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## NEW AND LITTLE KNOWN BEES (HYMENOPTERA: COLLETIDAE, APIDAE) FROM THE RUSSIAN FAR EAST

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*Biastes (Melittoxena) popovi* **sp. n.** is described and illustrated from the Russian Far East (Evreiskaya autonomnaya oblast, Amurskaya oblast). *Hylaeus noomen* Hirashima, *Ceratina satoi* Yasumatsu, *Tetralonia mitsukurii* Cockerell are newly recorded from Russia. *Anthophora plumipes* (Pallas), *Biastes truncatus* (Nylander), *Melecta luctuosa* (Scopoli), *Nomada roberjeotiana* Panzer, *N. sexfasciata* Panzer are firstly mentioned from the Russian Far East.

KEY WORDS. Hymenoptera, Colletidae, Apidae, bees, cleptoparasite, taxonomy.

**М. Ю. Прошчалыкин, А. С. Лелей. Новый и малоизвестные виды пчёл (Hymenoptera: Colletidae, Apidae) с Дальнего Востока России // Дальневосточный энтомолог. 2004. N 136. С. 1-10.**

Описывается *Biastes (Melittoxena) popovi* **sp. n.** с Дальнего Востока России (Еврейская автономная область, Амурская область). *Hylaeus noomen* Hirashima, *Ceratina satoi* Yasumatsu, *Tetralonia mitsukurii* Cockerell впервые указываются для фауны России. *Anthophora plumipes* (Pallas), *Biastes truncatus* (Nylander), *Melecta luctuosa* (Scopoli), *Nomada roberjeotiana* Panzer, *N. sexfasciata* Panzer впервые приводятся для Дальнего Востока России.

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### INTRODUCTION

New and little known species of the bees from the Russian Far East have been discovered during the study of collections deposited in the Institute of Biology and

Soil Science (Vladivostok) [IBSS] and Zoological Institute (St. Petersburg) [ZIS]. Distribution of hosts is given for Far Eastern species only. The classification of bees and descriptive terminology follow Ch. Michener (2000). Metasomal terga and sterna are referred to as T1, T2, etc., and S1, S2, etc. New distribution records are asterisked (\*).

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#### FAMILY COLLETIDAE

##### *Hylaeus (Nesoprosopis) noomen* Hirashima, 1977

*Hylaeus noomen* Hirashima, 1977: 35.

MATERIAL. Russia: Evreiskaya avtonomnaya oblast: Radde, 15.VII 2003, 3 ♂ (Proshchalykin). Japan: Akita Prefecture, Fukaura, 26.VII 1983, 1 ♀, 1 ♂ (Goukon) [*Hylaeus noomen* Hirashima, Ikudome det.].

DISTRIBUTION. \*Russia: Evreiskaya avtonomnaya oblast. – Japan (Hokkaido, Honshu, Shikoku, Kyushu) (Hirashima, 1977, 1989; Ikudome, 1989).

#### FAMILY APIDAE

##### *Anthophora (Anthophora) plumipes* (Pallas, 1772)

*Apis plumipes* Pallas, 1772: 24, pl. 1, fig. 14.

*Anthophora acervorum villosela* (sic!): Wu, 1965: 64.

*Anthophora pilipes villosula*: Hirashima, 1989: 690.

*Anthophora plumipes*: Brooks, 1988: 570.

*Anthophora acervorum* (non Linnaeus, 1758): auct.

MATERIAL. Primorskii krai: 15 km W Pokrovka, Nikolo-L'vovskoe, 22.IV 2003, 1 ♂ (Proshchalykin) [IBSS]. 2 ♀, 2 ♂ from the European part of Russia [ZIS].

DISTRIBUTION. Russia: \*Primorskii krai, European part (Osytshnjuk et al., 1978). – Japan (Honshu, Kyushu, Shikoku) (Hirashima, 1989), China (Qinhai, Hebei, Jiangsu, Zhejiang, Hubei, Sichuan, Fujian, Guangxi, Yunnan) (Wu, 1965), Europe (Schwarz et al., 1996).

REMARKS. For a long time this species has been known under name *Anthophora acervorum* (Linnaeus). M. Day (1979) discussed the status of *Apis acervorum* Linnaeus, 1758 and placed this name in *Bombus*. The detail synonymy of *A. plumipes* (Pallas) see: Brooks, 1988.

##### *Biastes (Melittoxena) popovi* Proshchalykin et Lelej, sp. n.

Figs 1-3, 11-15

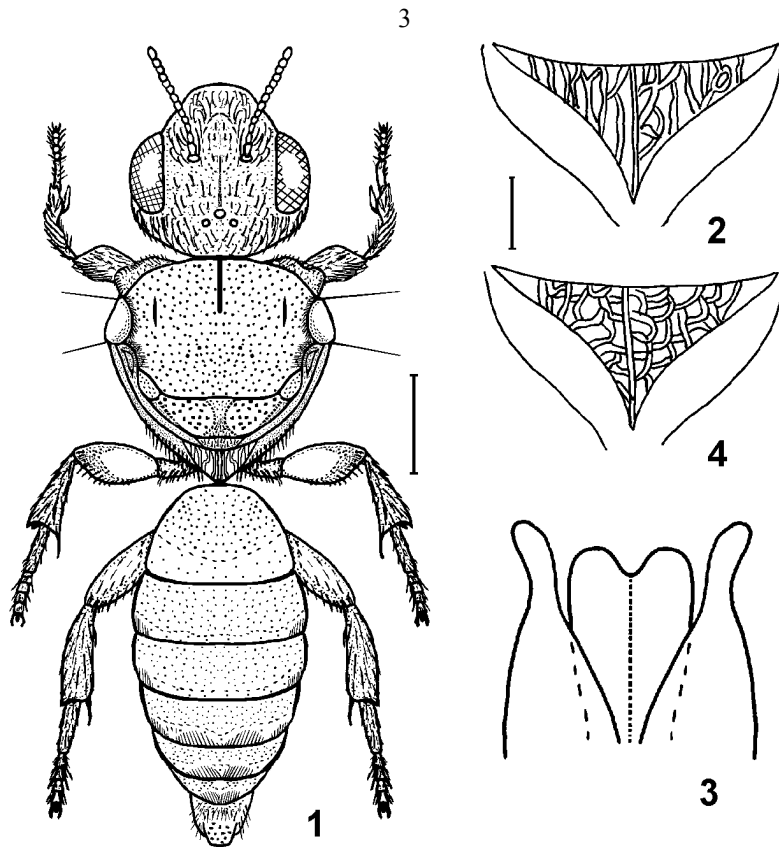
MATERIAL. Holotype – ♂, Russia: Evreiskaya avtonomnaya oblast, 40 km N Amurzhet, 27.VII 1981 (D. Kasparyan) [ZIS]. Paratype – 1 ♂, the same locality, 27.VII 1981 (D. Kasparyan) [IBSS]; Amurskaya oblast, 30 km S Arkhara, 21.VII 2003, 1 ♂ (S. Belokobylskij) [IBSS].

DESCRIPTION. MALE. Body length 7.2 mm, forewing length 4.8 mm, hindwing length 3.5 mm. Head wider than long; width 1.84, length 1.70. Inner border of mandible with preapical tooth. Labrum wider than long; width 0.60, length 0.37. Flagellum length 1.5 mm. Malar space exceedingly short, base of mandible almost touching compound eye. Hypostomal ridge carinate, anterior angle rounded. Gena well developed, 0.7 times as broad as compound eye (lateral view). Compound eye bare. Supraclypeal area convex, in posterior half with sharp longitudinal carina which ending by frontal longitudinal groove, latter touching frontal ocellus. Clypeus weakly convex, length 0.8 mm, width 1.2 mm. Antenna 12-segmented. Distance between antennal sockets 0.44 mm. Dorsolateral angle of pronotum well developed. Median (admedian) line of mesoscutum about half of mesoscutum length. Parapsidal line developed. Mesoscutellum convex bituberculate, longitudinally emarginated. Metanotum with median elevation well above level of adjacent part of mesoscutellum. Axilla posterad rounded. Propodeum 1.75 times as long as metapostnotum (dorsal view). Forewing venation as normal for genus. Hind- and midtibia apically with two short spines; arolium present. T7 with distinct pygidial area carinated laterally. S7 longer its width, posterior border with two distinct emarginations, posterolateral corner with sharp dent, posterior border with row of strong setae. S8 (hypopygium) distinctly enlarged apically with rounded base and apex.

Gonocoxite of male genitalia strongly widened dorso-laterally, equal length and width, gradually convergent to rounded apex. Gonostylus long, shorter than volsella, very thin, apically widened, inner side in apical third with setae longer than gonostylus apical width; basal lobe of gonostylus reduced to dent. Volsella 1.2 times longer than penial valve, wide, outside with dense short setae, inside spoon-like invaginated, apical part acuminate (ventral view), and lamellate with distinct apical dent (lateral view). Penial valve very wide, without sclerotized lamellae, apically rounded (dorsal view). Gonobase short, basally weakly emarginated.

Head with dense coarse deep punctures separated less than puncture width, integument shiny between punctures. Mesoscutum densely punctate, size of punctures smaller than those on head; mesoscutellum (especially lateral part) with deeper punctures. Metanotum medially densely punctate. Propodeal triangle (metapostnotum) coarsely longitudinally-rugose, remarkably coarser than those on lateral propodeal area. Metasomal terga with distinct punctures, broad apical part of T1 and narrow apical part of T2-T6 sparsely punctate. Pygidial area of T7 with dense deep punctures. Hind femora inside shiny with sparse small punctures.

Basal part of mandible, labrum, paraocular area and antennal socket with dense whitish hairs. Clypeus with long recumbent hairs not obscuring the sculpture. Gena with dense long suberect whitish hairs. Pronotum dorsally with subappressed plumose whitish hairs, mesoscutum and mesopleura with sparse recumbent whitish hairs. Mesoscutellum posterad with medial triangle spot of yellowish hairs. Metanotum medially with dense recumbent oriented anterad hairs. Lateral propodeal area with erect plumose hairs. T1 posterad with sparse white setae, T2-T7 with denser recumbent setae. T2, T3 and T5, T6 with two, T4 with four spots of silver plumose hairs. S2 apically, S3-S5 totally and S6 basally with dense yellowish hairs obscuring the sculpture; S6



Figs 1-4. *Biastes popovi* sp. n., holotype, male (1-3) and *B. truncatus* (4): 1) body from above; 2, 4) propodeal triangle (metapostnotum); 3) penial valvae and volsellae. Scale bars = 1 mm (Fig. 1), 0.2 mm (Figs 3-4).

with sparse pale setae. Leg except femora inside with long whitish setae. Apical part of mandible yellowish-red. Flagellomeres below yellowish. Head, mesosoma and metasoma black. Broad apical band of T1 and narrow apical band of T2-T5 reddish. Legs, especially hind femora, brownish-black, tarsal segments 2-5 brownish.

FEMALE. Unknown.

DISCUSSION. New species belongs to subgenus *Melittoxena* Morawitz, 1873 by having the similar male genitalia and shape of S7 and S8. The differences between new species and type species of this subgenus *Biastes truncatus* are given in the key below.

HOSTS. The hosts of related species *Biastes truncatus* in Europe are *Dufourea (Halictoides) dentiventris* (Nylander, 1848) and *D. (H.) inermis* (Nylander, 1848) (Hymenoptera, Halictidae) (Warncke, 1982). There are two known species of *Dufourea*

Lepelletier, 1841 from the Russian Far East: *D. (H.) inermis* (Khabarovskii krai, Amurskaya oblast, Primorskii krai) and *D. (Halictoides) carinata* Popov, 1959 (Amurskaya oblast, Primorskii krai) (Popov, 1959; Pesenko, 1998). Quite possible that *D. inermis* is the host of *Biastes truncatus* in the Russian Far East also, and *D. carinata* is the host of *B. popovi* sp. n. Furthermore, in Evreiskaya avtonomnaya oblast (type locality of *B. popovi*), *D. carinata* as a possible host collected only.

DISTRIBUTION. Russia: Evreiskaya avtonomnaya oblast, Amurskaya oblast.

ETYMOLOGY. The species is dedicated to Vladimir Veniaminovich Popov, who was an expert in Apoidea and revised the genus *Biastes*.

**Key to the species of *Biastes* of the Russian Far East (males)**

1. Propodeal triangle (metapostnotum) coarsely longitudinally-rugose (Fig. 2); flagellomeres below yellowish; hind femora brownish; T1 posterad with wide reddish sparsely punctate band; T2, T3 and T5, T6 with two and T4 with four spots of silver plumose hairs (Fig. 1); S7 longer its width, posterior border with two distinct emarginations, posterolateral corner with sharp dent (Figs 12-13), S8 (hypopygium) with rounded base and apex (Figs 14, 15); basal lobe of gonostylus reduced to dent; apical volsellar part acuminate with distinct apical dent (lateral view) (Fig. 11); penial valve without sclerotized lamellae (Fig. 3) . . . . . ***B. popovi* sp. n.**
- Propodeal triangle (metapostnotum) coarsely reticulate (Fig. 4); flagellomeres below black; hind femora black; T1 posterad with narrow reddish sparsely punctate band; T2, T3 and T6 with two and T4, T5 with four spots of silver plumose hairs; S7 equal length and width, posterior border with two weak emarginations, posterolateral corner without sharp dent (Figs 6, 9), S8 (hypopygium) with weakly emarginated base and angulate apex (Figs 7, 10); basal lobe of gonostylus reduced to row of microsetae; apical volsellar part rounded without apical dent (lateral view) (Fig. 5); penial valve with sclerotized lamellae (like Y-shape) (Fig. 8) . . . . . ***B. truncatus*** (Nylander)

***Biastes (Melittoxena) truncatus* (Nylander, 1848)**

Figs 4-10

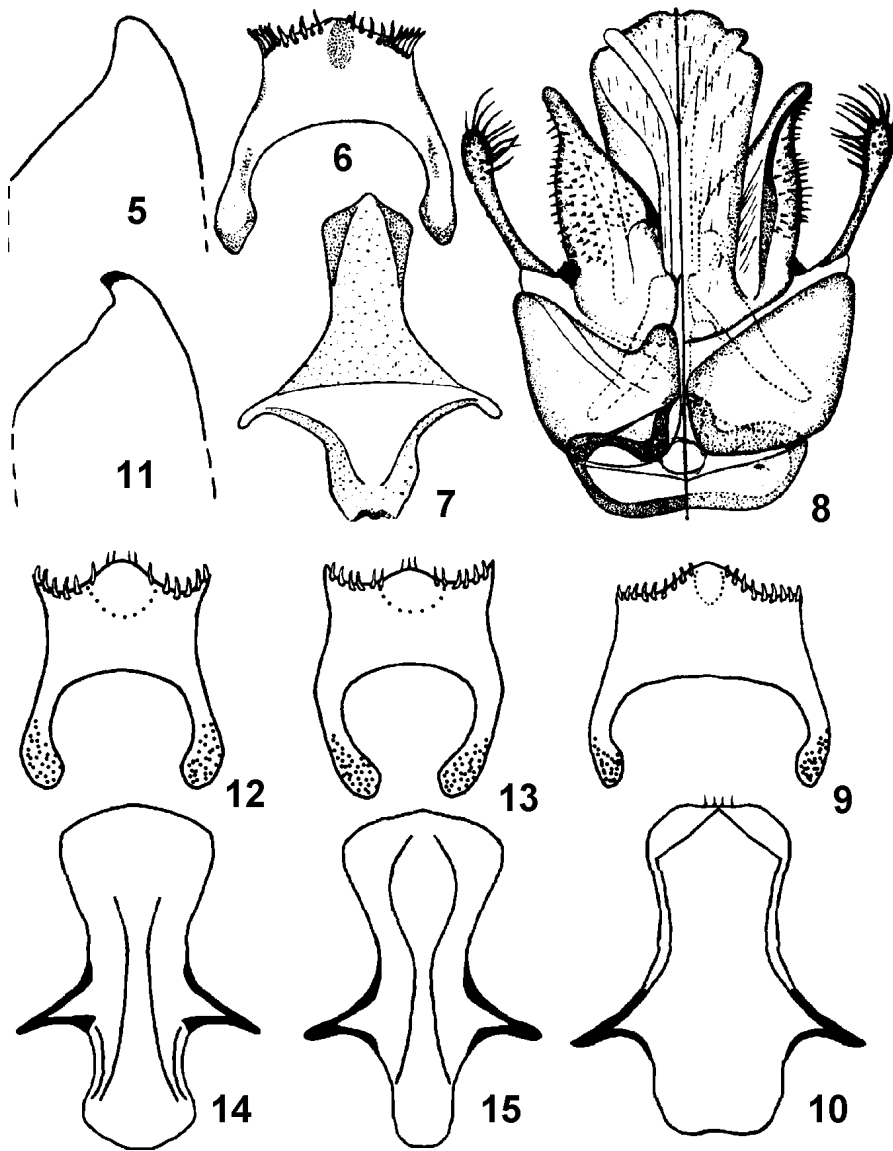
*Nomada truncata* Nylander, 1848: 186.

*Biastes truncatus*: Popov, 1934: 56.

MATERIAL. Primorskii krai: Benevskoe, 17.VIII 1978 1 ♀, 1 ♂ (Kasparyan); Khasan, 13.VIII 1998, 3 ♂ (Belokobylskij); 15 km E Pos'et, 16.VIII 1998, 1 ♀ (Belokobylskij); Spassk, 17.VIII 1998, 1 ♀, 1 ♂ (Belokobylskij).

DISTRIBUTION. Russia: \*Primorskii krai, European part (Popov, 1934; Osyshnjuk et al., 1978). – South Europe, West Asia, Caucasus (Warncke, 1982).

HOSTS. *Dufourea dentiventris* (Nylander, 1848) and *D. inermis* (Nylander, 1848) (Hymenoptera, Halictidae) (Warncke, 1982). *D. inermis* is known from the Russian Far East (Khabarovskii krai, Amurskaya oblast, Primorskii krai) (Pesenko, 1998).



Figs 5-15. *Biastes truncatus*, male (5-10; [6-8 – after Popov, 1934]) and *B. popovi* sp. n., male (11, 12, 14 – holotype; 13, 15 – paratype): 5, 11) apical volsellar part; 6, 9, 12, 13) S7; 7, 10, 14, 15) S8; 8) genitalia.

***Ceratina (Ceratina) satoi* Yasumatsu, 1936**

*Ceratina satoi* Yasumatsu, 1936: 550; Yasumatsu & Hirashima, 1969: 65.

MATERIAL. Russia: Amurskaya oblast: 30 km SW Arkhara, 21-23.VII 2003, 1 ♀ (Belokobylskij); Primorskii krai: Novovladimirovka, 30 km E Spassk, 26.VI 1985, 1 ♀ (Lelej); Spassk, 26-28.VI 2003, 1 ♀ (Belokobylskij); 28 km NW Arsen'ev, 14.VIII 2003, 1 ♀ (Proshchalykin). Japan: Honshu: Pref. Shimane, Matsue-City, 9.VIII 1993, 1 ♀ (Lelej); Ryukyus: Okinawa-jima, Yona, Kunigami-chô, 13.VIII 1991, 1 ♂ (Lelej) [IBSS].

DISTRIBUTION. \*Russia: Amurskaya oblast, Primorskii krai. – Japan (Hokkaido, Honshu, Kyushu, Shikoku, Ryukyus: Takara-jima, Amami-ôshima, Okinawa-jima, Yonaguni-jima), Korea, China (Yasumatsu, 1936; Yasumatsu & Hirashima, 1969; Hirashima, 1989; Yamane & Ikudome, 1999).

***Melecta (Melecta) luctuosa* (Scopoli, 1770)**

*Melecta luctuosa*: Osytshnjuk et al., 1978: 502; Romankova, 1995: 550; Davydova & Pesenko, 2002: 583.

MATERIAL. Amurskaya oblast: Blagoveshchensk, 5.VI 2003, 1 ♀ (Bezborodov) [IBSS]. 2 ♀ from European part of Russia and Yakutia [ZIS].

DISTRIBUTION. Russia: \*Amurskaya oblast, Yakutia, Irkutskaya oblast. – Western Asia, Europe (Osytsnjuk et al., 1978; Romankova, 1995; Davydova & Pesenko, 2002).

HOSTS. *Anthophora aestivalis* (Panzer, 1801) and *A. retusa* (Linnaeus, 1758) (Hymenoptera, Apidae) (Popov, 1967; Osytshnjuk et al., 1978). *A. retusa* is known from the Russian Far East (Amurskaya oblast) (Davydova & Pesenko, 2002).

***Tetralonia (Tetralonia) mitsukurii* Cockerell, 1911**

*Tetralonia mitsukurii* Cockerell, 1911: 257; Hirashima, 1989: 689; Yamane & Ikudome, 1999: 663.

MATERIAL. Primorskii krai: Spassk, 31.VII 1998, 1 ♂ (Belokobylskij); Khasan, 13.VIII 1998, 3 ♂ (Belokobylskij); 15 km E Pos'et, 16.VIII 1998, (Belokobylskij); 25 km SW Slavyanka, 1 ♂ (Belokobylskij); Novokachalinsk, 13-16.VIII 2003, 3 ♂ (Belokobylskij). Evreiskaya avtonomnaya oblast: 40 km N Amurzet, 27.VII 1981, 1 ♂ (Kasparyan). Amurskaya oblast: Kundur, 17.VII 2003, 1 ♂ (Proshchalykin); 30 km SW Arkhara, 21-23.VII 2003, 1 ♂ (Belokobylskij); 40 km SW Svobodnyi, 27-29.VII 2003, 1 ♂ (Belokobylskij) [IBSS]. Japan: 1 ♀, 3 ♂ from Honshu [ZIS].

DISTRIBUTION. \*Russia: Evreiskaya avtonomnaya oblast, Amurskaya oblast, Primorskii krai. – Japan (Honshu, Shikoku, Kyushu, North Ryukyus), Korea (Hirashima, 1989; Yamane & Ikudome, 1999).

### ***Nomada roberjeotiana* Panzer, 1799**

*Nomada roberjeotiana*: Osytshnjuk et al., 1978: 457; Alexander & Schwarz, 1994: 243; Davydova & Pesenko, 2002: 583.

MATERIAL. Amurskaya oblast: Kundur, 19.VII 1988, 2♂ (Lelej). Primorskii krai: Anisimovka, 3.VIII 1983, 2♀, 1♂ (Lelej); Uglekamensk, 3.VI 1994, 1♀, 1♂ (Lelej); Barabash-Levada, 25.VI 1981, 2♀, 2♂ (Krivolutskaya) [IBSS]. 2♀, 2♂ from European part of Russia [ZIS].

DISTRIBUTION. Russia: \*Amurskaya oblast, \*Primorskii krai, Yakutia (Davydova & Pesenko, 2002), European part (Osytshnjuk et al., 1978). – Palaearctic (Alexander & Schwarz, 1994).

HOSTS. *Andrena fuscipes* (Kirby, 1802), *A. nigriceps* (Kirby, 1802), *A. denticulata* (Kirby, 1802) and *A. coitana* (Kirby, 1802) (Hymenoptera, Andrenidae) (Osytshnjuk et al., 1978). *A. denticulata* and *A. coitana* are known from the Russian Far East (Khabarovskii krai, Amurskaya oblast, Primorskii krai, Sakhalin) (Osytshnjuk, 1995).

### ***Nomada sexfasciata* Panzer, 1799**

*Nomada sexfasciata*: Osytshnjuk et al., 1978: 453; Alexander & Schwarz, 1994: 254.

MATERIAL. Primorskii krai: Ussuriisk [=Voroshilov], 26.VI 1947, 1♂ (Konakov); Anisimovka, 19.VII 1976, 1♀, (Azarova); 20 km W Kamen'-Rybolov, 13.VI 1977, 1♀ (Lelej); Barabash-Levada, 17.VI 1980, 1♀, 1♂ (Moroz); 22.VI 1979, 1♂ (Krivolutskaya); Kamenushka, 27.VI 1979, 1♂ (Moroz); Gornotayezhnoe, 24.VII 1983, 1♀ (Lelej); Evseyevka, 28.VI 1985, 1♀ (Lelej); Uglekamensk, 2.VI 1994, 1♂ (Lelej); Kaimanovka, 5.VII 1998, 1♂ (Klimov). Khabarovskii krai: Komsomolsk-na-Amure, Pivan', 12.VI 2002, 2♂ (Mutin) [IBSS]. 2♀, 2♂ from European part of Russia [ZIS].

DISTRIBUTION. Russia: \* Khabarovskii krai, \* Primorskii krai, European part (Osytshnjuk et al., 1978). – Holarctic (Alexander & Schwarz, 1994).

HOSTS. *Eucera longicornis* (Linnaeus, 1758) and *E. nigrescens* Pérez, 1879 (Hymenoptera, Apidae) (Osytshnjuk et al., 1978). *E. longicornis* is known from the Russian Far East [Khabarovskii krai (Proshchalykin, 2003) and by material from \*Amurskaya oblast and \*Primorskii krai].

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## REFERENCES

- Alexander, B.A. & Schwarz, M. 1994. A Catalog of the Species of *Nomada* (Hymenoptera: Apoidea) of the World. – The University of Kansas Science Bulletin 55(7): 239-270.
- Brooks, R.W. 1988. Systematics and Phylogeny of the Anthophorine Bees (Hymenoptera: Anthophoridae; Anthophorini). – The University of Kansas Science Bulletin 53(9): 436-575.
- Cockerell, T.D.A. 1911. Bees in the collection of the United States National Museum. 2. – Proceedings of the United States Natural Museum 40: 241-264.
- Davydova, N.G. & Pesenko, Yu.A. 2002. Fauna pchel (Hymenoptera, Apoidea) Yakutii. I. [Bee fauna (Hymenoptera, Apoidea) of Yakutia. I]. – Entomologicheskoe obozrenie 81(3): 382-599. (In Russian).
- Day, M.C. 1979. The species of Hymenoptera described by Linnaeus in the genera *Sphex*, *Chrysis*, *Vespa*, *Apis* and *Mutilla*. – Biological Journal of the Linnean Society London 12: 45-84.
- Hirashima, Y. 1977. A revision of the Japanese species of *Nesoprosopis*, with descriptions of two new species (Hym., Colletidae, *Hylaeus*). – Esakia, 10: 21-43.
- Hirashima, Y. 1989. A check list of Japanese insects. – Entomological Laboratory, Faculty of Agriculture, Kyushu University and Japan Wild Life Research Center, Fukuoka. 1767 p. [Apoidea: 679-691]. (In Japanese).
- Ikudome, S. 1989. A revision of the family Colletidae of Japan (Hymenoptera, Apoidea). – Bulletin of the Institute of Minami-Kyūshū Regional Science 5: 43-314.
- Michener, C. 2000. The Bees of the World. Baltimore, London: John Hopkins University Press. 913 p.
- Nylander, W. 1848. Adnotationes in Expositionem Monographicam Apum Borealium. – Notis. Saellsk. Faun. Fl. Fenn. Förh. 1: 165-282.
- Osytsnjuk, A.Z. 1995. Family Andrenidae. – In: Lelej, A.S., Kupianskaya, A.N., Kurzenko, N.V. & Nemkov P.G. (eds.). Opredelitel' nasekomyh Dal'nego Vostoka Rossii [Key to the insects of Russian Far East]. Vol. 4. Neuropteroidea, Mecoptera, Hymenoptera. Pt. 1. St. Petersburg: Nauka. P. 489-527. (In Russian).
- Osytsnjuk, A.Z., Panfilov, D.V. & Ponomareva A.A. 1978. Apoidea – Pchelinye. – In: Tobias, V.I. (ed.). Opredelitel' nasekomyh Evropeiskoi chasti SSSR [Key to the insects of European part of the USSR]. Vol 3. Hymenoptera. Pt. 1. Leningrad: Nauka. P. 279-519. (In Russian).
- Pallas, P.S. 1772. Specilegia Zoologica Quibus Novae Imprimis et Obscurae Animalum Species Iconibus, Descriptionibus atque Commentariis Illustrantur. T. 1, Fasc. 9. 86 p., 5 pls.
- Pesenko, Yu.A. 1998. Novye i maloizvestnye pchely roda *Dufourea* Lepeletier (Hymenoptera, Halictidae) iz Palearkticheskoi oblasti [New and little known bees of the genus *Dufourea* Lepeletier (Hymenoptera, Halictidae) from Palaearctic region]. – Entomologicheskoe obozrenie 72(3): 670-686. (In Russian).
- Popov, V.V. (1933) 1934. Zametka o paraziticheskikh pchelakh roda *Biastes* Panz. (Hymenoptera, Nomadidae) [Notes on the parasitic bees allied to the genus *Biastes* Panz. (Hymenoptera, Nomadidae)]. – Trudy Zoologicheskogo Instituta AN SSSR 2: 51-75. (In Russian).
- Popov, V.V. 1959. Novye vostochnoaziatskie vidy rodov *Dufourea* i *Halictoides* (Hymenoptera, Halictidae) [New species of the genera *Dufourea* and *Halictoides* from Eastern Asia (Hymenoptera, Halictidae)]. – Entomologicheskoe obozrenie 38(1): 225-237. (In Russian).
- Popov, V.V. 1967. Pchelinye Sverdnei Azii i ih raspredelenie po tsvetkovym rasteniyam [The bees (Hymenoptera, Apoidea) of Middle Asia and their associations with angiosperm plants]. – Trudy Zoologicheskogo Instituta Akademii Nauk SSSR 38: 11-329.

Proshchalykin, M.Yu. 2003. Fauna pchel (Hymenoptera, Apoidea) Srednego i Nizhnego Priamur'ya. [Bee fauna (Hymenoptera, Apoidea) of Middle and Lower Amur region]. – Eurasian Entomological Journal 2(1): 25-29. (In Russian).

Romankova T.G. 1995. Family Anthophoridae. – In: Lelej, A.S., Kupianskaya, A.N., Kurzenko, N.V. & Nemkov P.G. (eds.). Opredelitel' nasekomyh Dal'nego Vostoka Rossii [Key to the insects of Russian Far East]. Vol. 4. Neuropteroidea, Mecoptera, Hymenoptera. Pt. 1. St. Petersburg: Nauka. P. 547-551. (In Russian).

Schwarz, M., Gusenleitner, P., Westrich P. & Dathe, H.H. 1996. Katalog der Bienen Österreichs, Deutschlands und der Schweiz (Hymenoptera, Apidae). – Entomofauna, Suppl. 8: 1-398.

Warncke, K. 1982. Zur Systematik der Bienen – Die Unterfamilie Nomadinae (Hymenoptera, Apidae). – Entomofauna 3(8): 97-126.

Wu, Y.-r. 1965. Hymenoptera Apoidea. Chinese Economic Insect Fauna. Vol. 9. Beijing: Science Press. IX + 83 p. + 7 pls. (In Chinese).

Yamane, S. & Ikudome, S. 1999. Superfamily Apoidea. – In: Yamane, S., Ikudome, S. & Terayama, M. (eds.). Identification Guide to the Aculeata of the Nansei Islands, Japan. Hokkaido University Press: 465-679.

Yasumatsu, K. 1936. On the occurrence of the subgenus *Zaodontomerus* Ashmead in Japan and Corea (Hymenoptera, Ceratinidae, *Ceratina*). – Annotationes zoologicae japonensis 15(4): 550-553.

Yasumatsu, K., Hirashima, Y. 1969. Synopsis of the small carpenter bee genus *Ceratina* of Japan. – Kontyû 37(1): 61-70.