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RESEARCH ARTICLE

A new species of the genus *Nephopterix* (Lepidoptera: Pyralidae) from Sakhalin Island

Новый вид рода *Nephopterix* (Lepidoptera: Pyralidae) с острова Сахалин

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Abstract. *Nephopterix beljaevi* **sp. nov.** (Lepidoptera: Pyralidae) from the southwestern part of Sakhalin Island is described. In the structure of the male and female genitalia, the new species is most closely related to the type species of the genus, *Nephopterix angustella* Hübner, 1796. The new species can be distinguished from it by the indistinct pattern of the forewings, a cone-shaped protrusion on the forehead, a much smaller tooth at the first antennal segment in the male, the cucullus with a rounded apex, larger spines in the aedeagus, and a group of strong spines in the middle part of bursa copulatrix.

Резюме. Новый вид *Nephopterix beljaevi* **sp. nov.** (Lepidoptera: Pyraloidea, Pyralidae) описан из юго-западной части острова Сахалин. По строению гениталий самцов и самок он наиболее близок к типовому виду рода *Nephopterix angustella* Hübner, 1796. Новый вид отличается от него нечетким рисунком передних крыльев, конусовидным выступом на лбу, более коротким зубцом на первом членике антенн самца, кукуллюсом с закругленной вершиной, более крупными шипами эдеагуса и группой сильных шипов в средней части копулятивной сумки.

Key words: taxonomy, Sakhalin Island, Russia, Lepidoptera, Pyralidae, new species

Ключевые слова: таксономия, Сахалин, Россия, Lepidoptera, Pyralidae, новый вид

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Introduction

The genus *Nephopterix* Hübner, 1825 includes a number of species distributed in the Old World and Australia. It is obviously a composite taxon that needs revision. In a number of publications, many species that previously belonged to *Nephopterix* were transferred to other genera. Most of the Far Eastern species described in this genus are now placed in the genera *Sciota* Hulst, 1888 and *Rhodophaea* Guenée, 1845, and the new monotypic genus, *Stenopterix* Streltzov, 2011, was established recently for *Nephopterix bicolorella* Leech, 1889 (Streltzov, 2011, 2012; Yamanaka et al., 2013; Leraut, 2014; Sinev et al., 2019). Currently, the genus *Nephopterix* does not include any species from the fauna of the Eastern Palaearctic Region.

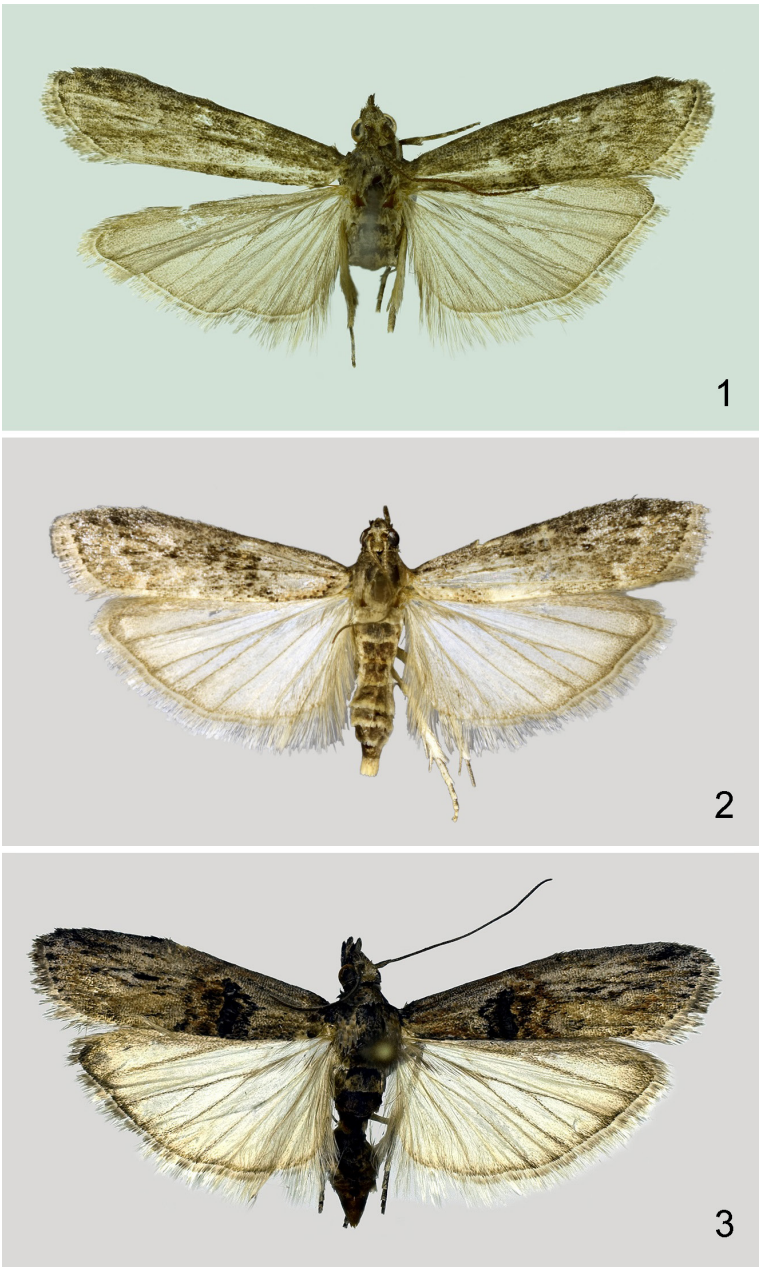
Materials from Sakhalin Island collected independently by E.A. Belyaev and O.L. Titova include specimens that, despite their weak external similarity to the type species of the genus *Nephopterix*, differ from it in the male and female genitalia. Further research showed that these specimens belong to a new species described below.

Material and methods

The material was collected on Sakhalin Island in July 2019 in the vicinities of the city of Kholmsk by O.L. Titova and in the settlement of Yasnomorskiy near the city of Nevel'sk by E.A. Belyaev, and processed using standard methods. Photographs of the type specimens were taken with a Nikon D3300 digital camera equipped with an AF-S DX Micro NIKKOR 40mm f/2.8G lens using the focus stacking technique and subsequently processed with Zerene Stacker 1.04 and Adobe Photoshop 21.2.3 software. The genitalia were photographed with a ToupCam UCMOS05100KPA camera mounted on a Micromed-1 microscope and processed using the above-mentioned software.

The holotype and paratypes of the new species are deposited in the collection of the Zoological Institute of the Russian Academy of Sciences, Saint Petersburg (ZISP).

For comparison with the new species, specimens of *Nephopterix angustella* Hübner, 1796 were examined: 2 males (genitalia slide PPH054), 1 female (genitalia slide PPH040), **South Ossetia**, *Tskhinval Distr.*, 2 km NW of Grom, 42°10′6″N, 44°11′53″E, 930 m, 22–25.VI.2021, A. Streltzov, P. Ustjuzhanin & R. Yakovlev leg. (ZISP).



Figs 1–3. *Nephopterix* spp., habitus. **1**, *N. beljaevi* **sp. nov.**, holotype, male; **2**, *N. beljaevi* **sp. nov.**, paratype, female; **3**, *Nephopterix angustella* Hübner, 1796, female

Taxonomy

Order **Lepidoptera**

Family **Pyralidae**

Subfamily **Phycitinae**

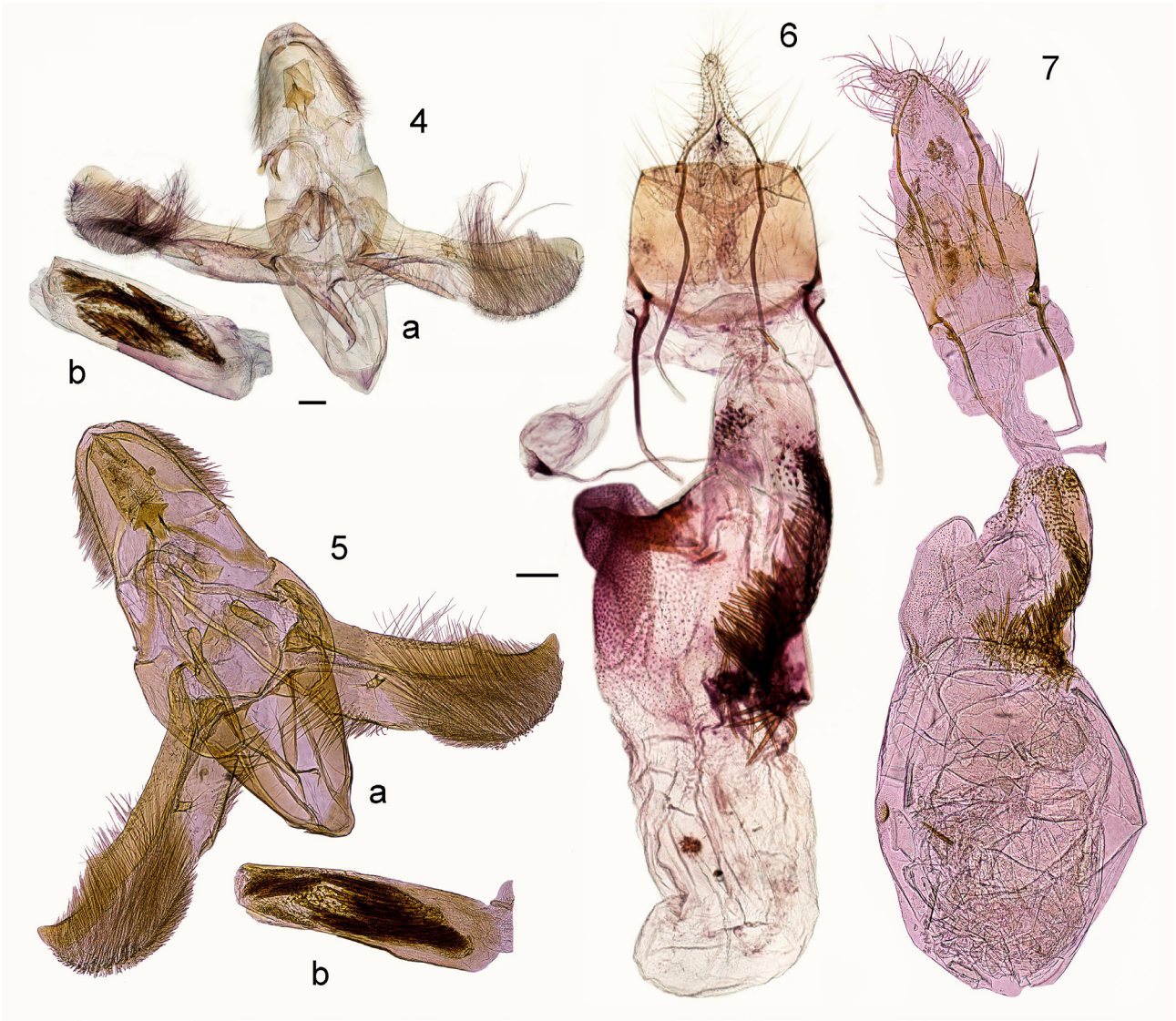
Genus ***Nephopterix*** Hübner, 1825

***Nephopterix beljaevi* sp. nov.**
(Figs 1, 2, 4, 6)

Holotype. Male (genitalia slide PPH060), **Russia**, *Sakhalin Prov.*, Sakhalin I., 8 km NNE of Nevel'sk, Yasnomorskoe Settlm., 46°45′N, 141°55′E, 18–21.VII.2019, E.A. Beljaev leg. (ZISP).

Paratypes. 1 female (genitalia slide PPH061), same data as for holotype; 3 females (genitalia slide PPH046, PPH072), **Russia**, *Sakhalin Prov.*, Sakhalin I., Kholmsk, 47°01′41″N, 142°02′13″E, 14.VII.2019, O.L. Titova leg. (ZISP).

Description. *Male* (Fig. 1). Head rounded. Frons with pointed cone-shaped protrusion covered with dense adpressed oblong scales. First segment of antennae with very small tooth, subse-



Figs 4–7. *Nephopterix* spp., genitalia. **4**, *N. beljaevi* **sp. nov.**, male genitalia (a, general view; b, aedeagus); **5**, *Nephopterix angustella* Hübner, 1796, male genitalia (a, general view; b, aedeagus); **6**, *N. beljaevi* **sp. nov.**, female genitalia; **7**, *Nephopterix angustella*, female genitalia. Scale bars: 100 μm.

quent segments of flagellum forming a bend, flagellum ventrally covered with relatively long (up to 2 mm) cilia. Labial palpus 1.5 times as long as eye diameter, curved, covered with oblong dark gray scales. Eyes round, bare. Forewing length 9.3 mm, wingspan 19 mm. Background coloration of forewings grey. Pattern indistinct, with blackish gray elements: dotted submarginal band, two small black dots in discal cell, and incomplete postbasal transversal band at anal margin of wing. Fringes of forewings unicolor, light gray. Hindwings light gray with narrow shading along margins. Fringes of hindwings whitish gray.

Male genitalia (Fig. 4). Uncus wide, with rounded apex, covered with long setae laterally. Gnathos small, diamond-shaped, with three distinct apices. Transtilla long, with two curved processes being slightly widened and rounded apically; juxta horseshoe-shaped. Valva oblong, with almost parallel sides, cucullus rounded, slightly curved dorsally. Aedeagus straight, with three areas of large spines.

Female (Fig. 2). Same as male, but antenna simple, first segment without tooth, cilia on flagellum shorter, wingspan up to 20 mm.

Female genitalia (Fig. 6). Papillae anales wedge-shaped in lateral view, half as long as poste-

rior apophyses, covered with short setae. Anterior apophyses as long as antrum, slightly shorter than posterior ones. Ostium as wide as antrum; antrum membranous, narrow. Ductus bursae short, membranous, gradually widened before bursa copulatrix. Bursa copulatrix large, oblong, with sclerotised rounded appendix, group of strong spines in middle part, small spines near base of seminal duct, and rounded signum of small spines. Corpus bursae almost three times as long as anterior apophyses.

Differential diagnosis. In the characters of external morphology and the structure of the male and female genitalia, the new species is most similar to the type species of the genus, *Nephopterix angustella* Hübner, 1796 (Figs 3, 5, 7). The new species can be distinguished from it by indistinct pattern of forewings, cone-shaped protrusion on forehead, much smaller tooth on first segment of antennae in male, cucullus with rounded apex, larger spines of aedeagus tube, and bursa copulatrix with group of strong spines in middle part [*vs.* distinct pattern of forewings, forehead smooth, without protrusion, first segment of antennae with noticeable tooth resembling that of species of *Acrobasis* Zeller, 1839, cucullus with pointed apex (Fig. 5), smaller spines of aedeagus tube, and bursa copulatrix without group of strong spines].

The new species has almost the same differences from the second known Palaearctic species *Nephopterix subangustella* Larsen, 2020, recently described from the Canary Islands (Larsen, 2020).

Distribution. Russia, Sakhalin Island.

Bionomics. The adult specimens were collected in July. The preimaginal stages and host plants are unknown. In Europe, the larvae of *Nephopterix angustella* were noted on the European spindle tree (*Euonymus* sp.) (Sinev, 1986), and it is quite possible that the larvae of *Nephopterix beljaevi* **sp. nov.** on Sakhalin develop on one of the local species of *Euonymus*, e.g., on *E. sachalinensis*.

Etymology. The species is named after the famous Russian lepidopterist Evgeniy Beljaev (Vladivostok, Russia).

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