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Description of a new *Ornithomya* Latreille, 1802 species (Diptera: Hippoboscidae) from Simushir Island, Russia

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Abstract. Louse flies from the genus *Ornithomya* Latreille, 1802 (Diptera: Hippoboscidae) inhabit mainly the middle latitudes of the Old World. The fauna of this genus is fairly extensive. Despite the continued interest of researchers in this group, the knowledge of the fauna of this genus in Russia remains insufficient. A new species of the genus *Ornithomya*, *O. nazarovi* Yatsuk, Matyukhin et Nartshuk, **sp. n.**, is described from Simushir Island (Sakhalin Region of Russia). The new species differs from other *Ornithomya* species inhabiting Russia and Japan in its combined length of head and thorax, length of the wings, number and morphology of setae on the scutellum, arrangement of microtrichia on the wings and colour of the dorsal and ventral sides of the thorax.

Key words: Diptera, Hippoboscidae, *Ornithomya*, louse flies, new species, Russia, Kuril Islands.

Описание нового вида рода *Ornithomya* Latreille, 1802 (Diptera: Hippoboscidae) с острова Симушир, Россия

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Резюме. Мухи-кровососки рода *Ornithomya* Latreille, 1802 (Diptera: Hippoboscidae) населяют в основном средние широты Старого Света. Фауна этого рода довольно обширна. Несмотря на постоянный интерес исследователей к этой группе, изученность фауны этого рода в России остается недостаточной. Описан новый вид рода *Ornithomya* – *O. nazarovi* Yatsuk, Matyukhin et Nartshuk, **sp. n.** – с острова Симушир (Сахалинская область, Россия). Новый вид отличается от других видов рода *Ornithomya*, населяющих Россию и Японию, объединенной длиной головы и груди, длиной крыльев, количеством щетинок на щитке, расположением микротрихий на крыльях, окраской дорсальной и вентральной сторон груди.

Ключевые слова: Diptera, Hippoboscidae, *Ornithomya*, мухи-кровососки, новый вид, Россия, Курильские острова.

Introduction

The family Hippoboscidae Samouelle, 1819 includes approximately 213 species [Dick, 2018; Oboňa et al., 2019]. They feed on the blood of their hosts – mammals and birds [Hutson, 1984]. Hippoboscidae flies are of great veterinary importance for birds and mammals as the vectors of many dangerous pathogens [Bequaert, 1954; Doszhanov, 1980, 2003; Gancz et al., 2004; Farajollahi et al., 2005; Khametova et al., 2018; Peña-Espinoza et al., 2023; Wawman, 2023] and additionally, as a transport for other parasites – phoretic mites [Fain, 1965a, b; Hill et al., 1967; Philips, Fain, 1991] and feather lice [De Moya, 2019; Lee et al., 2022].

Louse flies from the genus *Ornithomya* Latreille, 1802 inhabit mainly the middle latitudes of the Old World [Hutson, 1984]. The fauna of this genus is fairly extensive.

It includes 31 living species [Dick, 2018; Nartshuk et al., 2022; Matyukhin et al., 2023; Yatsuk et al., 2023] and one fossil species [Maa, 1966]. To date, eight species from this genus have been discovered on the territory of Russia, Kazakhstan, Uzbekistan and Kyrgyzstan: *O. avicularia* (Linnaeus, 1758), *O. biloba* (Dufour, 1827), *O. chloropus* (Bergroth, 1901), *O. comosa* (Austen, 1930), *O. fringillina* (Curtis, 1836), *O. strigilis* Nartshuk, Yatsuk et Matyukhin, 2022, *O. triselevae* Matyukhin, Yatsuk et Nartshuk, 2023 and *O. krivolutskii* Yatsuk, Matyukhin et Nartshuk, 2023.

All *Ornithomya* species are parasites of birds, especially of birds of prey [Maa, 1969a; Doszhanov, 1980, 2003]. These birds have large body sizes, a predatory beak, dense plumage, large legs with large claws, and do not clean themselves very well. They feed on meat, without using small insects as food, which makes them attractive

to parasites. Some small non-predatory birds also lack the ability to effectively clean their plumage and catch parasites in it [Matyukhin, Yatsuk, 2021].

Despite the continued interest of researchers in this group, the knowledge of the fauna of this genus in Russia remains insufficient. For example, data on the existence of several more unknown species from the genus *Ornithomya* are given for the Russian Far East [Meißner et al., 2020]. The aim of the present work is to describe a new *Ornithomya* species from Sakhalin Region of Russia.

Material and methods

Ya.A. Red'kin and P.A. Smirnov collected birds and its parasites flies in the Kuril Islands as part of the study of birds fauna. During the study on Simushir Island from July to August, 2023, about 300 birds from 58 species were viewed. Of these, 76 birds from 20 species were caught or found dead, including the pine grosbeak *Pinicola enucleator urupensis* Buturlin, 1915 from which a new species of *Ornithomya* was collected. The range of this bird subspecies includes the Kuril Islands and, possibly, the northern part of Japan. It is common and numerous on Simushir Island. The bird is sedentary; in winter it can stay in the same places, but part of the population migrates to more southern islands.

The louse flies material is fixed in 96% ethanol. Morphological terminology follows Maa [1967] and Hutson [1984].

Order Diptera Linnaeus, 1758
Family Hippoboscidae Samouelle, 1819
Subfamily Ornithomyiinae Bigot, 1853
Genus *Ornithomya* Latreille, 1802
Ornithomya nazarovi
 Yatsuk, Matyukhin et Nartshuk, **sp. n.**
 (Figs 1–4)

Material. Holotype, ♂ (Zoological Institute of the Russian Academy of Sciences (St Petersburg, Russia), inventory number INS_DIP_0001109): Russia, Sakhalin Region, Kuril Urban District, Simushir Island, collected from pine grosbeak *Pinicola enucleator urupensis* Buturlin, 1915, 5.07.2023 (Ya.A. Red'kin).

Description. Head and thorax length combined 2.5 mm.

Head with posterior part located between humeral tubercles and slightly covering anterior margin of thorax. Eye one-quarter as wide as head. Ocelli separated from each other by two width of ocellus. Inner orbits slightly widened posteriorly. Width of inner orbit almost equal to one-half of mediovertex width. Length of mediovertex equal to half of head length. 4 black and 4 thin light orbital setae present in the center and 8 black – near antennae. Posterior margin of lunula rounded. Lunula horns located between antennae, clearly separated from lunula. Anterior margin of lunula horns notched. Palpus equal in length to 2nd antennal segment. Antennae bicolour with basal brown and apical light parts. Ventral side of head light.

Mesonotum light brown. Humeral tubercles approximately cone-shaped, protruding anterolaterally. Longitudinal, transversal and scuto-scutellar sutures clearly visible. Transversal suture interrupted in middle; longitudinal suture not reaching scuto-scutellar suture. Setae of mesonotum: 1 long humeral seta in center, 2 long and approximately 8 short humeral setae close to anterior margin, 9 black mesopleural setae, 1 of them long, 1 long and 2 short black notopleural setae, 1 strong and 2 thin postalar

setae, 1 prescutellar seta. Setae of scutellum: thin light setae forming fringes on its anterior and posterior margins; 6 long black setae forming transverse row along posterior margin of scutellum; group of light setae present in center of scutellum. Ventral side of thorax light.

Wing length 5 mm. Wing with full venation, with 3 transverse and 7 longitudinal veins. Costa interrupted before juncture with Sc; longitudinal veins R_1 , R_{2+3} and R_{4+5} connecting with costa at acute angle. Section on costa between juncture of R_1 and R_{2+3} almost equal to section between juncture of R_{2+3} and R_{4+5} . The transverse vein between cells 2bc and 1m mostly unpigmented. Costa and basicosta covered with hairs. Microtrichia covering most of cells 3r, excepting lacuna without microtrichia in cell base, and 1m, excepting lacuna without microtrichia in cell base and stripe along vein M_{3+4} . Microtrichia slightly cover distal corner near vein M_{3+4} in cell 2m. Wing membrane light and transparent.

Legs light. Femora strong. Claws bifid. Empodium and paired pulvilli not reduced.

Abdomen covered with short setae. Tergites 1 + 2 with straight posterior margin. Tergites 3 and 4 approximately one third as wide as abdomen, tergite 5 almost reaches abdomen edges. Tergite 5 with 2 strong black setae at each lateral edge. Tergite 6 divided into two oval sclerites, each with 4 strong black setae and 2 less strong setae.

Comparison. *Ornithomya chloropus* is closest in species morphological features to *O. nazarovi* Yatsuk, Matyukhin et Nartshuk, **sp. n.** Two of its subspecies, *O. chloropus chloropus* (Bergroth, 1901) and *O. chloropus extensa* Maa, 1967, differ from the new species in colour of the dorsal side of the thorax (dark brown), in the colour of the ventral side of the thorax (presence of diamond-shaped dark spots on the basisternum) and in the colour of the head ventral side (distinctly dark triangles, extending forward to vibrissal area) [Maa, 1967; Doszhanov, 1980, 2003]. In addition, *O. chloropus chloropus* differs in the number of setae at each lateral edge of the tergite 5 (3–4) [Doszhanov, 1980, 2003]. In *O. chloropus montivaga* Maa, 1975 dark markings of the head and thorax are very poorly developed, but the colour of the dorsal side of the thorax is brown. Additionally, there are 2 strong setae on the tergite 6 [Maa, 1975]. All subspecies differ in arrangement of wing microtrichia: in *O. chloropus chloropus* microtrichia not so tightly cover cell 1m [Doszhanov, 1980, 2003], in *O. chloropus extensa* microtrichia form a strip in cell 2m [Maa, 1967], in *O. chloropus montivaga* cell 1m with 3 microtrichiate stripes [Maa, 1975].

Other *Ornithomya* species inhabiting Russia and Far East islands differ from the new one in the following features:

– *O. avicularia* in the head and thorax length combined (3–3.5 mm), wing length (5.5–7 mm), the ratio of section of costa between junctions of R_1 and R_{2+3} to section between the junctions of R_{2+3} and R_{4+5} (2 times) and eye width (one-third as wide as head);

– *O. biloba* in the palpus length (palpus longer than antennae), number of prescutellar setae (4–5) and arrangement of wing microtrichia (microtrichia cover almost entirely cells 3r and 1m and almost half of cell 2m);

– *O. candida* Maa, 1967 in arrangement of microtrichia (microtrichia form 3 stripes in cell 1m), number of long scutellum setae (4) and the ratio of section of costa between junctions of R_1 and R_{2+3} to section between the junctions of R_{2+3} and R_{4+5} (1.5 times);

– *O. comosa* in the colour of the ventral side of the head (dark brown), eye width (one-third as wide as head),



Figs 1–4. *Ornithomya nazarovi* Yatsuk, Matyukhin et Nartshuk, *sp. n.*, male, holotype.

1 – general view, dorsal side; 2 – head, thorax and abdomen, ventral side; 3 – head, thorax and abdomen, dorsal side; 4 – wing drawing. Scale bars 0.5 mm. Photographs by S.A. Shchedrin.

Рис. 1–4. *Ornithomya nazarovi* Yatsuk, Matyukhin et Nartshuk, *sp. n.*, самец, голотип.

1 – общий вид, дорсально; 2 – голова, грудь и брюшко, вентралью; 3 – голова, грудь и брюшко, дорсально; 4 – рисунок крыла. Масштабные линейки 0.5 мм. Фотографии С.А. Щедрина.

number of long scutellum setae (10–12) and arrangement of wing microtrichia (microtrichia cover all wing cells);

– *O. fringillina* in the wing length (3.5–4.5 mm), eye width (one-third as wide as head), number of scutellar and humeral setae (4 long scutellar setae and 2 humeral setae) and arrangement of wing microtrichia (microtrichia form stripe in cell 2m) [Doszhanov, 1980, 2003];

– *O. krivolutskii* in the number of scutellar setae (presence of 4 black long setae above 6 strong setae row along posterior margin of scutellum), the ratio of section of costa between junctions of R_1 and R_{2+3} to section between the junctions of R_{2+3} and R_{4+5} (2 times), the head and thorax length combined (3 mm), wing length (4 mm) and arrangement of wing microtrichia (microtrichia cover most of cells 3r, 1m and distal part of cell 2m) [Yatsuk et al., 2023];

– *O. strigilis* in the head and thorax length combined (4.3 mm), wing length (7.5–8 mm) and eye width (one-third as wide as head) [Nartshuk et al., 2022];

– *O. triselevae* in the ratio of section of costa between junctions of R_1 and R_{2+3} to section between the junctions of R_{2+3} and R_{4+5} (2 times), wing length (5.8–6 mm), eye width (one-third as wide as head) and number of long scutellar setae (4) [Matyukhin et al., 2023].

The arrangement of microtrichia on the wings is close to *O. bequaerti* Maa, 1969 [Maa, 1969b], *O. ambigua* Lutz, 1915 [Maa, 1964] and *O. rupes* Hutson, 1981 [Hutson, 1981]. But in *O. bequaerti* and *O. rupes* microtrichia form stripe in cell 2m, and in *O. ambigua* cover almost half of cell 2m. Additionally, in *O. ambigua* scutellum with many long and short setae, those near scuto-scutellar suture in irregular row [Maa, 1964], in *O. rupes* wing membrane with slight brownish tinge [Hutson, 1981], in *O. bequaerti* 4 long setae of scutellum [Maa, 1969b].

Hosts. The new species was collected from the pine grosbeak *Pinicola enucleator urupensis*.

Etymology. The new species is named in honour of Yuriy Nikolaevich Nazarov, professor at the Far Eastern Federal University, who studied birds and their parasites, in particular Hippoboscidae flies.

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