

Macrolepidoptera of Chineta Nature Reserve (Altai Province, Southern Siberia, Russia)

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Abstract

The article gives a faunal list of higher Lepidoptera, collected during May–August 2023 Chineta Reserve (Altai Province, Russia), which includes 343 species, eight of which are new to the fauna of the Altai Province: *Manulea flavociliata* (Lederer, 1853), *Manulea pygmaeola* (Doubleday, 1848), *Eublemma amasina* (Eversmann, 1842), *Autophila asiatica* (Staudinger, 1888) (Erebidae), *Lacanobia mongolica* Behounek, 1992, *Hadena magnolii* (Boisduval, 1829), *Cerastis orientalis* Boursin, 1948 (Noctuidae), and *Scopula prouti* Djakonov, 1935 (Geometridae). *C. orientalis* is a species with West-Siberian and Far-Eastern disjunctive areal.

Keywords

Altai Mountains, biodiversity, fauna, Lepidoptera, new records, Siberia

Introduction

According to modern estimates, the world fauna of Lepidoptera has been studied by no more than 62% (Ponomarenko and Beljaev 2016). For the territory of the Russian Federation, Sinev (2019) lists 97 families with 2251 genera and 9617 species, 1551 species of which are distributed in the territory of the Pre-Altai region, to which, according to the zoning proposed in the work, the Altai Territory belongs.

The relevance of the work is due to the fact that the study of the species composition of Macrolepidoptera in certain regions of the Russian Federation remains quite poor. For the territory of Western Siberia this was most clearly demonstrated by Knyazev (2020), which, over 20 years of research, more than doubled the species composition of the Omsk region fauna. A significant faunistic novelty (in Lepidoptera) is also found in other regions of Russia, for example in the Kemerovo region (Efimov et al. 2024a, b), Altai Province (Naydenov and Perunov 2023), the republic of Dagestan (Ustjuzhanin et al. 2022; Yakovlev et al. 2022; Tsvetkov 2023), Sakhalin region (Rybalkin and Yakovlev 2017; Rybalkin et al. 2018, 2019, 2022; Dubatolov 2019; Rybalkin 2020a, b; Koshkin et al. 2023; Spitsyna and Spitsyn 2022a, b; Spitsyna et al. 2024) etc.

The local faunas of Lepidoptera in Altai are studied poorly. Relatively complete data are available only for Papilionoidea, Noctuoidea, Geometridae and Sphingidae from several mountain ranges of Altai (Zhdanko 1993; Kosterin 1994; Yakovlev and Nakonechnyi 2001; Yakovlev 2004, 2005, 2012; Bondarenko 2005; Lukhtanov et al. 2007; Volynkin 2012; Rubin and Yakovlev 2013; Yakovlev et al. 2015; Volynkin et al. 2016; Naydenov and Yakovlev 2020; Naydenov et al. 2020). The only attempt to illuminate the complete local fauna of all Lepidoptera is presented for the Tigirek Reserve (Russia, Altai Province) (Volynkin et al. 2011).

Materials and methods

In the period from May to August 2023, 5 expedition trips were made to the territory of the Chineta Reserve, located in the low-mountain part of Western Altai, in the Krasnoshchyokovsky District of the Altai Territory (Fig. 1). The area of the reserve is covered with meadow and steppe vegetation with shrub thickets along river valleys, mixed forests, and azonal vegetation (deciduous riverine forests with *Populus nigra*) (Usik et al. 2008). According to the botanical and geographical zoning, the territory of the reserve is included in the Sredne-Charyshsky taiga-shrub-forest-steppe region of the North-West Altai taiga-shrub-steppe subprovince (Kuminova 1960). The area where the specially protected natural territory is located is characterized by a fairly dense river network. The elevations range from 652 m asl to 992 m asl.

Collections were carried out during the day and at night to reflect the most complete picture of the faunal composition of Lepidoptera in the studied protected natural area. The main methods of collecting butterflies were: catching with an entomological net (for the imagoes mainly active during the day) and catching with autonomous and manual light traps (for the imagoes that are active in the evening and at night).



Figure 1. Location of the Chineta Nature Reserve on the territory of the Altai Territory with designated collection points.

Ethyl acetic acid (ethyl acetate) was used to kill insects in all types of traps. Collection was carried out at the following locations (Fig. 2):

(1) **Russia**, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetinsky Reserve, 14 km SE of village Chineta, Forest-steppe, 775 m, 22–25.05.2023, 24–27.06.2023, 22.07.2023, 24.07.2023, 51.242476° N, 83.180799° E, leg. P. Pavlova

(2) **Russia**, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetinsky Reserve, 10 km N of village Chineta, Steppe, 390 m, 28–29.06.2023, 51.42360° N, 83.05062° E, leg. P. Pavlova

(3) **Russia**, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetinsky Reserve, 16 km SE of village Chineta, Steppe, 706 m, 23.07.2023, 51.25197° N, 83.23104° E, leg. P. Pavlova

(4) **Russia**, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetinsky Reserve, 16 km SE of village Chineta, Forest-steppe, 608 m, 02–03.08.2023, 51.34932° N, 83.28175° E, leg. P. Pavlova

(5) **Russia**, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetinsky Reserve, 20 km SE of village Chineta, Forest-steppe, 710 m, 08–09.08.2023, 51.273891° N, 83.295857° E, leg. P. Pavlova

(6) **Russia**, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetinsky Reserve, 20 km SE of village Chineta, Forest-steppe, 875 m, 10.08.2023, 51.26965° N, 83.02364° E, leg. P. Pavlova.



Figure 2. Typical landscapes of the Chinetinsky Reserve (photo original).

Specimens and genitalia were photographed by an Olympus DP74 camera attached to an Olympus SZX16 stereomicroscope at the Altai State University (Barnaul, Russia). Genitalia preparations were made following Hardwick (1950) and Lafontaine and Mikkola (1987).

The collected material is kept in the collection of the Altai State University. .

The taxonomy of the order Lepidoptera is given in accordance with the Catalogue of Lepidoptera of Russia (Sinev, 2019, 2024). Below is a table with the names of species, as well as an indication of the months in which they were noted for a given area. New species for the region are noted «*».

Results

The list of Macrolepidoptera of the Chinetinsky reserve is presented in the Suppl. material 1: Table 1.

List of new species for the Altai region

Family Arctiidae

**Manulea flavociliata* (Lederer, 1853)

Figures 9, 15

Material examined. 2 male, Russia, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetskiy Reserve, 20 km SE of village Chineta, Forest-steppe, 710 m, 09.08.2023, 51.273892° N, 83.295858° E, leg. P. Pavlova.

Distribution. Trans-Palaearctic species. Found in the Far East, European Russia, the Caucasus and Krasnodar Krai. Also reported for Mongolia, Kazakhstan, China, Korea and Japan. Previously not recorded for the Pre-Altai region (Dubatolov et al. 1993; Dubatolov and Zolotuhin 2011; Sinev 2024).

**Manulea pygmaeola* (Doubleday, 1848)

Figures 10, 16

Material examined. 1 male, Russia, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetskiy Reserve, 20 km SE of village Chineta, Forest-steppe, 710 m, 09.08.2023, 51.273892° N, 83.295858° E, leg. P. Pavlova.

Distribution. The species is distributed throughout the European part of Russia. Found in the Republics of Tatarstan, Mari El, Chuvashia and Mordovia. Indicated in the Caucasus, South Ural and South-West Siberian regions. Reported from North-West and East Kazakhstan. Western Europe north to South Britain (the nominate subspecies lives in Britain), southern Finland, North-West Africa, Asia Minor, Northern Iran. It was not previously noted for the Pre-Altai region (Dubatolov et al. 1993; Dubatolov and Zolotuhin 2011; Sinev 2019, 2024).

Family Erebidae

**Eublemma amasina* (Eversmann, 1842)

Figure 7

Material examined. 1 male, 1 female Russia, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetskiy Reserve, 20 km SE of village Chineta, Forest-steppe, 875 m, 10.08.2023, 51.26965 ° N, 83.02364 ° E, leg. P. Pavlova.

Distribution. Rare, but widespread from the European part of Russia to the Far East. Found in Central Asia, Northern China, Korea and Japan (Anikin et al. 2017; Sinev 2019; Galich and Knyazev 2021). Not recorded for the Pre-Altai region.

****Autophila asiatica* (Staudinger, 1888)**

Figures 3, 11

Material examined. 2 males. Russia, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetsinsky Reserve, 20 km SE of village Chineta, Forest-steppe, 710 m, 09.08.2023, 51.273892° N, 83.295858° E, leg. P. Pavlova.

Distribution. A Central Asian species, found in Saratov, Volgograd, Rostov and Astrakhan regions. It is also noted for the territory of the Western and Eastern Caucasus and Dagestan. In Siberia, it was collected from the territory of the Altai Republic. It was also noted for the fauna of Iran, Azerbaijan and Kazakhstan (Abdurakhmanov et al. 2014). It was not reported for the Pre-Altai region (Sinev 2019, 2024).

Family Geometridae****Scopula prouti* Djakonov, 1935**

Figures 8, 17

Material examined. 1 male, Russia, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetsinsky Reserve, 10 km N of village Chineta, Steppe, 390 m, 28.06.2023, 51.42360° N, 83.05062° E, leg. P. Pavlova

Distribution. The species is found from Buryatia to the Far East. Outside of Russia, it is found in northeastern China, Korea, and Japan (Viidalepp 1996; Beljaev 2005; Sinev 2019, 2024). This location is the westernmost point of the species' habitat.

Family Noctuidae****Lacanobia mongolica* Behounek, 1992**

Figures 5, 13

Material examined. 1 female, Russia, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetsinsky Reserve, 10 km N of village Chineta, Steppe, 390 m, 28.06.2023, 51.42360° N, 83.05062° E, leg. P. Pavlova. 2 male, Russia, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetsinsky Reserve, 14 km SE of village Chineta, Birch-fir Forest, 678 m, 27.06.2023, 51.23959° N, 83.17934° E, leg. P. Pavlova.

Distribution. Described from Eastern Mongolia, later found in the south of Krasnoyarsk Krai, Irkutsk Region, Eastern Transbaikalia (Matov et al. 2008). Found in the Far East (including Sakhalin and the Southern Kuril Islands). Recorded for Japan, Korea and Northeastern China (Kononenko 2003; Sinev 2024).

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

Figures 6, 14

Material examined. 1 male, Russia, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetsinsky Reserve, 10 km N of village Chineta, Steppe, 390 m, 28.06.2023, 51.42360° N, 83.05062° E, leg. P. Pavlova.

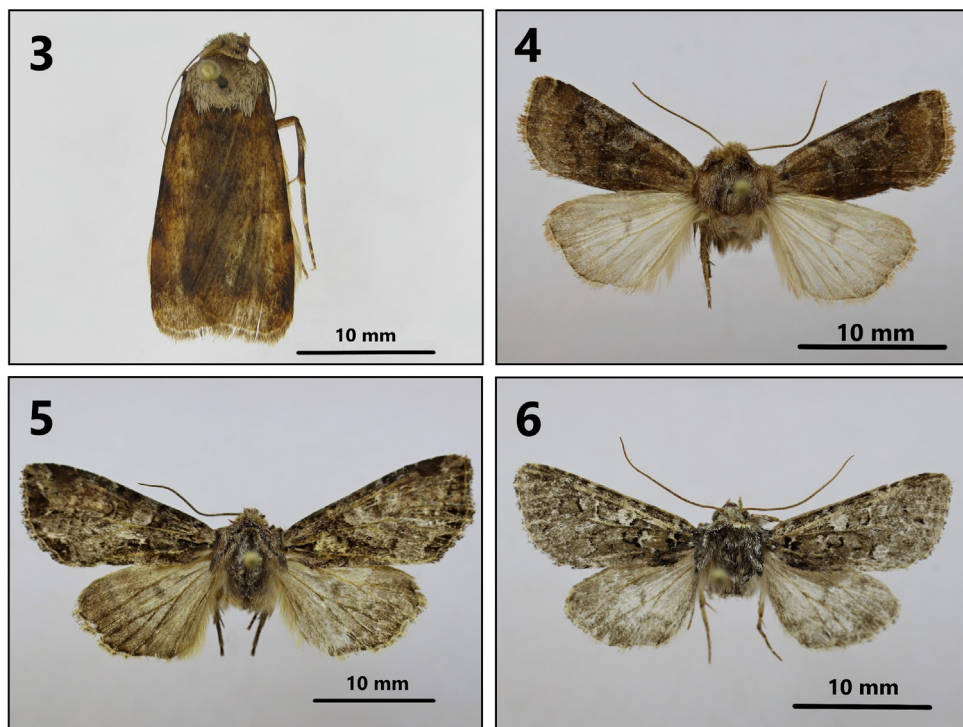
Distribution. A trans-Palaearctic species, found in the European part of Russia, the Western and Eastern Caucasus and the South Ural region. It is recorded for Kazakhstan, Kyrgyzstan, Uzbekistan and Turkmenistan (Abdurakhmanov et al. 2014; Sinev, 2024). The easternmost point of the habitat for this species.

****Cerastis orientalis* Boursin, 1948**

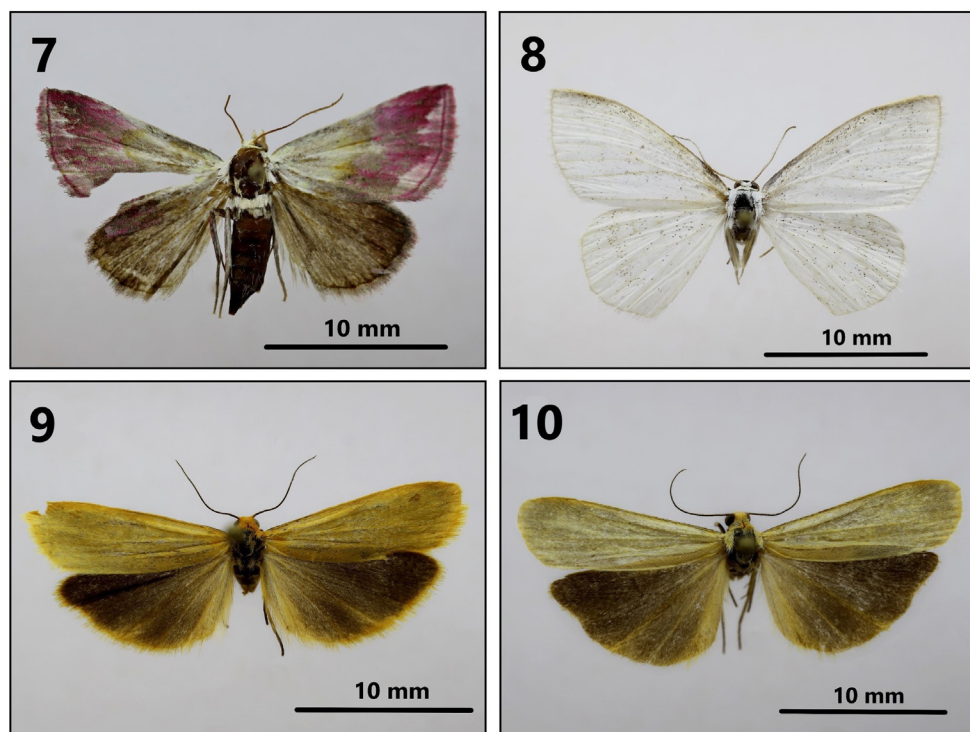
Figures 4, 12

Material examined. 1 male, Russia, West Siberia, Altai Territory, Krasnoshchekovo District, Chinetsinsky Reserve, 14 km SE of village Chineta, Forest-steppe, 775 m, 22.05.2023, 51.242476° N, 83.180799° E, leg. P. Pavlova.

Distribution. The species is found in the Amur Region, Primorsky Krai and Northeast China (Anikin et al. 2016; Mashchenko 1978; Sinev 2024). The westernmost point of the species' habitat.



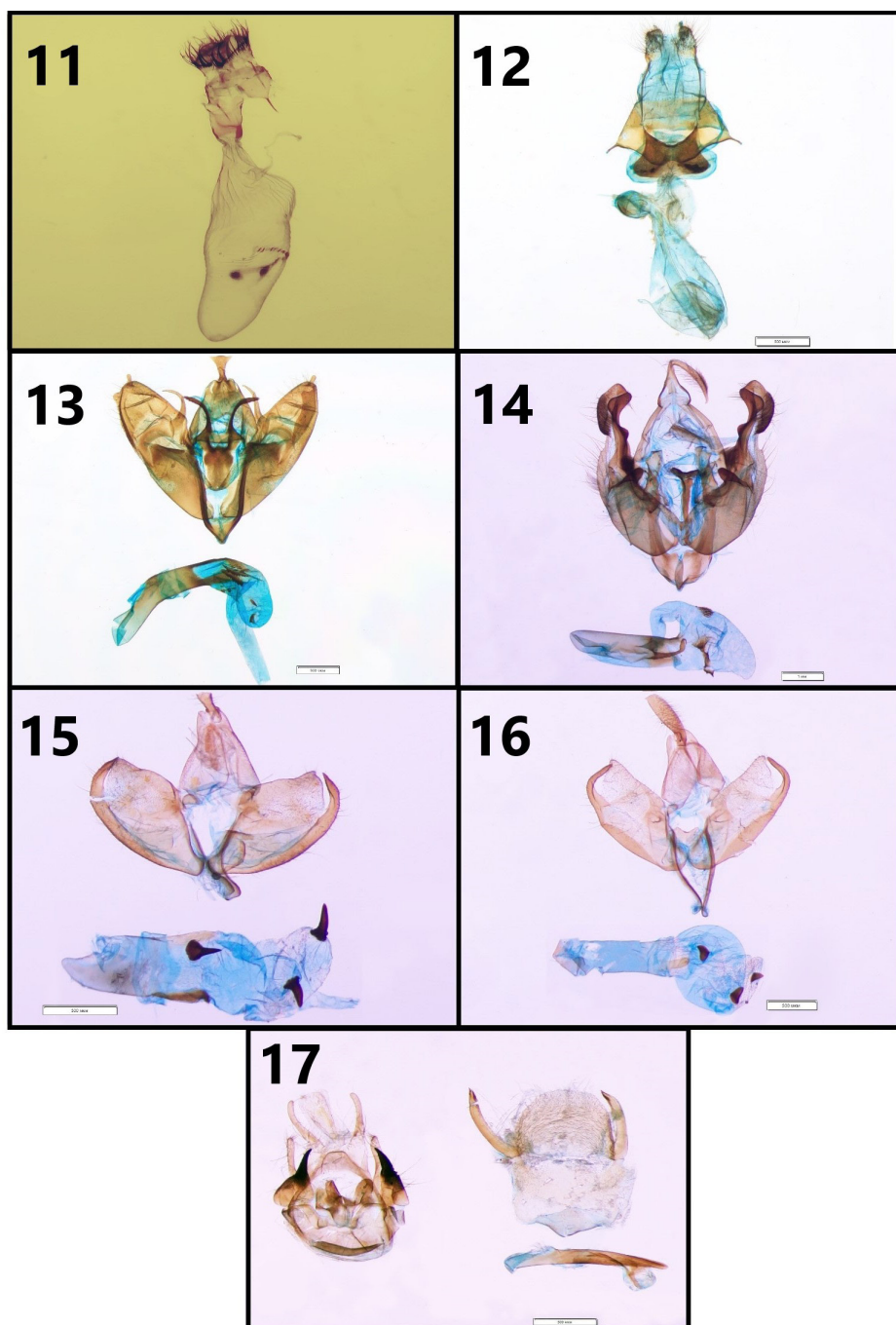
Figures 3–10. Continued on the next page.



Figures 3–10. Continued from the previous page. Adult specimens of Lepidoptera (upside): **3.** *Autophila asiatica* (Staudinger, 1888); **4.** *Cerastis orientalis* Boursin, 1948; **5.** *Lacanobia mongolica* Behounek, 1992; **6.** *Hadena magnolii* (Boisduval, 1829); **7.** *Eublemma amasina* (Eversmann, 1842); **8.** *Scopula prouti* Djakonov, 1935; **9.** *Manulea flavociliata* (Lederer, 1853); **10.** *Manulea pygmaeola* (Doubleday, 1848) (photo 3 by Alexey Yu. Matov; photo 4–10 original).

Discussion

The most interesting finding is *Cerastis orientalis*, which belongs to a complex of species with West Siberian-Far Eastern disjunctive ranges. This group includes, for example, *Limenitis helmanni*, *L. sydyi*, *Mellicta plotina* (Bremer, 1861) (Nymphalidae), *Acronicta major* (Bremer, 1861), *A. leucocuspis* (Butler, 1878), *Euclidia dentata* Staudinger, 1892, *Leucapamea askoldis* (Oberthür, 1880) (Noctuidae), *Cataclysta midas* Butler, 1881 (Pyraustidae) etc. (Dubatolov and Zolotarev 1996; Dubatolov and Kosterin 2000; Dubatolov et al. 2003), some species of Coleoptera from the families Carabidae and Agyrtidae (Dudko 2011).



Figures 11–17. Genital apparatus: 11 – *Autophila asiatica* (Staudinger, 1888); 12 – *Cerastis orientalis* Boursin, 1948; 13 – *Lacanobia mongolica* Behounek, 1992; 14 – *Hadena magnolii* (Boisduval, 1829); 15 – *Manulea flavociliata* (Lederer, 1853); 16 – *Manulea pygmaeola* (Doubleday, 1848); 17 – *Scopula prouti* Djakonov, 1935 (photo 11 by Alexey Yu. Matov; photo 12–17 original).

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Supplementary material 1

Table 1. Macrolepidoptera of the Chinetinsky reserve

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Data type: table

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