocosta*) *musiva* (Hübner, [1803])	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Dichagyris (*Albocosta*) *flammatra* ([Denis & Schiffermüller], 1775)	-	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Dichagyris (*Dichagyris*) *vallesiaca* (Boisduval, 1837)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Dichagyris (*Dichagyris*) *lutescens* (Eversmann, 1844)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Dichagyris (*Dichagyris*) *truculenta* (Lederer, 1853)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Dichagyris (*Dichagyris*) *signifera* ([Denis & Schiffermüller], 1775)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Dichagyris (*Dichagyris*) *orientis* (Alphéraky, 1882)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Dichagyris (*Dichagyris*) *latipennis* (Püngeler, 1909)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Chorizagrotis*) *adumbrata* (Eversmann, 1842)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Euxoa (*Euxoa*) *conspicua* (Hübner, 1827)	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Euxoa (*Euxoa*) *temera* (Hübner, [1808])	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Euxoa*) *ochrogaster* (Guenée, 1853)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Euxoa (*Euxoa*) *phantoma* (I. Kozhantschikov, 1928)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Euxoa*) *cursoria* (Hufnagel, 1766)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Euxoa*) *distinguenda* (Lederer, 1857)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Euxoa*) *obelisca* ([Denis & Schiffermüller], 1775)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Euxoa*) *segnilis* (Duponchel, 1836)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Euxoa*) *nigrofusca* (Esper, [1788])	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Euxoa (*Euxoa*) *eruta* (Hübner, [1817])	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Euxoa (*Euxoa*) *nigricans* (Linnaeus, 1761)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Euxoa (*Euxoa*) *aquilina* ([Denis & Schiffermüller], 1775)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Euxoa (*Euxoa*) *basigramma* (Staudinger, 1870)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Euxoa*) *fallax* (Eversmann, 1854)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Euxoa*) *deserta* (Staudinger, 1870)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Euxoa*) *recussa* (Hübner, [1817])	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Orosagrotis*) *tristis* (Staudinger, 1897)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Orosagrotis*) *deficiens* (Wagner, 1913)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Agrotis characteristica (Alphéraky, 1892)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Agrotis trifurca (Eversmann, 1837)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Agrotis cinerea ([Denis & Schiffermüller], 1775)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Agrotis exclamationis (Linnaeus, 1758)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Agrotis segetum ([Denis & Schiffermüller], 1775)	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure												
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Agrotis clavis (Hufnagel, 1766)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Agrotis vestigialis (Hufnagel, 1766)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Agrotis ripae (Hübner, [1823])	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Agrotis desertorum Boisduval, 1840	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Agrotis ipsilon (Hufnagel, 1766)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Axylia putris (Linnaeus, 1761)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Ochropleura plecta (Linnaeus, 1761)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Diarsia dahlii (Hübner, [1813])	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Diarsia brunnea ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Diarsia mendica (Fabricius, 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Sineugraphe exusta (Butler, 1878)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerastis rubricosa ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerastis leucographa ([Denis & Schiffermüller], 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Paradiarsia punicea (Hübner, [1803])	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Netrocerocora quadrangula (Eversmann, 1844)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Rhyacia caradrinoides (Staudinger, 1897)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Rhyacia simulans (Hufnagel, 1766)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Rhyacia arenacea (Hampson, 1907)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Chersotis transiens (Staudinger, 1896)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Chersotis elegans (Eversmann, 1837)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Chersotis margaritacea (de Villers, 1789)	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Noctua interposita (Hübner, 1790)	•	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Spaelotis ravida ([Denis & Schiffermüller], 1775)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Spaelotis deplorata (Staudinger, 1896)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Spaelotis senna (Freyer, 1829)	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Opigena polygona ([Denis & Schiffermüller], 1775)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Eurois occulta (Linnaeus, 1758)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Graphiphora augur (Fabricius, 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Anaplectoides prasina ([Denis & Schiffermüller], 1775)	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Pseudohermonassa melancholica (Lederer, 1853)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Xestia (*Xestia*) *baja* ([Denis & Schiffermüller], 1775)	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Xestia (*Megasema*) *c-nigrum* (Linnaeus, 1758)	•	•	-	-	•	-	-	-	-	-	-	-	-	-	-	-

Species	Geomorphological landscapes		Bionomical structure											
	West Siberian Plain	Kazakh Upland	Mesophilous	Xero-mesophilous	Eurytopic	Hygrophilous	Xero-thermophilous	Xero-halophilous	Hygro-thermophilous	Meso-xerophilous	Xeromontane	Hygro-mesophilous	Xero-heliophilous	Meso-hygrophilous	Xerophilous	Meso-thermophilous
Xestia (*Megasema*) *ditrapezium* ([Denis & Schiffermüller], 1775)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Xestia (*Megasema*) *triangulum* (Hufnagel, 1766)	•	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Xestia (*Megasema*) *kollari* (Lederer, 1853)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Xestia (*Megasema*) *ashworthii* (Doubleday, 1855)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Eugraphe sigma ([Denis & Schiffermüller], 1775)	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Coenophila subrosea (Stephens, 1829)	-	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Eugnorisma (*Eugnorisma*) *ignoratum* Varga & L. Ronkay, 1994	•	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Eugnorisma (*Eugnorisma*) *insignata* (Lederer, 1853)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Eugnorisma (*Eugnorisma*) *eminens* (Lederer, 1855)	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Miniphila miniago (Freyer, 1839)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Protolampra sobrina (Duponchel, 1843)	-	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Nyssocnemis eversmanni (Lederer, 1853)	-	•	-	•	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX 12. Distribution of Noctuoidea species in the geobotanical districts and the landscape-biotopic groups of the Pavlodar Region

Species	Chaglinsko-Seletinsko-Karasuk geobotanical district	Pavlodar geobotanical district	Bayanaul-Karaganda geobotanical district	Semipalatinsk geobotanical district	Arkalyk-Chingiz geobotanical district	Birch-aspen forests of the West Siberian Plain	Floodplain forests of the Irtysh River	Floodplain forests of Kazakh Uplands	Pine relic of the West Siberian Plain	Mixed forests of the Kazakh Uplands	Birch-aspen forests of the Kazakh Uplands	Deserted wormwood-feather grass steppes	Fescue-feather grass steppe	Saline and alkali soils of salt lakes	Shrub mountain steppes	Agrocenosis	Residential landscape
Lymantria (Porthetria) dispar (Linnaeus, 1758)	•	•	•	•	-	•	•	•	•	•	•	-	•	•	•	-	•
Gynaephora (Dicallomera) fascelina (Linnaeus, 1758	•	•	•	•	•	•	•	•	•	•	•	-	•	•	•	-	•
Gynaephora (Dicallomera) pumila (Staudinger, 1881)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-
Clethrogyna dubia (Tauscher, 1806)	•	•	•	-	-	-	•	•	-	•	-	-	-	•	•	-	-
Thylacigyna antiquoides (Hübner, [1822])	-	•	-	•	-	-	-	-	•	•	-	-	•	-	•	-	-
Leucoma salicis (Linnaeus, 1758)	•	•	•	•	-	•	•	•	•	•	•	•	•	•	•	-	-
Euproctis kargalika (Moore, 1878)	•	•	•	•	•	•	•	•	•	•	•	-	•	•	•	-	-
Sphrageidus similis (Fuessly, 1775)	•	•	•	•	-	-	•	-	-	•	-	-	-	-	•	-	-
Cybosia mesomella (Linnaeus, 1758)	-	-	•	-	-	-	-	-	•	•	-	-	-	•	•	-	-
Manulea palliatella (Scopoli, 1763)	-	•	•	•	-	-	-	-	•	•	-	-	-	•	•	-	-
Manulea complana (Linnaeus, 1758)	-	-	-	-	-	-	•	-	•	•	•	-	-	-	•	-	-
Manulea pygmaeola (Doubleday, 1847)	-	•	•	•	-	-	•	-	•	-	•	-	-	•	•	-	-
Manulea lutarella (Linnaeus, 1758)	-	•	•	•	-	-	•	•	•	•	-	-	•	-	•	-	-
Manulea luridеola ([Zincken], 1817)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Witia sororcula (Hufnagel, 1766)	•	-	•	-	-	•	-	-	-	•	-	-	-	-	•	-	-
Collita griseola (Hübner, [1803])	-	-	-	•	-	-	-	-	-	•	-	-	•	-	-	-	•

Species	Chaglinsko-Seletinsko-Karasuk geobotanical district	Pavlodar geobotanical district	Bayanaul-Karaganda geobotanical district	Semipalatinsk geobotanical district	Arkalyk-Chingiz geobotanical district	Birch-aspen forests of the West Siberian Plain	Floodplain forests of the Irtysh River	Floodplain forests of Kazakh Uplands	Pine relic of the West Siberian Plain	Mixed forests of the Kazakh Uplands	Birch-aspen forests of the Kazakh Uplands	Deserted wormwood-feather grass steppes	Fescue-feather grass steppe	Saline and alkali soils of salt lakes	Shrub mountain steppes	Agrocenosis	Residential landscape
Atolmis rubricollis (Linnaeus, 1758)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	-	-	-
Pelosia muscerda (Hufnagel, 1766)	-	•	-	-	-	•	-	-	-	•	-	-	-	•	•	-	-
Pelosia obtusa (Herrich-Schäffer, 1847)	•	•	-	-	-	•	•	-	-	-	-	-	-	•	•	-	-
Stigmatophora flava (Bremer & Grey, 1852)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Stigmatophora micans (Bremer & Grey, 1852)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Setina irrorella (Linnaeus, 1758)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Setina roscida ([Denis & Schiffermüller], 1775)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Thumatha senex (Hübner, [1808])	-	•	•	-	-	-	•	-	-	•	•	-	-	-	•	-	-
Miltochrista miniata (J.R. Forster, 1771)	-	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-
Tyria jacobaeae (Linnaeus, 1758)	•	•	•	-	-	•	•	•	-	-	-	-	•	•	-	-	-
Lacydes spectabilis (Tauscher, 1806)	-	•	•	-	-	-	•	•	•	•	-	-	•	•	•	-	•
Spiris striata (Linnaeus, 1758)	-	•	-	•	-	-	-	-	•	-	-	-	•	-	-	-	-
Coscinia cribraria (Linnaeus, 1758)	-	•	•	•	-	-	•	-	•	•	-	-	•	•	•	-	•
Hyphoraia aulica (Linnaeus, 1758)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	-	-	-
Arctia caja (Linnaeus, 1758)	•	•	•	•	•	•	•	•	•	•	•	-	•	•	•	•	•
Arctia flavia (Fuessly, 1779)	•	•	•	-	-	•	•	•	-	•	-	-	•	-	•	-	•
Epicallia villica (Linnaeus, 1758)	•	•	•	-	-	•	•	-	-	•	-	-	•	-	•	-	•
Eucharia festiva (Hufnagel, 1766)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Species	Chaglinsko-Seletinsko-Karasuk geobotanical district	Pavlodar geobotanical district	Bayanaul-Karaganda geobotanical district	Semipalatinsk geobotanical district	Arkalyk-Chingiz geobotanical district	Birch-aspen forests of the West Siberian Plain	Floodplain forests of the Irtysh River	Floodplain forests of Kazakh Uplands	Pine relic of the West Siberian Plain	Mixed forests of the Kazakh Uplands	Birch-aspen forests of the Kazakh Uplands	Deserted wormwood-feather grass steppes	Fescue-feather grass steppe	Saline and alkali soils of salt lakes	Shrub mountain steppes	Agrocenosis	Residential landscape
Chelis maculosa (Gerning, 1780)	-	•	•	-	-	-	•	•	-	-	-	-	•	•	-	-	•
Chelis caecilia (Kindermann in Lederer, 1853)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Chelis dahurica (Boisduval, 1832)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Diacrisia sannio (Linnaeus, 1758)	-	-	-	-	-	•	•	•	•	•	-	-	•	•	•	-	•
Rhyparia purpurata (Linnaeus, 1758)	•	•	•	•	•	•	•	•	•	•	•	-	•	•	•	-	•
Watsonarctia deserta (Bartel, 1902)	•	-	•	-	•	•	•	-	-	•	•	-	•	-	•	-	-
Spilosoma lubricipeda (Linnaeus, 1758)	-	•	•	•	-	-	•	-	•	•	-	-	-	-	•	-	-
Spilosoma urticae (Esper, 1789)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	-
Spilarctia lutea (Hufnagel, 1766)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Phragmatobia fuliginosa (Linnaeus, 1758)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-	-	-
Eudiaphora turensis (Erschoff, 1874)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Amata transcaspica Obraztsov, 1941	•	•	•	•	-	•	•	•	•	•	•	-	•	•	•	-	-
Amata caspia (Staudinger, 1877)	•	•	•	•	•	•	•	•	•	•	•	-	•	•	•	-	-
Simplicia rectalis (Eversmann, 1842)	•	•	•	-	-	•	•	-	-	•	-	-	•	-	•	-	-
Paracolax tristalis (Fabricius, 1794)	•	•	•	-	-	•	•	-	-	•	-	-	•	-	-	-	-
Herminia tenuialis (Rebel, 1896)	•	-	•	-	-	•	-	-	-	•	-	-	-	-	•	-	-
Herminia tristriga W. Kozhantschikov, 1929	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Polypogon tentacularia (Linnaeus, 1758)	•	•	•	-	-	•	•	-	-	•	-	-	-	-	•	-	-
Pechipogo strigilata (Linnaeus, 1758)	-	•	-	-	-	-	•	-	-	-	-	•	-	-	-	-	•

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Zanclognatha lunalis (Scopoli, 1763)	•	•	•	-	-	•	•	-	-	•	-	-	-	ı	•	ı	•
Zekelita ravularis (Staudinger, 1879)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	ı	•
Hypena rostralis (Linnaeus, 1758)	-	-	•	-	•	-	•	•	•	•	-	-	-	-	•	-	-
Hypena obesalis (Treitschke, 1829)	•	•	-	•	-	•	•	-	•	-	-	-	-	-	-	-	-
Hypena tristalis Lederer, 1853	-	-	•	•	-	-	-	-	•	•	-	-	-	•	•	-	-
Rivula sericealis (Scopoli, 1763)	-	•	•	-	-	•	•	-	-	•	-	-	•	•	•	-	-
Scoliopteryx libatrix (Linnaeus, 1758)	•	•	•	•	-	•	•	•	•	•	•	•	-	•	•	-	-
Calyptra thalictri (Borkhausen, 1790)	-	•	•	•	•	-	•	•	•	•	•	-	-	•	•	-	-
Parascotia fuliginaria (Linnaeus, 1761)	-	•	-	•	-	•	•	-	•	-	-	-	•	•	•	-	-
Paragona cognata (Staudinger, 1892)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Odice arcuinna (Hübner, 1790)	-	•	•	-	-	-	-	•	•	•	•	-	-	-	•	-	-
Eublemma minutata (Fabricius, 1794)	-	•	•	-	-	-	•	•	•	-	-	-	-	-	•	-	-
Eublemma ostrina (Hübner, [1808])	-	•	-	•	-	-	-	-	•	-	-	-	-	•	-	-	-
Eublemma porphyrinia (Freyer, 1845)	-	-	•	•	-	-	-	-	•	•	-	-	-	•	•	-	-
Eublemma panonica (Freyer, 1840)	-	-	-	•	-	-	-	-	•	-	-	-	-	•	-	-	-
Eublemma amasina (Eversmann, 1842)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Eublemma purpurina ([Denis & Schiffermüller], 1775)	-	•	•	•	•	-	•	•	•	•	•	-	•	-	•	•	•
Eublemma pallidula (Herrich-Schäffer, 1856)	-	•	-	-	-	•	•	-	-	-	-	-	-	•	-	-	•

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Eublemma pusilla (Eversmann, 1834)	•	•	•	•	-	•	•	•	•	•	-	-	-	•	•	-	•
Eublemma polygramma (Duponchel, 1842)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Phytometra viridaria (Clerck, 1759)	•	•	•	-	•	•	•	•	•	•	-	-	•	•	•	-	•
Lygephila lubrica (Freyer, 1842)	•	•	•	•	-	•	•	•	•	•	•	-	•	-	•	-	•
Lygephila ludicra (Hübner, 1790)	-	•	•	•	-	-	•	•	•	•	•	-	•	-	•	-	•
Lygephila pastinum (Treitschke, 1826)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Lygephila viciae (Hübner, [1822])	-	•	•	-	-	-	•	-	-	•	-	-	•	-	•	-	•
Lygephila craccae ([Denis & Schiffermüller], 1775)	-	-	•	•	-	-	-	-	•	•	-	-	-	•	•	-	-
Lygephila asiatica Pekarsky, 2016	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-
Autophila (*Cheirophanes*) *chamaephanes* Boursin, 1940	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Autophila (*Autophila*) *vespertalis* (Staudinger, 1896)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Acantholipes regularis (Hübner, 1813)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	•	-	•
Catocala fulminea (Scopoli, 1763)	-	•	•	-	-	-	•	-	-	•	-	-	•	-	•	-	•
Catocala neonympha (Esper, 1805)	•	•	•	•	-	•	•	•	•	•	•	-	•	•	•	-	•
Catocala fraxini (Linnaeus, 1758)	•	•	•	•	-	•	•	•	•	•	-	-	•	-	•	•	•
Catocala nupta (Linnaeus, 1767)	•	•	•	•	-	•	•	-	•	•	-	-	•	-	•	-	•
Catocala adultera Ménétriès, 1856	•	•	-	•	-	•	•	-	•	-	-	-	-	•	-	-	•

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Catocala deducta Eversmann 1843	-	•	-	•	-	-	•	-	•	-	-	-	-	•	-	-	•
Catocala puerpera (Giorna, 1791)	•	•	•	•	-	•	•	•	•	•	-	-	•	•	•	-	•
Catocala lupina Herrich-Schäffer, 1851	-	-	•	•	-	-	-	•	•	-	-	-	-	-	•	-	-
Catocala pacta (Linnaeus, 1758)	•	•	•	-	•	•	•	•	-	•	•	-	-	-	•	-	•
Drasteria cailino (Lefèbvre, 1827)	-	•	•	•	-	-	•	•	•	•	-	-	-	•	•	-	•
Drasteria rada (Boisduval, 1848)	-	-	•	•	•	-	-	•	•	•	-	•	-	•	•	-	-
Drasteria christophi (Alphéraky, 1895)	-	-	-	-	•	-	-	-	-	-	-	•	-	-	-	-	-
Drasteria obscurata (Staudinger, 1882)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Euclidia glyphica (Linnaeus, 1758)	•	•	•	-	-	•	•	-	-	•	-	-	-	-	•	-	-
Callistege mi (Clerck, 1759)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Callistege fortalitium (Tauscher, 1809)	•	•	•	-	-	•	•	•	-	•	-	-	-	-	•	-	-
Gonospileia triquetra ([Denis & Schiffermüller], 1775)	•	•	•	•	-	•	•	•	-	•	-	•	•	-	•	-	-
Gonospileia munita (Hübner, [1818])	-	•	•	-	-	•	•	-	-	•	-	-	•	-	•	-	-
Nola aerugula (Hübner, 1793)	-	•	•	-	-	-	•	-	-	•	-	-	•	-	•	-	-
Nola crambiformis Rebel, 1902	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	-
Nola confusalis (Herrich-Schäffer, 1847)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Earias clorana (Linnaeus, 1761)	•	•	•	-	-	•	•	-	-	•	-	-	-	•	•	-	•
Pseudoips prasinana (Linnaeus, 1758)	-	-	•	-	-	-	-	-	-	•	•	-	-	-	•	-	-

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Nycteola eremostola Dufay, 1961	-	-	•	-	-	-	-	•	-	-	-	-	•	-	-	-	•
Nycteola degenerana (Hübner, 1799)	-	•	•	-	-	-	•	•	-	•	-	-	-	-	•	-	•
Nycteola asiatica (Krulikovsky, 1904)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	-
Abrostola triplasia (Linnaeus, 1758)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Abrostola tripartita (Hufnagel, 1766)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	-
Trichoplusia ni (Hübner, [1803])	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Macdunnoughia confusa (Stephens, 1850)	•	•	•	•	-	•	•	•	•	•	•	-	•	•	•	-	•
Diachrysia chryson (Esper, 1789)	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-
Diachrysia chrysitis (Linnaeus, 1758)	-	•	•	-	-	-	•	•	-	•	-	-	-	-	•	-	-
Diachrysia stenochrysis (Warren, 1913)	•	•	•	•	-	•	•	•	•	•	•	-	•	•	•	-	•
Diachrysia zosimi (Hübner, [1822])	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Euchalcia consona (Fabricius, 1787)	-	•	-	•	-	-	•	-	-	-	-	-	•	-	-	-	-
Polychrysia esmeralda (Oberthür, 1880)	-	•	•	-	-	-	•	-	-	-	•	-	•	-	-	-	-
Panchrysia deaurata (Esper, 1787)	-	-	•	-	-	-	-	-	-	•	•	-	-	-	•	-	-
Lamprotes c-aureum (Knoch, 1781)	-	•	-	-	-	-	•	-	-	•	-	-	-	-	-	-	•
Plusidia cheiranthi (Tauscher, 1809)	•	•	•	-	-	•	-	-	-	•	-	-	-	-	•	-	•
Autographa gamma (Linnaeus, 1758)	•	•	•	•	-	•	•	•	•	•	•	•	•	•	•	•	•
Autographa buraetica (Staudinger, 1892)	-	-	•	•	-	-	-	-	•	•	-	-	-	-	•	-	-
Autographa mandarina (Freyer, 1845)	-	-	-	•	-	-	-	-	•	•	-	-	•	-	-	-	•

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Autographa bractea ([Denis & Schiffermüller], 1775)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Autographa excelsa (Kretschmar, 1862)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Cornutiplusia circumflexa (Linnaeus, 1767)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Syngrapha interrogationis (Linnaeus, 1758)	•	-	•	-	-	•	-	-	-	•	-	-	-	-	•	-	-
Plusia festucae (Linnaeus, 1758)	•	•	•	•	-	•	•	•	-	•	•	-	•	•	•	-	•
Plusia putnami (Grote, 1873)	•	-	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-
Phyllophyla obliterata (Rambur, 1833)	-	•	-	-	-	-	•	-	-	-	-	-	•	-	-	-	•
Deltote (Protodeltote) pygarga (Hufnagel, 1766)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Deltote (*Deltote*) *deceptoria* (Scopoli, 1763)	•	•	-	-	-	•	•	-	-	-	-	-	•	-	-	-	•
Deltote (*Deltote*) *uncula* (Clerck, 1759)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Deltote (*Deltote*) *bankiana* (Fabricius, 1775)	-	•	•	-	-	•	•	•	-	-	-	-	-	•	•	-	•
Acontia (*Acontia*) *lucida* (Hufnagel, 1766)	-	•	•	•	-	-	•	•	-	-	-	-	•	-	•	-	•
Acontia (*Emmelia*) *trabealis* (Scopoli, 1763)	•	•	•	•	-	•	•	-	-	-	-	-	•	•	-	•	•
Aedia funesta (Esper, 1786)	•	•	•	•	-	•	•	•	-	-	-	-	•	-	•	-	•
Colocasia coryli (Linnaeus, 1758)	-	•	•	•	-	-	-	-	•	•	-	-	•	-	•	-	-
Leiometopon simyrides Staudinger, 1888	-	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-
Acronicta (*Johaera*) *alni* (Linnaeus, 1767)	-	•	•	•	-	-	•	-	-	•	-	-	•	-	•	-	•
Acronicta (*Triaena*) *cuspis* (Hübner, [1813])	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•

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Acronicta (Triaena) tridens ([Denis & Schiffermüller], 1775)	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-	-	-
Acronicta (Triaena) psi (Linnaeus, 1758)	•	•	•	•	-	•	•	-	•	•	•	-	•	•	•	-	•
Acronicta (Viminia) auricoma ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Acronicta (Viminia) rumicis (Linnaeus, 1758)	-	•	•	-	-	-	•	-	-	•	-	-	•	-	•	•	•
Acronicta (Viminia) cinerea (Hufnagel, 1766)	-	•	•	-	-	-	•	-	-	•	•	-	-	-	•	-	•
Acronicta (Simyra) nervosa ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	•	•	-	•	•	-	-	•	•	-	-
Acronicta (Simyra) albovenosa (Goeze, 1781)	-	•	•	•	•	-	•	•	-	-	-	-	•	-	•	-	•
Acronicta (Simyra) dentinosa Freyer, 1838	-	•	•	-	-	-	•	•	-	-	-	-	-	•	•	-	-
Acronicta (Subacronicta) megacephala ([Denis & Schiffermüller], 1775)	•	•	•	-	-	•	•	-	-	•	-	•	•	-	•	-	-
Mycterophus puniceago (Boisduval, 1840)	•	•	-	-	-	•	•	•	-	-	-	-	-	-	-	-	•
Tyta luctuosa ([Denis & Schiffermüller], 1775)	•	•	•	•	-	•	•	•	-	-	-	-	•	•	•	•	•
Cucullia tiefi Tshetverikov, 1956	-	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Cucullia praecana Eversmann, 1843	-	-	•	-	-	-	-	-	-	•	-	-	-	•	•	-	-
Cucullia propinqua Eversmann, 1842	-	-	•	-	•	-	•	-	-	-	•	-	-	-	-	-	-
Cucullia scopariae Dorfmeister, 1853	-	•	•	•	-	-	•	•	•	-	-	-	-	-	•	-	•
Cucullia fraudatrix Eversmann, 1837	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Cucullia absinthii (Linnaeus, 1761)	-	•	•	•	-	-	•	-	-	-	-	-	-	-	-	-	•

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Cucullia argentea (Hufnagel, 1766)	•	•	•	-	-	•	•	•	-	•	•	-	•	•	•	-	•
Cucullia infuscata Tshetverikov, 1925	-	•	•	-	-	•	•	•	-	•	-	-	•	-	•	-	•
Cucullia artemisiae (Hufnagel, 1766)	-	•	•	-	-	-	•	•	-	-	-	-	-	•	•	-	•
Cucullia humilis Boursin, 1941	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Cucullia splendida (Stoll, 1782)	•	•	•	•	-	•	•	•	•	-	-	-	•	•	•	-	•
Cucullia gnaphalii (Hübner, 1813)	•	-	•	-	-	•	-	-	-	•	•	-	-	•	•	-	-
Cucullia magnifica (Freyer, 1839)	-	-	-	•	-	-	-	-	•	-	-	-	-	•	-	-	-
Cucullia argentina (Fabricius, 1787)	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	-	•
Cucullia biradiata W. Kozhantshikov, 1925	•	-	-	-	-	•	•	-	-	-	-	-	-	-	-	-	-
Cucullia pustulata Eversmann, 1842	-	•	-	•	-	-	-	-	-	-	-	-	•	-	-	•	•
Cucullia lucifuga ([Denis & Schiffermüller], 1775)	•	-	-	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Cucullia umbratica (Linnaeus, 1758)	•	•	•	•	-	•	•	•	-	•	•	•	•	-	•	-	-
Cucullia biornata Fischer von Waldheim, 1840	•	•	•	•	-	•	•	•	-	•	-	-	•	-	•	•	•
Cucullia balsamitae (Boisduval, 1840)	-	-	•	•	-	-	-	•	•	-	-	-	-	-	•	-	-
Cucullia inderiensis Herrich-Schäffer, 1856	•	•	•	-	-	•	•	•	-	•	-	-	-	-	•	-	•
Cucullia duplicata Staudinger, 1882	•	•	•	-	•	•	•	•	-	•	-	-	•	•	•	-	•
Cucullia santonici (Hübner, [1813])	-	-	•	-	-	-	-	•	-	-	•	-	-	-	•	-	-
Cucullia lactea (Fabricius, 1787)	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-

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Cucullia mixta Freyer, 1841	•	-	•	-	-	•	-	•	-	•	-	-	-	•	•	-	-
Cucullia xeranthemi (Boisduval, 1840)	•	•	•	-	-	•	•	-	-	•	-	-	-	-	•	-	•
Cucullia virgaureae Boisduval, 1840	-	•	•	-	-	-	•	•	-	-	-	-	-	•	•	-	•
Cucullia amota Alphéraky, 1887	-	•	•	-	-	-	•	-	-	•	-	-	-	•	•	-	•
Cucullia asteris ([Denis & Schiffermüller], 1775)	•	•	•	-	-	•	•	-	•	-	•	-	-	-	-	-	-
Cucullia tanaceti ([Denis & Schiffermüller], 1775)	-	•	-	•	-	-	-	-	•	-	-	•	-	-	-	-	-
Amphipyra pyramidea (Linnaeus, 1758)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Amphipyra perflua (Fabricius, 1787)	•	•	•	-	-	•	•	-	-	•	-	-	-	-	•	-	•
Amphipyra livida ([Denis & Schiffermüller], 1775)	•	•	•	-	-	•	•	•	-	-	-	-	-	-	•	-	•
Amphipyra tragopoginis (Clerck, 1759)	•	•	•	-	-	•	•	-	-	•	-	-	-	-	•	-	•
Amphipyra tetra (Fabricius, 1787)	•	•	-	-	-	•	•	-	•	-	-	-	-	-	-	-	•
Amphipyra sergei Staudinger, 1888	-	•	-	•	-	-	•	-	•	-	-	-	-	•	-	-	•
Brachiomycha nubeculosa (Esper, 1785)	•	•	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Calophasia lunula (Hufnagel, 1766)	•	•	•	•	-	•	•	•	-	•	-	•	•	-	•	•	•
Calophasia opalina (Esper, [1794])	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-
Sympistis strioligera (Lederer, 1853)	-	-	•	•	-	-	-	-	-	•	-	-	-	•	•	-	-
Sympistis campicola (Lederer, 1853)	-	-	•	-	-	-	-	•	-	•	-	-	-	•	•	-	-

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Sympistis exacta (Christoph, 1887)	-	-	•	-	-	-	•	-	-	•	-	-	-	-	•	-	-
Sympistis nigricula (Eversmann, 1856)	-	-	•	•	-	-	-	•	-	•	-	-	•	-	•	-	•
Sympistis senica (Eversmann, 1856)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Lophoterges (*Varilerges*) *centralasiae* (Staudinger, 1901)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Epimecia ustula (Freyer, 1835)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	-	-	-
Phidrimana amurensis (Staudinger, 1892)	•	•	•	-	-	•	•	-	-	-	-	•	•	•	-	-	•
Acosmetia caliginosa (Hübner, [1813])	-	-	•	-	-	-	-	•	-	-	-	-	-	•	•	-	•
Eucarta virgo (Treitschke, 1835)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Eucarta amethystina (Hübner, [1803])	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Pyrrhia umbra (Hufnagel, 1766)	-	•	•	-	-	-	•	•	-	-	•	-	•	-	•	-	•
Pyrrhia exprimens (Walker, 1857)	-	•	-	•	-	-	•	-	•	-	-	-	-	-	-	-	•
Schinia cognata (Freyer, 1833)	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
Protoschinia scutosa ([Denis & Schiffermüller], 1775)	•	•	•	•	•	•	•	•	-	•	•	•	•	•	•	-	•
Heliothis peltigera ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-
Heliothis viriplaca (Hufnagel, 1766)	-	•	•	•	-	-	•	•	•	-	-	-	•	•	•	-	•
Heliothis adaucta Butler, 1878	-	•	•	•	-	-	•	•	•	-	-	-	•	•	•	-	•
Helicoverpa armigera (Hübner, [1808])	-	•	•	•	-	-	•	-	•	-	-	-	-	•	-	-	•

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Cryphia (*Cryphia*) *fraudatricula* (Hübner, [1803])	-	-	•	-	-	-	-	-	-	•	•	-	-	-	•	-	-
Bryophila (*Bryoleuca*) *orthogramma* (Boursin, 1954)	-	-	•	-	-	-	-	•	-	•	-	-	-	-	•	-	-
Victrix (*P.*) *fabiani* Varga & Ronkay, 1989	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Athaumasta expressa (Lederer, 1855)	-	-	•	-	-	-	-	-	-	•	•	-	-	-	•	-	-
Pseudeustrotia candidula ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	-	-	•
Spodoptera exigua (Hübner, 1808)	-	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-
Elaphria venustula (Hübner, 1790)	•	•	•	-	-	•	•	-	•	•	-	-	-	-	•	-	•
Caradrina (*Caradrina*) *morpheus* (Hufnagel, 1766)	•	•	-	•	-	•	•	-	•	-	-	-	-	•	-	-	•
Caradrina (*Platyperigea*) *terrea* Freyer, 1840	•	-	•	•	-	-	•	-	•	•	-	•	•	-	•	-	•
Caradrina (*Platyperigea*) *montana* Bremer, 1861	-	•	•	•	-	-	-	•	•	•	-	-	-	-	•	-	•
Caradrina (*Platyperigea*) *albina* (Eversmann, 1848)	•	•	•	•	-	•	•	•	•	•	-	•	-	•	•	•	•
Caradrina (*Platyperigea*) *petraea* Tengström, 1869	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	•	•
Caradrina (*Eremodrina*) *monssacralis* (Varga & L. Ronkay, 1991)	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-
Caradrina (*Paradrina*) *wullschlegeli* Püngeler, 1903	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•

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Caradrina (*Paradrina*) *clavipalpis* (Scopoli, 1763)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Hoplodrina octogenaria (Goeze, 1781)	-	•	-	•	-	-	•	-	-	-	-	-	•	-	-	-	•
Hoplodrina blanda ([Denis & Schiffermüller], 1775)	-	•	•	•	-	-	•	-	-	•	•	-	•	-	•	-	•
Chilodes maritima (Tauscher, 1806)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	•
Chilodes distracta (Eversmann, 1848)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Charamyca (*Rusina*) *ferruginea* (Esper, [1787])	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Athetis (*Athetis*) *furvula* (Hübner, [1808])	-	•	•	•	-	-	•	-	•	-	•	-	•	-	•	-	•
Athetis (*Hydrillula*) *pallustris* (Hübner, [1808])	•	-	•	-	-	•	-	-	-	•	-	-	-	-	•	-	-
Athetis (*Proxenus*) *lepigone* (Möschler, 1860)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Athetis (*Proxenus*) *correpta* (Püngeler, 1906)	•	•	-	-	-	•	•	-	-	-	-	-	-	-	-	-	-
Dypterygia scabriuscula (Linnaeus, 1758)	•	•	•	•	•	•	•	•	•	•	•	-	•	-	•	-	•
Trachea atriplicis (Linnaeus, 1758)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Actinotia polyodon (Clerck, 1759)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Oxytripia orbiculosa (Esper, 1799)	-	-	•	-	-	-	-	•	-	•	-	-	-	-	•	-	-
Sidemia spilogramma (Rambur, 1871)	-	•	•	•	-	-	•	•	-	•	-	-	•	•	•	-	•
Calamia tridens (Hufnagel, 1766)	•	•	•	•	•	•	•	•	•	•	•	-	•	•	•	-	•
Staurophora celsia (Linnaeus, 1758)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Heliotropha leucostigma (Hübner, [1808])	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	-

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Celaena haworthii (Curtis, 1829)	-	•	•	-	-	-	•	-	-	-	-	-	-	•	-	-	•
Hydraecia micacea (Esper, 1789)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Hydraecia ultima Holst, 1965	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Hydraecia mongoliensis Urbahn, 1967	-	•	•	-	-	-	•	•	-	•	-	-	-	-	•	-	•
Hydraecia osseola (Staudinger, 1882)	-	•	•	-	-	-	•	-	-	-	-	-	-	•	-	-	•
Amphipoea fucosa (Freyer, 1830)	•	•	•	•	-	•	•	•	•	•	•	-	-	•	•	-	•
Amphipoea ochreola (Staudinger, 1882)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	•
Amphipoea asiatica (Burrows, 1911)	•	-	•	•	-	•	-	-	•	•	-	-	-	-	•	-	•
Fabula zollikoferi (Freyer, 1836)	-	•	•	•	-	-	•	•	-	-	-	•	•	•	-	-	•
Rhizedra lutosa (Hübner, [1803])	-	•	•	-	-	-	•	•	-	-	-	-	-	-	-	-	•
Nonagria typhae (Thunberg, 1784)	-	•	•	•	-	-	•	•	-	-	-	•	-	-	•	-	•
Longalatedes elymi (Treitschke, 1825)	-	•	•	-	-	•	•	•	-	•	-	-	-	•	•	-	•
Archanara dissoluta (Treitschke, 1825)	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	•
Denticucullus pygmina (Haworth, 1809)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	•
Hypocoena stigmatica (Eversmann, 1855)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Photedes fluxa (Hübner, 1809)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Photedes extrema (Hübner, [1809])	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	•
Ogilia leuconephra (Hampson, 1908)	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	•
Protarchanara brevilinea (Fenn, 1864)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•

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Globia sparganii (Esper, 1790)	-	-	•	-	-	-	•	•	-	•	-	-	•	-	-	-	-
Globia algae (Esper, 1789)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	•
Pabulatrix pabulatricula (Brahm, 1791)	-	•	•	-	-	-	•	-	-	-	•	-	-	-	-	-	•
Apamea (Apamea) monoglypha (Hufnagel, 1766)	•	•	•	•	-	•	•	•	-	•	•	-	•	-	•	-	•
Apamea (Apamea) ferrago (Eversmann, 1837)	•	•	•	-	-	•	•	•	-	•	•	-	•	-	•	-	-
Apamea (Apamea) furva ([Denis & Schiffermüller], 1775)	•	•	•	•	-	•	•	-	•	-	•	-	-	•	-	-	•
Apamea (Apamea) lateritia (Hufnagel, 1766)	•	•	•	•	-	•	•	•	-	•	•	-	•	-	•	•	•
Apamea (Apamea) oblonga (Haworth, 1809)	•	•	-	•	-	-	•	-	-	-	-	-	•	-	-	•	•
Apamea (Apamea) sordens (Hufnagel, 1766)	•	•	-	-	-	•	•	-	-	-	-	-	•	-	-	-	•
Apamea (Apamea) anceps ([Denis & Schiffermüller], 1775)	•	•	•	•	-	•	•	•	-	•	-	-	•	-	-	•	•
Apamea (Apamea) leucodon (Eversmann, 1837)	-	•	•	-	-	•	•	•	-	•	-	-	•	-	•	-	•
Apamea (Apamea) remissa (Hübner, [1809])	•	•	•	•	-	•	•	•	-	-	-	-	•	-	•	-	•
Apamea (Apamea) crenata (Hufnagel, 1766)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Apamea (Apamea) unanimis (Hübner, [1813])	-	•	•	-	-	-	•	-	-	•	-	-	-	-	-	-	•
Apamea (Apamea) illyria Freyer, 1846	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Oligia latruncula ([Denis & Schiffermüller], 1775)	-	•	-	•	-	-	•	-	-	-	-	-	•	-	-	-	•

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Mesoligia furuncula ([Denis & Schiffermüller], 1775)	-	•	•	•	-	-	•	•	-	-	-	-	•	-	•	-	•
Litoligia literosa (Haworth, 1809)	-	•	•	•	-	-	•	-	-	•	•	-	•	-	•	-	•
Mesapamea secalis (Linnaeus, 1758)	-	-	-	•	-	-	-	-	•	-	-	-	-	•	-	-	-
Mesapamea moderata (Eversmann, 1843)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Resapamea hedeni (Graeser, [1889])	•	•	•	•	-	•	•	•	•	-	-	-	•	-	•	-	•
Xylomoia graminea (Graeser, [1889])	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	•
Episema tersa ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Leucochlaena (*Furcochlaena*) *fallax* (Staudinger, 1870)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Hyppa rectilinea (Esper, 1788)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Parastichtis suspecta (Hübner, [1817])	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Apterogenum ypsillon ([Denis & Schiffermüller], 1775)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Xanthia togata (Esper, 1788)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Cirrhia icteritia (Hufnagel, 1766).	-	•	•	•	-	-	•	-	•	•	-	•	•	•	•	-	•
Cirrhia ocellaris (Borkhausen, 1792)	-	•	•	-	-	-	•	•	-	•	-	-	-	-	•	-	•
Cirrhia tunicata (Graeser, 1890)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	•
Mesogona acetosellae ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	•	•	-	•	-	-	-	-	•	-	•

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Mesogona oxalina (Hübner, [1803])	-	•	•	-	-	-	-	•	-	•	-	-	-	-	•	-	-
Sunira circellaris (Hufnagel, 1766)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	•
Agrochola (*Agrochola*) *vulpecula* (Lederer, 1853)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Agrochola (*Anchoscelis*) *helvola* (Linnaeus, 1758)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Agrochola (*Leptologia*) *lota* (Clerck, 1759)	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-
Conistra (*Conistra*) *vaccinii* (Linnaeus, 1761)	•	•	•	-	-	•	•	•	-	•	-	-	-	-	•	-	•
Conistra (*Dasycampa*) *rubiginea* ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	•
Lithophane (*Lithophane*) *socia* (Hufnagel, 1766)	•	•	•	-	-	•	•	-	-	•	-	-	-	-	•	-	-
Lithophane (*Lithophane*) *furcifera* (Hufnagel, 1766)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Xylena (*Xylena*) *exsoleta* (Linnaeus, 1758)	•	-	•	-	-	•	-	•	-	•	-	-	-	-	•	-	-
Xylena (*Xylena*) *vetusta* (Hübner, [1813])	•	•	•	-	-	•	•	•	-	•	-	-	-	-	•	-	•
Xylena (*Lithomoia*) *solidaginis* (Hübner, 1803)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Orbona fragariae (Vieweg, 1790)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Eupsilia transversa (Hufnagel, 1766)	•	•	•	-	-	•	•	-	-	•	-	-	-	-	•	-	-
Enargia paleacea (Esper, 1788)	-	•	•	•	-	-	•	-	•	•	-	-	•	•	•	•	•
Enargia abluta (Hübner, 1808)	-	•	-	•	-	-	•	-	•	-	-	-	-	•	-	-	•

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Ipimorpha retusa ([Denis & Schiffermüller], 1775)	-	•	-	-	-	-	•	-	-	•	-	-	-	-	-	-	•
Ipimorpha subtusa ([Denis & Schiffermüller], 1775)	-	•	-	-	-	-	•	-	-	•	-	-	-	-	-	-	•
Cosmia (*Ulmia*) *affinis* (Linnaeus, 1767)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Brachyxanthia zelotypa (Lederer, 1853)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Pseudohadena argyllostigma (Varga & L. Ronkay, 1991)	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-
Eremohadena immunda (Eversmann, 1842)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	-
Antitype chi (Linnaeus, 1758)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Ammoconia caecimacula ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Dasypolia (*Dasypolia*) *templi* (Thunberg, 1792)	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-
Dasypolia (*Dasypolia*) *timoi* Fibiger & Nupponen, 2006	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-
Dasypolia (*Cteipolia*) *murina* (Ménétriés, 1848)	-	-	•	-	-	-	-	•	-	•	-	-	-	-	•	-	-
Blepharita amica (Treitschke, 1825)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	-	-	-
Mniotype adusta (Esper, 1790)	-	-	•	-	-	-	-	-	-	•	•	-	-	-	•	-	-
Mniotype satura ([Denis & Schiffermüller], 1775)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•

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Panolis flammea ([Denis & Schiffermüller], 1775)	-	•	•	•	-	-	-	-	•	•	-	-	-	•	•	-	•
Orthosia (*Orthosia*) *incerta* (Hufnagel, 1766)	•	•	•	•	•	•	•	-	•	•	-	•	-	•	•	-	•
Orthosia (*Orthosia*) ronkayorum Volynkin & Titov, 2014	-	-	•	-	-	-	-	•	-	•	-	-	-	-	•	-	-
Orthosia (*Poporthosia*) *populeti* (Fabricius, 1775)	•	•	•	-	-	•	•	•	-	•	-	-	-	-	•	-	•
Orthosia (*Cororthosia*) *gracilis* ([Denis & Schiffermüller], 1775)	•	•	-	-	-	•	•	-	-	-	-	-	-	-	-	-	-
Orthosia (*Cororthosia*) *opima* (Hübner, [1809])	-	-	•	-	-	-	-	•	-	•	-	-	-	-	•	-	-
Orthosia (*Semiophora*) *gothica* (Linnaeus, 1758)	•	•	•	-	-	•	•	-	-	•	-	-	-	-	•	-	•
Anorthoa munda ([Denis & Schiffermüller], 1775)	•	-	-	-	-	•	-	-	-	•	-	-	-	-	•	-	-
Perigrapha (*Perigrapha*) *circumducta* (Lederer, 1855)	•	•	•	-	•	•	•	•	-	•	-	-	-	-	•	-	-
Egira anatolica (Hering, 1933)	-	-	-	•	-	-	-	-	•	-	-	-	-	•	-	-	-
Tholera cespitis ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	•	-	-	-	-	-	-	-	•	-	•
Tholera decimalis (Poda, 1761)	-	•	•	-	-	-	•	-	-	•	-	-	•	-	•	-	•
Tholera hilaris (Staudinger, 1901)	-	•	•	•	-	-	•	-	-	•	-	-	•	-	•	-	•

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Cerapteryx graminis (Linnaeus, 1758)	-	•	•	-	-	-	•	-	-	•	-	-	-	•	•	-	-
Anarta (*Cardiestra*) *vaciva* (Püngeler, 1906)	-	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-
Anarta (*Calocestra*) *dianthii* (Tauscher, 1809)	-	•	•	•	-	-	-	•	•	•	-	-	•	•	•	-	•
Anarta (*Calocestra*) *trifolii* (Hufnagel, 1766)	•	•	•	•	-	•	•	•	•	•	•	-	•	•	•	•	•
Anarta (*Calocestra*) *stigmosa* (Christoph, 1887)	•	•	•	•	-	•	•	•	•	-	-	-	•	-	•	-	•
Polia bombycina (Hufnagel, 1766)	•	•	•	-	-	•	•	•	-	•	•	-	-	-	•	-	•
Polia hepatica (Clerck, 1759)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Polia nebulosa (Hufnagel, 1766)	•	•	•	•	-	•	•	-	•	•	-	-	-	-	•	-	•
Polia serratilinea (Treitschke, 1825)	•	•	•	-	-	•	•	-	-	•	•	-	-	-	•	-	•
Polia altaica (Lederer, 1853)	-	-	•	•	•	-	-	-	-	•	•	•	•	-	•	-	•
Pachetra sagittigera (Hufnagel, 1766)	-	-	-	-	-	•	•	-	-	-	-	•	•	-	-	-	•
Lacanobia (*Lacanobia*) *w-latinum* (Hufnagel, 1766) 1	•	•	•	-	-	-	-	-	-	•	-	-	-	•	•	-	-
Lacanobia (*Diamobia*) *thalassina* (Hufnagel, 1766)	•	•	•	•	-	•	•	-	•	•	-	-	•	•	•	-	•
Lacanobia (*Diamobia*) *suasa* ([Denis & Schiffermüller], 1775)	•	•	•	•	-	•	•	•	•	•	•	-	•	•	•	-	•
Lacanobia (*Diamobia*) *contigua* ([Denis & Schiffermüller], 1775)	•	•	•	-	-	•	•	-	-	•	-	-	-	-	•	-	•
Lacanobia (*Diataraxia*) *oleracea* (Linnaeus, 1758)	•	•	•	•	-	•	•	-	•	-	-	-	•	•	•	-	•

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Lacanobia (*Diataraxia*) *splendens* (Hübner, [1803–1808])	•	-	-	-	-	•	-	-	-	-	-	-	-	•	•	-	•
Lacanobia (*Diataraxia*) *aliena* (Hübner, [1808])	•	•	•	•	-	•	•	-	•	•	-	-	-	•	•	-	•
Lacanobia (*Diataraxia*) *blenna* (Hübner, [1824])	-	•	•	•	-	-	•	-	-	-	-	-	•	•	•	-	•
Melanchra persicariae (Linnaeus, 1761)	-	•	•	-	-	-	•	-	-	•	•	-	-	-	-	-	•
Ceramica pisi (Linnaeus, 1758) 1	-	•	•	-	-	-	-	-	-	•	-	-	-	-	•	-	•
Hada plebeja (Linnaeus, 1761)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Hyssia cavernosa (Eversmann, 1842)	•	•	-	-	-	•	•	-	-	-	-	-	-	-	-	-	-
Mamestra brassicae (Linnaeus, 1758)	-	•	-	•	-	-	•	-	-	-	-	•	-	-	-	-	•
Sideridis (*Sideridis*) *lampra* (Schawerda, 1913)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Sideridis (*Sideridis*) *turbida* (Esper, 1790)	•	•	•	•	-	•	•	•	•	•	-	-	-	•	•	-	•
Sideridis (*Sideridis*) *egena* (Lederer, 1853)	•	•	•	•	-	•	•	-	•	•	-	-	•	•	•	-	•
Sideridis (*Aneda*) *rivularis* (Fabricius, 1775)	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Heliophobus unicolor (Alphéraky, 1889)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Heliophobus mongoliensis Simonyi, 2015	•	•	•	•	-	•	•	•	•	•	-	-	-	•	•	-	•
Saragossa siccanorum (Staudinger, 1870)	-	•	•	•	-	-	•	-	•	•	-	-	•	•	•	-	-
Saragossa porosa (Eversmann, 1854)	-	•	•	-	-	-	•	•	-	•	-	-	-	•	•	-	-
Comisania (*Comisania*) *leineri* (Freyer, 1836)	-	•	•	-	-	•	•	•	-	•	-	-	-	•	•	-	•

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Conisania (*Luteohadena*) *luteago* ([Denis & Schiffermüller], 1775)	•	•	•	•	-	•	•	-	•	•	-	-	•	•	•	-	•
Conisania (*Luteohadena*) *literata* (Fischer von Waldheim, 1840)	•	•	-	-	-	•	•	-	-	-	-	-	-	-	-	-	•
Hecatera bicolorata (Hufnagel, 1766)	•	•	•	•	-	•	•	•	-	-	-	-	•	-	•	-	•
Hecatera dysodea ([Denis & Schiffermüller], 1775)	-	•	•	•	-	-	•	-	•	•	-	-	•	•	•	-	•
Enterpia picturata (Alphéraky, 1882)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	•
Hadena (*Hadena*) *capsincola* ([Denis & Schiffermüller], 1775)	•	-	•	-	-	•	-	-	-	•	•	-	-	-	•	-	-
Hadena (*Hadena*) *magnolii* (Boisduval, 1829)	•	•	•	-	-	•	•	•	-	•	-	-	-	-	•	-	•
Hadena (*Hadena*) *compta* ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	3	-	-	3	-	-	-	3	-	-
Hadena (*Hadena*) *variolata* (Smith, 1888)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-
Hadena (*Hadena*) *albimacula* (Borkhausen, 1792)	-	-	•	•	-	-	-	•	-	•	•	-	•	-	•	-	•
Hadena (*Hadena*) *dsungarica* Hacker, 1996	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Hadena (*Hadena*) *persimilis* Hacker, 1996	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Hadena (*Hadena*) *filograna* (Esper, [1788])	-	•	•	-	-	•	-	•	•	•	-	-	-	•	•	-	-
Hadena (*Anepia*) *perplexa* ([Denis & Schiffermüller], 1775)	-	-	•	•	-	-	-	•	•	•	•	-	-	•	•	-	-
Hadena (*Anepia*) *christophi* (Möschler, 1862)	•	•	-	-	•	•	•	-	-	-	-	•	•	-	-	-	•

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Hadena (*Anepia*) *irregularis* (Hufnagel, 1766)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	•
Mythimna (*Mythimna*) *turca* (Linnaeus, 1761)	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-
Mythimna (*Mythimna*) *velutina* (Eversmann, 1846)	•	•	•	•	-	•	•	•	•	-	•	-	•	•	•	•	•
Mythimna (*Mythimna*) *pudorina* ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	•
Mythimna (*Mythimna*) *conigera* ([Denis & Schiffermüller], 1775)	•	-	•	-	-	•	-	•	-	•	-	-	-	-	•	-	-
Mythimna (*Mythimna*) *pallens* (Linnaeus, 1758)	•	•	•	•	-	•	•	•	•	-	-	•	•	•	•	-	•
Mythimna (*Mythimna*) *deserticola* (Bartel, 1902)	-	•	-	-	-	•	•	-	-	-	-	-	-	•	-	-	•
Mythimna (*Mythimna*) *impura* (Hübner, [1808])	-	•	•	•	-	-	•	•	-	-	-	•	•	•	•	-	•
Mythimna (*Mythimna*) *straminea* (Treitschke, 1825)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Mythimna (*Mythimna*) *vitellina* (Hübner, [1808])	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-
Mythimna (*Sablia*) *andereggi* (Boisduval, 1840)	•	-	•	•	•	•	•	-	•	•	-	-	-	•	•	-	-
Mythimna (*Sablia*) *albiradiosa* (Eversmann, 1852)	•	•	•	-	-	•	•	•	-	•	-	-	•	•	•	-	-
Mythimna (*Sablia*) *opaca* (Staudinger, 1900)	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-

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Mythimna (*Hyphilare*) *ferrago* (Fabricius, 1787)	•	•	•	•	-	•	•	•	•	-	•	-	•	•	•	-	•
Mythimna (*Hyphilare*) *l-album* (Linnaeus, 1767)	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-
Leucania (*Leucania*) *comma* (Linnaeus, 1761)	•	•	•	-	-	•	•	•	-	•	-	-	•	-	•	-	•
Leucania (*Leucania*) *obsoleta* (Hübner, 1803)	•	•	•	-	-	•	•	-	-	•	-	-	-	•	•	-	•
Senta flammea (Curtis, 1828)	•	•	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-
Lasionhada proxima (Hübner, [1808])	-	-	•	-	-	-	-	-	-	•	•	-	-	-	•	-	-
Eriopygodes imbecilla (Fabricius, 1794)	-	•	•	•	-	-	-	-	-	•	-	•	•	•	-	•	-
Eriopygodes impar (Staudinger, 1870)	-	-	•	-	•	-	-	•	-	•	-	-	-	-	•	-	-
Actebia (*Actebia*) *praecox* (Linnaeus, 1758)	-	•	-	•	-	-	•	-	-	-	-	•	•	-	-	-	-
Actebia (*Protexarnis*) *squalida* (Guenée, 1852)	•	•	•	•	-	•	•	•	•	•	-	-	•	•	•	•	-
Dichagyris (*Albocosta*) *musiva* (Hübner, [1803])	-	•	•	-	-	-	-	•	-	•	-	-	•	-	•	-	•
Dichagyris (*Albocosta*) *flammatra* ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-
Dichagyris (*Dichagyris*) *vallesiaca* (Boisduval, 1837)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Dichagyris (*Dichagyris*) *lutescens* (Eversmann, 1844)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Dichagyris (*Dichagyris*) *truculenta* (Lederer, 1853)	-	•	•	-	-	-	-	•	•	•	-	-	-	-	•	-	-

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Dichagyris (*Dichagyris*) *signifera* ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	•	•	-	•	-	-	•	-	•	-	-
Dichagyris (*Dichagyris*) *orientis* (Alphéraky, 1882)	-	•	•	•	-	-	•	-	•	•	-	-	•	-	•	-	•
Dichagyris (*Dichagyris*) *latipennis* (Püngeler, 1909)	-	•	•	•	-	-	•	-	-	•	-	-	•	-	•	-	•
Euxoa (*Chorizagrotis*) *adumbrata* (Eversmann, 1842)	•	•	•	•	-	-	-	-	-	•	-	-	•	-	•	•	-
Euxoa (*Euxoa*) *conspicua* (Hübner, 1827)	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	•
Euxoa (*Euxoa*) *temera* (Hübner, [1808])	-	-	•	•	-	-	-	-	-	•	-	-	•	-	•	-	•
Euxoa (*Euxoa*) *ochrogaster* (Guenée, 1853)	•	•	•	-	-	•	•	•	•	•	-	-	•	•	•	•	-
Euxoa (*Euxoa*) *phantoma* (I. Kozhantschikov, 1928)	•	•	•	•	-	•	•	-	-	•	-	-	•	•	•	•	•
Euxoa (*Euxoa*) *cursoria* (Hufnagel, 1766)	-	•	•	•	-	-	•	•	-	•	-	-	•	-	•	•	•
Euxoa (*Euxoa*) *distinguenda* (Lederer, 1857)	-	•	•	•	-	-	•	•	•	-	-	-	-	•	•	-	•
Euxoa (*Euxoa*) *obelisca* ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Euxoa (*Euxoa*) *segnilis* (Duponchel, 1836)	-	•	•	•	-	-	•	•	•	•	-	-	•	•	•	-	•
Euxoa (*Euxoa*) *nigrofusca* (Esper, [1788])	•	•	•	•	-	-	•	•	•	•	•	-	•	•	•	•	•
Euxoa (*Euxoa*) *eruta* (Hübner, [1817])	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	•
Euxoa (*Euxoa*) *nigricans* (Linnaeus, 1761)	•	•	•	•	-	-	•	-	•	•	•	-	•	•	•	•	•

Species	Chaglinsko-Seletinsko-Karasuk geobotanical district	Pavlodar geobotanical district	Bayanaul-Karaganda geobotanical district	Semipalatinsk geobotanical district	Arkalyk-Chingiz geobotanical district	Birch-aspen forests of the West Siberian Plain	Floodplain forests of the Irtysh River	Floodplain forests of Kazakh Uplands	Pine relic of the West Siberian Plain	Mixed forests of the Kazakh Uplands	Birch-aspen forests of the Kazakh Uplands	Deserted wormwood-feather grass steppes	Fescue-feather grass steppe	Saline and alkali soils of salt lakes	Shrub mountain steppes	Agrocenosis	Residential landscape
Euxoa (*Euxoa*) *aquilina* ([Denis & Schiffermüller], 1775)	-	•	•	•	-	-	•	•	•	•	-	•	•	•	•	-	•
Euxoa (*Euxoa*) *basigramma* (Staudinger, 1870)	-	•	•	•	-	-	•	•	•	•	-	•	•	•	•	•	•
Euxoa (*Euxoa*) *fallax* (Eversmann, 1854)	-	-	-	•	-	-	-	-	-	-	-	•	•	-	-	•	•
Euxoa (*Euxoa*) *deserta* (Staudinger, 1870)	-	•	-	•	-	-	•	-	-	-	-	•	•	-	-	•	•
Euxoa (*Euxoa*) *phantoma* (I. Kozhantschikov, 1928)	•	•	•	•	-	•	•	-	-	•	-	•	•	•	•	•	•
Euxoa (*Euxoa*) *cursoria* (Hufnagel, 1766)	-	•	•	•	-	-	•	•	-	•	-	•	•	•	•	•	•
Euxoa (*Euxoa*) *distinguenda* (Lederer, 1857)	-	•	•	•	-	-	•	•	•	-	-	-	-	•	•	-	•
Euxoa (*Euxoa*) *obelisca* ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	•	•	-	•	-	-	•	-	•	-	•
Euxoa (*Euxoa*) *segnilis* (Duponchel, 1836)	-	•	•	•	-	-	•	•	•	•	-	-	•	•	•	-	•
Euxoa (*Euxoa*) *nigrofusca* (Esper, [1788])	•	•	•	•	-	-	•	•	•	•	•	-	•	•	•	-	•
Euxoa (*Euxoa*) *eruta* (Hübner, [1817])	-	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Euxoa (*Euxoa*) *nigricans* (Linnaeus, 1761)	•	•	•	•	-	-	•	-	•	•	•	-	•	•	•	•	•
Euxoa (*Euxoa*) *aquilina* ([Denis & Schiffermüller], 1775)	-	•	•	•	-	-	•	•	•	•	-	-	•	-	•	-	•
Euxoa (*Euxoa*) *basigramma* (Staudinger, 1870)	-	•	•	•	-	-	•	•	•	•	-	-	•	•	•	•	•
Euxoa (*Euxoa*) *fallax* (Eversmann, 1854)	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	•	•
Euxoa (*Euxoa*) *deserta* (Staudinger, 1870)	-	•	-	•	-	-	•	-	-	-	-	-	•	-	-	•	•
Euxoa (*Euxoa*) *recussa* (Hübner, [1817])	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-

Species	Chaglinsko-Seletinsko-Karasuk geobotanical district	Pavlodar geobotanical district	Bayanaul-Karaganda geobotanical district	Semipalatinsk geobotanical district	Arkalyk-Chingiz geobotanical district	Birch-aspen forests of the West Siberian Plain	Floodplain forests of the Irtysh River	Floodplain forests of Kazakh Uplands	Pine relic of the West Siberian Plain	Mixed forests of the Kazakh Uplands	Birch-aspen forests of the Kazakh Uplands	Deserted wormwood-feather grass steppes	Fescue-feather grass steppe	Saline and alkali soils of salt lakes	Shrub mountain steppes	Agrocenosis	Residential landscape
Euxoa (*Orosagrotis*) *tristis* (Staudinger, 1897)	-	-	-	•	-	-	-	•	-	-	-	-	•	-	-	-	•
Euxoa (*Orosagrotis*) *deficiens* (Wagner, 1913)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Agrotis characteristica (Alphéraky, 1892)	-	-	•	-	-	-	-	•	-	•	-	-	-	-	•	-	-
Agrotis trifurca (Eversmann, 1837)	-	•	•	•	-	-	•	•	-	-	-	-	•	-	•	-	-
Agrotis cinerea ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Agrotis exclamationis (Linnaeus, 1758)	•	•	•	-	-	•	•	•	-	-	-	-	•	•	-	•	•
Agrotis segetum ([Denis & Schiffermüller], 1775)	•	•	-	•	-	•	•	-	-	-	-	-	•	-	-	-	•
Agrotis clavis (Hufnagel, 1766)	-	-	•	-	-	-	-	•	-	-	•	-	-	-	•	-	-
Agrotis vestigialis (Hufnagel, 1766)	-	•	-	•	-	-	•	-	•	-	-	-	•	•	-	•	•
Agrotis ripae (Hübner, [1823])	•	•	•	•	-	•	•	-	•	•	-	-	•	•	-	-	•
Agrotis desertorum Boisduval, 1840	-	•	-	•	-	-	•	-	•	-	-	-	-	•	-	-	•
Agrotis ipsilon (Hufnagel, 1766)	-	-	•	-	-	-	•	•	•	•	-	-	-	•	•	-	•
Axylia putris (Linnaeus, 1761)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Ochropleura plecta (Linnaeus, 1761)	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-	•
Diarsia dahlii (Hübner, [1813])	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Diarsia brunnea ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Diarsia mendica (Fabricius, 1775)	-	•	•	-	-	-	•	•	-	-	-	-	-	-	•	-	•

Species	Chaglinsko-Seletinsko-Karasuk geobotanical district	Pavlodar geobotanical district	Bayanaul-Karaganda geobotanical district	Semipalatinsk geobotanical district	Arkalyk-Chingiz geobotanical district	Birch-aspen forests of the West Siberian Plain	Floodplain forests of the Irtysh River	Floodplain forests of Kazakh Uplands	Pine relic of the West Siberian Plain	Mixed forests of the Kazakh Uplands	Birch-aspen forests of the Kazakh Uplands	Deserted wormwood-feather grass steppes	Fescue-feather grass steppe	Saline and alkali soils of salt lakes	Shrub mountain steppes	Agrocenosis	Residential landscape
Sineugraphe exusta (Butler, 1878)	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-
Cerastis rubricosa ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Cerastis leucographa ([Denis & Schiffermüller], 1775)	-	•	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Paradiarsia punicea (Hübner, [1803])	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Netrocerocora quadrangula (Eversmann, 1844)	•	•	-	-	-	•	•	-	-	-	-	-	-	•	•	-	-
Rhyacia caradrinoides (Staudinger, 1897)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Rhyacia simulans (Hufnagel, 1766)	-	•	•	•	-	-	•	-	-	-	-	•	•	-	-	-	-
Rhyacia arenacea (Hampson, 1907)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Chersotis transiens (Staudinger, 1896)	-	-	•	-	-	-	-	•	-	•	•	-	-	-	•	-	-
Chersotis elegans (Eversmann, 1837)	-	-	•	-	-	-	-	-	-	•	•	-	-	-	•	-	-
Chersotis margaritacea (de Villers, 1789)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Noctua interposita (Hübner, 1790)	-	•	•	•	-	-	•	-	-	•	•	•	•	-	•	-	•
Spaelotis ravida ([Denis & Schiffermüller], 1775)	•	•	•	-	-	•	•	•	•	•	-	-	•	•	•	•	•
Spaelotis deplorata (Staudinger, 1896)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Spaelotis senna (Freyer, 1829)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Opigena polygona ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-

Species	Chaglinsko-Seletinsko-Karasuk geobotanical district	Pavlodar geobotanical district	Bayanaul-Karaganda geobotanical district	Semipalatinsk geobotanical district	Arkalyk-Chingiz geobotanical district	Birch-aspen forests of the West Siberian Plain	Floodplain forests of the Irtysh River	Floodplain forests of Kazakh Uplands	Pine relic of the West Siberian Plain	Mixed forests of the Kazakh Uplands	Birch-aspen forests of the Kazakh Uplands	Deserted wormwood-feather grass steppes	Fescue-feather grass steppe	Saline and alkali soils of salt lakes	Shrub mountain steppes	Agrocenosis	Residential landscape
Eurois occulta (Linnaeus, 1758)	•	•	•	-	-	•	•	•	-	•	-	-	-	-	•	-	•
Graphiphora augur (Fabricius, 1775)	-	-	•	-	-	-	•	-	-	-	•	-	-	-	-	-	-
Anaplectoides prasina ([Denis & Schiffermüller], 1775)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Pseudohermonassa melancholica (Lederer, 1853)	•	•	•	•	-	•	•	-	•	•	-	-	-	-	•	-	•
Xestia (*Xestia*) *baja* ([Denis & Schiffermüller], 1775)	-	•	•	•	-	-	•	-	•	-	•	•	•	•	•	-	•
Xestia (*Megasema*) *c-nigrum* (Linnaeus, 1758)	•	•	•	•	-	•	•	•	•	•	-	-	•	•	•	-	•
Xestia (*Megasema*) *ditrapezium* ([Denis & Schiffermüller], 1775)	•	•	•	-	-	•	•	•	-	-	-	-	-	-	•	-	•
Xestia (*Megasema*) *triangulum* (Hufnagel, 1766)	•	•	•	-	-	•	•	•	-	-	-	-	-	-	•	-	•
Xestia (*Megasema*) *kollari* (Lederer, 1853)	-	-	•	-	-	-	-	-	-	•	•	-	-	-	•	-	-
Xestia (*Megasema*) *ashworthii* (Doubleday, 1855)	-	-	•	-	-	-	-	•	-	-	-	-	-	-	•	-	-
Eugraphe sigma ([Denis & Schiffermüller], 1775)	-	•	•	-	-	-	•	-	-	•	-	-	-	-	•	-	•
Coenophila subrosea (Stephens, 1829)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Eugnorisma (*Eugnorisma*) *ignoratum* Varga & L. Ronkay, 1994	-	•	•	-	-	-	•	-	-	•	•	-	-	-	•	-	•

Species	Chaglinsko-Seletinsko-Karasuk geobotanical district	Pavlodar geobotanical district	Bayanaul-Karaganda geobotanical district	Semipalatinsk geobotanical district	Arkalyk-Chingiz geobotanical district	Birch-aspen forests of the West Siberian Plain	Floodplain forests of the Irtysh River	Floodplain forests of Kazakh Uplands	Pine relic of the West Siberian Plain	Mixed forests of the Kazakh Uplands	Birch-aspen forests of the Kazakh Uplands	Deserted wormwood-feather grass steppes	Fescue-feather grass steppe	Saline and alkali soils of salt lakes	Shrub mountain steppes	Agrocenosis	Residential landscape
Eugnorisma (*Eugnorisma*) *insignata* (Lederer, 1853)	-	-	•	-	-	-	-	•	-	•	-	-	-	-	•	-	-
Eugnorisma (*Eugnorisma*) *eminens* (Lederer, 1855)	-	-	•	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Miniphila miniago (Freyer, 1839)	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Protolampra sobrina (Duponchel, 1843)	-	-	•	-	-	-	-	•	-	•	-	-	-	-	•	-	-
Nyssocnemis eversmanni (Lederer, 1853)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-

APPENDIX 13. Groups of areals of Noctuoida in the Pavlodar Region

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Lymantria (Porthetria) dispar (Linnaeus, 1758)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Gynaephora (Dicallomera) fascelina (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Gynaephora (Dicallomera) pumila (Staudinger, 1881)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Clethrogyna dubia (Tauscher, 1806)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Thylacigyna antiquoides (Hübner, [1822])	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Leucoma salicis (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	•
Euproctis kargalika (Moore, 1878)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Sphrageidus similis (Fuessly, 1775)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Cybosia mesomella (Linnaeus, 1758)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Manulea palliatella (Scopoli, 1763)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Manulea complana (Linnaeus, 1758)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Manulea pygmaeola (Doubleday, 1847)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Manulea lutarella (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Manulea lurideola ([Zincken], 1817)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Wittia sororcula (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Collita griseola (Hübner, [1803])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Atolmis rubricollis (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Pelosia muscerda (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Pelosia obtusa (Herrich-Schäffer, 1847)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Stigmatophora flava (Bremer & Grey, 1852)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Stigmatophora micans (Bremer & Grey, 1852)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Setina irrorella (Linnaeus, 1758)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Setina roscida ([Denis & Schiffermüller], 1775) –	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Thumatha senex (Hübner, [1808])	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Miltochrista miniata (J.R. Forster, 1771)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Tyria jacobaeae (Linnaeus, 1758)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Lacydes spectabilis (Tauscher, 1806)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Spiris striata (Linnaeus, 1758)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Coscinia cribraria (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Hyphoraia aulica (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Arctia caja (Linnaeus, 1758)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-
Arctia flavia (Fuessly, 1779)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Epicallia villica (Linnaeus, 1758)	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eucharia festiva (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Chelis maculosa (Gerning, 1780)	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Chelis caecilia (Kindermann in Lederer, 1853)	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features: Longitude line																	Latitude										
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Chelis dahurica (Boisduval, 1832)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Diacrisia sannio (Linnaeus, 1758)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Rhyparia purpurata (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Watsonarctia deserta (Bartel, 1902)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Spilosoma lubricipeda (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Spilosoma urticae (Esper, 1789)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Spilarctia lutea (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Phragmatobia fuliginosa (Linnaeus, 1758)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-
Eudiaphora turensis (Erschoff, 1874)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Amata transcaspica Obraztsov, 1941	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Amata caspia (Staudinger, 1877)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Simplicia rectalis (Eversmann, 1842)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Paracolax tristalis (Fabricius, 1794)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Herminia temialis (Rebel, 1896)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Herminia tristriga W. Kozhantschikov, 1929	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Polypogon tentacularia (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Pechipogo strigilata (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Zanclognatha lunalis (Scopoli, 1763)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Zekelita ravulalis (Staudinger, 1879)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Hypena rostralis (Linnaeus, 1758)	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Hypena obesalis (Treitschke, 1829)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Hypena tristalis Lederer, 1853	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Rivula sericealis (Scopoli, 1763)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Scoliopteryx libatrix (Linnaeus, 1758)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Calyptra thalictri (Borkhausen, 1790)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Parascotia fuliginaria (Linnaeus, 1761)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Paragona cognata (Staudinger, 1892)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Odice arcuinna (Hübner, 1790)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eublemma minutata (Fabricius, 1794)	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eublemma ostrina (Hübner, [1808])	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eublemma porphyrimia (Freyer, 1845)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eublemma panonica (Freyer, 1840)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eublemma amasina (Eversmann, 1842)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eublemma purpurina ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eublemma pallidula (Herrich-Schäffer, 1856)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eublemma pusilla (Eversmann, 1834)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eublemma polygramma (Duponchel, 1842)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Phytometra viridaria (Clerck, 1759)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	•	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																											
	Longitude line																	Latitude										
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Lygephila lubrica (Freyer, 1842)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Lygephila ludicra (Hübner, 1790)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Lygephila pastinum (Treitschke, 1826)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Lygephila viciae (Hübner, [1822])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Lygephila craccae ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Lygephila asiatica Pekarsky, 2016	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Autophila (*Cheirophanes*) *chamaephanes* Boursin, 1940	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Autophila (*Autophila*) *vespertalis* (Staudinger, 1896)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Acantholipes regularis (Hübner, 1813)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Catocala fulminea (Scopoli, 1763)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Catocala neonympha (Esper, 1805)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Catocala fraxini (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																								
	Longitude line																Latitude								
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Catocala nupta (Linnaeus, 1767)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Catocala adultera Ménétriès, 1856	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-
Catocala deducta Eversmann 1843	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Catocala puerpera (Giorna, 1791)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Catocala lupina Herrich-Schäffer, 1851	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Catocala pacta (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Drasteria cailino (Lefebvre, 1827)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Drasteria rada (Boisduval, 1848)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Drasteria christophi (Alphéraky, 1895)	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Drasteria obscurata (Staudinger, 1882)	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euclidia glyphica (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Callistege mi (Clerck, 1759)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Callistege fortalitium (Tauscher, 1809)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Gonospileia triquetra ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Gonospileia munita (Hübner, [1818])	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Nola aerugula (Hübner, 1793)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Nola crambiformis Rebel, 1902	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Nola confusalis (Herrich-Schäffer, 1847)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Earias clorana (Linnaeus, 1761)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Pseudoips prasinana (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Nycteola eremostola Dufay, 1961	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Nycteola degenerana (Hübner, 1799)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Nycteola asiatica (Krulikovsky, 1904)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Abrostola triplasia (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Abrostola tripartita (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Trichoplusia ni (Hübner, [1803])	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-
Macdunnoughia confusa (Stephens, 1850)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																							
	Longitude line															Latitude								
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Diachrysia chryson (Esper, 1789)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Diachrysia chrysitis (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Diachrysia stenochrysis (Warren, 1913)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Diachrysia zosimi (Hübner, [1822])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Euchalcia consona (Fabricius, 1787)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychrysia esmeralda (Oberthür, 1880)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Panchrysia deaurata (Esper, 1787)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lamprotes c-aureum (Knoch, 1781)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plusidia cheiranthi (Tauscher, 1809)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Autographa gamma (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	•	-	-	-	-	•	-	-	-	-	-
Autographa buraetica (Staudinger, 1892)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Autographa mandarina (Freyer, 1845)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Autographa bractea ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Autographa excelsa (Kretschmar, 1862)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Cornutiplusia circumflexa (Linnaeus, 1767)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	•
Syngrapha interrogationis (Linnaeus, 1758)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Plusia festucae (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Plusia putnami (Grote, 1873)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Phyllophyla obliterata (Rambur, 1833)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Deltote (*Protodeltote*) *pygarga* (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Deltote (*Deltote*) *deceptoria* (Scopoli, 1763)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Deltote (*Deltote*) *uncula* (Clerck, 1759)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Deltote (*Deltote*) *bankiana* (Fabricius, 1775)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Acontia (*Acontia*) *lucida* (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Acontia (*Emmelia*) *trabealis* (Scopoli, 1763)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Aedia funesta (Esper, 1786)	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Colocasia coryli (Linnaeus, 1758)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Leiometopon simyrides Staudinger, 1888	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Acronicta (*Johaera*) *alni* (Linnaeus, 1767)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Acronicta (*Triaena*) *cuspis* (Hübner, [1813])	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Acronicta (*Triaena*) *tridens* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Acronicta (*Triaena*) *psi* (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Acronicta (*Viminia*) *auricoma* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Acronicta (*Viminia*) *rumicis* (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Acronicta (*Viminia*) *cinerea* (Hufnagel, 1766)	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Acronicta (*Simyra*) *nervosa* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Acronicta (*Simyra*) *albovenosa* (Goeze, 1781)	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Acronicta (*Simyra*) *dentinosa* Freyer, 1838	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Acronicta (*Subacronicta*) *megacephala* ([Denis & Schiffermüller], 1775)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Mycterophus puniceago (Boisduval, 1840)	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Tyta luctuosa ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia tiefi Tshetverikov, 1956	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia praecana Eversmann, 1843	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia propinqua Eversmann, 1842	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia scopariae Dorfmeister, 1853	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia fraudatrix Eversmann, 1837	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia absinthii (Linnaeus, 1761)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia argentea (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Cucullia infuscata Tshetverikov, 1925	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia artemisiae (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia humilis Boursin, 1941	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia splendida (Stoll, 1782)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia gnaphalii (Hübner, 1813)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia magnifica (Freyer, 1839)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia argentina (Fabricius, 1787)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia biradiata W. Kozhantshikov, 1925	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia pustulata Eversmann, 1842	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia lucifuga ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia umbratica (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia biornata Fischer von Waldheim, 1840	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia balsamitae (Boisduval, 1840)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-

Species	Biogeographical features																															
	Longitude line																				Latitude											
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Cucullia inderiensis Herrich-Schäffer, 1856	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia duplicata Staudinger, 1882	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia santonici (Hübner, [1813])	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Cucullia lactea (Fabricius, 1787)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-
Cucullia mixta Freyer, 1841	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	•
Cucullia xeranthemi (Boisduval, 1840)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia virgaureae Boisduval, 1840	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia amota Alphéraky, 1887	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia asteris ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cucullia tanaceti ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-
Amphipyra pyramidea (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Amphipyra perflua (Fabricius, 1787)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Amphipyra livida ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																								
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	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Amphipyra tragopoginis (Clerck, 1759)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Amphipyra tetra (Fabricius, 1787)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Amphipyra sergei Staudinger, 1888	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Brachionycha nubeculosa (Esper, 1785)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Calophasia lunula (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Calophasia opalina (Esper, [1794])	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Sympistis strioligera (Lederer, 1853)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Sympistis campicola (Lederer, 1853)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Sympistis exacta (Christoph, 1887)	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Sympistis nigricula (Eversmann, 1856)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Sympistis senica (Eversmann, 1856)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Lophoterges (*Variterges*) *centralasiae* (Staudinger, 1901)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line																Latitude								
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Epimecia ustula (Freyer, 1835)	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Phidrimana amurensis (Staudinger, 1892)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Acosmetia caliginosa (Hübner, [1813])	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eucarta virgo (Treitschke, 1835)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Eucarta amethystina (Hübner, [1803])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Pyrrhia umbra (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Pyrrhia exprimens (Walker, 1857)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Schinia cognata (Freyer, 1833)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Protoschinia scutosa ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Heliothis peltigera ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Heliothis viriplaca (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Heliothis adaucta Butler, 1878	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Helicoverpa armigera (Hübner, [1808])	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-
Cryphia (*Cryphia*) *fraudatricula* (Hübner, [1803])	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Bryophila (*Bryoleuca*) *orthogramma* (Boursin, 1954)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Victrix (*P.*) *fabiani* Varga & Ronkay, 1989	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Athaumasta expressa (Lederer, 1855)	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Pseudeustrotia candidula ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Spodoptera exigua (Hübner, 1808)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Elaphria venustula (Hübner, 1790)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Caradrina (*Caradrina*) *morpheus* (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Caradrina (*Platyperigea*) *terrea* Freyer, 1840	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Caradrina (*Platyperigea*) *montana* Bremer, 1861	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Caradrina (*Platyperigea*) *albina* (Eversmann, 1848)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Caradrina (*Platyperigea*) *petraea* Tengström, 1869	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Caradrina (*Eremodrina*) *monssacralis* (Varga & L. Ronkay, 1991)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Caradrina (*Paradrina*) *wullschlegeli* Püngeler, 1903	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Caradrina (*Paradrina*) *clavipalpis* (Scopoli, 1763)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Hoplodrina octogenaria (Goeze, 1781)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Hoplodrina blanda ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Chilodes maritima (Tauscher, 1806)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Chilodes distracta (Eversmann, 1848)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Charanyca (*Rusina*) *ferruginea* (Esper, [1787])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Athetis (*Athetis*) *furvula* (Hübner, [1808])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Athetis (*Hydrillula*) *pallustris* (Hübner, [1808])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Athetis (*Proxenus*) *lepigone* (Möschler, 1860)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																											
	Longitude line																	Latitude										
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Athetis (*Proxenus*) *correpta* (Püngeler, 1906)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Dypterygia scabriuscula (Linnaeus, 1758)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Trachea atriplicis (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Actinotia polyodon (Clerck, 1759)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Oxytripia orbiculosa (Esper, 1799)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Sidemia spilogramma (Rambur, 1871)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Calamia tridens (Hufnagel, 1766)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Staurophora celsia (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Helotropha leucostigma (Hübner, [1808])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Celaena haworthii (Curtis, 1829)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Hydraecia micacea (Esper, 1789)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Hydraecia ultima Holst, 1965	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Hydraecia mongoliensis Urbahn, 1967	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line														Latitude										
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Hydraecia osseola (Staudinger, 1882)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Amphipoea fucosa (Freyer, 1830)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Amphipoea ochreola (Staudinger, 1882)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Amphipoea asiatica (Burrows, 1911)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Fabula zollikoferi (Freyer, 1836)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Rhizedra lutosa (Hübner, [1803])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Nonagria typhae (Thunberg, 1784)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Longalatedes elymi (Treitschke, 1825)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Archanara dissoluta (Treitschke, 1825)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Denticucullus pygmina (Haworth, 1809)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Hypocoena stigmatica (Eversmann, 1855)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Photedes fluxa (Hübner, 1809)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Photedes extrema (Hübner, [1809])	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																											
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	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Ogilia leuconephra (Hampson, 1908)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Protarchanara brevilinea (Fenn, 1864)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Globia sparganii (Esper, 1790)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Globia algae (Esper, 1789)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Pabulatrix pabulatricula (Brahm, 1791)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *monoglypha* (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *ferrago* (Eversmann, 1837)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Apamea (*Apamea*) *furva* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Apamea (*Apamea*) *lateritia* (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *oblonga* (Haworth, 1809)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Apamea (*Apamea*) *sordens* (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *anceps* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																								
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	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Apamea (*Apamea*) *leucodon* (Eversmann, 1837)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Apamea (*Apamea*) *remissa* (Hübner, [1809])	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Apamea (*Apamea*) *crenata* (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Apamea (*Apamea*) *unanimis* (Hübner, [1813])	•	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Apamea (*Apamea*) *illyria* Freyer, 1846	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Oligia latruncula ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Mesoligia furuncula ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Litoligia literosa (Haworth, 1809)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Mesapamea secalis (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Mesapamea moderata (Eversmann, 1843)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Resapamea hedeni (Graeser, [1889])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Xylomoia graminea (Graeser, [1889])	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-

Species	Biogeographical features																								
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	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Episema tersa ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-
Leucochlaena (*Furcochlaena*) *fallax* (Staudinger, 1870)	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Hyppa rectilinea (Esper, 1788)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Parastichtis suspecta (Hübner, [1817])	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Apterogenum ypsillon ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Xanthia togata (Esper, 1788)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Cirrhia icteritia (Hufnagel, 1766).	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Cirrhia ocellaris (Borkhausen, 1792)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Cirrhia tunicata (Graeser, 1890)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Mesogona acetosellae ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Mesogona oxalina (Hübner, [1803])	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Sunira circellaris (Hufnagel, 1766)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•
Agrochola (*Agrochola*) *vulpecula* (Lederer, 1853)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
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Agrochola (*Anchoscelis*) *helvola* (Linnaeus, 1758)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Agrochola (*Leptologia*) *lota* (Clerck, 1759)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Conistra (*Conistra*) *vaccinii* (Linnaeus, 1761)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Conistra (*Dasycampa*) *rubiginea* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Lithophane (*Lithophane*) *socia* (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Lithophane (*Lithophane*) *furcifera* (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	•
Xylena (*Xylena*) *exsoleta* (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Xylena (*Xylena*) *vetusta* (Hübner, [1813])	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Xylena (*Lithomoia*) *solidaginis* (Hübner, 1803)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Orbona fragariae (Vieweg, 1790)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eupsilia transversa (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Enargia paleacea (Esper, 1788)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																								
	Longitude line																Latitude								
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Enargia abluta (Hübner, 1808)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Ipimorpha retusa ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Ipimorpha subtusa ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Cosmia (*Ulmia*) *affinis* (Linnaeus, 1767)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Brachyxanthia zelotypa (Lederer, 1853)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Pseudohadena argyllostigma (Varga & L. Ronkay, 1991)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eremohadena immunda (Eversmann, 1842)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Antitype chi (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Ammoconia caecimacula ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Dasypolia (*Dasypolia*) *templi* (Thunberg, 1792)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Dasypolia (*Dasypolia*) *timoi* Fibiger & Nupponen, 2006	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Dasypolia (*Ctenipolia*) *murina* (Ménétriés, 1848)	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Blepharita amica (Treitschke, 1825)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Mniotype adusta (Esper, 1790)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Mniotype satura ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Panolis flammea ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Orthosia (*Orthosia*) *incerta* (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Orthosia (*Orthosia*) ronkayorum Volynkin & Titov, 2014	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Orthosia (*Poporthosia*) *populeti* (Fabricius, 1775)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Orthosia (*Cororthosia*) *gracilis* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Orthosia (*Cororthosia*) *opima* (Hübner, [1809])	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Orthosia (*Semiophora*) *gothica* (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Anorthoa munda ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Perigrapha (*Perigrapha*) *circumducta* (Lederer, 1855)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																														
	Longitude line																		Latitude												
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Egira anatolica (Hering, 1933)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	•	-	-	-	-	-	•	-	-	-	-	-	•
Tholera cespitis ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Tholera decimalis (Poda, 1761)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Tholera hilaris (Staudinger, 1901)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cerapteryx graminis (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Anarta (*Cardiestra*) *vaciva* (Püngeler, 1906)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Anarta (*Calocestra*) *dianthi* (Tauscher, 1809)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Anarta (*Calocestra*) *trifolii* (Hufnagel, 1766)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Anarta (*Calocestra*) *stigmosa* (Christoph, 1887)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Polia bombycina (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Polia hepatica (Clerck, 1759)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Polia nebulosa (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Polia serratilinea (Treitschke, 1825)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Polia altaica (Lederer, 1853)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																										
	Longitude line																	Latitude										
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Pachetra sagittigera (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Lacanobia (*Lacanobia*) *w-latinum* (Hufnagel, 1766)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Lacanobia (*Dianobia*) *thalassina* (Hufnagel, 1766)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Lacanobia (*Dianobia*) *suasa* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Dianobia*) *contigua* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Diataraxia*) *oleracea* (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Diataraxia*) *splendens* (Hübner, [1803–1808])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Diataraxia*) *aliena* (Hübner, [1808])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Lacanobia (*Diataraxia*) *blenna* (Hübner, [1824])	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Melanchra persicariae (Linnaeus, 1761)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Ceramica pisi (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Hada plebeja (Linnaeus, 1761)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Hyssia cavernosa (Eversmann, 1842)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																															
	Longitude line																				Latitude											
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Mamestra brassicae (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Sideridis (*Sideridis*) *lampra* (Schawerda, 1913)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Sideridis (*Sideridis*) *turbida* (Esper, 1790)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Sideridis (*Sideridis*) *egena* (Lederer, 1853)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Sideridis (*Aneda*) *rivularis* (Fabricius, 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Heliophobus unicolor (Alphéraky, 1889)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Heliophobus mongoliensis Simonyi, 2015	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Saragossa siccanorum (Staudinger, 1870)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Saragossa porosa (Eversmann, 1854)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Conisania (*Conisania*) *leineri* (Freyer, 1836)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Conisania (*Luteohadena*) *luteago* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Conisania (*Luteohadena*) *literata* (Fischer von Waldheim, 1840)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																							
	Longitude line															Latitude								
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Hecatera bicolorata (Hufnagel, 1766)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Hecatera dysodea ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•
Enterpia picturata (Alphéraky, 1882)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Hadena (*Hadena*) *capsincola* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Hadena (*Hadena*) *magnolii* (Boisduval, 1829)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Hadena (*Hadena*) *compta* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Hadena (*Hadena*) *variolata* (Smith, 1888)	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hadena (*Hadena*) *albimacula* (Borkhausen, 1792)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hadena (*Hadena*) *dsungarica* Hacker, 1996	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hadena (*Hadena*) *persimilis* Hacker, 1996	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hadena (*Hadena*) *filograna* (Esper, [1788])	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hadena (*Anepia*) *perplexa* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																															
	Longitude line																			Latitude												
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Hadena (*Anepia*) *christophi* (Möschler, 1862)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Hadena (*Anepia*) *irregularis* (Hufnagel, 1766)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Mythimna (*Mythimna*) *turca* (Linnaeus, 1761)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Mythimna (*Mythimna*) *velutina* (Eversmann, 1846)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Mythimna (*Mythimna*) *pudorina* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Mythimna (*Mythimna*) *conigera* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Mythimna (*Mythimna*) *pallens* (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Mythimna (*Mythimna*) *deserticola* (Bartel, 1902)	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Mythimna (*Mythimna*) *impura* (Hübner, [1808])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Mythimna (*Mythimna*) *straminea* (Treitschke, 1825)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Mythimna (*Mythimna*) *vitellina* (Hübner, [1808])	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Mythimna (*Sablia*) *anderreggi* *(Boisduval, 1840)*	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Mythimna (*Sablia*) *albiradiosa* (Eversmann, 1852)	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Mythimna (*Sablia*) *opaca* (Staudinger, 1900)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Mythimna (*Hyphilare*) *ferrago* (Fabricius, 1787)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Mythimna (*Hyphilare*) *l-album* (Linnaeus, 1767)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Leucania (*Leucania*) *comma* (Linnaeus, 1761)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Leucania (*Leucania*) *obsoleta* (Hübner, 1803)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Senta flammea (Curtis, 1828)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Lasionhada proxima (Hübner, [1808])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Eriopygodes imbecilla (Fabricius, 1794)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Eriopygodes impar (Staudinger, 1870)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Actebia (*Actebia*) *praecox* (Linnaeus, 1758)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Actebia (*Protexarnis*) *squalida* (Guenée, 1852)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Dichagyris (*Albocosta*) *musiva* (Hübner, [1803])	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Dichagyris (*Albocosta*) *flammatra* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Dichagyris (*Dichagyris*) *vallesiaca* (Boisduval, 1837)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Dichagyris (*Dichagyris*) *lutescens* (Eversmann, 1844)	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Dichagyris (*Dichagyris*) *truculenta* (Lederer, 1853)	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Dichagyris (*Dichagyris*) *signifera* ([Denis & Schiffermüller], 1775)	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Dichagyris (*Dichagyris*) *orientis* (Alphéraky, 1882)	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Dichagyris (*Dichagyris*) *latipennis* (Püngeler, 1909)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-
Euxoa (*Chorizagrotis*) *adumbrata* (Eversmann, 1842)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Euxoa (*Euxoa*) *conspicua* (Hübner, 1827)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Euxoa (*Euxoa*) *temera* (Hübner, [1808])	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-

Species	Biogeographical features																											
	Longitude line																	Latitude										
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Euxoa (*Euxoa*) *ochrogaster* (Guenée, 1853)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Euxoa (*Euxoa*) *phantoma* (I. Kozhantschikov, 1928)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Euxoa*) *cursoria* (Hufnagel, 1766)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Euxoa*) *distinguenda* (Lederer, 1857)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Euxoa*) *obelisca* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Euxoa*) *segnilis* (Duponchel, 1836)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Euxoa*) *nigrofusca* (Esper, [1788])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Euxoa (*Euxoa*) *eruta* (Hübner, [1817])	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Euxoa*) *nigricans* (Linnaeus, 1761)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Euxoa (*Euxoa*) *aquilina* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Euxoa*) *basigramma* (Staudinger, 1870)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Euxoa*) *fallax* (Eversmann, 1854)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																										
	Longitude line																	Latitude										
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Euxoa (*Euxoa*) *deserta* (Staudinger, 1870)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Euxoa*) *recussa* (Hübner, [1817])	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Orosagrotis*) *tristis* (Staudinger, 1897)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Euxoa (*Orosagrotis*) *deficiens* (Wagner, 1913)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Agrotis characteristica (Alphéraky, 1892)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Agrotis trifurca (Eversmann, 1837)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Agrotis cinerea ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Agrotis exclamationis (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Agrotis segetum ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	•	-	-	-	-	-	-	-	-	-	-
Agrotis clavis (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Agrotis vestigialis (Hufnagel, 1766)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Agrotis ripae (Hübner, [1823])	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																								
	Longitude line														Latitude										
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Agrotis desertorum Boisduval, 1840	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Agrotis ipsilon (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	•	-	-	-	-	-	-	-	-	-	-
Axylia putris (Linnaeus, 1761)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Ochropleura plecta (Linnaeus, 1761)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	•	-	-	-	-	-	-	-	-	-	-
Diarsia dahlii (Hübner, [1813])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Diarsia brunnea ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Diarsia mendica (Fabricius, 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Sineugraphe exusta (Butler, 1878)	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Cerastis rubricosa ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Cerastis leucographa ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Paradiarsia punicea (Hübner, [1803])	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Netrocerocora quadrangula (Eversmann, 1844)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
Rhyacia caradrinoides (Staudinger, 1897)	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•

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Rhyacia simulans (Hufnagel, 1766)	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Rhyacia arenacea (Hampson, 1907)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Chersotis transiens (Staudinger, 1896)	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Chersotis elegans (Eversmann, 1837)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Chersotis margaritacea (de Villers, 1789)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Noctua interposita (Hübner, 1790)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Spaelotis ravida ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Spaelotis deplorata (Staudinger, 1896)	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Spaelotis senna (Freyer, 1829)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Opigena polygona ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eurois occulta (Linnaeus, 1758)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Graphiphora augur (Fabricius, 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-

Species	Biogeographical features																								
	Longitude line															Latitude									
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Anaplectoides prasina ([Denis & Schiffermüller], 1775)	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Pseudohermonassa melancholica (Lederer, 1853)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Xestia (*Xestia*) *baja* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	•	-	-	-	-	-	-	-	-	-	-
Xestia (*Megasema*) *c-nigrum* (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	•	-	-	-	-	-	-	-	-	-	-
Xestia (*Megasema*) *ditrapezium* ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Xestia (*Megasema*) *triangulum* (Hufnagel, 1766)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Xestia (*Megasema*) *kollari* (Lederer, 1853)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Xestia (*Megasema*) *ashworthii* (Doubleday, 1855)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eugraphe sigma ([Denis & Schiffermüller], 1775)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-
Coenophila subrosea (Stephens, 1829)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Eugnorisma (*Eugnorisma*) *ignoratum* Varga & L. Ronkay, 1994	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•

Species	Biogeographical features																											
	Longitude line																	Latitude										
	Holarctic	Siberian - American	East Palaearctic	Central Asian	West Palaearctic-Central Asian	Eurasiatic Palaearctic	European - West Asian	European-Siberian	European-Central Asian	West Palaearctic	Manchurian - Central Asian - Siberian	Uralian-Kazakhstan	Siberian - Mediterranean	Siberian - Central Asian	Subcosmopolitan	Trans-Palaearctic	Siberian-Pacific	Temperate	Boreal	Subtemperate migrant	Global migrant	Boreomontane	Migrant	Tropical migrant	Nemoral	Boreal-Subtropical	Subtemperate	Subboreal
Eugnorisma (*Eugnorisma*) *insignata* (Lederer, 1853)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Eugnorisma (*Eugnorisma*) *eminens* (Lederer, 1855)	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Miniphila miniago (Freyer, 1839)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Protolampra sobrina (Duponchel, 1843)	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
Nyssocnemis eversmanni (Lederer, 1853)	-	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•