

New records of species of the genus *Brachyserphus* Hellén, 1941 (Hymenoptera: Proctotrupidae) in the Palaearctic Region, with description of a new species

Новые находки видов рода *Brachyserphus* Hellén, 1941 (Hymenoptera: Proctotrupidae) в Палеарктике с описанием нового вида

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Ключевые слова: Hymenoptera, Proctotrupidae, *Brachyserphus*, наездники, Палеарктика, Россия, Япония.

Abstract. A new species, *Brachyserphus leleji* sp.n., from Japan is described and illustrated. *Brachyserphus abruptus* (Say, 1836) is found in the Central part of Siberia and recorded for the Palaearctic Region for the first time. Three species, *Brachyserphus acuticaudatus* Kolyada, 2012, *B. nudipleuralis* Kolyada, 1997, and *B. semipunctatus* Kolyada, 2012, are recorded for the first time for Japan, and *B. acuticaudatus* for the Western Palaearctic. Renewed key to the Palaearctic species of the genus *Brachyserphus* is proposed.

Резюме. Новый вид *Brachyserphus leleji* sp.n. из Японии описан и проиллюстрирован. *Brachyserphus abruptus* (Say, 1836) впервые обнаружен в Палеарктике (Центральная Сибирь). Три вида — *Brachyserphus acuticaudatus* Kolyada, 2012, *B. nudipleuralis* Kolyada, 1997 и *B. semipunctatus* Kolyada, 2012 — впервые указываются для Японии, а *B. acuticaudatus* — впервые отмечается в фауне Западной Палеарктики. Предложен обновленный ключ для определения палеарктических видов рода *Brachyserphus*.

Introduction

The genus *Brachyserphus* Hellén, 1941 associates the small and medium size parasitoids with predominantly black, smooth and shiny body. The biology of this genus is poorly studied. Larvae of the beetles from families Erotylidae, Phalacridae and Melandryidae are recorded as the hosts of *Brachyserphus* species [Townes, 1981]. However, Hoebeke and Wheeler [1990] and Williams et al. [1992] mentioned also as hosts the larvae of the fungus beetles families Mycetophagidae and Nitidulidae.

This genus comprises 20 valid species including a new one described below, which distribute mainly in the Northern Hemisphere [Townes, 1981; Choi et al., 2012]. Of them, eleven species are known in the Old World [He, Xu, 2011; Choi et al., 2012], seven of which are recorded in the Palaearctic Region. During the study of the Eastern Palaearctic fauna three species, *B. acuti-*

caudatus Kolyada, 2012, *B. nudipleuralis* Kolyada, 1997, and *B. semipunctatus* Kolyada, 2012, were described from the Russian Far East and South Korea [Kolyada, 1997; Choi et al., 2012]. Moreover, *B. lucens* (Provancher, 1883) and *B. hawaiiensis* (Ashmead, 1901) were found in the fauna of the Russian Far East and South Korea [Kolyada, 1997; Choi et al., 2012].

A new Japanese *Brachyserphus* species is described in this paper. Key for determination of *Brachyserphus* species known in the Palaearctic fauna proposed by Choi et al. [2012] is here supplemented and improved.

Materials and methods

The morphological terms and characters used follow Townes and Townes [1981] and the Hymenoptera anatomy ontology [Yoder et al., 2010]. The length of ovipositor sheath is measured from the base (that may be covered by the last tergite) to the top on the straight line, and the width at its widest part. The following abbreviations are used in the text: A1–A12 — antennal segments; CNCI — the Canadian National Collection of Insects (Ottawa, Canada); ZISP — Zoological Institute, Russian Academy of Science (St Petersburg, Russia). All photographs were obtained with a stereomicroscope Leica M165 and Camera Leica DFC450. Image stacking was performed using Helicon Focus 5.1. New records are marked by asterisk (*).

Results

Proctotrupidae Latreille, 1802

Proctotrupinae Latreille, 1802

Cryptoserphini Kozlov, 1970

Brachyserphus Hellén, 1941

Brachyserphus Hellén, 1941:42.

Type species: *Codrus parvulus* Nees, 1834, by original designation.

Brachyserphus abruptus (Say, 1836)

Figs 3, 5, 8.

Material examined. Russia: 1♀, Republic of Altai, Teletskoye Lake, Artybash, 26.VII.2007, S. Belokobyl'skij leg. (ZISP); 1♂, Chermal, 20–22.VII.2007, A. Khalaim leg. (ZISP); 1♀, Krasnoyarsk Territory, Central Siberian Nature Reserve, left bank of Stolbovaya River, 1.0–1.5 km from mouth of Malyi Dul'kuma River, mouth of Berezovyy Creek, 25.VII.2003, A. Kuvaev (ZISP).

Comparison diagnosis. *Brachyserphus abruptus* is similar to *B. parvulus* (Nees, 1834), but differs in having the ovipositor sheath shorter and thickened, 3.2 times longer than width in lateral view (4.2–5.0 times in *B. parvulus*) (Figs 8, 9) and 3.9 times longer than width in dorsal view (5.0–5.6 times in *B. parvulus*) (Figs 3, 4); shoulders protruding (sloping and rounded in *B. parvulus*) (Figs 5, 6).

Distribution. *Russia (Siberia), Canada, USA, Mexico, Costa Rica, Brasil.

Remarks. *B. abruptus* is the most abundant species in the Nearctic Region which is distributed from Yukon (British Columbia) to the south States of the USA. Moreover, this species was also recorded in the Central and South America [Townes, 1981].

Brachyserphus acuticaudatus Kolyada, 2012

Material examined. Russia: 1♀, Karelia, Kivach National Park, 25.VII–29.VIII.1991, polypore trap, A. Polevoy leg. (ZISP). 1♀, Krasnoyarsk Territory, Central Siberian Nature Reserve, left bank of Stolbovaya River, 1.0–1.5 km from mouth of Malyi Dul'kuma River, mouth of Berezovyy Creek, 25.VII.2003, A. Kuvaev leg. (ZISP). Sweden: 1♀, N side of Tornetrask, 5.VIII.1960, W.R.M. Mason leg. (CNCI). Japan: 1♀, Hokkaido, Sapporo, Jozankei, 350m, MT, 10–21.VIII.1989, M. Sharkey, K. Maeto leg. (CNCI).

Distribution. *Sweden, Russia (*Karelia, *Siberia, Far East), South Korea, *Japan.

Brachyserphus leleji sp.n.

Figs 1–2, 7.

Type material. Holotype: ♀, Japan, Honshu, Iwate, Mt. Hayachine, 400m, MT, 8–15.VIII.1989, H. Makihara, M. Sharkey leg. (CNCI). Paratypes: 1♀, same label as in holotype (CNCI); 1♀, Japan, Honshu, Niigata, Asachi Village for r. Saruta, 300 m, 38°17'2" N 139°44'2" E, 30.VIII.1994, L. Masner leg. (CNCI).

Description. Female. Body length 3.4–3.7 mm, Fore wing length 2.7 mm.

Antenna short; A12 1.5 times longer than width. Pronotum behind pronotal shoulder with very fine horizontal wrinkles. Epomia not interrupted and dorsally connected by carina to pronotal shoulder. Metapleuron with developed metapleural epicoxal carina. Propodeum just behind spiracle and apical area of dorsum finely reticulate. Propodeum dorsolaterally with 30–40 hairs. Ovipositor sheath 0.5–0.6 times as long as metatibia. Ovipositor sheath thick and gradually tapered, strongly curved, pointed apically, with hairs on its lower surface 0.28 times as long as sheath height.

Colour. Body black. Labrum, mandible, scape, tegula and legs (except coxae) yellow or light brown, coxae dark brown. Maxillary palps light brown.

Male: unknown.

Etymology. Named in honor of well-known Russian hymenopterist and expert on Mutillidae Professor Arkadiy Stepanovich Lelej.

Distribution. Japan.

Comparison diagnosis. This new species is similar to *B. parvulus*, but differs from it and other known species of

the genus by the strongly curved and narrowly tapered ovipositor sheath.

Brachyserphus nudipleuralis Kolyada, 1997

Material examined. Japan: 1♀, Hokkaido, Sapporo, Jozankei, 350 m, MT, 10–21.VIII.1989, K. Maeto, M. Sharkey leg. (CNCI); 1♀, Jozankei, MT, VIII.1989, M. Sharkey leg. (CNCI).

Distribution. Russia (Far East), *Japan.

Brachyserphus semipunctatus Kolyada, 2012

Material examined. Japan: 1♀, Ibaraki Pref., Mt. Tsukuba, 14–28.VIII.1989, M. Sharkey leg. (CNCI).

Distribution. Ukraine, Russia, South Korea, *Japan.

KEY TO THE PALAEARCTIC SPECIES OF THE GENUS *BRACHYSERPHUS* (AFTER CHOI ET AL. [2012] WITH MODIFICATIONS)

1. Metatibia with spurs hooked, short and thickened. Ovipositor sheath with apex smoothly rounded ventrally. Ovipositor sheath 0.9 times as long as metatibia *B. lucens* (Provancher)
- Metatibia with spurs normal shape, straight and slender. Ovipositor sheath with apex more or less acuminate ventrally. Ovipositor sheath less than 0.9 times as long as metatibia 2
- 2(1). Pronotal shoulders and medial surface of pronotal side with several horizontal and oblique wrinkles. Ventral part of pronotum with group of setae posteriorly of epomia. — Metapleuron with epicoxal carina. Ovipositor sheath 0.53 times as long as metatibia *B. hawaiiensis* (Ashmead)
- Pronotal shoulders without or with weak horizontal and oblique wrinkles, medial surface of pronotum side without horizontal and oblique wrinkles. Ventral part of pronotum without group of setae posteriorly of epomia 3
- 3(2). Metapleuron without epicoxal carina. — Ovipositor sheath 0.55–0.60 times as long as metatibia *B. nudipleuralis* Kolyada
- Metapleuron with epicoxal carina, sometimes only in apical one third 4
- 4(3). Ovipositor sheath distinctly widened in apical half *B. laeviceps* (Thomson)
- Ovipositor sheath almost the same width in basal and apical halves 5
- 5(4). Punctate area in anterior part of fifth tergite not reaching half of its length and not included row of hairs in posterior part of tergite. Flagellomere 9 longer and narrower *B. semipunctatus* Kolyada
- Punctate area in anterior part of fifth tergite reaching 2/3 of its length and included row of hairs in posterior part of tergite. Flagellomere 9 shorter and wider 6
- 6(5). Ovipositor sheath strongly pointed apically. — Maxillary palps dark brown *B. acuticaudatus* Kolyada
- Ovipositor sheath weakly pointed apically (Figs 7–9) 7
- 7(6). Ovipositor sheath hooked, distinctly curved at top (Fig. 7) *B. leleji* sp.n.
- Ovipositor sheath evenly and moderately curved at top 8



Figs 1–9. *Brachyserphus leleji* sp.n. (1, 2, 7), *B. abruptus* (3, 5, 8) and *B. parvulus* (4, 6, 9): 1 — body, lateral view; 2 — mesosoma, lateral view; 3, 4 — ovipositor sheath, dorsal view; 5, 6 — pronotal shoulders, dorsal view; 7–9 — ovipositor sheath, lateral view. Scale bar: 1 = 1.0 mm; 2–9 = 0.2 mm.

Рис. 1–9. *Brachyserphus leleji* sp.n. (1, 2, 7), *B. abruptus* (3, 5, 8) и *B. parvulus* (4, 6, 9): 1 — тело сбоку; 2 — метасома сбоку; 3, 4 — створки яйцеклада сверху; 5, 6 — плечи переднеспинки сверху; 7–9 — створки яйцеклада сбоку. Масштабная линейка: 1 = 1,0 мм; 2–9 = 0,2 мм.

8(7). Ovipositor sheath short, in lateral view 3.2 times as long as its width (Fig. 8), in dorsal view 3.9 times as long as wide (Fig. 3). Pronotal shoulders distinctly protruded (Fig. 5) *B. abruptus* (Say)

— Ovipositor sheath long, in lateral view 4.2–5.0 times as long as its width (Fig. 9), in dorsal view 5.0–5.6 times as

long as wide (Fig. 4). Pronotal shoulders sloped and rounded (Fig. 6) *B. parvulus* (Nees)

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References

- Choi M.B., Kolyada V.A., Lee J.W. 2012. Description of two new species from South Korea and Russian Far East with a key to the Palearctic species of the genus *Brachyserphus* Hellen (Hymenoptera, Proctotrupidae) // *Animal Cells and Systems*. Vol.16. No.3. P.237–244.
- He J., Xu Z. 2011. Notes on the species of genus *Brachyserphus* (Hymenoptera: Proctotrupidae) from China // *Entomotaxonomia*. Vol.33. No.2. P.132–142.
- Hellén W. 1941. Übersicht der Proctotrupoiden (Hym.) Ostfennoskandiens. I. Heloridae, Proctotrupidae // *Notulae Entomologica*. No.21. P.28–42.
- Hoebeke E.R., Wheeler Q.D. 1990. Notes on the biology of *Brachyserphus barberi* Townes (Hymenoptera: Serphidae), a parasitoid of the fungus beetle *Mycetophagus melsheimeri* Leconte (Coleoptera: Mycetophagidae) // *Journal of New York Entomological Society*. Vol.98. No.3. P.376–378.
- Johnson N.F. 1992. Catalogue of World species of Proctotrupeoidea, excluding Platygasteridae (Hymenoptera) // *Memoirs of the American Entomological Institute* No.51. P.1–825.
- Kolyada V.A. 1997. A review of the Palearctic species of the genus *Brachyserphus* Hellen (Hymenoptera, Proctotrupidae), with description of two new species from Russian Far East // *Far Eastern Entomologist*. No.49. P.1–6.
- Townes H. 1981. A revision of the Serphidae (Hymenoptera) // *Memoirs of the American Entomological Institute*. No.32. P.1–541.
- Williams R.B., Fickle D.S., Galford J.R. 1992. Biological studies of *Brachyserphus abruptus* (Hymenoptera: Proctotrupidae), a nitidulid parasite // *Entomophaga*. Vol.37. No.1. P.91–98.
- Yoder M.J., Mikó I., Seltmann K.C., Bertone M.A., Deans A.R. 2010. A gross anatomy ontology for Hymenoptera // *PLoS ONE*. Vol.5. No.12. e15991.

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