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To Research of Noctuoidea Fauna (Lepidoptera) of the Western Kazakhstan

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Abstract

Noctuoidea fauna of the Western Kazakhstan was examined by authors from 2003 to 2012. As a result of this study the annotated list includes 200 species. The species *Rhabinopteryx turanica* (ERSCHOFF, 1874), *Heptapotamia eustratii* ALPHÉRAKY, 1882, *Eugnorisma tamerlana* (HAMPSON, 1903) and *Margelana versicolor* (STAUDINGER, 1888) are noted here as new for Europe. *Guselderia lutea* HACKER, KUHN & GROSS, 1986 (nov. syn.) is established as a junior synonym of *Heptapotamia eustratii* ALPHÉRAKY, 1882. 573 species of Noctuoidea known at present from the Western Kazakhstan are discussed.

Key words: Western Kazakhstan, Noctuoidea fauna.

Zusammenfassung

Die Noctuoidea Fauna von West-Kasachstan wurde von den Autoren in den Jahren 2003 bis 2012 erforscht. Als Ergebnis wird hier eine Liste mit 200 Arten vorgestellt. *Rhabinopteryx turanica* (ERSCHOFF, 1874), *Heptapotamia eustratii* ALPHÉRAKY, 1882, *Eugnorisma tamerlana* (HAMPSON, 1903) und *Margelana versicolor* (STAUDINGER, 1888) sind Erstnachweise für Europa. *Guselderia lutea* HACKER, KUHN & GROSS, 1986 (nov.

syn.) wird als jüngeres Synonym zu *Heptapotamia eustratii* ALPHÉRAKY, 1882 gestellt. Die insgesamt 573 derzeit aus West Kazakhstan bekannten Noctuoidea Arten werden diskutiert.

Introduction

The Noctuoidea of the European region is well-known as soon as the last volume of a series devoted to the particular part of the regional fauna (Noctuidae Europaeae) was finished in 2011. The fauna of Noctuoidea of the Western Kazakhstan region is partly involved in this series as a south area of the European geographical region crossing this territory. The north of the Western Kazakhstan was studied by the entomologists for a long time but most of collections from this territory were kept in a fragmentary way. This manuscript is devoted to the results of the Noctuidae fauna studies collected in 2003-2012 from the Western Kazakhstan. The list of Noctuoidea is presented in Table 1.

The area of research

The region under consideration is disposed in the western region of the Kazakhstan Republic simultaneously interfaced in the eastern European and central Asian geographical regions. This region has a total area of 736 129 km² and includes the Aktobe, West Kazakhstan (former Uralsk Region), Mangystau, Atyrau and Kyzil-Orda provinces. This territory is situated on the limits of the continental arid area in a cold-temperate zone. The rhythm of precipitation is closer to the Mediterranean type and the total amount of precipitation is 100-150 mm per year. Mainly it is the plain ground territory except for the low ridge of Mugodgary and the arid region on the interfluvies of the Caspian Sea and the Aral Sea where the semidesert steppe and the north desert are joined.

The semidesert steppe of the West Kazakhstan Region (Fig. 1) is a transitive subzone from steppes to deserts (RACHKOVSKAYA 1993: 323) and it is spread from N 51° to N 49° across of Podural'skoe Plateau (Under Urals) and being a narrow wedge of the peneplain of the Mugodgary Mountains is spreading dry steppes to the desert zone and somewhat further to the south. The vegetation cover is heterogeneous and depends on the types of soil and calciphilous, hemipetrophytic, hemisammophytic and hemihalophytic communities exist there.

The north plane desert penetrates from N 48° to N 36° and comprises the Ustyrt Plateau, the Aral Sea depression and the Caspian Lowland withing the area under consideration. Vegetation cover is characterized by the alternation of the community types on genetically heterogeneous territories (Fig. 1). The major dominants are the dwarf semishrub species of genus *Artemisia* and the species of genera *Salsola*, *Anabasis*, *Atriplex*, *Nanophyton*, *Hammada*, *Suaeda*, etc. The shrubs are represented by the species of genera *Calligonum*, *Ephedra*, *Athrophaxis*. Sagebrush and the perennial saltwort communities occupy the most part of the area (RACHKOVSKAYA et al. 2003).

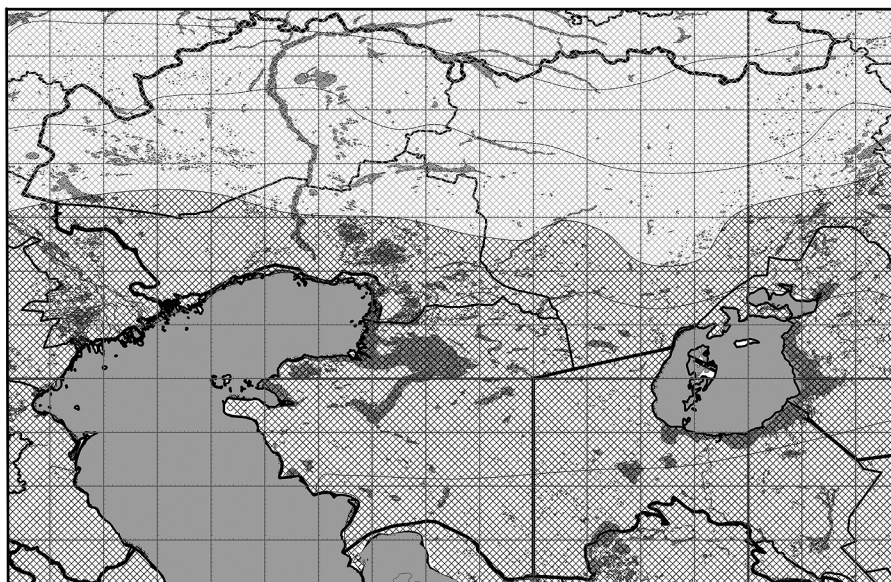


Fig. 1. Zone stripes of vegetation of the Western Kazakhstan, grey fill – Steppe area; black fill – Desert area.

The list and decoding of locality number (for locality map, Fig. 2)

1. 07.05.2007 Kazakhstan, West Kazakhstan Prov.,
N 50°45'; E 51°03' leg. Trofimova T.A. & Shovkoon D.F.
2. 02.05.2004 Kazakhstan, Aktoke Prov., near Hobda vill.,
N 20°08'; E 55°42' leg. T.T.A.
3. 31.05.2007 Kazakhstan, West Kazakhstan Prov.,
N 48°38'; E 50°41' leg. T.T.A. & Sh.D.F.
- 4a. 20.05.2004 Kazakhstan, Aktoke Prov., Mugodzhary Mts.,
N 48°32'; E 58°43' leg. T.T.A.
- 4b. 31.05-01.06.2006 Kazakhstan, Aktoke Prov., Mugodzhary Mts.,
N 48°32'; E 58°44' leg. T.T.A. & Sh.D.F.
5. 10-11.05.2006 Kazakhstan, Aktoke Prov., Mugodzhary Mts.,
N 48°31' E 58°26' T.T.A. & Sh.D.F.
6. 05.05.2004 Kazakhstan, Aktoke Prov., near Kompessorniy vill.
N 48°30'; E 59°19' leg. T.T.A.
7. 30-31.05.2006 Kazakhstan, Aktoke Prov., Mugodzhary Mts.,
N 48°30'; E 58°50' leg. T.T.A. & Sh.D.F.
- 8a. 08.05.2007 Kazakhstan, Atyrau Prov.,
N 48°28'; E 51°18' leg. T.T.A. & Sh.D.F.
- 8b. 30.05.2007 Kazakhstan, Atyrau Prov.,
N 48°28'; E 51°18' leg. T.T.A. & Sh.D.F.

- 8c. 07.06.2009 Kazakhstan, Atyrau Prov., Ryn-sands,
N 48°27'; E 51°18' leg. T.T.A. & Sh.D.F.
- 8d. 18.09.2009 Kazakhstan, Atyrau Prov., Ryn-sands,
N 48°27'; E 51°18' leg. T.T.A. Sh.D.F.
9. 01-02.06.2006 Kazakhstan, Aktobe Prov., Mugodzhary Mts.,
N 48°26'; E 58°24' leg. T.T.A. & Sh.D.F.
10. 17.05.2004 Kazakhstan, Aktobe Prov., Mugodzhary Mts.,
N 48°11'; E 58°17' leg. T.T.A.
11. 14.05.2004 Kazakhstan, Aktobe Prov., near Kompressorny vill, Kauldgur river,
N 48°03'; E 59°19' leg. T.T.A.
12. 11-12.05.2006 Kazakhstan, Aktobe Prov.,
N 47°59' E 59°24' leg. T.T.A. & Sh.D.F.
13. 25.05.2009 Kazakhstan, Atyrau Prov., N 47°55'; E 51°25' T.T.A. & Sh.D.F.
14. 10.05.2004 Kazakhstan, Aktobe Prov., Shagyrai Plateau
N 47°50', E 57°30' leg. leg. T.T.A.
15. 29.05.2007 Kazakhstan, Atyrau Prov., 15 km E Komsomolsky village,
N 47°19', E 53°50' leg. T.T.A. & Sh.D.F.
16. 09.05.2007 Kazakhstan, Atyrau Prov.,
N 47°16' E 53°50' leg. T.T.A. & Sh.D.F.
17. 26.05.2009 Kazakhstan, Atyrau Prov.,
N 47°07'; E 54°05' T.T.A. & Sh.D.F.
18. 13-14.05.2006 Kazakhstan, Aktobe Prov., Bolshie Barsuki sands,
N 46°58'; E 59°13' T.T.A. & Sh.D.F.
19. 01.05.2003 Kazakhstan, Aktobe Prov., Bolshie Barsuki sands, N 46°52'; E 59°16'
20. 15-16-17.05.2006 Kazakhstan, Aktobe Prov., Shagyrai Plateau,
N 46°52'; E 58°02' leg. T.T.A. & Sh.D.F.
21. 19-20-21-22.05.2006 Kazakhstan, Aktobe Prov., Shagyrai Plateau,
N 46°50'; E 57°47' leg. T.T.A. & Sh.D.F.
22. 06.05.2004 Kazakhstan, Aktobe Prov., 35 km S Begembet vill.,
N 46°48'; E 59°09' leg. T.T.A.
- 23a. 12.05.2004 Kazakhstan, Aktobe Prov., Shagyrai Plateau,
N 46°45'; E 57°30' leg. T.T.A.
- 23b. 24-25.05.2006 Kazakhstan, Aktobe Prov., Shagyrai Plateau,
N 46°45'; E 57°31' leg. T.T.A. & Sh.D.F.
- 23c. 22-23-24.05.2006 Kazakhstan, Aktobe Prov., Shagyrai Plateau,
N 46°44'; E 57°30' leg. T.T.A. & Sh.D.F.
- 23d. 11.05.2004 Kazakhstan, Aktobe Prov., Shagyrai Plateau,
N 46°43'; E 57°31' leg. T.T.A.
24. 09.05.2007 Kazakhstan, Aktobe Prov., Shagyrai Plateau,
N 46°39'; E 59°23' leg. T.T.A.

25. 08.05.2004 Kazakhstan, Aktobe Prov., Shagyrat Plateau,
N 46°38'; E 58°04' leg. T.T.A.
26. 21.09.2009 Kazakhstan, Atyrau Prov., Karakum desert,
N 46°25'; E 54°23' leg. T.T.A. & Sh.D.F.
27. 20.09.2009 Kazakhstan, Atyrau Prov.,
N 46°24'; E 55°22' leg. T.T.A. & Sh.D.F.
- 28a. 07.05.2004 Kazakhstan, Kyzyl-Orda Prov., Karatup penin., Aral lake,
N 46°20'; E 59°43' leg. T.T.A.
- 28b. 26-27-28.05.2006 Kazakhstan, Kyzyl-Orda Prov., Karatup penin., Aral lake,
N 46°20'; E 59°43' leg. T.T.A. & Sh.D.F.
29. 19.09.2009 Kazakhstan, Mangystau Prov.,
N 46°19'; E 54°55' leg. T.T.A. & Sh.D.F.
30. 25-26.05.2006 Kazakhstan, Aktobe Prov., near Bozoe vill., sands,
N 46°17'; E 58°56' leg. T.T.A. & Sh.D.F.
31. 28.05.2007 Kazakhstan, Mangystau Prov.,
N 46°10'; E 55°21' leg. T.T.A. & Sh.D.F.
32. 10.05.2007 Kazakhstan, Mangystau Prov.,
N 46°05'; E 54°35' leg. T.T.A. & Sh.D.F.
33. 27.05.2007 Kazakhstan, Mangistau Prov., near Oporny vill.,
N 45°45'; E 55°28' leg. T.T.A. & Sh.D.F.
34. 11.05.2007 Kazakhstan, Mangystau Prov., 45 km S-W Bejneu,
N 44°57'; E 54°54' leg. T.T.A. & Sh.D.F.
35. 27.05.2009 Kazakhstan, Mangystau Prov.,
N 44°36'; E 54°09' leg. T.T.A. & Sh.D.F.
36. 04.06.2009 Kazakhstan, Mangistau Prov., Tuyb-Karagan penin.,
N 44°36'; E 50°37' leg. T.T.A. & Sh.D.F.
37. 24.05.2007 Kazakhstan, Mangystau Prov., Tuyb-Karagan penin., Caspian sea,
N 44°34'; E 50°56' leg. T.T.A. & Sh.D.F.
- 38a. 22.05.2007 Kazakhstan, Mangistau Prov., Tuyb-Karagan penin. Caspian sea,
N 44°30'; E 51°01' leg. T.T.A. & Sh.D.F.
- 38b. 23.05.2007 Kazakhstan, Mangystau Prov., Tuyb-Karagan penin. Caspian sea
N 44°30'; E 51°01' leg. T.T.A. & Sh.D.F.
39. 21.05.2007 Kazakhstan, Mangistau Prov., Mangistau Mts.,
N 44°18'; E 51°35' leg. T.T.A. & Sh.D.F.
40. 20.05.2007 Kazakhstan, Mangistau Prov., Aktau Mts.,
N 44°16'; E 52°10' leg. T.T.A. & Sh.D.F.
41. 03.06.2009 Kazakhstan, Mangistau Prov., Tuyb-Karagan penin.,
N 44°14'; E 50°47' leg. T.T.A. & Sh.D.F.
42. 28.05.2009 Kazakhstan, Mangystau Prov.,
N 44°13'; E 53°21' leg. T.T.A. & Sh.D.F.
43. 25.05.2007 Kazakhstan, Mangistau Prov., Ustyurt Plateau,
N 44°10'; E 53°16' leg. T.T.A. & Sh.D.F.

44. 05.06.2009 Kazakhstan, Mangystau Prov.,
N 44°07'; E 51°50' leg. T.T.A. & Sh.D.F.
45. 19.05.2007 Kazakhstan, Mangystau Prov., Mangistau Mts.,
N 44°04'; E 52°23' leg. T.T.A. & Sh.D.F.
46. 18.05.2007 Kazakhstan, Mangistau Prov., Mangistau Mts.,
N 44°02'; E 52°34' leg. T.T.A. & Sh.D.F.
- 47a. 13.05.2007 Kazakhstan, Mangistau Prov., Ustyurt Plateau,
N 43°57'; E 53°45' leg. T.T.A. & Sh.D.F.
- 47b. 14.05.2007 Kazakhstan, Mangistau Prov., Ustyurt Plateau,
N 43°57'; E 53°45' leg. T.T.A. & Sh.D.F.
- 47c. 15.05.2007 Kazakhstan, Mangistau Prov., Ustyurt Plateau, sands,
N 43°57'; E 53°45' leg. T.T.A. & Sh.D.F.
- 48a. 12.05.2007 Kazakhstan, Mangistau Prov., Ustyurt Plateau,
N 43°55'; E 53°34' leg. T.T.A. & Sh.D.F.
- 48b. 01.06.2009 Kazakhstan, Mangystau Prov.,
N 43°55'; E 53°35' leg. T.T.A. & Sh.D.F.
- 49a. 16.05.2007 Kazakhstan, Mangystau Prov., Ustyurt Plateau, sands,
N 43°48'; E 53°32' leg. T.T.A. & Sh.D.F.
- 49b. 29.05.2009 Kazakhstan, Mangystau Prov.,
N 43°47'; E 53°34' leg. T.T.A. & Sh.D.F.
50. 31.05.2009 Kazakhstan, Mangystau Prov.,
N 43°45'; E 54°00' leg. T.T.A. & Sh.D.F.
51. 17.05.2007 Kazakhstan, Mangystau Prov., Ustyurt Plateau,
N 43°44'; E 53°37' leg. T.T.A. & Sh.D.F.
52. 02.06.2009 Kazakhstan, Mangistau Prov., Ustyurt Plateau,
N 43°41'; E 51°47' leg. T.T.A. & Sh.D.F.
53. 30.05.2009 Kazakhstan, Mangistau Prov., Ustyurt Plateau, Sengirkum sands,
N 43°33'; E 53°44' leg. T.T.A. & Sh.D.F.

Material and methods

The moths were collected mainly by attracting them to a "light screen" with 100 Wt mercury lamps and 12 Wt ultraviolet lamps. Over 2500 specimens of Noctuoidea were collected and examined. The genitalia were dissected using the standard methodology (ROBINSON, 1976) and embedded in Euparal.

A list of examined species is given below. Most specimens are deposited in the private collection of the authors and partly were transferred to the Laboratory of the animal systematics and faunistics, Samara State University, Russia. The applied classification and nomenclature are given according to proposed in the series on the Noctuidae Europaeae (FIBIGER et al., 2011).

List of the most significant finds

Heptapotamia eustratii ALPHÉRAKY, 1882. (Figs 5, 6)

Type locality: station Arganaty [Western China].

References: ALPHÉRAKY, 1882: 75-76

= *Guselderia lutea* HACKER, KUHN & GROSS, 1986. Type locality: Turkey, Prov. Van, Göseldere, Gegidi (nov.syn.)

References: HACKER, KUHN & GROSS, 1986: 105-106.

Material: 1♂ 18.09.2009 Kazakhstan, Atyrau Prov., Ryn-sands, N 48°27'; E 51°18' leg. T.T.A. Sh.D.F. (LSSU); 3 ♂ 20.09.2009 Kazakhstan, Atyrau Prov., N 46°24'; E 55°22' leg. T.T.A. & Sh.D.F. LSSU.

Note: The new synonymy is established on the basis of investigation of the type of *Heptapotamia eustratii* ALPHÉRAKY, 1882 (deposited in ZISP) and of the investigation of the original description and illustrations of *Guselderia lutea* HACKER, KUHN & GROSS, 1986. The species is recorded for the first time for Europe.

Margelana versicolor (STAUDINGER, 1888) (Fig. 3)

Material: 4♂♂, 5♀♀ 18.09.2009 Kazakhstan, Atyrau Prov., Ryn-sands, N 48°27'; E 51°18' leg. T.T.A. Sh.D.F. LSSU.

Note: The species is recorded for the first time for Europe.

Rhabinopteryx turanica (ERSCHOFF, 1874) (Fig. 4)

Material: 3♂♂, 1♀ 08.05.2007 Kazakhstan, Atyrau Prov., N 48°28'; E 51°18' leg. T.T.A. & Sh.D.F. LSSU.

Note: The species is recorded for the first time for Europe.

Eugnorisma tamerlana (HAMPSON, 1903)

Material: 2♂♂ 18.09.2009 Kazakhstan, Atyrau Prov., Ryn-sands, N 48°27'; E 51°18' leg. T.T.A. Sh.D.F. LSSU.

Note: The species is recorded for the first time for Europe.

Discussion

The 573 species of Noctuoidea are known from the Western Kazakhstan at present (ANIKIN et al., 1999, 2000; AIBASOV 1974; BARTEL, 1914; BOURSIN, 1970; CORTI & DRAUDT, 1933; ERSCHOFF, 1874; EVERSMAHN, 1844, 1854, 1857; FIBIGER, 1990; FIBIGER et al., 2009, 2010; FIBIGER, HACKER, 2007; FILIPJEV, 1931; GOATER, 2003; HACKER et al., 2002; HACKER, MIATLEUSKI, 2001; JOHN, 1910; KONONENKO, MATOV, 2009; KOZHANCHIKOV, 1929, 1937; KUZNETZOV, 1908; KUZNETZOV, MARTYNOVA, 1952, 1954; OBRAZTSOV, 1937; STAUDINGER, 1870; UVAROV, 1910; ZHURAVLJOV, 1910; ZILLI, et al., 2005).

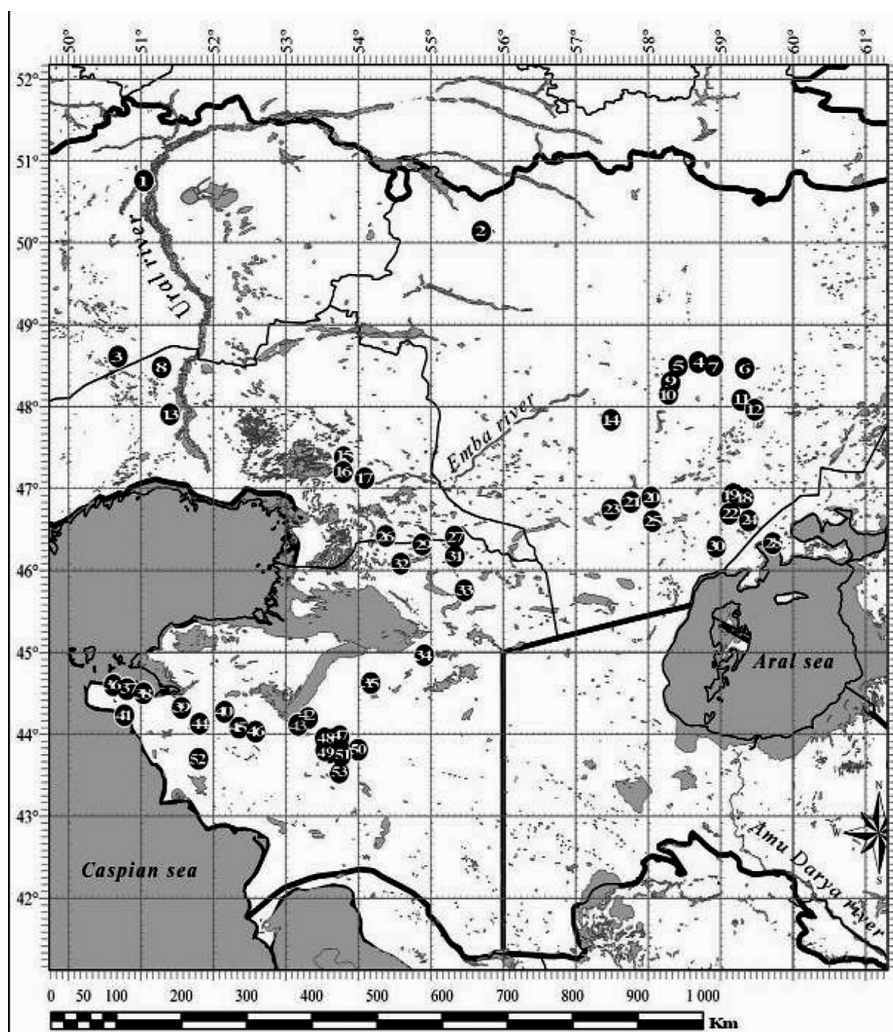
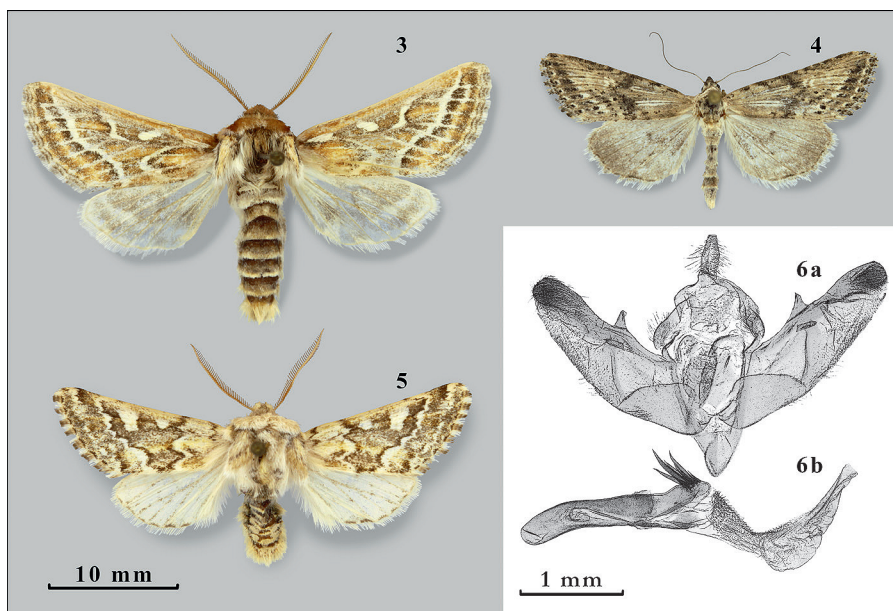


Fig. 2: Locality map.



Figs 3–6: Adults and genitalia of Noctuoidea

Margelana versicolor (STAUDINGER, 1888), male (3); *Rhabinopteryx turanica* (ERSCHOFF, 1874), male (4); *Heptapotamia eustratii* ALPHÉRAKY, 1882, male (5); The genitalia of *Heptapotamia eustratii* ALPHÉRAKY, 1882 (6): **a** – general view, **b** – aedeagus with everted vesica

It is characteristic that revealed fauna has no endemic species. The Noctuoidea of the West Kazakhstan Region represents allochthonic fauna as a result of mixture of species from adjacent territories.

The defining factors for fauna formation were most likely repeated migration during the various transgressions of the Caspian Sea. At present it is known that there were at least five significant transgressions – Akchagylian (2.7–2.3 Ma ago), Apsheronian (2 Ma ago), Bakuvian (1.7 Ma ago), the Early Khazarian (400 ka ago) and the Early Khvalynian – 100 ka ago (Aladin et al., 1998). The waters of the Akchagyl Lake had penetrated into the Aral depression and formed islands recently known as Plateau Ustyurt. Lowland areas of Trans-Caspian, Azerbaijan, Daghestan and Lower Volga Region were flooded. The Apsheron Lake was smaller than Akchagyl, but its waters also penetrated into the Aral basin and drained into the Black Sea. The Caspian lowland was completely flooded and the Kura lowland and Karakum were partially inundated (SHOVKOON, 2010).

Thus, the flora and the fauna of these territories were formed due to repeatable migrations after every transgression.

The list of Noctuoidea collected in 2003-2012 from the the Western Kazakhstan

	Species list	New for Europe	Locality
Familia Erebidae			
1	<i>Scoliopteryx libatrix</i> (LINNAEUS, 1758)		9.
2	<i>Zekelita ravalis</i> (HERRICH-SCHÄFFER, 1851)		5; 8b; 16; 18b; 20; 38a; 38b; 46; 49b.
3	<i>Zekelita ravularis</i> (STAUDINGER, 1879)		18; 20; 23b; 23c.
4	<i>Hypena rostralis</i> (LINNAEUS, 1758)		7.
Subfamilia Lymantriinae			
5	<i>Orgyia dubia</i> (TAUSCHER, 1806)		8d; 20; 21.
Subfamilia Arctiinae			
6	<i>Arctia festiva</i> (HUFNAGEL, 1766)		37.
7	<i>Arctia caja</i> (LINNAEUS, 1758)		7; 9; 36.
8	<i>Lacides spectabilis</i> (TAUSCHER, 1806)		8d.
9	<i>Amata caspia</i> (STAUDINGER, 1877)		8d; 29; 27.
Subfamily Hermiinae			
10	<i>Paracolax tristalis</i> (FABRICIUS, 1794)		9.
Subfamily Hipenodinae			
11	<i>Schranksia balnearum</i> (ALPHERAKY, 1880)		27.
Subfamily Boletobiinae			
12	<i>Eublemma minutata</i> (FABRICIUS, 1794)		3; 8b; 8c; 8d; 9; 15; 20; 21; 23c.
13	<i>Eublemma purpurina</i> ([DEN. & SCHIFF.], 1775)		7; 52.
14	<i>Eublemma pannonica</i> (FREYER, 1840)		8c; 41.
15	<i>Eublemma pusilla</i> (EVERSMANN, 1834)		3; 7; 8b; 8c; 9; 15; 18; 21; 23c; 28b.
16	<i>Eublemma ostrina</i> (HÜBNER, 1808)		23b; 23c; 39; 40.
17	<i>Eublemma parva</i> (HÜBNER, 1808)		21; 23b; 23c; 27; 28b; 36; 43.
18	<i>Eublemma porphyria</i> (FREYER, 1845)		9; 23b; 23c; 41; 52.
19	<i>Eublemma debilis</i> (CHRISTOPH, 1886)		6; 18a; 23b; 47a.
20	<i>Eublemma rosea</i> (HÜBNER, 1790)		21; 28b; 41.
21	<i>Eublemma polygramma</i> (DUPONCHEL, 1836)		7; 43.
22	<i>Eublemma candidana</i> (FABRICIUS, 1794)		3; 8b; 8c; 8d; 9; 20; 21; 23b; 23c; 27; 28b; 30.
23	<i>Eublemma uniformis</i> (STAUDINGER, 1878)		49b; 50.
24	<i>Eublemma pallidula</i> (HERRICH-SCHÄFFER, 1856)		27; 29.
25	<i>Eublemma pulchralis</i> (VILLERS, 1789)		32.
26	<i>Metochrostis djakonovi</i> (MATOV et KONONENKO, 2009)		38a.
Subfamilia Erebinae			
27	<i>Pandesma robusta</i> (WALKER, [1858])		23b; 23c.
28	<i>Pericyma albidentaria</i> (FREYER, 1842)		8c; 44.
29	<i>Acantholipes regularis</i> (HÜBNER, 1813)		3; 8c; 38a; 39; 40; 46.
30	<i>Drasteria cailino</i> (LEFEBVRE, 1827)		6; 9; 18; 23c; 28a.

Species list		New for Europe	Locality
31	<i>Drasteria caucasica</i> (KOLENATI, 1846)		18; 23b; 23c.
32	<i>Drasteria picta</i> (CHRISTOPH, 1877)		6; 12; 18; 20; 21; 22; 23c; 28b; 28a; 30; 39; 47b; 47c.
33	<i>Drasteria flexuosa</i> (MÉNÉTRIÉS, 1848)		3; 8a; 8b; 8c; 15; 28b; 38a; 38b; 40; 41; 44.
34	<i>Drasteria sinuosa</i> (STAUDINGER, 1884)		8c.
35	<i>Drasteria sesquistria</i> (EVERSMANN, 1854)		18; 47b; 49a; 49b; 51.
36	<i>Drasteria rada</i> (BOISDUVAL, 1848)		4a; 10; 12; 18; 20; 21; 23b; 28a; 28b; 30; 32; 47a; 48a.
37	<i>Drasteria saisani</i> (STAUDINGER, 1882)		9; 18; 20; 21; 23b; 23c; 30; 31; 38a; 41; 46; 47a; 48a.
38	<i>Drasteria kusnezovi</i> (O.JOHN, 1910)		20; 21; 23c; 32; 39; 48a.
39	<i>Drasteria indecora</i> (O.JOHN, 1910)		30.
40	<i>Anumeta cestis</i> (MÉNÉTRIÉS, 1848)		18; 20; 28b.
41	<i>Anumeta fractistrigata</i> (ALPHERAKY, 1882)		3; 6; 18; 21; 28a; 28b; 30.
42	<i>Anumeta dentistrigata</i> (STAUDINGER, 1877)		6; 20; 23c; 28b; 30; 51.
43	<i>Anumeta spilota</i> Erschov, 1874		18; 28b.
44	<i>Euclidia glyphica</i> (LINNAEUS, 1758)		9.
45	<i>Gonospileia munita</i> (HÜBNER, 1813)		20; 23b; 23c; 28b.
46	<i>Gonospileia triquetra</i> ([DEN. & SCHIFF.], 1775)		5; 23b.
47	<i>Clytie gracilis</i> (BANG-HAAS, 1907)		15; 21; 23b; 23c; 28b; 33.
48	<i>Clytie delunaris</i> STAUDINGER, 1889		20; 21; 23b; 28b; 31.
49	<i>Anydrophila mirifica</i> (ERSCHOFF, 1874)		28b; 49b.
50	<i>Anydrophila simiola</i> (PÜNGELER, 1899)		23b; 28b; 30; 49b; 53.
51	<i>Grammodes stolidia</i> (FABRICIUS, 1775)		41.
Familia Noctuidae			
Subfamilia Plusiinae			
52	<i>Abrostola tripartita</i> (HUFNAGEL, 1766)		9.
53	<i>Trichoplusia ni</i> (HÜBNER, [1803])		43; 33; 50; 53.
54	<i>Macdunoughia confusa</i> (STEPHENS, 1850)		1; 2.
55	<i>Euchalcia siderifera</i> (EVERSMANN, 1846)		23c; 9.
56	<i>Autographa gamma</i> (LINNAEUS, 1758)		8d; 13; 47b; 49b.
57	<i>Cornutiplusia circumflexa</i> (LINNAEUS, 1767)		39.
Subfamilia Eustrotiinae			
58	<i>Phyllophila oblitterata</i> (RAMBUR, 1833)		3.
Subfamilia Acontiinae			
59	<i>Acontia lucida</i> (HUFNAGEL, 1766)		41; 44.
60	<i>Emmelia trabealis</i> (SCOPOLI, 1763)		3; 8b; 15; 40.
61	<i>Armada panaceorum</i> (MÉNÉTRIÉS, 1849)		11; 14; 21; 23c; 37; 47a; 47b; 47c; 48a; 49a; 51.
62	<i>Armada dentata</i> (STAUDINGER, 1884)		49b.
63	<i>Armada clio</i> (STAUDINGER, 1884)		21; 47c; 49b; 51; 53.
64	<i>Armada hueberi</i> (ERSCHOFF, 1874)		47a; 47b; 49a; 53.

Species list		New for Europe	Locality
65	<i>Drasteriodes limata</i> (CHRISTOPH, 1884)		39; 40; 45; 47a; 47b; 48a.
66	<i>Aedia funesta</i> (ESPER, 1786)		1; 4a.
Subfamilia Acronictinae			
67	<i>Oxycesta geographica</i> (FABRICIUS, 1787)		4b.
68	<i>Eogena contaminei</i> (EVERSMANN, 1847)		5; 37.
69	<i>Simyra nervosa</i> ([DEN. & SCHIFF.], 1775)		2; 19.
70	<i>Simyra albovenosa</i> (GOEZE, 1781)		49a – 6 caterpillars.
71	<i>Simyra dentinosa</i> (FREYER, 1839)		20 – 8 caterpillars.
72	<i>Acronicta psi</i> (LINNAEUS, 1758)		1.
Subfamilia Metoponiinae			
73	<i>Aegle subflava</i> (ERSCHOFF, 1874)		37; 40; 43; 47a; 47b; 48a; 49a; 49b; 50.
74	<i>Aegle ochracea</i> (ERSCHOFF, 1874)		40; 49b.
75	<i>Haemerosia sterrha</i> (STAUDINGER, 1888)		48a.
76	<i>Mycteroplus puniceago</i> (BOISDUVAL, 1840)		29.
77	<i>Tyta luctuosa</i> ([DEN. & SCHIFF.], 1775)		7; 9; 23c; 49b.
Subfamilia Cucullinae			
78	<i>Cucullia boryphora</i> (FISCHER V. WALDHEIM, 1840)		18a; 20; 21; 23b; 23c; 24; 25; 28b; 30; 32; 37; 38a; 39; 40; 43; 45; 46; 47a; 47b; 47c; 48a; 49a; 49b; 51.
79	<i>Cucullia argentina</i> (FABRICIUS, 1787)		5; 6; 8b; 12; 18; 20; 21; 23c; 30; 32; 40; 43.
80	<i>Cucullia naruenensis</i> (STAUDINGER, 1879)		8c; 20; 21; 28a; 28b; 30; 40; 48a; 49b; 51.
81	<i>Cucullia santonici</i> (HÜBNER, 1813)		21; 23b; 23c; 30.
82	<i>Cucullia mixta</i> (FREYER, 1841)		4a; 7; 9; 10; 11; 18a; 20; 23b; 23d; 30.
83	<i>Cucullia lactea</i> (FABRICIUS, 1787)		8d.
84	<i>Cucullia tanacetii</i> ([DEN. & SCHIFF.], 1775)		4b; 7.
85	<i>Cucullia hemidiaphana</i> GRAESER, 1892		26; 27.
Subfamilia Oncocnemidinae			
87	<i>Calophasia lunula</i> (HUFNAGEL, 1766)		5.
88	<i>Calophasia opalina</i> (ESPER, 1793)		4a; 12; 18; 30; 38a; 39; 40.
89	<i>Epimecia ustula</i> (FREYER, 1835)		4a; 10.
90	<i>Rhabinopteryx turanica</i> (ERSCHOFF, 1874)	+	8a; 20; 23a; 23d; 25; 28a; 32; 40; 46; 47a; 47b; 48a.
91	<i>Pinacoplus didymogramma</i> ERSCHOFF, 1874		28b.
Subfamilia Amphipyriinae			
92	<i>Amphipyra tragopoginis</i> (LINNAEUS, 1758)		8d.
Subfamilia Heliothinae			
93	<i>Aedophron eos</i> (VARGA & RONKAY 1991)		28b; 31; 32.
94	<i>Periphanes delphini</i> (LINNAEUS, 1758)		16; 20; 28a; 32; 34; 36; 38a; 39; 40; 43; 45; 46; 47a; 47b; 48a; 51.
95	<i>Protoschinia scutosa</i> ([DEN. & SCHIFF.], 1775)		3; 8c; 20; 21; 23c; 34; 35; 38a; 39.
96	<i>Hebdomochondra syrticola</i> STAUDINGER, 1879		3; 28b.
97	<i>Heliothis nubigera</i> (HERRICH-SCHÄFFER, 1851)		20; 35; 38a; 39; 41; 43; 47b.
98	<i>Heliothis peltigera</i> ([DEN. & SCHIFF.], 1775)		2; 4; 7; 13; 20; 23c; 31; 38a; 40; 47a; 47b; 51.

	Species list	New for Europe	Locality
99	<i>Heliothis virespalla</i> (HUFNAGEL, 1766)		9; 20; 23b; 23c; 36.
100	<i>Heliothis incarnata</i> (FREYER, 1838)		9; 23c; 38a; 40; 49b.
101	<i>Heliothis adaucta</i> (BUTLER, 1878)		10.
102	<i>Rhodocleptia feildi</i> (ERSCHOFF, 1874)		11; 23c.
Subfamilia Xyleniinae			
103	<i>Spodoptera exigua</i> (HÜBNER, 1808)		18; 39; 46; 52; 53.
104	<i>Caradrina morpheus</i> (HUFNAGEL, 1766)		9.
105	<i>Caradrina albina</i> (EVERSMANN, 1848)		3; 7; 8c; 10; 15; 21; 23b; 23c; 25; 26; 28b; 39; 40; 41; 46; 47b; 48b; 52; 53.
106	<i>Caradrina armeniaca</i> (BOURSIN, 1936)		27.
107	<i>Caradrina clavipalpis</i> (SCOPOLI, 1763)		8d; 26.
108	<i>Caradrina vicina</i> (STAUDINGER, 1870)		8d; 26.
109	<i>Caradrina expansa</i> (ALPHÉRAKY, 1887)		8d; 26.
110	<i>Scythocentropus misella</i> (PÜNGELER, 1908)		27.
111	<i>Athetis lepigone</i> (MÖSCHLER, 1860)		7; 23c.
112	<i>Dypterygia scabriuscula</i> (LINNAEUS, 1758)		9.
113	<i>Trachea atriplicis</i> (LINNAEUS, 1758)		9.
114	<i>Phlogophora meticulosa</i> (LINNAEUS, 1758)		52.
115	<i>Heptapotamia eustratii</i> (ALPHÉRAKY, 1882)	+	8d; 27.
116	<i>Cervyna cervago</i> (EVERSMANN, 1842)		8d.
117	<i>Fabula zollikoferi</i> (FREYER, 1836)		27.
118	<i>Nonagria typhae</i> (THUNBERG, 1784)		27; 29.
119	<i>Globia sparganii</i> (ESPER, 1790)		27; 29.
120	<i>Apamea leucodon</i> (EVERSMANN, 1837)		7; 8b; 13; 18; 20; 21; 23b; 23c; 30; 33; 37; 38a; 40; 41; 47a; 47b; 48a; 49a; 51; 52.
121	<i>Margelana versicolor</i> (STAUDINGER, 1888)	+	8d.
122	<i>Episema lederi</i> (CHRISTOPH, 1885)		27; 29.
123	<i>Ulochlaena hirta</i> (HÜBNER, 1813)		8d.
124	<i>Agrochola circellaris</i> (HUFNAGEL, 1766)		27.
125	<i>Xylena exsoleta</i> (LINNAEUS, 1758)		20. – 3 caterpillars; 21. – 1 caterpillar; 48a. – 1 caterpillar.
126	<i>Pseudohadena cymatodes</i> (BOURSIN, 1954)		27.
127	<i>Pseudohadena arenacea</i> (RONKAY, VARGA & FÁBIÁN, 1995)		27.
128	<i>Rhiza commoda</i> (STAUDINGER, 1889)		29.
129	<i>Rhiza schlumbergeri</i> (PÜNGELER, 1905)		30; 31; 37; 43.
130	<i>Rhiza laciniosa</i> (CHRISTOPH, 1887)		28b; 49b.
131	<i>Eremohadena chenopodiphaga</i> (RAMBUR, 1832)		18.
132	<i>Eremohadena immunda</i> (EVERSMANN, 1842)		26.
133	<i>Marsiphiophora christophi</i> (ERSCHOFF, 1874)		28b; 40; 47b; 47c; 49a; 49b; 51.
134	<i>Polymixis acharis</i> (PÜNGELER, 1901)		27.

	Species list	New for Europe	Locality
135	<i>Heterographa thoenyi</i> (RONKAY, VARGA & GYULAI), 2002		22.
136	<i>Heterographa fabrilis</i> (PÜNGELER, 1909)		28b.
137	<i>BOURSINIA malitiosa</i> (ALPHERAKY, 1892)		29.
Subfamilia Hadeninae			
138	<i>Orthosia gracilis</i> ([DEN. & SCHIFF.], 1775)		2.
139	<i>Egira anatolica</i> (HERING, 1933)		1.
140	<i>Tholera decimalis</i> (PODA, 1761)		29; 27.
141	<i>Hadula trifolii</i> (HUFNAGEL, 1766)		6; 7; 8c; 18; 23c; 30; 53.
142	<i>Hadula stigmosa</i> (CHRISTOPH, 1887)		6; 20; 21; 28b; 29; 30; 31; 39; 46; 49b; 51.
143	<i>Hadula halolimna</i> (GYULAY & VARGA, 1998)		20.
144	<i>Anarta accurata</i> (CHRISTOPH, 1882)		36; 37; 38a.
145	<i>Cardepija irrisoria</i> (ERSHOV, 1874)		3; 6; 12; 18; 20; 21; 23c; 23b; 23d; 28a; 28b; 30; 31; 32; 33; 37; 38a; 39; 40; 41; 43; 45; 46; 47a; 47b; 48a; 52.
146	<i>Polia serratilinea</i> (OCHSENHEIMER, 1816)		10.
147	<i>Pachetra sagittigera</i> (HUFNAGEL, 1766)		5; 12.
148	<i>Lacanobia w-latinum</i> (HUFNAGEL, 1766)		7; 23b.
149	<i>Lacanobia praedita</i> (HÜBNER, 1813)		1; 5; 6; 8b; 10; 12; 20; 21; 23c; 30; 33; 39; 40; 47b; 48a; 51.
150	<i>Lacanobia oleracea</i> (LINNAEUS, 1758)		9.
151	<i>Lacanobia suasa</i> ([DEN. & SCHIFF.], 1775)		20.
152	<i>Lacanobia blenna</i> (HÜBNER, 1824)		4b; 6.
153	<i>Lacanobia aliena</i> (HÜBNER, 1809)		9.
154	<i>Sideridis turbida</i> (ESPER, [1790])		9; 20.
155	<i>Sideridis egena</i> (LEDERER, 1853)		7; 9.
156	<i>Saragossa porosa</i> (EVERSMANN, 1854)		7.
157	<i>Saragossa uralica</i> HACKER & FIBIGER, 2002		10; 11.
158	<i>Conisania luteago</i> ([DEN. & SCHIFF.], 1775)		7.
159	<i>Conisania leineri</i> (FREYER, 1836)		18; 28a.
160	<i>Hecatera deserticola</i> (STAUDINGER, 1879)		7.
161	<i>Epipsammia fixseni</i> (CHRISTOPH, 1882)		38a.
162	<i>Thargelia distincta</i> (CHRISTOPH, 1884)		19; 21; 23b; 23c; 48a; 49a.
163	<i>Enterpia laudeti</i> (BOISDUVAL, 1840)		40; 46.
164	<i>Enterpia picturata</i> (ALPHERAKY, 1882)		20; 21; 23c; 28b; 30; 37; 43.
165	<i>Hadena CHRISTOPHI</i> (MÖSCHLER, 1862)		5; 12; 20; 21; 25; 47a; 48a.
166	<i>Mythimna vitellina</i> (HÜBNER, 1808)		27; 37; 38a; 41; 52; 53.
167	<i>Mythimna l-album</i> (LINNAEUS, 1767)		7; 9; 23b; 28b.
168	<i>Mythimna albipuncta</i> ([DEN. & SCHIFF.], 1775)		27; 47b.
169	<i>Mythimna pallens</i> (LINNAEUS, 1758)		7; 9; 28b; 30.
170	<i>Mythimna deserticola</i> (BARTEL, 1902)		9.

	Species list	New for Europe	Locality
171	<i>Leucania obsoleta</i> (HÜBNER, 1803)		5; 9; 53.
172	<i>Leucania zaeae</i> (DUPONCHEL, 1827)		21; 23c; 28b; 40.
173	<i>Eriopygodes impar</i> (STAUDINGER, 1870)		9; 23b.
Subfamilia Noctuidae			
174	<i>Albocosta musiva</i> (HÜBNER, [1803])		4b.
175	<i>Albocosta flammata</i> ([DEN. & SCHIFF.], 1775)		47b; 48b; 52.
176	<i>Yigoga multicuspis</i> (EVERSMANN, 1852)		23b; 23c; 28b; 30; 41; 42; 48b; 49b.
177	<i>Yigoga perturbans</i> (BOURSIN, 1948)		48b.
178	<i>Yigoga orientis</i> (ALPHÉRAKY, 1882)		23b; 28b; 30; 33.
179	<i>Euxoa fallax</i> (EVERSMANN, 1854)		29.
180	<i>Euxoa dsheiron</i> (BRANDT, 1938)		29.
181	<i>Euxoa agricola</i> (BOISDUVAL, 1829)		53.
182	<i>Euxoa acuminifera</i> (EVERSMANN, 1854)		27; 29.
183	<i>Euxoa foeda</i> (LEDERER, 1855)		26; 27.
184	<i>Agrotis desertorum</i> (BOISDUVAL, 1840)		15; 20; 21; 23c; 28b; 30; 31; 37; 46.
185	<i>Agrotis ipsilon</i> (HUFNAGEL, 1766)		6; 38a; 47a; 47b; 47c.
186	<i>Agrotis exclamationis</i> (LINNAEUS, 1758)		7; 9.
187	<i>Agrotis segetum</i> ([DEN. & SCHIFF.], 1775)		7; 9; 30; 38a; 47a; 47c.
188	<i>Agrotis vestigialis</i> (HUFNAGEL, 1766)		24c; 26.
189	<i>Agrotis psammocharis</i> (BOURSIN, 1950)		29.
190	<i>Agrotis bifurca</i> STAUDINGER 1881		27; 29.
191	<i>Agrotis obesa</i> (BOISDUVAL, 1829)		8d.
192	<i>Rhyacia arenacea</i> (HAMPSON, 1907)		36; 37; 38a; 39; 40; 41; 43; 45; 46; 47b.
193	<i>Rhyacia simulans</i> (HUFNAGEL, 1766)		46; 47b; 52.
194	<i>Noctua pronuba</i> (LINNAEUS, 1758)		13; 38a; 41; 51; 52.
195	<i>Noctua interposita</i> (HÜBNER, 1790)		7; 9.
196	<i>Noctua orbona</i> (HUFNAGEL, 1766)		37; 38a; 41; 52.
197	<i>Spaelotis ravida</i> ([DEN. & SCHIFF.], 1775)		3; 7; 8c; 9; 28b; 52.
198	<i>Xestia c-nigrum</i> (LINNAEUS, 1758)		9; 23c; 41.
199	<i>Xestia trifida</i> (FISCHER VON WALGHEIM, 1820)		8d; 27; 29.
200	<i>Eugnorisma tamerlana</i> (HAMPSON, 1903)	+	8d; 27.
	Total: 200	4	

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