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A New Record of *Ecclisomyia kamtshatica* (Trichoptera: Limnephilidae) from Japan, with Descriptions of Immature Stages

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Abstract *Ecclisomyia kamtshatica* (Martynov) is recorded from Japan for the first time, and the larva, pupa and their cases are described. Larvae of *E. kamtshatica* occur in small, cold mountain streams or cold springs.

Key words: Trichoptera, Limnephilidae, immature stages, new record, Japan.

The genus *Ecclisomyia* Banks 1907 (=*Praecosmoecus* Martynov, 1913) is a small genus with five species distributed in the Holarctic region: three species *E. conspersa* Banks, *E. maculosa* Banks and *E. bilera* Dennig in the Nearctic region, and two species *E. kamtshatica* (Martynov) and *E. digitata* (Martynov) in the Palaearctic region. Martynov (1913) described *Praecosmoecus kamtshaticus* with wings of a female, and Martynov (1925) redescribed female genitalia. Ulmer (1927) described *P. malaisei* from Kamchatka but Martynov (1929) synonymized *P. malaisei* with *P. kamtshaticus*. Uéno (1933) described pupa and pupal case of *P. kamtshaticus* collected from the Paramushir Island of north Kurile Islands. Kuranishi and Kuhara (1994) recorded the genus *Ecclisomyia* from Japan for the first time, but they were not able to identify the species because the morphological information of male genitalia had been in question.

Recently, Nimmo *et al.* (1997) illustrated the male and female genitalia of *E. kamtshatica* in the key book of the caddisflies of the Russian Far East, and the Japanese *Ecclisomyia* species fits their illustrations. In this paper, *Ecclisomyia kamtshatica* is newly recorded from Japan, with description of its immature stages. Primary setal numbers used in this paper are adopted from Mathis (1997).

Ecclisomyia kamtshatica (Martynov, 1913)

(Fig. 1: A–F)

Japanese name: Kamuchakka-tobikera

Praecosmoecus kamtshaticus Martynov, 1913: 478–479, wings of female; Martynov, 1925: 15–17, female (as *P. camtshaticus*); Uéno, 1933: 192–193, pupa and pupal case.

Praecosmoecus malaisei Ulmer, 1927: 7–9, male, (synonymized by Martynov 1929).

Ecclisomyia sp.: Kuranishi and Kuhara, 1994.

Ecclisomyia kamtshatica (Martynov): Levanidova, Vshivkova, Arefina and Zasypkina, 1994: 9, distribution in the Russian Far East; Nimmo, Arefina & Levanidova, 1997: 98–99, male and female.

Final instar larva (Fig. 1: A–B). Larva up to 15 mm in length, slender. Head dark brown with darker muscle scars on posterior part, posterior part of frontoclypeal apotome and coronal suture often slightly paler. Primary setae nos. FC_1, FC_4, L_1 and P_3 transparent; setae FC_5 and FC_6 short and thin; seta P_1 longest. Pro- and mesonota dark brown with paler median area. Pronotum strongly constricted at the posterior margin and weakly at one-third distance from anterior margin, short transparent secondary setae on dorsum and on anterior margin. Metanotal sa1 scle-

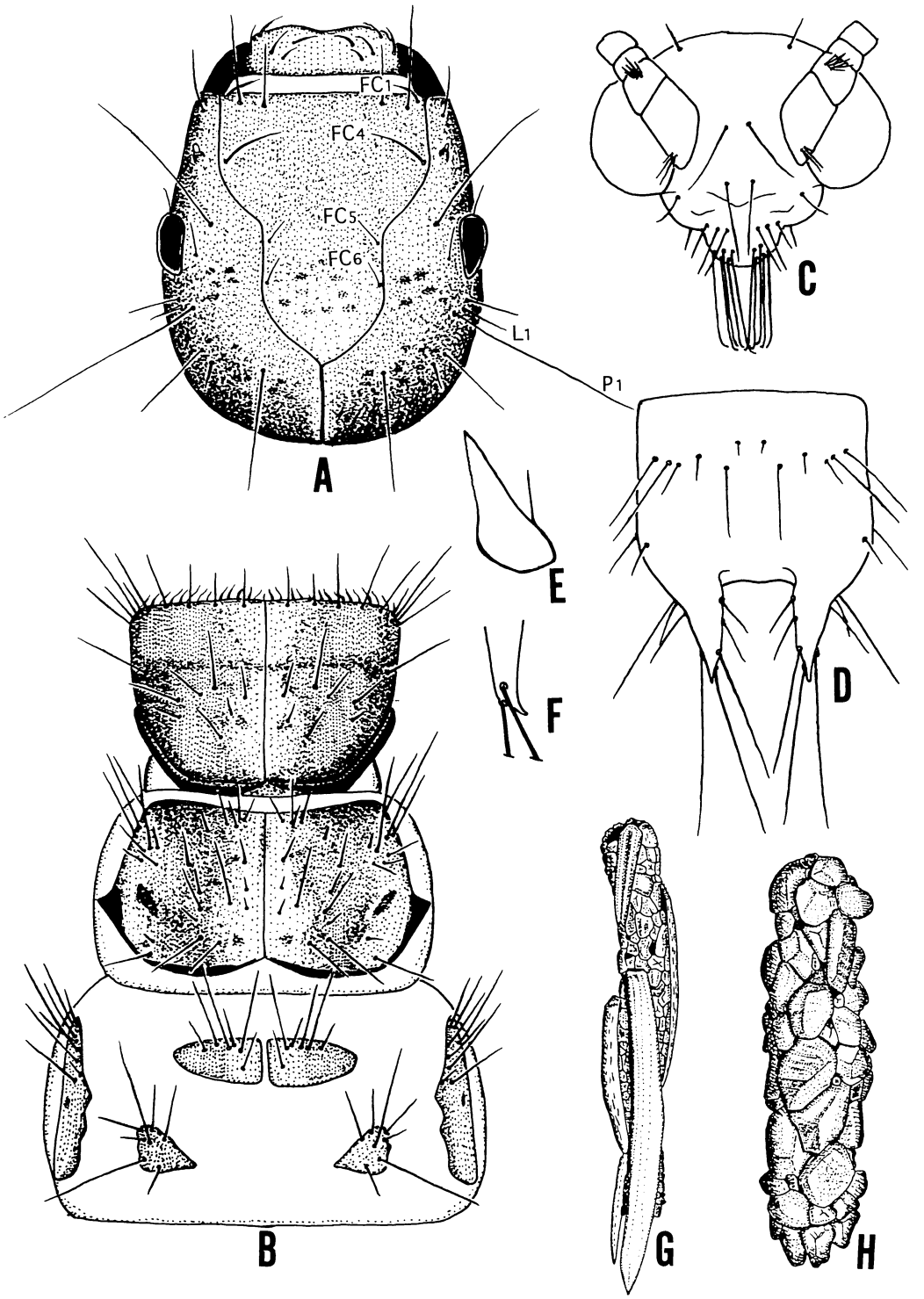

Fig. 1. Larva and pupa of *Ecclisomyia kamtshatica* (Martynov). A–B, Larva: A, head, dorsal; B, pro-, meso- and metanota, dorsal. C–F, Pupa: C, head, dorsal; D, anal processes, dorsal; E, right mandible, dorsal; F, left anal process, lateral. G, Case of final instar larva. H, Case of pupa.

rites large, close to each other at median line. Abdominal gills single, present on following segments: dorsal and ventral gills on 2nd (posterior) and 3rd to 7th (anterior and posterior); lateral gill usually on 3rd (anterior). Lateral fringe extending from 3rd segment to anterior margin of 8th segment. Ventral chloride epithelia present on 3rd to 7th abdominal segments.

Pupa (Fig. 1: C–F). Body ca. 13 mm. Mandibles simple, mesal margins slightly notched. Antenna with a setal tuft on each of first two segments. Anterior hook plates on 3rd to 7th abdominal segments and posterior hook plate on 5th. First abdominal segment with a pair of spined ridge. Lateral fringe extending from posterior part of 5th segment to 8th segment. Abdominal gills single present on following segments: dorsal and ventral gills on 2nd (posterior) and 3rd to 7th (anterior and posterior); lateral gills on 3rd and 4th (anterior). Anal processes curved and pointed apicodosally with three long setae apically.

Case (Fig. 1: G–H). Case of final instar larvae very slender, up to 18 mm long, constructed by rather flat sand grains, slightly tapering, often bearing some long pieces of plant materials; posterior end closed by sand grains with a central hole. Pupal cases up to 18 mm long, not so slender as larval case, newly constructed by coarse rock fragments at anterior end of larval case.

Specimens examined. HOKKAIDO: 1 male, Shiretoko-ohashi, Rausu-gawa River, Rausu-cho, 6. VII. 1985, Takao Nozaki (TN); 9 larvae, a head water of Akai-gawa River, Shari-cho, 7. VII. 1985, TN; 2 males, Chiesakuetonpi-gawa (Alt. 220 m), Kiyosato-cho, 5. VII. 1990, NK; 1 male, Nijibetsu hatchery, Shibetsu-cho, 10. VII. 1992, RBK & NK; 1 female, a spring stream at former hatchery, Motosakimui, Shibetsu-cho, 13–22. VII. 1996 (by Malaise Trap), H. Kamei, T. Ito and A. Ohkawa; 5 larvae, Nakanosawa River, Akan-cho, 14. VI. 1990, RBK & NK; 8 males 1 female, ibid, 6. VIII. 1990, RBK & NK; 12 larvae, Yanbetsu-gawa River, Kamishihoro-cho, 15. V. 1990, RBK; 1larva, ibid, 15. VI. 1990, RBK; 2 pupa, ibid, 7. VIII. 1990, RBK; 3 males 6 females, ibid, (pupae collected 7. VIII. 1990 and emerged 10. VIII. 1990 – 16. VIII. 1990); 3 larvae, Tokachimitsumata, Kamishihoro-cho, 15. V. 1976, T. Yamanouchi (TY); 5 larvae, Shimizudani, Kamishihoro-cho, 19. VII. 1977, TY; 19 larvae, 4 prepupae and 16 pupae, a head water of Ishikari-gawa River, near Sekihoku-toge, Kamikawa-cho, 10. VII. 1985, TN; 1 male, Soranuma-dake (520 m), Sapporo-shi, 27. VI. 1990, (NK); 9 males 1 female, Fukidashi-Koen, Kyogoku-cho, 11. VI. 1988; 5 larvae, ibid, 10. IV. 1992, (NK); 3 males 1 female, Yashiro, Makkari-mura, 20. VI. 1990, (NK).

Distribution. Japan (Hokkaido), Russian Far East (Kamchatka, Sakhalin, Kurile, Khabarovsk region, Amur region, Primorye region).

Habitat. Larvae of *Ecclisomyia kamtshatica* occur in small, cold mountain streams or cold springs.

Remarks. This is the only species of the genus *Ecclisomyia* known from Japan at present. Larvae of this species differ in some characters from those of allied species *Ecclisomyia digitata* (Martynov), whose larvae were first described by Lepneva (1966), as follows: the primary seta no. 5 on head is short and thin in *E. kamtshatica* while it is long in *E. digitata.* The light-colored areas on the mid-dorsal line of pro- and mesonota are present in *E. kamtschatica* but not in *E. digitata.*

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References

Kuranishi, R. B. and N. Kuhara. 1994. Benthic Invertebrates of Akan National Park. *In* The Nature of Akan National Park 1993, pp. 1191–1240. Maeda Ippoen Foundation, Akan. (In Japanese)

Lepneva, S. G. 1966. Fauna of the U.S.S.R.; Trichoptera, vol. 2, no. 2. Larvae and Pupae of Integripalpia. (In Russian, translated and published by the Israel program for scientific translations, 1971)

Levanidova, I. M., T. S. Vshivkova, T. I. Arefina, I. A. Zasypkina. 1995. A tabular check-list of caddisflies (Insecta: Trichoptera) of the Russian Far East. Far Eastern Entomologist 16: 1–19.

Martynov, A. B. 1913. Trichoptera of the Kamtshatka Expedition. Rev. Russe d'Ent. 13: 476–481.

Martynov, A. B. 1925. Trichoptera recueillis au Kamtshatka par l'expédition de Mr Th. Riabušinskij en 1908–1909. Ann. Mus. Zool. Sci. U.R.S.S. 26: 10–26. (In Russian)

Martynov, A. B. 1929. On a collection of Trichoptera from the river Bija and from the vicinities of the lake Teletzkoje. Konowia 8: 293–311.

Mathis, M. L. 1997. Primary setation of caddisfly larvae (Trichoptera) with the emphasis on limnephiloids. *In* Holzenthal, R. W. and O. S. Flint (eds.), Proceedings of the 8th International Symposium on Trichoptera, pp. 293–302.

Nimmo, A. P., T. I. Arefina and I. M. Levanidova. 1997. Limnephilidae. *In* Key to the insects of Russian Far East. Vol. 5, Trichoptera and Lepidoptera, pp. 93–126. Dal'nauka, Vladivostock.

Uéno, M. 1933. Inland Water Fauna of the North Kurile Islands. Bull. Biogeogr. Soc. Jap. 4: 171–212. (In Japanese with English summary)

Ulmer, G. 1927. Trichoptera and Ephemeroptera. *In* Entomol. Ergebnisse Schwed. Kamtchatka-Expedition 1920–1922. Arkiv Zool. 19A: 1–17. (In Germany)

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日本初記録種カムチャッカトビケラ（新称）の幼虫と蛹の記載

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ロシア極東に分布するカムチャッカトビケラ（新称）*Ecclisomyia kamtshatica* (Martynov) を日本より初めて記録した．カムチャッカトビケラは，北海道では山地渓流の源頭部や水温の低い湧水にのみ出現した。これまで未記載であったカムチャッカトビケラの終令幼虫の形態を記載し，蛹を再記載した．近縁種の *Ecclisomyia digitata* (Martynov) とは，終令幼虫の頭部の第 1 次刺毛 (FC_5) が *E. digitata* で長いのに対し，カムチャッカトビケラでは短く細いこと，またカムチャッカトビケラでは前・中胸の背中線上に明るい部分があるのに対し，*E. digitata* にはそれがないことから明瞭に区別できた．