

## New records of *Craniophora minuscula* Kiss et Jinbo, 2016 (Lepidoptera, Noctuidae, Acronictinae) from Russia

## Новые находки *Craniophora minuscula* Kiss et Jinbo, 2016 (Lepidoptera, Noctuidae, Acronictinae) в России

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**Keywords:** Russian Far East, Japan, genitalia, abdominal segment, external variability.

**Ключевые слова:** Дальний Восток России, Япония, гениталии, сегменты брюшка, внешняя изменчивость.

**Abstract.** In the present study, we give new faunistical records of *Craniophora minuscula* Kiss et Jinbo, 2016 from the Russian Far East and compare the male and female genitalia and the last abdominal segments of the Japanese and Russian Far Eastern populations and with *C. pacifica* Filipjev, 1927.

**Резюме.** В статье приводятся находки *Craniophora minuscula* Kiss et Jinbo, 2016 как нового вида для фауны Дальнего Востока России. Показаны различия гениталий самцов и самок из Японии и Дальнего Востока России и отличия от близкого вида *C. pacifica* Filipjev, 1927.

### Introduction

*Craniophora minuscula* Kiss et Jinbo, 2016 was described as a member of *Craniophora* s. str. [Kiss, 2017] from Japan. This species, based on the original description [Kiss, Jinbo, 2016], was considered as endemic to Japan, where it occurs in three well separated populations. The first population lives in Hokkaido, where the species is widely distributed [Sugi, 1982]; the other two occurs in two rather distant areas of Honshu: Sodeyama, Iwate Prefecture [Saito, 1981], Togakushiyama, Nagano Prefecture [Sugiyama, 1989; Tanaka, Umetsu, 1994] and Hiroshima and Okayama Prefectures [Uno, 1986]. However, recently the first author found some *C. pacifica*-like specimens from the Russian Far East in the collection of Zoological Institute of the Russian Academy of Sciences (Saint-Petersburg, Russia) and the private collections of Péter Gyulai (Miskolc, Hungary) which were proved to belong to *C. minuscula* (Kiss, 2017). The determination of the specimens in the collection of Zoological Institute of the Russian Academy of Sciences was checked by the study of the genitalia by the second author.

Present paper contains the data of these additional specimens and the comparisons of the male and female genitalia and the last abdominal segments of the Japa-

nese and Russian Far Eastern populations and with *C. pacifica* Filipjev, 1927.

### Material and methods

The examined and illustrated specimens are preserved in the collections of Hungarian Natural History Museum (HNHM, Hungary, Budapest), National Museum of Nature and Science (NSMT, Japan, Tsukuba), Staatliches Museum für Naturkunde Karlsruhe (SMNK, Germany, Karlsruhe), Tomakomai Experimental Forest Station of Hokkaido University (TOEF, Japan, Tomakomai), Zoological Institute of the Russian Academy of Sciences (ZISP, Russia, Saint-Petersburg) and the private collections of Péter Gyulai (Pgy, Hungary, Miskolc) and Seiji Miyake (SMC, Japan, Okayama).

The habitus pictures of the adults were taken with Canon EOS 550D with Tamron AF 90mm F2.8 Di Macro 1:1 SP and Leica DFC290. The genital dissections were made by the authors and were based on the technique described in Kiss and Jinbo, 2016, except a few genitalia prepares in the collection of ZISP which are preserved in small plastic tubes with glycerine. The photos of the slides were taken by an Olympus DP70 digital microscope camera connected with an Olympus SZX12 zoom stereo microscope and Leica MZ95 microscope.

### Taxonomic part

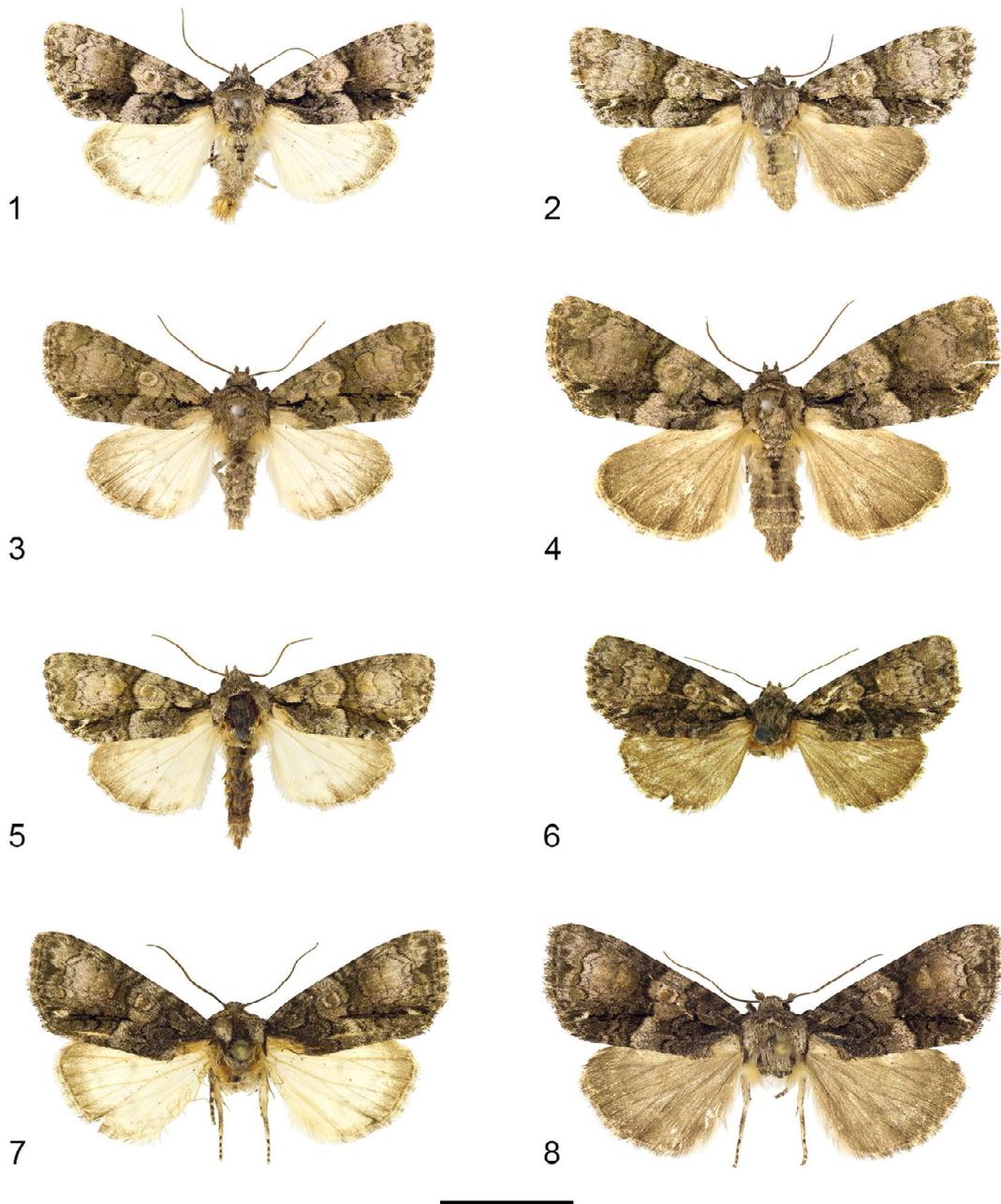
*Craniophora minuscula* Kiss et Jinbo, 2016

Figs 1–6, 9–12, 15–18, 21–24, 27–30.

*Craniophora minuscula* Kiss et Jinbo, 2016, Journal of Asia-Pacific Entomology, 19: 930, figs 1, 2, 8, 9, 15, 16, 27, 33.

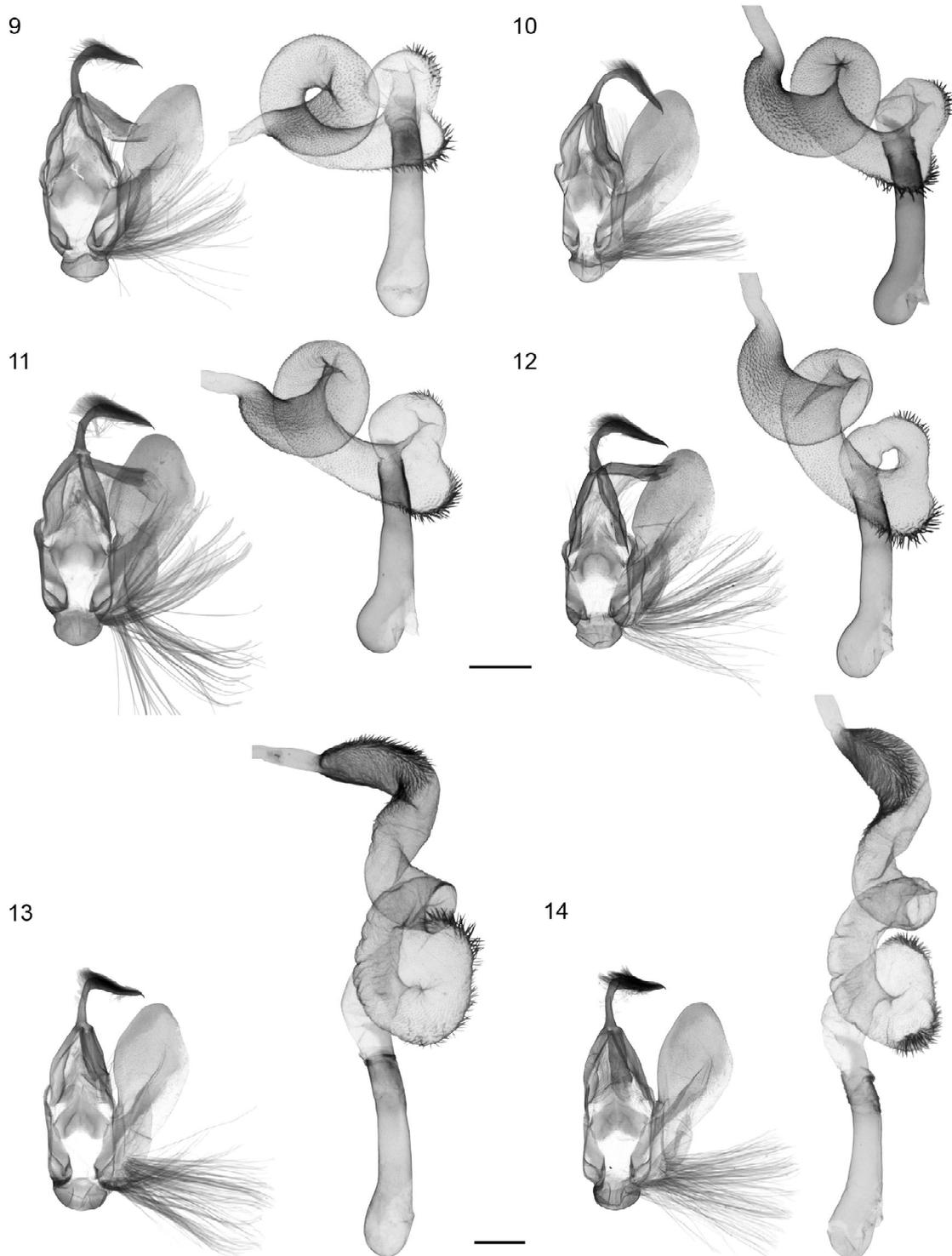
= *Craniophora pacifica* Sugi, 1982, Moths of Japan 1: 681, 2: 347, pl. 197: figs 18, 19, nec Filipjev [1927].

= *Craniophora pacifica* Eda et Yanagita, 2011, The Standard of Moths in Japan 2: 302, pl. 2–072: figs 22, 23, nec Filipjev [1927].



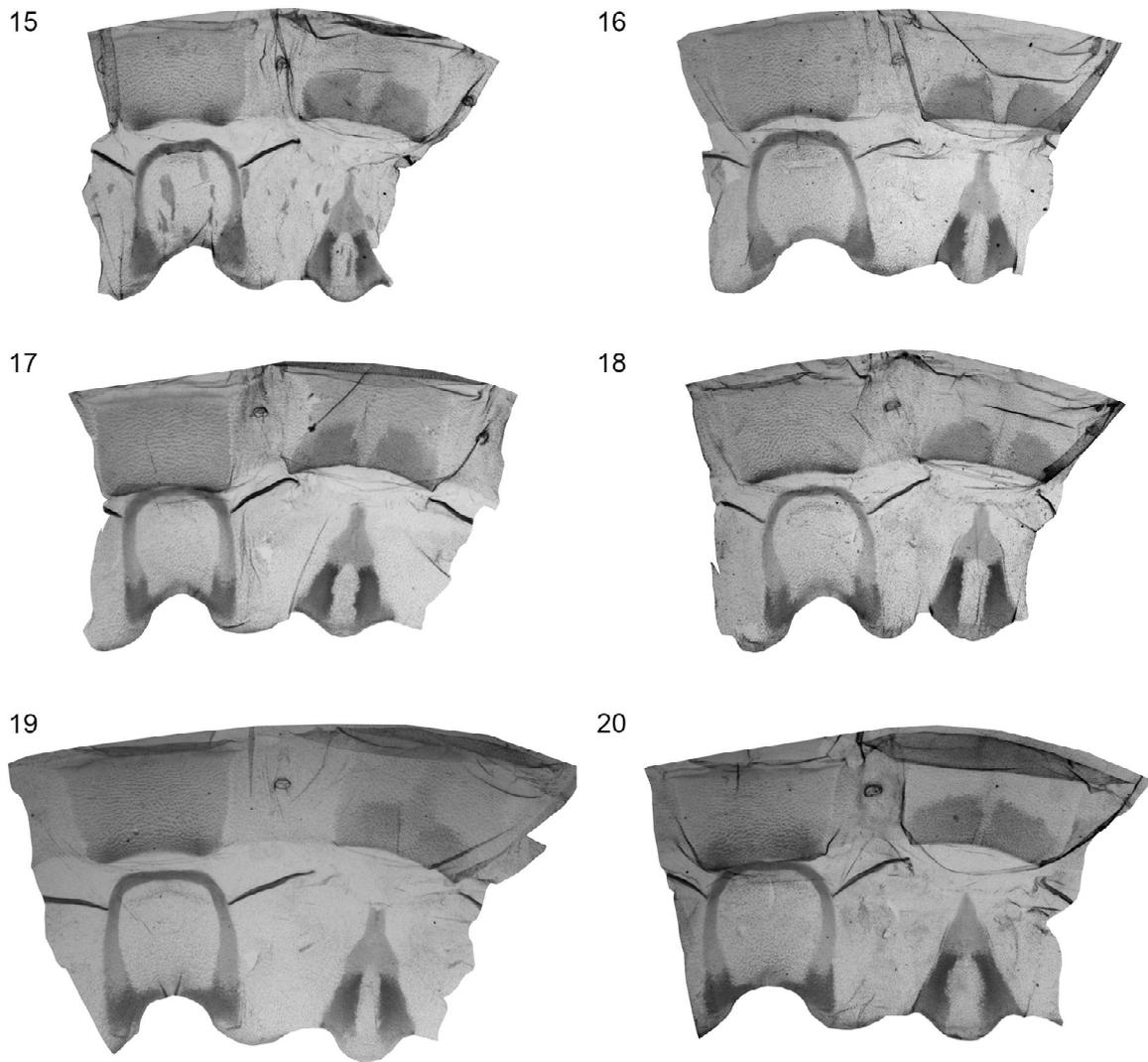
Figs 1–8. *Craniophora minuscula* and *C. pacifica* adults: 1 — *C. minuscula*, male, Holotype, Japan, Hokkaido, slide No.: KA1174m (coll. TOEF), 2 — *C. minuscula*, female, Paratype, Japan, Hokkaido, slide No.: KA1176f (coll. TOEF), 3 — *C. minuscula*, male, Paratype, Japan, Honshu, Okayama Pref., slide No.: KA1177m (coll. SMC), 4 — *C. minuscula*, female, Paratype, Japan, Honshu, Okayama Pref., slide No.: KA1178f (coll. SMC), 5 — *C. minuscula*, male, Russia, Primorsky Krai, slide No.: KA1747m (coll. PGy), 6 — *C. minuscula*, female, Russia, Primorsky Krai, slide No.: Matov0499 (coll. ZISP), 7 — *C. pacifica*, male, Russia, Primorsky Krai, slide No.: KA826m (coll. HNHM), 8 — *C. pacifica*, female, China, Prov. Liaoning, slide No.: KA1048f (coll. HNHM). Scale bar 10 mm.

Рис. 1–8. Внешний вид *Craniophora minuscula* и *C. pacifica*: 1 — *C. minuscula*, самец, голотип, Япония, Хоккайдо, KA1174m (coll. TOEF), 2 — *C. minuscula*, самка, паратип, Япония, Хоккайдо, KA1176f (coll. TOEF), 3 — *C. minuscula*, самец, паратип, Япония, Хонсю, Окаяма преф., KA1177m (coll. SMC), 4 — *C. minuscula*, самка, паратип, Япония, Хонсю, Окаяма преф., KA1178f (coll. SMC), 5 — *C. minuscula*, самец, Россия, Приморский край, KA1747m (coll. PGy), 6 — *C. minuscula*, самка, Россия, Приморский край, Matov0499 (coll. ZISP), 7 — *C. pacifica*, самец, Россия, Приморский край, KA826m (coll. HNHM), 8 — *C. pacifica*, самка, Китай, Ляонин пров., KA1048f (coll. HNHM). Масштаб 10 мм.



Figs 9–14. *Craniophora minuscula* and *C. pacifica* male genitalia: 9 — *C. minuscula*, Holotype, Japan, Hokkaido, slide No.: KA1174m (coll. TOEF), 10 — *C. minuscula*, Paratype, Japan, Hokkaido, slide No.: KA944m (coll. NSMT), 11 — *C. minuscula*, Paratype, Japan, Honshu, Okayama Pref., slide No.: KA1177m (coll. SMC), 12 — *C. minuscula*, Russia, Primorsky Krai, slide No.: KA1747m (coll. PGy), 13 — *C. pacifica*, Russia, Primorsky Krai, slide No.: KA826m (coll. HNHM), 14 — *C. pacifica*, Russia, Primorsky Krai, slide No.: KA1020m (coll. SMNK). Scale bar 1 mm.

Рис. 9–14. Гениталии самцов *Craniophora minuscula* and *C. pacifica*: 9 — *C. minuscula*, голотип, Япония, Хоккайдо, слайд № KA1174m (coll. TOEF), 10 — *C. minuscula*, паратип, Япония, Хоккайдо, слайд № KA944m (coll. NSMT), 11 — *C. minuscula*, паратип, Япония, Хонсю, Окаяма преф., KA1177m (coll. SMC), 12 — *C. minuscula*, Россия, Приморский край, KA1747m (coll. PGy), 13 — *C. pacifica*, Россия, Приморский край, слайд № KA826m (coll. HNHM), 14 — *C. pacifica*, Россия, Приморский край, слайд № KA1020m (coll. SMNK). Масштаб 1 мм.

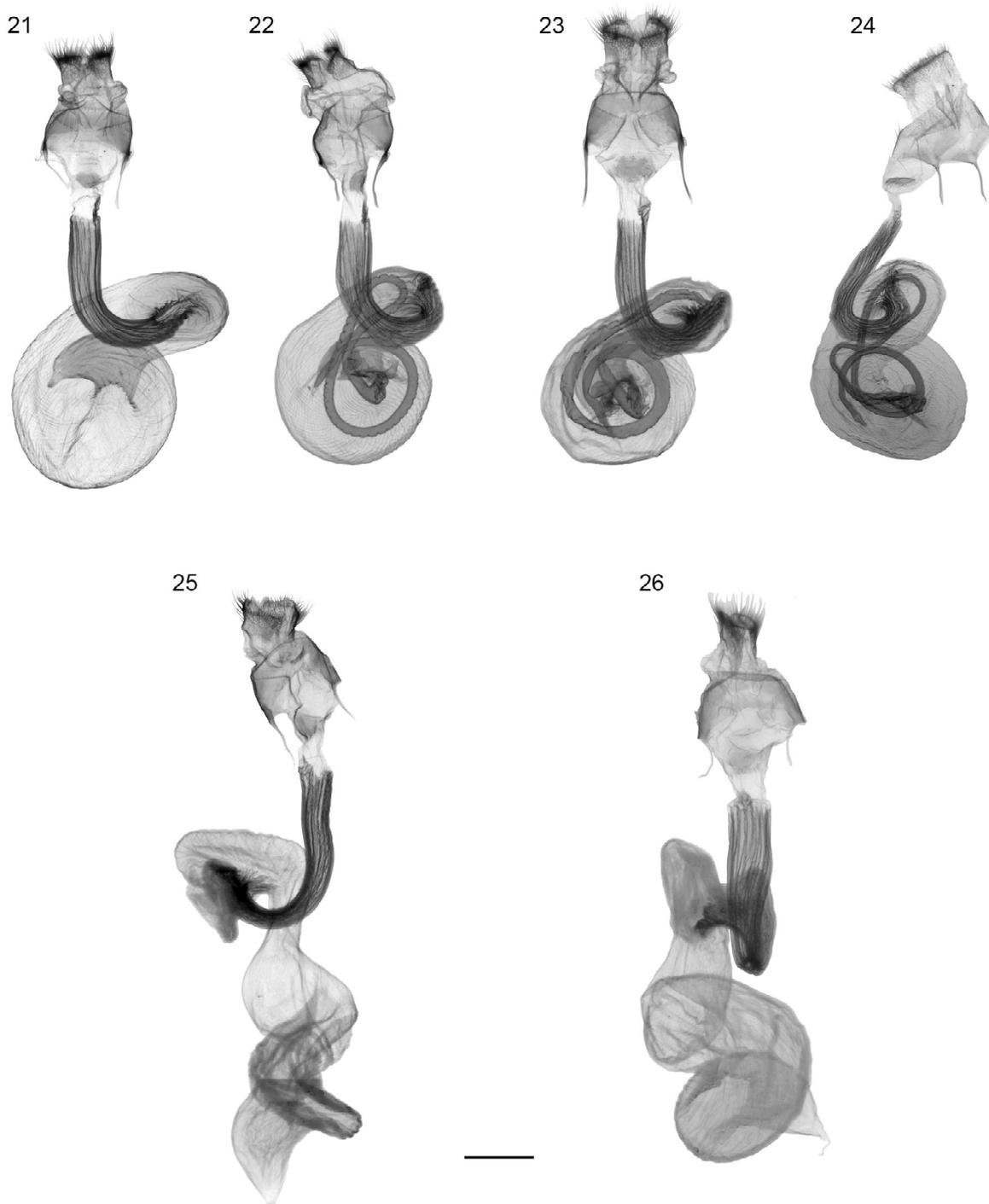


Figs 15–20. *Craniophora minuscula* and *C. pacifica* male 7<sup>th</sup> and 8<sup>th</sup> abdominal segments: 15 — *C. minuscula*, Holotype, Japan, Hokkaido, slide No.: KA1174m (coll. TOEF), 16 — *C. minuscula*, Paratype, Japan, Hokkaido, slide No.: KA944m (coll. NSMT), 17 — *C. minuscula*, Paratype, Japan, Honshu, Okayama Pref., slide No.: KA1177m (coll. SMC), 18 — *C. minuscula*, Russia, Primorsky Krai, slide No.: KA1747m (coll. Pgy), 19 — *C. pacifica*, Russia, Primorsky Krai, slide No.: KA826m (coll. HNHM), 20 — *C. pacifica*, Russia, Primorsky Krai, slide No.: KA1020m (coll. SMNK). Scale bar 1 mm.

Рис. 15–20. 7-й и 8-й сегменты брюшка самцов *Craniophora minuscula* и *C. pacifica*: 15 — *C. minuscula*, голотип, Япония, Хоккайдо, слайд № KA1174m (coll. TOEF), 16 — *C. minuscula*, паратип, Япония, Хоккайдо, слайд № KA944m (coll. NSMT), 17 — *C. minuscula*, паратип, Япония, Хонсю, Окаяма преф., слайд № KA1177m (coll. SMC), 18 — *C. minuscula*, Россия, Приморский край, слайд № KA1747m (coll. Pgy), 19 — *C. pacifica*, Россия, Приморский край, слайд № KA826m (coll. HNHM), 20 — *C. pacifica*, Россия, Приморский край, слайд № KA1020m (coll. SMNK). Масштаб 1 мм.

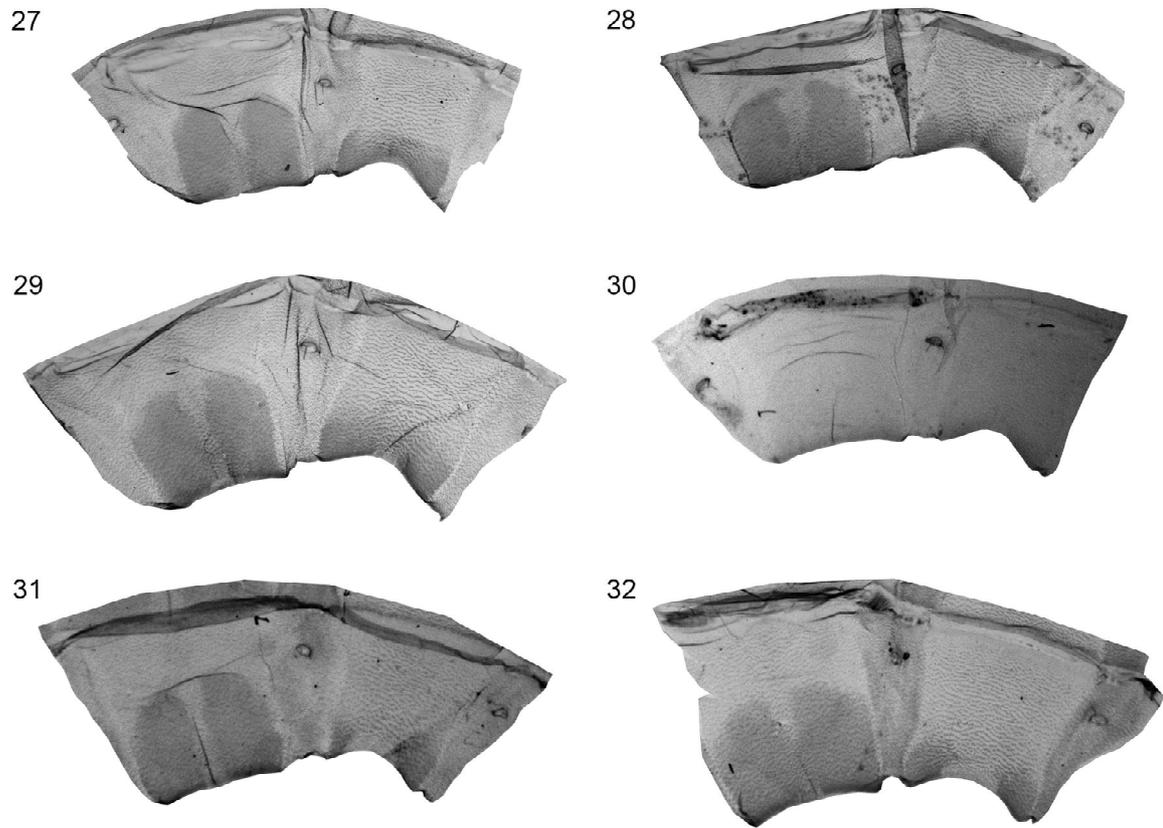
**Material.** *Holotype*: 1♂ — **Japan, Hokkaido**: Mukawa Town, Hobetsu, Fukuyama, 22.06.1997; slide No.: KA1174m (coll. TOEF); 1♂, Paratype, Rikubetsu Town, Kunbetsu, 30.05.1998, leg. H. Kogi; slide No.: KA1172m (coll. TOEF); 1♂, Paratype, Hamanaka Town, Kiritappu, 0.08.1989; slide No.: KA1173m (coll. TOEF); 1♀, Paratype, Nemuro City, Konbumori, 3.08.1989; slide No.: KA1175f (coll. TOEF); 1♂, 1♀, Paratype, Kushiro, Shibeche, Fututsuyama, 12.08.1978, leg. K. Ijima; slide No.: KA946f (coll. NSMT); 2.08.1989, leg. K. Ijima; slide No.: KA1176f (coll. TOEF); 1♂, Paratype, Gōjikkoku, Shibeche, 1.08.1978, leg. Y. Kishida (coll. NSMT); 1♂, Paratype, Nokanan, Ashibetsu, 15.08.1993, leg. H. Kobayashi (coll. NSMT); 5♀♀, Paratype, Ashibetsu, 15.08.1993,

leg. M. Owada; slide Nos. KA942m, KA943m, KA944m (coll. NSMT); 1♂, 1♀, Paratype, Sharigun, Koshimizucho, 30.07.1978, leg. Y. Kishida; slide No.: KA945m (coll. NSMT); HONSHU: 1♂, 1♀, Paratype, Okayama, Takahasi, Iwayakei, alt. 230 m, 30.05.2009; slide No.: KA1177m (coll. SMC); 13.06.2009; slide No.: KA1178f (coll. SMC). **Russia, Primorsky Krai**: 2♂, Anisimovka, 23.08.1980, leg. A. Nekrasov (preparate in glycerine, coll. ZISP); 20–21.07.2012, leg. L. Krasilnikov (preparate in glycerine, coll. ZISP); 1♂, Barabash, 17.08.1985, leg. M. Danilevskij (preparate in glycerine, coll. ZISP); 1♂, 1♀, Kedrovaja Pad, 15–18.08.1966, leg. A. Lisetskij, slide No.: Matov0499 (coll. ZISP); 26.07.1996, leg. V. Kononenko (preparate in glycerine, coll. ZISP); 1♀, Slavjanka, 13–



Figs 21–26. *Craniophora minuscula* and *C. pacifica* female genitalia: 21 — *C. minuscula*, Paratype, Japan, Hokkaido, slide No.: KA946f (coll. NSMT), 22 — *C. minuscula*, Paratype, Japan, Hokkaido, slide No.: KA1176f (coll. TOEF), 23 — *C. minuscula*, Paratype, Japan, Honshu, Okayama Pref., slide No.: KA1178f (coll. SMC), 24 — *C. minuscula*, Russia, Primorsky Krai, slide No.: Matov0499 (coll. ZISP), 25 — *C. pacifica*, Russia, Primorsky Krai, slide No.: KA504f (coll. HNHM), 26 — *C. pacifica*, China, Prov. Liaoning, slide No.: KA1048f (coll. HNHM). Scale bar 1 mm.

Рис. 21–26. Гениталии самок *Craniophora minuscula* и *C. pacifica*: 21 — *C. minuscula*, паратип, Япония, Хоккайдо, KA946f (coll. NSMT), 22 — *C. minuscula*, паратип, Япония, Хоккайдо, KA1176f (coll. TOEF), 23 — *C. minuscula*, паратип, Япония, Хонсю, Окаяма преф., KA1178f (coll. SMC), 24 — *C. minuscula*, Россия, Приморский край, Matov0499 (coll. ZISP), 25 — *C. pacifica*, Россия, Приморский край, KA504f (coll. HNHM), 26 — *C. pacifica*, Китай, Ляонин пров., KA1048f (coll. HNHM). Масштаб 1 мм.



Figs 27–32. *Craniophora minuscula* and *C. pacifica* female 7<sup>th</sup> abdominal segments: 27 — *C. minuscula*, Paratype, Japan, Hokkaido, slide No.: KA1175f (coll. TOEF), 28 — *C. minuscula*, Paratype, Japan, Hokkaido, slide No.: KA1176f (coll. TOEF), 29 — *C. minuscula*, Paratype, Japan, Honshu, Okayama Pref., slide No.: KA1178f (coll. SMC). 30 — *C. minuscula*, Russia, Primorsky Krai, slide No.: Matov0499 (coll. ZISP), 31 — *C. pacifica*, Russia, Primorsky Krai, slide No.: KA504f (coll. HNHM), 32 — *C. pacifica*, China, Prov. Liaoning, slide No.: KA1048f (coll. HNHM). Scale bar 1 mm.

Рис. 27–32. 7-й сегмент брюшка самок *Craniophora minuscula* и *C. pacifica*: 27 — *C. minuscula*, паратип, Япония, Хоккайдо, KA1175f (coll. TOEF), 28 — *C. minuscula*, паратип, Япония, Хоккайдо, KA1176f (coll. TOEF), 29 — *C. minuscula*, паратип, Япония, Хонсю, Окаяма преф., KA1178f (coll. SMC). 30 — *C. minuscula*, Россия, Приморский край, Matov0499 (coll. ZISP), 31 — *C. pacifica*, Россия, Приморский край, KA504f (coll. HNHM), 32 — *C. pacifica*, Китай, Ляонин пров., KA1048f (coll. HNHM). Масштаб 1 мм.

25.08.1995. leg. A. Danchenko (preparate in glycerine, coll. ZISP); 1♂, Zanadvorovka village, 12–18.08.1991, leg. Berg, slide No.: KA1747m (coll. PGy).

**Diagnosis.** *Craniophora minuscula* (figs 1–6) externally resembles *C. pacifica* (figs 7, 8) by its average smaller size; the typical specimens by much higher ground colour of forewing and slightly stronger rosy-tint brilliance (the somewhat greenish ground coloured darker form also with rosy-tint brilliance); by the hook-like white dash next to the Cu<sub>2</sub> vein; in males, by the whitish hindwing with evenly narrowing, brownish marginal band reaching the tornal angle and indistinct discal line. In the male genitalia (figs 9–12), *C. minuscula* can be distinguished from *C. pacifica* (figs 13, 14) by the smaller size of the clasping apparatus, by the more rounded shape of the valvae, by basally and terminally coiled vesica with numerous small, spinulose structures on its surface in two patches. In the male last abdominal segments (figs 15–

18), the 8<sup>th</sup> tergite more triangular, with more or less regular, oval “window”; the two lateral sections of the 8<sup>th</sup> sternite gradually more widening than in *C. pacifica* (figs. 19, 20). In the female genitalia (figs 21–24), ductus bursae shorter, appendix-corporis bursae complex rather simpler, tubular and recurved with a distal loop than in *C. pacifica* (figs 25, 26). In the female last abdominal segments (figs 27–30), *C. minuscula* differs from *C. pacifica* (figs 31, 32) by its average smaller size, the slightly more quadrangular 7<sup>th</sup> sternite (not widening at the proximal edge than in *C. pacifica*) with narrower and shallower “window” distally.

**Distribution.** Japan (Hokkaido, Honshu) and Russian Far East (Primorsky Krai).

**Remarks.** The southernmost populations from Hiroshima and Okayama Prefectures (figs 3, 4) externally differ from the Hokkaido, northern Honshu (figs 1, 2) and the Russian Far Eastern (figs 5, 6) populations by their more uniform and

much darker ground colour of forewing with some greenish shade and on average somewhat larger size. The Russian Far Eastern population is more greyish-brownish than the two northern Japanese populations living in Hokkaido and northern Honshu, lacking the rosy-tint brilliance which is typical of the Japanese specimens.

In the genitalia, both of male (figs 9–12) and female (figs 21–24) genitalia do not show any differential characters among the three population groups. In the last abdominal segments of the male (figs 15–18), the three population groups have some minor differences. In the females, the last abdominal segments of the populations occurring in Hiroshima and Okayama Prefectures (fig. 29) have larger abdominal segments, coincide with its larger size comparing to the other specimens (figs 27, 28, 30). However, solely these slight differences do not support the separation of these populations as a distinct subspecies.

The external similarity of the Russian Far Eastern and the Hokkaido population is probably coincided with the same latitude, while the difference of the Hiroshima and Okayama Prefectures populations is probably originated from the different host plant usage [Kiss, Jinbo, 2016].

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