

Taxonomic notes of the genus *Bathanthidium* Mavromoustakis, 1953 (Hymenoptera, Megachilidae: Anthidiini)

Таксономические заметки о роде *Bathanthidium* Mavromoustakis, 1953 (Hymenoptera, Megachilidae: Anthidiini)

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Ключевые слова: таксономия, синонимия, лектотип, Anthophila, Азия.

Abstract. Based on a study of the holotype of *Stelis malaisei* Popov, 1941, a new synonymy has been proposed for *Bathanthidium bifoveolatum* (Alfken, 1937) = *B. malaisei* (Popov, 1941), **syn.n.** A lectotype is designated for *Anthidium sibiricum* Eversmann, 1852. The genus *Lasanthidium* Romankova, 1988 is considered a synonym of the subgenus *Bathanthidium* s.str., rather than the subgenus *Stenanthidiellum* as was previously thought. As a result of these changes, an updated checklist of the species of the genus *Bathanthidium* is provided.

Резюме. На основании изучения голотипа *Stelis malaisei* Попов, 1941 установлена новая синонимия для *Bathanthidium bifoveolatum* (Алфкен, 1937) = *B. malaisei* (Попов, 1941), **syn.n.** Для *Anthidium sibiricum* Эверсманн, 1852 обозначен лектотип. Род *Lasanthidium* Романкова, 1988 рассматривается как синоним подрода *Bathanthidium* s.str., а не подрода *Stenanthidiellum* как это считалось ранее. В результате этих изменений приведён обновленный список видов рода *Bathanthidium*.

Introduction

Bathanthidium was originally described by Mavromoustakis [1953] as a subgenus of *Dianthidium*. At that time, *Dianthidium* included species from the Old World, but it is now known that the genus includes only New World species. Pasteels [1968] raised *Bathanthidium* to the genus status. Michener and Griswold [1994] revised the Old World Anthidiini and splitted this genus into three subgenera, two of which were described by Pasteels [1968, 1969].

Bathanthidium species are small to medium-sized, black or black with yellow markings, with medially interrupted yellow bands on anterior terga. Key traits

include a straight epistomal suture, non-carinate preoccipital ridge, weak or absent ocellar and pronotal carinae, rounded or emarginate scutellum, propodeal fovea behind spiracle, arolia present, and males with pectinate hairs on S4–S5 and variable T7.

Michener [2000, 2007] noted uncertainty about the genus *Lasanthidium* Romankova, 1988, which may be a synonym of the subgenus *Stenanthidiellum* Pasteels, 1968. Wu [2004] reported two subgenera and five species of *Bathanthidium* from China. Niu et al. [2012] described a new species from Hainan and provided a key to eight Chinese species. They also identified China as the diversity centre of the genus. Subsequently, Niu et al. [2019] identified eleven species in the Chinese fauna, describing a new species from Guangdong. Tran et al. [2021] described a new species from Vietnam and provided an identification key to the *Bathanthidium* s.str.

Knowledge of *Bathanthidium* remains limited due to its Asian distribution and a historical scarcity of specimens, most of which are held in Chinese and, to a lesser extent, Russian collections.

New taxonomic data were obtained based on a study of type specimens of *Bathanthidium* stored in museums in Stockholm (Sweden) and Krakow (Poland). This paper includes an updated list of the twelve currently known *Bathanthidium* species.

Material and methods

Morphological terminology follows that of Michener [2007], synonymy and distribution follows that of Niu et al. [2012, 2019] and Tran et al. [2021]. The data from each label are separated by a double slash (//). Square

brackets are used for English translations and when information is added to specimen label information (e.g. geographical coordinates). Abbreviations T and S are used for metasomal tergum, and metasomal sternum, respectively. Illustrations were obtained by stacking from an image series that covers different focal planes into a single in-focus image with Helicon Focus 8.0. The final illustrations were post-processed for contrast and brightness using Adobe® Photoshop® software.

The following abbreviations are used for collections: CWS — personal collection of W. Seo, South Korea; IEBR — Institute of Ecology and Biological Resources, Hanoi, Vietnam; IZCAS — Institute of Zoology, Chinese Academy of Sciences, Beijing, China; IZKP — Institute of Systematic and Experimental Zoology of the Polish Academy of Sciences, Krakow, Poland; MNHU — Museum für Naturkunde, Berlin, Germany; NHML — Natural History Museum, London, UK; SMNH — Swedish Museum of Natural History, Stockholm, Sweden; ZISP — Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia.

The present work is registered in ZooBank (www.zoobank.org) under urn:lsid:zoobank.org:pub:EF018E27-CA22-41B0-9F46-54CB1F63A04C

Results

Bathanthidium Mavromoustakis, 1953

Dianthidium (*Bathanthidium*) Mavromoustakis, 1953: 837. Type species: *Anthidium bifoveolatum* Alfken, 1937, by original designation. In the original, Mavromoustakis [1953] listed *Dianthidium bifoveolatum* (Alfken) as the type species, contrary to the Recommendation 67B of the Code [ISZN, 1999]. Subsequent authors [Michener, 2000, 2007; Proshchalykin, 2013; Niu et al., 2019, etc.] also erroneously listed the type species as *Dianthidium bifoveolatum*.

Lasanthidium Romankova, 1988: 26. Type species: *Stelis malaisei* Popov, 1941, by original designation.

1. *Bathanthidium* (*Bathanthidium*) *bifoveolatum* (Alfken, 1937)

Figs 1–12.

Anthidium bifoveolatum Alfken, 1937: 405, ♀, ♂. Holotype: ♀, Tien-Mu-Shan, W Chekiang [China, Fujian], 24.VIII.1936, Tsing Chao Ma leg., MNHU.

Stelis (*Protostelis*) *malaisei* Popov, 1941: 222, ♂. Holotype: ♂, Vladivostok, Sedanka, Malaise [leg.] [Russia, Primorsky Territory, 43°12'38"N 131°57'32"E] // 21.VI.[19]30 // *Anthidium sibiricum* Ev., V. gussakovskij [det.], ♂ // Typus <red label> // *Stelis* (*Protostelis*) *malaisei*, sp. n. ♂, V. Popov det. Typ! // NHRS 000027548, SMNH. **Syn.n.**

Dianthidium (*Bathanthidium*) *bifoveolatum* (Alfken, 1937): Mavromoustakis, 1953: 838.

Lasanthidium malaisei (Popov, 1941): Romankova, 1988: 26; 1995: 531; Lee, Woo, 2001: 330; Paek et al., 2010: 214; Lee, Ryu, 2013: 18; Proshchalykin, 2014: 532.

Bathanthidium (*Stenanthidiellum*) *malaisei* (Popov, 1941): Proshchalykin, 2013: 150; Proshchalykin, Fateryga, 2017: 301.

Material. Russia, *Primorskii Territory*: 1♂ — Vladivostok, Sedanka, 21.VI.1930, R. Malaise, holotype of *Stelis malaisei* Popov, 1941 (SMNH); South Korea, *Gangwondo*: 2♂♂ — Inje, 38°03'09"N 128°47'32"E, 27.VII.2025, W. Seo (CWS).

Distribution. Russia (Primorskii Territory), China (Shaanxi, Henan, Jiangxi, Zhejiang, Anhui, Fujian, Hubei, Hunan,

Guangxi, Guizhou, Sichuan, Chongqing, Yunnan, Taiwan), South Korea (Gangwondo, Jeju).

Remarks. A detailed history of taxonomic changes in *Stelis malaisei* Popov, 1941 and *Lasanthidium* Romankova, 1988 is provided by Proshchalykin [2013]. Examination of the holotype of *Stelis malaisei* Popov, 1941 shows that it is conspecific with *Bathanthidium bifoveolatum* (Alfken, 1937). All distinguishing features noted by Popov [1941] and supplemented by Romankova [1988] — colouration of the clypeus, supraclypeal area, paraocular area, metasoma, and the structure of T6–T7, S7–S8 and genitalia — completely match the original description [Alfken, 1937] and redescription [Niu et al., 2019] of *B. bifoveolatum*. Therefore, new synonymy is proposed for *Bathanthidium bifoveolatum* (Alfken, 1937) with *Stelis malaisei* Popov, 1941, **syn.n.**

Thus, the genus *Lasanthidium* Romankova, 1988 is a synonym of the subgenus *Bathanthidium* s.str., and not of the subgenus *Stenanthidiellum* as was previously thought [Michener, 2000, 2007].

2. *Bathanthidium* (*Bathanthidium*) *fengkaiense* Niu et Zhu, 2019

Bathanthidium fengkaiense Niu et Zhu in Niu et al., 2019: 101, ♀. Holotype: ♀, China, Guangdong, Fengkai Xian (32°00'N 113°24'E), 24.IV.2013, Ming-Hua Zhang leg., IZCAS.

Distribution. China (Guangdong).

Remarks. The male is unknown.

3. *Bathanthidium* (*Bathanthidium*) *hainanense* Niu, Wu et Zhu, 2012

Bathanthidium (*Bathanthidium*) *hainanense* Niu, Wu et Zhu, 2012: 61, ♀. Holotype: ♀, China, Hainan, Wuzhi Mountain, 1147 m, 10.IV.2010, Mei-Ying Ling, IZCAS.

Distribution. China (Hainan).

Remarks. The male is unknown.

4. *Bathanthidium* (*Bathanthidium*) *paco* Tran et Nguyen, 2021

Bathanthidium (*Bathanthidium*) *paco* Tran et Nguyen in Tran et al., 2021: 53, ♀, ♂. Holotype: ♀, Vietnam, Hoa Binh, Mai Chau, Pa Co, Hang Kia — Pa Co Natural Reserve, 20°44'36"N, 104°53'42"E, 1340 m, 24.VI.2020, Nguyen L.T.P., Nguyen C.Q., Tran N.T. & Mai T.V. leg., IEBR.

Distribution. Vietnam (Hoa Binh Province).

Bathanthidium (*Manthidium*) *Pasteels*, 1969

Manthidium Pasteels, 1969: 43. Type species: *Anthidium binghami* Friese, 1901, by original designation.

5. *Bathanthidium* (*Manthidium*) *atriceps* (Morawitz, 1889)

Anthidium atriceps Morawitz, 1889: 373, ♀. Holotype: ♀, Kansu. upin. [China, Gansu, 33°37'N 104°17'E], G. Potanin leg., ZISP.

Dianthidium atriceps (Morawitz, 1889): Mavromoustakis 1953: 838 (description of male).

Distribution. China (Shaanxi, Zhejiang, Fujian, Gansu, Xizang).

6. *Bathanthidium* (*Manthidium*) *barkamense* (Wu, 1986)

Dianthidium barkamensis Wu, 1986: 214, ♂. Holotype: ♂, China, Sichuan, Barkam, 2700 m, 22.VII.1983, Xue-Zhong Zhang leg., IZCAS; Wu, 1993: 1397 (description of female).

Distribution. China (Sichuan).

7. *Bathanthidium (Manthidium) bicolor* (Wu, 2004)

Anthidium (Anthidium) bicolor Wu, 2004: 542, ♂. Holotype: ♂, China, Sichuan, Kangding, 2400–2700 m, 15.VII.1963, Jin-Long Mao leg., IZCAS.

Distribution. China (Sichuan).

Remarks. The female is unknown.

8. *Bathanthidium (Manthidium) binghami* (Fries, 1901)

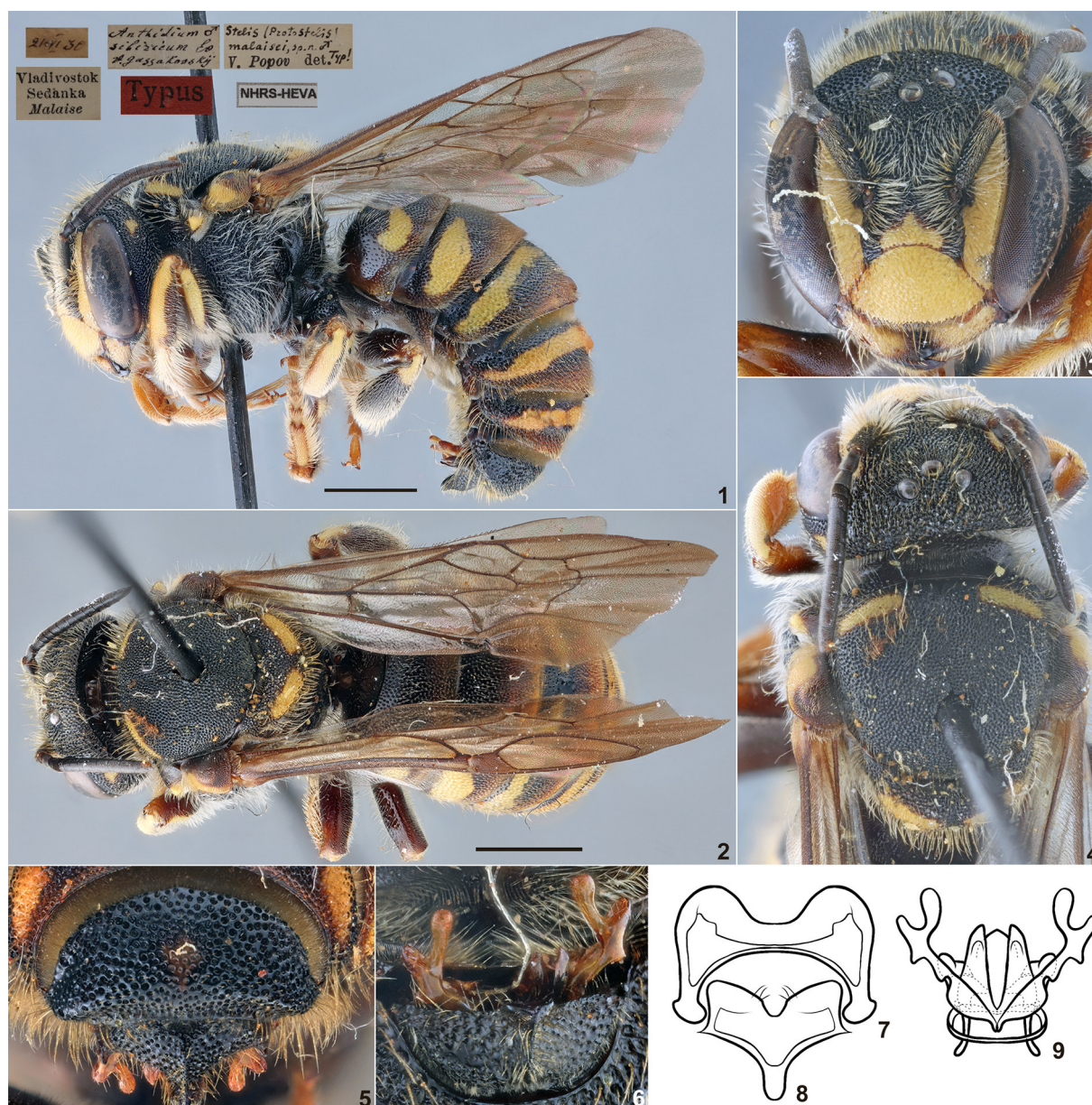
Anthidium fraternum Bingham, 1897: 495, ♀. Holotype: ♀, Tenasserim [Myanmar, Tanintharyi Region], BMNH (nom. praec., nec Pérez, 1895).

Anthidium binghami Fries, 1901: 224, replacement name for *Anthidium fraternum* Bingham, 1897.

Stelis siamensis Fries, 1925: 40, ♂. Holotype: ♂, Siam bei Hinlap, [Thailand, Saraburi, *Hin Lap*], MNHU. Synonymised by Niu et al., 2019: 106.

Paraanthidium concavum Wu, 1962: 164, ♂. Holotype: China, Yunnan, Xishuangbannan, 31.VIII.1957, Guang-Ji Hong leg., IZCAS. Synonymised by Niu et al., 2019: 106.

Distribution. Myanmar, Laos, Thailand, India (Sikkim), China (Yunnan).



Figs 1–9. *Stelis (Protostelis) malaisei* Popov, 1941, holotype, male. 1 — habitus, lateral view, and labels; 2 — habitus, dorsal view; 3 — head, frontal view; 4 — head and mesosoma, dorsal view; 5 — T7, dorsal view; 6 — T7, posterior view; 7 — S7, dorsal view; 8 — S8, dorsal view; 9 — genitalia, dorsal view. Scale bars: 1.5 mm. (Figs 1–6 photo by H. Vårdal; Figs 7–9 from Popov [1941]).

Рис. 1–9. *Stelis (Protostelis) malaisei* Попов, 1941, голотип, самец. 1 — внешний вид сбоку и этикетки; 2 — внешний вид сверху; 3 — голова спереди; 4 — голова и мезосома сверху; 5 — T7 сверху; 6 — T7 сзади; 7 — S7 сверху; 8 — S8 сверху; 9 — гениталии сверху. Масштаб: 1,5 мм. (Рис. 1–6 фотографии Х. Ваардал; Рис. 7–9 из Попов [1941]).



Figs 10–12. *Bathanthidium* (*Bathanthidium*) *bifoveolatum* (Alfken, 1937), male from South Korea. 10 — habitus, lateral view; 11 — head, frontal view; 12 — metasoma, lateral view. (Photo by W. Seo).

Рис. 10–12. *Bathanthidium* (*Bathanthidium*) *bifoveolatum* (Alfken, 1937), самец из Южной Кореи. 10 — внешний вид сбоку; 11 — голова спереди; 12 — метасома сбоку. (Фотографии В. Сео).

9. *Bathanthidium* (*Manthidium*) *moganshanense*
(Wu, 2004)

Anthidium moganshanensis [sic!] Wu, 2004: 544, ♂. Holotype: ♂, China, Zhejiang, Moganshan, 30.V.1936, O. Piel leg., IZCAS.

Distribution. China (Zhejiang).

Remarks. The female is unknown.

Bathanthidium (*Stenanthidiellum*) Pasteels, 1968

Stenanthidiellum Pasteels, 1968: 1059. Type species: *Anthidium sibiricum* Eversmann, 1852, by original designation.

10. *Bathanthidium* (*Stenanthidiellum*) *emeiense*
Wu, 2004

Bathanthidium emeiense Wu, 2004: 541, ♀. Holotype: ♀, China, Sichuan, Mt. Emei, 550–570 m, 23.V.1964, Yan-Ru Wu leg., IZCAS.

Distribution. China (Sichuan).

Remarks. The male is unknown.

11. *Bathanthidium* (*Stenanthidiellum*) *rubopunctatum*
(Wu, 1993)

Anthidium rubopunctatum Wu, 1993: 1397, ♀, ♂. Holotype: ♂, China, Yunnan, Zhongdian, Tuguan, 2900 m, 7.VIII.1984, Jian-Guo Fan leg., IZCAS.

Distribution. China (Yunnan, Sichuan).

12. *Bathanthidium* (*Stenanthidiellum*) *sibiricum*
(Eversmann, 1852)

Figs 13–17.

Anthidium sibiricum Eversmann, 1852: 85, ♀. Lectotype (designated here): ♀, Irkutsk [Russia] // *sibiricum* Evm., ♀ // LECTOTYPE *Anthidium sibiricum* Eversmann, 1852 ♀, design. Ivlev & Proshchalykin, 2026; IZKP; Lee, Ryu, 2013: 17.

Dianthidium sibiricum (Eversmann, 1852): Cockerell, 1924: 526 (description of male).

Anthidium (*Dianthidium*) *sibiricum* (Eversmann, 1852): Lee, Woo, 2001: 329; Paek et al., 2010: 214.

Bathanthidium (*Stenanthidiellum*) *sibiricum* (Eversmann, 1852): Proshchalykin, 2013: 153; Proshchalykin, Fateryga, 2017: 301; Proshchalykin et al., 2018: 22; Byvaltsev, Proshchalykin, 2019: 165.

Material. Russia, *Irkutsk Province*: 8♀♀, 4♂♂ — Irkutsk, mouth of the Kaya River, on *Taraxacum* sp., 18, 28, 29.V., 16, 18, 22, 24.VI., 20, 24, 25.VII.2024, O. Berlov (ZISP); *Zabaikalskii Territory*: “Dauria”, collection of F. Morawitz (ZISP); *Amur Province*: 4♀♀ — between Malaya Pyora and Bolshoy Ergil Rivers, road in an oak forest, on *Vaccinium myrtillus*, 4.VI., 26.VII., 12.VIII.1958, V.I. Zinoviev (ZISP);

1♀ — 40 km west of Svobodny, Klimoutsy village, 13.VII.1959, V.I. Zinoviev (ZISP); 1♀, 2♂♂ — 100 km west of Svobodny, 5.VIII.1958, 4.VIII.1959, Borisova (ZISP); 1♂ — 75 km west of Svobodny, Simonovo village, 1959, V.I. Zinoviev (ZISP); 1♂ — Khingansky Nature Reserve: Antonovskoye Forestry, near of Yuzhny cordon, 18.VII.2013, D.N. Kochetkov (ZISP); 1♀ — 2 km west of Kundur village, Karapcha River basin, 18.VI.–22.IX.2021, D.N. Kochetkov (ZISP); 2♀♀ — 12 km SSW of Kundur village, Eraktra River basin, 20.VI.–23.IX.2021, D.N. Kochetkov (ZISP); 1♀ — Arkhara settlement, upland meadow on a slope, 28.VI.2021, D.N. Kochetkov (ZISP); 2♀♀ — Maly Khingan Range, Dyrovatka River, mixed forest, 12.VIII.2021, D.N. Kochetkov (ZISP); *Primorskii Territory*: 1♂ — Vladivostok, Diomid Bay, 10.VII.1911, Rydzhevsky, Kuznetsov (ZISP); 3♀♀ — 30 km SE of Ussuriysk, Ussuriysky Nature Reserve, 28.VII.1986, E. Budrys (ZISP); 2♀♀, 1♂ — Spasskoye village, 10.VII.1993, 6.VIII.1995, S.A. Belokobylskij (ZISP); 3♀♀, 2♂♂ — 20 km ESE of Spasskoye village, forest edge, 8.VII.2001, S.A. Belokobylskij (ZISP); 1♂ — near Spassk-Dalny, 1.VII.2013, S.A. Belokobylskij (ZISP). For additional material studied, see Proshchalykin [2013: 153].

Distribution. Russia (Altai Territory, Kemerovo Province, Irkutsk Province, Buryat Republic, Zabaikalskii Territory, Amur Province, Jewish Autonomous Region, Khabarovsk Territory, Primorskii Territory), Mongolia, China (Beijing, Hebei, Neimenggu, Heilongjiang, Jilin, Zhejiang, Hubei, Guangdong, Sichuan, Yunnan, Xizang), South Korea (Chungcheongbukdo, Gangwondo, Jeonlabukdo, Gyeongsangbukdo).

Remarks. The species was described from the females collected in “terris transuralensibus”. There is only one female in IZKP from Irkutsk (Fig. 17), which corresponds to the original description of E. Eversmann. This specimens is designated here as a lectotype of *Anthidium sibiricum*.

The records of this species from the Urals [Proshchalykin, 2013; Proshchalykin, Fateryga, 2017; Proshchalykin et al., 2017] are erroneous.

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Figs 13–17. *Bathanthidium* (*Stenanthidiellum*) *sibiricum* (Eversmann, 1852), male from Primorsky Territory, Russia (13–16) and lectotype labels of *Anthidium sibiricum* Eversmann, 1852, female from Irkutsk, Russia (17). 13 — habitus, lateral view; 14 — habitus, dorsal view; 15 — head, frontal view; 16 — T5–T7, dorsal view; 17 — labels.

Рис. 13–17. *Bathanthidium* (*Stenanthidiellum*) *sibiricum* (Eversmann, 1852), самец из Приморского края, Россия (13–16) и этикетки лектотипа *Anthidium sibiricum* Eversmann, 1852, самка из Иркутска, Россия (17). 13 — внешний вид сбоку; 14 — внешний вид сверху; 15 — голова спереди; 16 — T5–T7 сверху; 17 — этикетки.

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