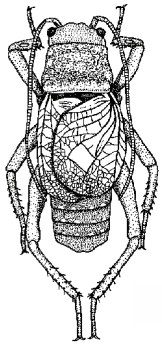

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TWO NEW FOR RUSSIA GEOMETRID MOTHS (LEPIDOPTERA: GEOMETRIDAE) FROM PRIMORSKY KRAI: RECENT IMMIGRANTS OR RARE SPECIES?

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Summary. Two East Asian geometrid moths, *Paratrichopteryx misera* (Butler, 1879) and *Rheumaptera hecate hecate* (Butler, 1878), are recorded from Russia for the first time. Their invasive or native status in the south part of Primorsky Krai is briefly discussed.

Key words: Lepidoptera, Geometridae, fauna, new record, invasion, Russian Far East.

Е. А. Беляев. Две новые для России пяденицы (Lepidoptera: Geometridae: Larentiinae) из Приморского края: недавние вселенцы или редкие виды? // Дальневосточный энтомолог. 2021. N 443. С. 1-5.

Резюме. Впервые в России обнаружены две восточноазиатские пяденицы, *Paratrichopteryx misera* (Butler, 1879) и *Rheumaptera hecate hecate* (Butler, 1878). Кратко обсуждается их инвазивный или местный статус на юге Приморского края.

INTRODUCTION

The Khasan District in Primorsky Krai (Russia) borders with North Korea and Northeast China. It is territory with most warm winter condition on the continental

part of the Russian Far East, wherefore a number of southern species of plants and animals have northern limit of their areas here. From time to time new southern species are found in Khasan District. They could penetrate into Russia as accidental bringing of single specimens with typhoons, or as result of invasion in accordance with the current trend of the global warming. Dubatolov (2021), Koshkin *et al*. (2021) and Ustjuzhanin *et al*. (2021) reviewed of those invasions of moths. Among the geometrid moths only 14 species are so far unknown to the north of Khasan District: *Alsophila vladimiri* Viidalepp, 1986, *Callabraxas fabiolaria* (Oberthür, 1884), *Dysstroma cinereata* (Moore, 1867), *Episteira nigrilinearia* (Leech, 1897), *Hemistola tenuilinea* (Alphéraky, 1897), *Heterothera postalbida* (Wileman, 1911), *Idaea trisetata* (Prout, 1922), *Idiotephria amelia* (Butler, 1878), *Luxiaria amasa* (Butler, 1878), *Maxates fuscofrons* (Inoue, 1954), *Megabiston plumosaria* (Leech, 1891), *Operophtera japonaria* (Leech, 1891), *Thinopteryx crocoptera* (Kollar, 1844), and *Xanthorhoe saturata* (Guenée, 1957 [1858]) (Beljaev, 2016). Herein, two more taxa are added to them and their invasive or native status is discussed.

NEW RECORDS

Family Geometridae

Subfamily Larentiinae

***Paratrichopteryx misera* (Butler, 1879)**

Figs 1, 2

Lobophora misera Butler, 1879: 443. Type locality: Yokohama, Japan.

MATERIAL EXAMINED. **Russia**: Primorsky Krai, Khasan District, 13 km SW Slavyanka, Ryazanovka, 42°47'37"N, 131°15'08"E, on light, 15.V 1987, 1♀, E.A. Beljaev leg.; 34 km SSW of Slavyanka, western slopes of Gamov Peninsula, Vityaz, 42°35'57" N, 131°11'14" E, on light, 17.V 2021, 1♀, Yu. Tshistjakov leg.

DISTRIBUTION. Russia (first record), Japan (Hokkaido, Honshu) (Nakajima & Yazaki, 2011), South Korea (Choi, 2007).

REMARKS. *P. misera* is rare species known from the Korean Peninsula only from most northern part of South Korea (Choi, 2007; Kim *et al*., 2016), on the distance about 600 km SW from new localities in Russia. In Japan it also is rare species with local and limited distribution (Nakajima &Yazaki, 2011). In North Korea this species has not been found yet. In Japan larvae feed on different *Quercus* (Fagaceae) including *Q. dentata* (Hashimoto, 2021), which is also common in the Khasan District of Russia.

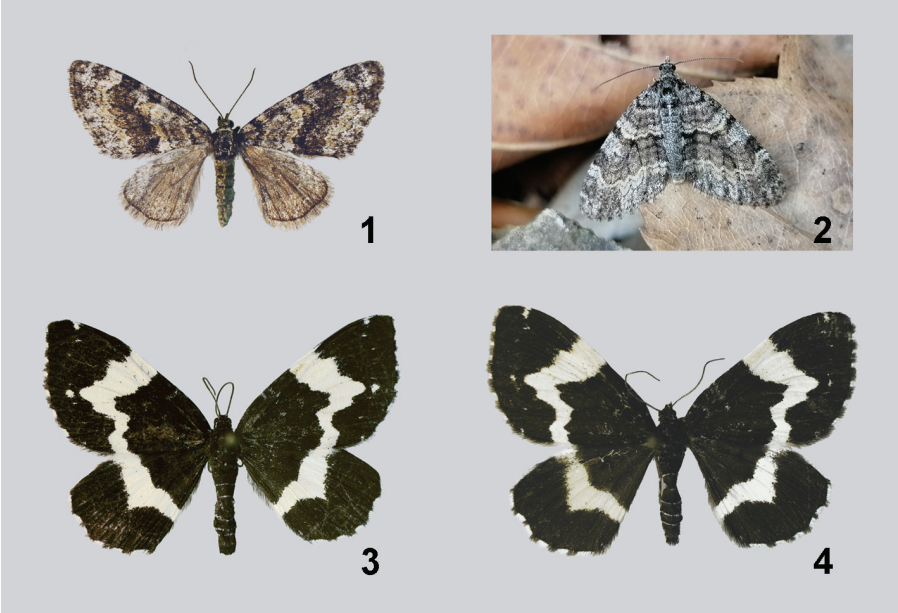
***Rheumaptera hecate hecate* (Butler, 1878)**

Figs 3, 4

Melanippe hecate Butler, 1878: 448. Type locality: Yokohama, Japan.

MATERIAL EXAMINED. **Russia**: Primorsky Krai, Khasan District, 22 km SW of Slavyanka, Sukhanovsky Ridge, upper Gladkaya River, 42°47'52" N, 131°08'12" E,

oak-rhododendron woodland, at day time, 10.VI 1987, 1♂, E.A. Beljaev leg.; 16 km WSW Slavyanka, middle Ryazanovka River, 42°50'35"N, 131°11'05"E, at day time, 11.VI 1989, 1♂, E. Beljaev leg.; 36 km SW of Slavyanka, eastern slopes of Gamov Peninsula, Telyakovsky Bay, 42°34' N, 131°12' E, oak-rhododendron woodland, on light, 15–16.VI 2003, 3♂, 3♀, E. Beljaev leg.; 34 km SW of Slavyanka, western slopes of Gamov Peninsula, Vityaz, 42°35'57"N, 131°11'14" E, on the flowers of *Arabis* (Brassicaceae), 6.VI 2004, 1 ♀, M. Proshchalykin leg.



Figs 1–4. Geometrid moths. 1, 2 – *Paratrichopteryx misera* (Butler, 1879), female: 1 – from Ryazanovka, 2 – from Vityaz (photo by Yu.A. Tshistjakov); 3, 4 – *Rheumaptera hecate hecate* (Butler, 1878) from Telyakovsky Bay: 3 – male, 4 – female.

DISTRIBUTION. Nominative subspecies: Russia (first record), Japan (Honshu, Shikoku, Kyushu) (Nakajima & Yazaki, 2011), and Korea (Choi, 2007). Subspecies *Rh. h. matsumurai* Inoue, 1977 is distributed in Russia (South Sakhalin and South Kuriles) and Japan (Hokkaido) (Nakajima & Yazaki, 2011).

REMARKS. The Russian records are located about 140 km north-east from the nearest known locality of the species in North Korea (province North Khamgen, in the vicinity of Kumgang, 15 km NW of Chondjin) (Tóth *et al.*, 2018). Larval host plants recorded in Japan are different Ericaceae (*Elliottia paniculata*, *Rhododendron multiflorum*, *Rhododendron molle*, *Vaccinium vitis-idaea*) and *Betula platyphylla* (Betulaceae) (Nakajima & Yazaki, 2011), in Korea – *Rhododendron schlippenbachii* (Ericaceae) (Kim *et al*., 2016); in the thickets of the latter, the moths were caught on the Sukhanovsky Ridge and at the Telyakovsky Bay in Russia.

DISCUSSION

Geometrid moths, in comparison with other large families of Macrolepidoptera, are mostly conservative to their habitats and possess low migratory activity, which made this family highly convenient for biogeography studies (Holloway, 1986; Beljaev, 2011). Considering these properties, the finding of *Rh. hecate* and *P. misera* could indicate presence of native populations of these species in the Russian Far East. Collecting history of *Rh. hecate* suggests it may be native for explored area at least from end of XX century. This species was unlikely missed earlier due to its bright wing patterns and diurnal activity. But most of the specimens have been collected in less visited locations. Absence of records of *Rh. hecate* after 2004 is probably the result of lack of collecting of geometrids during the flight of this species in their habitats. As for *P. misera*, this rare and outwardly similar to common and simultaneously flying *Esakiopteryx volitans* (Butler, 1878) could be unnoticed earlier. However, unambiguous conclusion whether these species are long-lived inhabitants of this area in Russia or invaded recently is problematic because of highly insufficient entomological studies in Khasan District in XX century. Nevertheless, the discussed finds of *Rh. hecate* and *P. misera* in the Russian Far East correspond to the current global warming trend.

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