

Studies on the Chironomid Species Collected in Hokkaido in September, 2000

Manabu SASA¹ and Hiroshi SUZUKI²

¹*Kankyo Fukushi Kenkyusho(Institute of Environmental and Welfare Studies),
135-3, Aramata, Kurobe-shi Toyama-Ken 938-0001*

²*Institute of Tropical Medicine, Nagasaki University, Nagasaki, 852-8523*

Abstract: Collections of adult chironomids were conducted in September 2000 by Suzuki, with insect net at the side of Chubetsu River, and 10 species, including 5 new species, are recorded. In the collection with insect net at the side of Sorachi River, 5 species, including 2 new species, are recorded. In the collection with light trap and insect net at Ginzan, a total of 40 species, including 17 new species are also recorded. Although the island of Hokkaido is located in the northmost area of Japan and the climate is very cold in winter, the chironomid fauna are again found to be very rich.

Key words: Chironomidae, Medical entomology, New species, Hokkaido

INTRODUCTION

The Chironomid species collected in the island of Hokkaido have been recorded in the following 5 papers.

(1). Sasa and Kamimura (1987) examined 172 males and 29 females collected with insect net in June 1982 on the shore of 3 lakes in the Akan National Park, and recorded 28 species, including 11 new species.

(2). Sasa (1988a) examined adult specimens collected in June 1986 from 3 lakes (Toya, Shikotsu and Utonai) and a stream (Osaru) in southern Hokkaido, and recorded 53 chironomid species, including 13 new to Japan and 10 new species.

(3). Sasa (1988b) examined adult specimens collected with insect net on the shore of 7 lakes in the Abasiri region, and recorded 9 species, including 4 species common with those already recorded from Europe, and one new species.

(4). Sasa and Suzuki (1998) recorded 9 species collected on Sept. 5, 1997, in the campus of Hokkaido University, Sapporo, 16 species including 5 new species at Ginzan, 14 species including 5 new species collected at Misumai, 8 species including 2 new species at Kyogoku, and 4 species on the foot of Mount Tarumae.

(5). Sasa and Suzuki (2000) recorded 7 species of chironomids collected with net in the campus of Hokkaido University, Sapporo, in September 1998, and also collected with net and

light trap at 4 localities in the Hidaka Mountain areas, and recorded a total of 25 species, including 8 new species.

**A. The species collected with net at the side of Chubetsu River on Sept.
5, 2000** No.404:46–64 (19)

- Polypedilum (Polypedilum) chubetuabeum* sp. nov.; No.404:50. Fig. 1
Polypedilum (Polypedilum) chubetubeceum sp. nov.; No.404:55. Fig. 2
Polypedilum (Polypedilum) chubetuceceum sp. nov.; No.404:56,57,58. Fig. 3
Polypedilum (Polypedilum) convictum (Walker, 1856); No.404:59,60 Fig. 4
Polypedilum (Polypedilum) chubetudeeum sp. nov.; No.404:49,51. Fig. 5
Tanytarsus chubetuefeus sp. nov.; No.404:52,53,54. Fig.6
Brillia japonica (Tokunaga, 1939); No. 404:48
Brillia longifurca Kieffer, 1921; No.404:46,47
Cricotopus bifascius Tokunaga, 1936; No.404:64
Limnophyes minimus (Meigen, 1818); No.404:61,62,63

Notes on the species collected at Chubetsu

***Polypedilum (Polypedilum) chubetuabeum* sp. nov.** (Figs. 1 a-h)

A male, No.404:50, was collected with net on Sept. 5, 2000, at the side of Chubetsu River. BL 3.48 mm, WL 1.81 mm, WW/WL 0.31. Thorax and abdomen almost entirely pale, even scutal stripes hardly discernible by color. Leg segments slightly yellowish. Eyes bare, ER 0.42. Antennae both lost. P/H 0.99. SO 14:12, CL 14. Anteprepronotum (Fig. 1 a) separated, without lateral setae. DM 18, DL 20:20, PA 7:8, SC 9 (Fig. 1 b).

Wing membrane bare, SQ 8:6, anal lobe obtuse, RR 0.15, VR 1.24, R/C 1.11. Tip of fore tibia (Fig. 1 c) with a broad and rounded process, tips of mid and hind tibiae (Figs. 1 d,e) with two comb scales, one with a long spur and the other without spur. fLR 1.80, mLR 0.59, hLR 0.76, fTR 0.30, fBR 3.3, mBR 4.6, hBR 9.0 (tarsal bears very long).

Hypopygium in Fig. 1 f. Anal point (also in Fig. 1 g) long, narrow, parallel-sided an apically truncate, without setae and lateral ridges. Dorsal appendage (also in Figs. 1 g,h) very narrow, slightly curved inwards and apically hooked, with inner setae arising at about middle, and a lateral seta arising at about middle. Ventral appendage (also in Fig. 1 g) long, finger-like and slightly expanded apically,, with 8 relatively long setae along inner margin, 20 short recurved setae on the apical portion, and a long, caudally directed apical seta. Gonostylus widest at about distal 1/3.

Remarks. This specimen belongs to the *nubeculosum* group of genus *Polypedilum*, but is quite characteristic in the dorsal appendage (Figs. 1 g,h) is long, slender and apically hooked, with a lateral seta arising at about middle, and with two inner setae not arising near the base but from about middle, and ventral appendage is also characteristic in that it bears long, recurved setae along lateral margin, and short recurved setae on the apical portion.

***Polypedilum (Polypedilum) chubetubeceum* sp. nov.** (Figs. 2 a-i)

A male, No.404:55 (#5-1), was collected with net at Chubetsu River on Sept. 5, 2000. BL 3.78 mm, WL 2.02 mm, WW/WL 0.30. Scutum and postnotum almost uniformly brown, legs all yellow, abdominal tergites almost uniformly yellowish brown. ER 0.24. Antenna both lost. P/H 1.15. SO 18:19, CL 12. Anteprepronotum (Fig. 2 a) separated, without seta. DM 18, DL 20:20, PA 7:8, SC 9. Wing bare, SQ 12:10, RR 0.09, VR 1.24, R/Cu 1.25. Tip of fore tibia (Fig. 2 b) with a broad but apically pointed terminal process, tips of mid and hind tibiae (Figs. 2 c,d) with two comb scales, one with a long spur, the other without spur. Fore tarsi all lost. mLR 0.66, hLR 0.75, mLR 0.70, hLR 6.5. Pulvilli large, brush-like.

Hypopygium in Fig. 2 e. Anal point (also in Fig. 2 f) long, narrow, widest at base and tapering towards pointed apex, posterior margin of ninth tergite forming an acute angle at its base. Dorsal appendage (Fig. 2 g) sickle-shaped, lateral margin slightly produced and with a long seta arising at about middle. Ventral appendage (Fig. 2 i) finger-like, with recurved setae and a long, caudally directed apical seta. Gonostylus (Fig. 2 h) long and narrow, widest at about middle, with 4 long and 6 short setae along inner margin.

Remarks. This specimen is a member of the genus *Polypedilum*, but dorsal appendage is unusually wide, lateral margin slightly expanded and the distal horn is directed inwards, a structure somewhat intermediate between the subgenus *Uresipedilum* and the *nubeculosum* complex of subgenus *Polypedilum*, a structure not seen in the previously recorded species. Terminal process of fore tibia broad but apically pointed in this species (Fig. 2 c), but it is rounded in the former species (Fig. 1 c).

***Polypedilum (Polypedilum) chubetuceum* sp. nov.** (Figs. 3 a-j)

Three males, No.404:57, holotype, and No.404:56,58, paratypes, were collected with net on Sept. 5, 2000, at the side of Chubetsu River. BL 2.94, 2.88, 3.10 mm, WL 1.54, 1.48, 1.66 mm, WW/WL 0.31, 0.33, 0.32. Eyes bare, ER 0.16, 0.16, 0.21, antennae all lost. P/H 1.04, 0.93, 0.92. SO 13:13, 9:9, 11:10, CL 14, 16, 14. Anteprepronotum (Fig 3 a) separated with a deep groove, without setae. DM 15, 14, 12, DL 14:15, 14:14, 13:14, PA 6:6, 5:5, 5:6, SC 12, 20, 11. Wing bare, slightly brownish, squama with 9:6, 10:9, 8:9 fringe hairs, R2+3 in contact with R1, VR 1.29, 1.28, 1.31, R/Cu 1.06, 1.16, 1.15. Tip of fore tibia (Fig. 3 b) with a broad but apically pointed terminal process, tips of mid and hind tibiae (Figs. 3 c,d) with two comb scales, one with a long spur and the other without spur. Fore tarsi all lost. mLR 0.55, 0.53, 52, hLR 0.66, 0.71, 0.71, mBR 5.3, 4.2, 5.4, hBR 4.7, 4.5, 5.4. Legs with large, brush-like pulvilli.

Hypopygium in Fig. 3 e. Anal point (also in Fig. 3 f) long, parallel-sided but apically pointed, ninth tergite with 6 long setae on its base and 6 shorter setae on posterior margin flanking anal point. Dorsal appendage (Figs. 3 g,h) composed of a low and broad base bearing 2 inner setae and a long, narrow and apically slightly hooked distal horn bearing a long lateral seta at about distal 1/3. Ventral appendage (Fig. 3 i) finger-like, with 10 recurved setae arising on distal half of dorsal surface, and a long caudally directed apical seta. Gonostylus (also in Fig. 3 j) long, narrow, widest near apex, with 3 very long setae on inner

margin (a peculiar structure).

Remarks. From the above morphological characters, these specimens are considered as representing a new species belonging to the *nubeculosum*-group of subgenus *Polypedilum*. Especially characteristic are the structures of anal point, dorsal appendage, and gonostylus.

***Polypedilum (Uresipedilum) convictum* (Walker, 1856)** (Fig. 4 a)

Two males, No.404:59,60, were collected with net at Chubetsu River on Sept. 5, 2000. BL 3.54, 3.58 mm, WL 1.90, 1.76 mm, WW/WL 0.31, 0.30. Scutal stripes and postnotum brownish yellow, other body portions almost entirely yellow. Eyes bare, ER 0.24, 0.24. Antenna all lost. P/H 0.84. SO 14:16, 13:13, CL 16, 18. Anteprepronotum separated, without seta. DM 19, 22, DL 22:20, 20:20, PA 6:6, 6:5, SC 22, 18. Wing bare, squama with 15:12, 9:12 fringe hairs, RR2+3 largely separated but fused with R1 near the tip, VR 1.20, 1.17, R/Cu 1.14, 1.14. Tip of fore tibia with a broad but apically pointed terminal scale, tips of mid and hind tibiae with two comb scales, one with a long spur, the other without spur. Fore tarsi all lost. mLR 0.53, 0.56, hLR 0.72, 0.70, mBR 0.46, 0.52, hBR 0.59, 0.56. Legs with large, brush-like pulvilli.

Hypopygium in Fig. 4 a. Anal point widest at base, distal 2/3 nearly parallel-sided and apically rounded. Dorsal appendage nearly sickle-shaped, basal portion only slightly expanded and with 4 inner setae, distal portion curved inwards and tapering towards rounded apex, with one long lateral seta arising at about basal 1/3, without posterior lobe. Ventral appendage with 7 relatively long recurved setae, and a longer caudally directed apical seta. Gonostylus widest at about basal 1/3, with 6 relatively long setae along inner margin.

Remarks. From the above morphological characters, these specimens are provisionally diagnosed as belonging to *P. convictum*, following the illustration with European specimens by Pinder (1978), and also by description of Sasa (1989) with Japanese specimens, but anal point is shorter and stouter, and dorsal appendage without posterior extension in the present specimens.

***Polypedilum (Uresipedilum) chubetudeeum* sp. nov.** (Figs. 5 a-i)

Two males, No.404:49, holotype, and No.404:51, paratype, were collected on Sept. 5, 2000, at the side Chubetsu River. BL 3.63, 3.84 mm, WL 1.92, 1.94 mm, WW/WL 0.32, 0.31. Body almost entirely pale yellow, even scutal stripes hardly discernible by color. Head in Fig 5 a. Eyes bare, ER 0.34, 0.33. Antenna all lost. P/H 1.07 (palpi of the first specimen lost). SO 14:15, 12:14, CL 15, 18. Anteprepronotum (Fig. 5 b) widely separated, without setae. DM 20, 16, DL 16:16, 13:17, PA 4:4, 5:5, SC 18, 20 in two transverse rows.

Wing bare, squama with 10:12, 12:14 fringe hairs; R2+3 in contact with R1, VR 1.23, 1.20, R/Cu 1.14, 1.14. Tip of fore tibia (Fig. 5 c) with a broad and rounded terminal scale, bearing two long setae and a short curved seta. Tips of mid and hind tibiae (Figs. 5 d,e) with two comb scales, one with a long spur and the other without spur. fLR 1.67, mLR 0.57, hLR 0.76, fTR 0.30, fBR 3.2, mBR 4.4, hBR 6.3 (tarsi are all lost from the second specimen). Pulvilli large, brush-like.

Hypopygium in Fig. 5 f. Anal point very stout and apically rounded, with a pair of lateral ridges but without spine clusters and setae on dorsal side. Dorsal appendage (also in Fig. 5 g) composed of a broad and caudally expanded shaft bearing two setae on basal portion of inner margin, and one long caudally directed seta on the tip of posterior process. Ventral appendage (also in Figs. 5 h,i) finger-like and with 26-28 short recurved setae on distal portion and a prominent apical process on inner margin bearing a long, caudally directed seta. Gonostylus (Fig. 5 e) widest at about middle, with 10 relatively short setae along inner margin.

Remarks. These specimens have morphological characters typical as a species belonging to subgenus *Uresipedilum* of genus *Polypedilum*, especially in the structure of dorsal appendage being composed of a broad plate bearing a seta on posterior margin and a sickle-shaped inner process, and thus it is closely related to the *Polypedilum aviceps* group (including *P. surugense* Niitsuma, 1992), but is especially characteristic in the structure of ventral appendage with a prominent apical process on inner margin bearing a long caudally directed seta, and of dorsal appendage bearing one long apical seta on posterior process and with a relatively stout and sickle-shaped inner process.

***Tanytarsus chubetuefeus* sp. nov.** (Figs. 6 a-m)

Three males were collected with net on Sept. 5, 2000, at Chubetsu River; No.404:52, holotype; No.404:53,54, paratypes. BL 2.42, 2.21, 2.22 mm, WL 1.30, 1.29, 1.26 mm, WW/WL 0.33, 0.32, 0.33. Body almost entirely pale, even scutal stripes hardly discernible by color. Head in Fig. 6 a. Eyes bare, 0.62, 0.52, 0.69. Antenna with 13 flagellar segments, AR 0.41, AHR 0.33 (antennae lost in the two paratypes). P/H 1.05, 0.91. SO 7:6, 7:8, 7:7, CL 16, 15, 16. Frontal tubercles absent. Antepnotum (Fig. 6 b) low, broad and widely separated, without setae. DM 16, 15, 16, DL 10:8, 6:5, 7:7, PA 11 1, SC 7, 6, 8 (Fig. 6 c).

Wing (Fig. 6 d) with macrotrichia on the principal veins and rather sparsely on distal half of the membrane, anal lobe nearly flat. R2+3 almost in contact with R4+5, VR 1.68, 1.63, 1.58 (very high), R/Cu 1.09, 1.09, 1.11. Tip of fore tibia (Fig. 6 e) with a narrow and sharply pointed terminal process. Tips of mid and hind tibiae (Figs. 6 f,g) with two comb scales, both with a spur. Fore tarsi lost from all of the 3 specimens, mLR 0.58, 0.58, 0.59, hLR 0.68, 0.65, 0.68, mBR 8.5, 4.2, 4.2, hBR 7.8, 6.8, 5.8. Pulvilli absent.

Hypopygium in Fig. 6 h (dorsal view). Anal point (also in Fig. 6 i) widest at base and apically rounded, with lateral ridges but without spine clusters, ninth tergite with a group of strong setae on its base. Dorsal appendage (Figs. 6 j, dorsal, 6 k, ventral view) roughly triangular, with 4 or 5 median and 4 or 5 lateral setae on dorsal side, and with a D-shaped digitus on ventral side. Median and ventral appendages in Fig. 6 m; the former short, composed of 8-10 inwards directed simple setae; the latter finger-like but apically expanded, with some 14 recurved and 2 or 3 caudally directed setae on apical portion. Gonostylus narrow and widest at about middle, with 8 setae along inner margin.

Remarks. These specimens show morphological characters typical as a member of genus *Tanytarsus* van der Wulp, 1874, and belongs to the *usmaensis* group, since anal point

with lateral ridges but without spine clusters. They are quite characteristic in the structure of hypopygium, especially in that of anal point, dorsal appendage, digitus, and median appendage.

***Brillia japonica* Tokunaga, 1939**

A male, No.404:48, was collected with net on Sept. 5, 2000, at Chubetsu River. This is a species originally recorded with specimens collected in Kyoto, and has recently been recorded from rivers in Tokyo and Kyoto (Sasa and Kukuchi, 1995, p.52).

***Brillia longifurca* Kieffer, 1921**

Two males, No.404:46,47, were collected with net on Sept. 5, 2000, at Chubetsu River. This is a species originally described in Europe, and has been recorded from lakes and rivers in Honshu and Hokkaido (Sasa and Kikuchi, 1995, p.52).

***Cricotopus triannulatus* (Macquart, 1826)**

A male, No.404:64, was collected on Sept. 5, 2000, at Chubetsu River. This is a species described from Europe, and was recorded also from more than 10 localities in Honshu (Sasa and Kikuchi, 1995, p.55).

***Limnophyes minimus* (Meigen, 1818)**

No.404:61-63, with net on Sept. 5, 2000, at Chubetsu River. This species has been recorded commonly from Europe, Americas, and also from Japan (Sasa and Kikuchi, 1995, p.67).

B. The species collected with net at the side of Sorachi River on

September 5, 2000 No.404:65-72 (8)

Chironomus salinarius Kieffer, 1921; (2) No.404:65,66 (#1-1, 1-2)

Polypedilum nubeculosum (Meigen, 1804); (1) No.404:67 (#2)

Tanytarsus sorachiabeus sp. nov.; (1) No.404:68 (#3) Fig. 7

Cricotopus triannulatus (Macquart, 1826); (1) No.404:72

Corynoneura sorachibecea sp. nov.; (3) No.404:69-71 (#4:1-3) Fig. 8

Notes on the species collected

***Chironomus salinarius* Kieffer, 1921**

Two males, No.404:65,66, were collected. This is a species commonly breeding in brackish water pools in Europe, and was recorded also from several localities in Shikoku, Honshu and Hokkaido.

***Polypedilum (Polypedilum) nubeculosum* (Meigen, 1804)**

A male, No.404:67, was collected. WL 2.14 mm, WW/WL 0.30. AR 1.60. This is a species widely distributed in Europe and Japan (Sasa and Kikuchi, 1995, p.37).

***Tanytarsus sorachiabeus* sp. nov.** (Figs. 7 a-j)

A male, No.404:68, was collected with insect net on Sept. 5, 2000. at the side of Sorachi River. BL 2.54 mm, WL 1.52 mm, WW/WL 0.29. Body almost entirely pale yellow, even scutal stripes not discernible by color. Head in Fig. 7 a. Eyes bare, ER 0.82. Antennae both lost. Frontal tubercles (Fig. 7 b) very long, widest at base and tapering towards pointed apex, 45 μm long, 15 μm wide at the base, and 38 μm wide at the base, and 38 μm apart from each other. P/H 0.91. Anteppronotum (Fig. 7 c) separated, without setae. SO 8:9, CL 10. Scutum and scutellum (Fig. 7 d) with very small numbers of setae, DM 6, DL 6:7, PA 1:1,, SC 5.

Wing (Fig. 7 e) with macrotrichia mainly on the distal half and on the principal veins, squama bare. R2+3 separated from both R1 and R4+5, and ending about midway between tips of R1 and R4+5, RR 0.49. VR 1.17, R/Cu 1.06. Tip of fore tibia (Fig. 7 f) with a narrow and apically pointed terminal process, tips of mid and hind tibiae (Figs. 7 g,h) with two comb scales, both with a long spur. Fore and hind tarsi all lost, mLR 0.55, mBR 6.8.

Hypopygium in Figs. 7 i (dorsal), 7 j (ventral view). Anal point long, narrow, constricted in the middle, with lateral ridges and lateral setae but without spine clusters. Posterior margin of ninth tergite with a broad, concave margin flanking anal point, a quite peculiar structure not seen in the previously recorded species of this group. Dorsal appendage very complicated in the structure (Fig. 7 j), composed of some 5 processes bearing basal setae, also a quite peculiar structure. Ventral appendage short, finger-like, with recurved setae. Median appendage (Fig. 7 j) with relatively long shaft bearing inwards directed simple setae.

Remarks. This specimen is has a structure typical as a member of the genus *Tanytarsus* van der Wulp, 1874, and to the *usmaensis* group in that anal point with lateral ridges but without spine clusters, but quite unusual in that body is very small and almost entirely pale yellow, frontal tubercles very long, setae on scutum and scutellum are very small in the numbers, and in the structure of hypopygium, in which anal point is constricted in the middle and with lateral setae, posterior margin of ninth tergite and dorsal appendages are very complicated in structure, all not seen in the previously recorded species of this group.

***Corynoneura sorachibecea* sp. nov.** (Figs. 5 a-k)

Three males, No.404:69, holotype, No.404:70,71, paratypes, were collected with insect net on Sept. 5, 2000, at the side of Sorachi River. BL 1.24, 1.28, 1.24 mm, WL 0.80, 0.80, 0.82 mm, WW/WL 0.39, 0.38, 0.37 (very wide). Scutal stripes and postnotum dark brown, other scutal areas and scutellum brown, legs largely yellow but distal end and both proximal and distal ends of tibiae with dark rings, abdominal tergites brownish yellow. Head in Fig. 8 a. Eyes bare, reniform, ER 1.71, 1.53, 1.47. Antenna with only 10 flagellar segments, AR 0.56, 0.61, AHR 0.36, 0.39 (antennae are lost in the third specimen), Palp very short, P/H 0.63. 0.44, 0.49. Anteppronotum (Fig. 8 b) united, with 0:0, 1:1, 1:1 lateral seta. DM all 0, DL 4:4, 5:5, 4:5, PA all 2, SC all 2 (Fig. 8 c). Wing (Fig. 8 d) membrane bare, squama bare, venation typical as a member of tribe Corynoneurini; veins R1 and R4+5 united and short,

FCu is located far distal to most other tribes and Cu2 is short, VR 1.92, 2.00, 1.86, R/Cu 0.35, 0.29, 0.26. Tip of fore tibia (Fig. 8 e) with a short spur, tip of mid tibia (Fig. 8 f) also with only one short spur, tip of hind tibia (Fig. 8 g) strongly expanded, with a long and a short spur, and a comb composed of 14 free spines. fLR 0.60, 0.60, 0.59, mLR 0.56, 0.59, 0.58 (relatively high), hLR 0.51, 0.53, 0.53, fTR 0.13, 0.13, 0.12, fBR 2.1, 1.8, 2.3, mBR 2.5, 3.1, 3.3, hBR 3.6, 3.2, 3.4. Pulvilli absent.

Abdominal tergites (Fig. 8 h) with small numbers of setae, 0 on I, 1 on II to IV, 2 on V and VI, 1 on VII, and 2 on X. Hypopygium in Figs. 8 i (No.404:69), j (No.404:70), k (No.404:71). Ninth tergite with an anal point-like Y-shaped ridge on the ventral side, the length of median ridge vary greatly among the 3 specimens. Posterior margin of ninth tergite slightly concave in the middle and with a pair of marginal setae. Gonocoxite short and stout, without inner lobe. Gonostylus short and broad, widest at about middle and apically rounded.

Remarks. These specimens belong to genus *Corynoneura* Winnertz, 1846, since the wing venation is typical as Corynoneurini, and tip of hind tibia is strongly expanded, and is somewhat similar in structure to *C. scutellata* Winnertz among the European species, in that ninth tergite concave in the middle, gonocoxite without inner lobe, and gonostylus not tapered distally (Pinder, 1978, p.84, Fig.125A), but in this species posterior margin of ninth tergite with 3 pairs of setae on the expanded middle portion, AR is larger, and the structures of anal point-like processes and gonostylus are quite different.

C. The species collected with light trap at Ginzan on Sept. 2, 2000.

(145) No.403:01–100, 404:01–45

- Chironomus ginzanabeus* sp. nov.; Fig. 9. No.403:05 (1)
Chironomus ginzanbeceus sp. nov.; Fig. 10. No.403:13 (1)
Chironomus nipponensis Tokunaga, 1940; No.403:01-04 (4)
Chironomus samoensis Edwards, 1928; No.403:06-08 (3)
Demicryptochironomus ginzancedeus sp. nov.; Fig. 11. No.403:09-12 (4)
Einfeldia dissidens (Walker, 1841); No.403:50,74-78 (6)
Harnischia ginzandeeus sp. nov.; Fig. 12. No.403:16 (1)
Microtendipes ginzanefeus sp. nov.; Fig. 13. No.403:46,51 (2)
Microtendipes shoukomaki Sasa, 1989; No.403:53-55 (3)
Pentapedilum ginzanfegeum sp. nov.; Fig. 14. No.403:41-45 (5)
Polypedilum (Polypedilum) asakawaense Sasa, 1980; Fig. 15. No.403:56-60 (5)
Polypedilum (Polypedilum) ginzangeheum sp. nov.; Fig. 16. No.403:14,15,17 (3)
Polypedilum (Polypedilum) ginzanheium sp. nov.; Fig. 17. No.403:52 (1)
Polypedilum (Polypedilum) ginzanijeum sp. nov.; Fig. 18. No.403:66,67,69,72 (4)
Polypedilum (Polypedilum) kyotoense Tokunaga, 1938; No.403:61,62,64,65,68 (5)
Polypedilum (Tripodura) ginzansecundum Sasa et Suzuki, 1998;
 No.403:18-21,23,24,26,27 (8) No.403:22,25,33
Polypedilum (Tripodura) japonicum (Tokunaga, 1938); No.403:79,80,82,83 (4)
Polypedilum (Tripodura) tamahinoense Sasa et Ichimori, 1983; No.403:81 (1)

- Polypedilum (Uresipedilum) cultellatum* Goetghebuer, 1931; No.403:34-37,47-49 (6)
Polypedilum (Uresipedilum) hirosshimaense Kawai et Sasa, 1985;22,25,33 (3)
Tanytarsus ginzanjekeus sp. nov. Fig. 19. No.403:28,29,31 (3)
Taytarsus ginzankeleus sp. nov.; Fig. 20. No.403:32 (1)
Tanytarsus ginzanlemeus sp. nov.; Fig. 21. No.403:38-40 (3)
Tanytarsus ginzanquartus Sasa et Suzuki, 2000; Fig. 22. No.403:30 (1)
Cricotopus bicinctus (Meigen, 1818); No.404:40 (1)
Cricotopus bimaculatus Tokunaga, 1936; No.404:41-44 (4)
Cricotopus metatibialis Tokunaga, 1936; No.404:30-34 (5)
Cricotopus polyannulatus Tokunaga, 1936; No.404:35-39 (5)
Cricotopus triannulatus (Macquart, 1826); No.404:45 (1)
Paratrichocladius tamaater Sasa, 1981; No.403:99,100,404:01-03 (5)
Rheocricotopus chalybeatus (Edwards, 1929); No.404:04 (1)
Eukiefferiella ginzanopea sp. nov.; No.403:97 (1) Fig. 23
Eukiefferiella ginzanpequea sp. nov.; No.403:98 (1) Fig. 24
Hydrobaenus ginzanneous sp. nov.; No.403:63 (1) Fig. 25
Limnophyes minimus (Meigen, 1818); No.404:13-21 (9) Fig. 26
Thienemanniella ginzanquerea sp. nov.; No.404:22-29 (8) Fig. 27
Ablabesmyia monilis (Linnaeus 1763); No.403:88-91 (4)
Conchapelopia ginzanuwea sp. nov.; No.403:84-86 (3) Fig. 28
Conchapelopia ginzanvewea sp. nov. No.403:87 (1) Fig. 29
Procladius sagittalis Kieffer, 1909; No.403:94-96 (3)

Notes on the species collected

The chironomid specimens were collected also with a light trap set outside of a mountain hut on Ginzan Mountain on Sept. 7, 1997, and a total of 42 male specimens were collected and examined. They were classified into 16 species, including 5 new species (Sasa and Suzuki, 1998, p.12). This time, a light trap operated with a battery was set at the side of a stream on Ginzan Mountain, and a total of 145 male specimens were collected and examined, and 40 species, including 17 new species, are recorded. Only 5 species among them were in common to both collections. It was indicated that the light trap operated with a battery and set at the side of a breeding place was more efficient for the collection of many species.

Chironomus ginzanabeus sp. nov. (Figs. 9 a-k)

A male, No.403:13, was collected with a light trap at Ginzan on Sept. 2, 2000. BL 5.36 mm, WL 2.76 mm, WW/WL 0.28. Scutal stripes and postnotum brownish yellow, other scutal portions, scutellum and abdomen almost entirely white, leg segments largely yellow but tips of femora, tibiae, tarsi I and II slightly brownish, tarsi III to V largely brown. Head in Fig. 9 a. Eyes bare, ER 0.28. Antenna with 11 flagellar segments, AR 3.21, AHR 0.66. Frontal tubercles absent. Palp long, with numerous short setae, P/H 1.35. SO 23:25, CL 20. An-

tepronotum (Fig. 9 b) separated in the middle (unusual character as a *Chironomus*), without setae. Scutum and scutellum in Fig. 9 c. DM 15, DL 23:24, PA 7:8, SC 31. Wing (Fig. 9 d) bare, SQ 23:23, RR 0.25, VR 1.06, R/Cu 1.09. Tip of fore tibia (Fig. 9 e) with two terminal processes, both broad and rounded. Tips of mid and hind tibiae (Figs. 10 f,g) with two comb scales, both with a spur. fLR 1.29 (relatively small), mLR 0.52, hLR 0.61, fTR 0.21, fBR 2.4, mBR 2.4, hBR 2.4. Pulvilli large, brush-like.

Hypopygium in Fig. 9 h. Anal point (also in Fig. 9 i) constricted in the middle and apically rounded, with lateral ridges but without spine clusters and setae. Dorsal appendage (also in Fig. 9 j) broad and sickle-shaped but apically rounded, basal portion only slightly expanded, with 5 inner setae. Ventral appendage (Fig. 9 k) rather stout, with 18 recurved setae. Gonostylus widest at about basal 1/3 and constricted near apex, with 10 short setae along inner margin.

Remarks. This is one of the rare species among the genus *Chironomus* in that anteppronotum is separated in the middle. Body is largely pale yellow, only scutal stripes and postnotum are slightly brownish and abdominal tergites are uniformly yellow. The shape of dorsal appendage being stout and sickle-shaped is quite characteristic.

***Chironomus ginzanbeceus* sp. nov.** (Figs. 10 a-m)

A male, No.403:05, was collected with light trap on Sept. 2, 2000, at Ginzan. BL 5.92 mm, WL 2.90 mm, WW/WL 0.27. Scutal stripes and postnotum brown, humeral and prescutellar areas yellow, legs brownish yellow, abdominal tergites largely brown but posterior halves of I to V yellow. Head in Fig. 10 a. Eyes bare, ER 0.24. Antenna with 11 flagellar segments, AR 3.18, AHR 0.71. P/H 1.07. SO 38:36, CL 30. Anteppronotum (Fig. 10 b) united with a point, with 1:0 lateral seta. DM 20, DL 28:30, PA 6:6, SC 28 (Fig. 10 c).

Wing (Fig. 10 d) bare, SQ 24:24, RR 0.20, VR 1.08, R/Cu 1.15. Tip of fore tibia (Fig. 10 e) with rounded terminal scale bearing a long seta. Tips of mid and hind tibiae (Figs. 10 f,g) with two broad terminal comb scales, both with a spur. All tibiae with a group of numerous short setae in the preterminal area. fLR 1.78, mLR 0.67, hLR 0.78 (all larger than in the former species), fTR 0.27, fBR 2.4, mBR 2.6, hBR 3.0. Pulvilli large, brush-like.

Hypopygium in Fig. 10 h. Anal point (also in Fig. 10 i, lateral view) bare and sickle-shaped, without lateral ridges and spine clusters. Dorsal appendages (Figs. 10 j,k) also sickle-shaped, with 8 or 7 basal setae in two rows. Ventral appendage (Fig. 10 m) finger-like but slightly expanded apically, with 20 recurved setae. Gonostylus (Fig. 10 h) long and sledner, slightly curved inwards.

Remarks. This is one of the rare species among the genus *Chironomus* in that anteppronotum has lateral setae. The shape of dorsal appendage being sickle-shaped and with two rows of basal setae is quite characteristic. The body coloration, especially that of scutum with a pair of large pale areas in humeral portions, and of abdomen with a broad pale area on posterior half of tergites I to V, is also characteristic.

***Chironomus nipponensis* Tokunaga, 1940**

Four males, No.403:01-04, were collected with a light trap on Sept. 2, 2000, at Ginzan. WL 3.42-3.70 (3.59 in average of 4) mm, AR 3.70-4.17 (3.89), fLR 1.54-1.66 (1.60). This species was recorded first from Shikuka (Sakhalin), and later from more than 10 localities in Japan, including Hokkaido, Honshu and Kyushu (Sasa and Kikuchi, 1995, p.25).

***Demicryptochironomus ginzancedeus* sp. nov.** (Figs. 11 a-m)

Four males, No.403:09-12 (#3:1-4) were collected with light trap on Sept. 2, 2000, at Ginzan. Holotype: No.403:10. Paratypes: other 3 specimens. BL 4.96-5.48 (5.20 in average of 4) mm, WL 2.36-2.60 (2.51 in average of 4) mm, WW/WL 0.27-0.29 (0.28). Scutal stripes and postnotum brown, other scutal regions and scutellum pale; in the fore legs, femora largely yellow and with an apical brown ring, tibiae and tarsal segments all brown; in the mid and hind legs, femora, tibiae and tarsi I to III yellow, IV and V brownish yellow. Head in Fig. 11 a. Eyes bare, ER 0.24-0.27 (0.24). Antenna with 11 flagellar segments, AR 2.94-3.12 (3.02), AHR 0.57-0.66 (0.552). Palp long, P/H 1.28-1.44 (1.35). SO 23-26 (25.1), CL 10-22 (14.8). Large frontal tubercles present (Fig. 11 b), 25 μ m long, 9 μ m wide, and 10 μ m apart from each other. Anteprepronotum (Fig. 11 c) united, with 8-12 (very many) lateral setae. Scutum and scutellum in Fig. 11 d; DM 18-24 (21.5), DL 12-17 (14.5), PA 5-7 (6.5), SC 20-25 (23.0).

Wing in Fig. 11 e; squama with 13-20 (15.8) fringe hairs, membrane bare, anal lobe nearly rectangular, RR 0.21-0.29 (0.25), VR 1.09-1.15 (1.12), R/Cu 1.13-1.14 (1.13). Tip of fore tibia (Fig. 11 f) with a broad and rounded terminal scale bearing two long setae. Tips of mid and hind tibiae (Figs. 11 g,h) with two comb scales, both with a spur. fLR 1.53-1.63 (1.58), mLR 0.62-0.66 (0.64), hBR 0.63-0.67 (0.65), fTR 0.23-0.25 (0.24), fBR 1.9-2.6 (2.3), mBR 2.8-3.6 (3.0), hBR 3.1-4.2 (3.6). Pulvilli large, brush-like.

Abdominal tergites with large numbers of setae almost evenly distributed. Hypopygium in Fig. 11 i. Anal point (also in Fig. 11 j) long, slender, nearly parallel-sided and apically rounded, darkly pigmented. Dorsal and ventral appendages (Figs 11 k, No.403:10; m, No.403:09) both a very small process, the former usually with 2 (rarely 1) and the latter with 1 long seta. Gonostylus long, sledner, slightly curved inwards, with a longitudinal ridge, and 16 very short setae along inner margin.

Remarks. These specimens belong to a species of the *Harnischia* complex of the tribe Chironomini, since antennae are composed of 11 flagellar segments, wing membrane is bare, mid and hind tibiae with two comb scales and both with a spur, and both dorsal and ventral appendages are highly reduced. It further belongs to the genus *Demicryptochironomus*, since gonostylus with a longitudinal keel. However, the present species differs from the European species of *D. vulneratus* (Zetterstedt) in that in the latter dorsal appendage is longer and bearing several long setae, ventral appendage is absent, and anal point is apically pointed (cf. Pinder, 1978, Fig. 150 D). Three species have been recorded from Japan as members of this genus (Sasa and Kikuchi, 1995, p.100), among which *D. asamaprimus* Sasa et Hirabayashi, 1991, is closest to the present species in body coloration and in the shape of dorsal append-

age, but in this species anal point is sickle-shaped and apically pointed, and ventral appendage is absent.

***Einfeldia dissidens* (Walker, 1841)**

Six males, No.403:50,74-78, were collected with light trap on Sept. 2, 2000, at Ginzan. BL 4.38-4.66 (0.52 in aveage) mm, WL 2.10-2.36 (2.23) mm, WW/WL 0.28-0.32 (0.30), AR 2.26-2.59 (2.43), fLR 1.83, mLR 0.56, hLR 0.71. Body almost entirely dark brown or brown, head with a pair of large frontal tubercles, anal point constricted near the base, dorsal appendage with high setigerous base.

***Harnischia ginzandeeus* sp. nov.** (Figs. 12 a-k)

A male, No.403:16, was collected with light trap on Sept. 2 at Ginzan. BL 3.24 mm, WL 1.42 mm, WW/WL 0.30. Scutal stripes and postnotum brownish yellow, other scutal areas and scutellum pale, legs and abdomen almost entirely yellow. Head in Fig. 12 a. Eyes bare, ER 0.45. Antenna with 11 flagellar segments, AR 2.18, AHR 0.67. P/H 1.06. Frontal tubercles (Fig. 12 b) small and rounded. SO 9:11, CL 10. Anteprenotum (Fig. 12 c) united with a point, with 2:2 lateral setae. DM 6, DL 8:7, PA 3:3, SC 6 (Fig. 12 d).

Wing (Fig. 12 e) bare, SQ 6:6, RR 0.27, VR 1.19, R/Cu 1.08. Tip of fore tibia (Fig. 12 f) with a broad and rounded process, tips of mid and hind tibiae (Figs. 12 g,h) with two comb scales, both with a short spur. Fore tarsi lost, mLR 0.50, hLR 0.60, mBR 2.8, hBR 3.7.

Hypopygium in Fig. 12 i. Anal point (also in Fig. 12 j) very stout and apically rounded, with lateral ridges and 5 lateral setae on both sides, with microtrichia on dorsal side in the middle, a peculiar structure. Dorsal and ventral appendages in Fig. 12 k; both very small, the former narrow and straight, with a relatively long apical seta; ventral appendage low and broad, with 3 setae on caudal margin and almost entirely clothed in microtrichia. Gonostylus (Fig. 12 i) slender, slightly curved and almost parallel-sided, with a short apical seta, and 8 very short setae along inner margin.

Remarks. This specimen is a typical member of genus *Harnischia* Kieffer, 1921, since the general structure is typical as a member of Chironomini, antenna with 11 flagellar segments, fore tibia with a rounded terminal process, mid and hind tibiae with two comb scales and both with a spur, dorsal appendage is highly reduced to a small process bearing an apical seta, and ventral appendage is absent. It is somewhat related to *H. curtilamellata* (Maloch, 1915) in that scutal stripes are almost uniformly brown, frontal tubercles present, ventral appendage absent, and gonostylus is almost parallel-sided, but the structure of anal point is essentially different, which is long and narrow, without microtrichia in *H. curtilamellata* (very stout and with microtrichia on dorsal side in the present species).

***Microtendipes ginzanefeus* sp. nov.** (Figs. 13 a-k)

Two males, No.403:46, paratype, and No.403:51, holotype, were collected. BL 5.08, 5.26 mm, WL 2.36, 2.54 mm, WW/WL 0.25, 0.28. Scutal stripes and postnotum brown, other body portions almost uniformly yellow. Head in Fig. 13 a. Eyes bare, ER 0.32, 0.23. Antenna

with 13 flagellar segments, AR 1.69, 2.00, AHR 0.59, 0.64. Palp long, P/H 1.36, 1.37, segment II with 8, III with 52, IV with 42, V with 36 setae in the holotype. (all very many). Frontal tubercles absent. Anteprepronotum (Fig. 13 b) separated in the middle, without setae. Scutum and scutellum in Fig. 13 c. DM 12, 8, DL 13:13, 14:9, PA 4:5, 4:4, SC 27, 24.

Wing (Fig. 13 d) bare, squama with 22:20 fringe hairs, R2+3 in contact with R1, VR 1.26, 1.20, R/Cu 1.11, 1.12. Tip of fore tibia (Fig. 13 e) almost truncate, with a very short spur. One of the terminal comb scales of mid and hind tibiae with a spur, the other without spur (Figs. 13 f,g). fLR 1.30 (relatively low), mLR 0.67, 0.62, hLR 0.84, 0.74, fTR 0.21, fBR 3.3, mBR 7.4, 3.8, hBR 3.6. Pulvilli large, brush-like.

Hypopygium in Fig. 13 h. Anal point (also in Fig. 13 i) long, narrow and parallel-sided. Dorsal appendages (Fig. 13 j) sickle-shaped, with 7 or 9 setae in the middle portion. Ventral appendages (Fig. 13 k) finger-like, with 18 recurved setae and one long caudal seta. Gonostylus (Fig. 13 h) nearly parallel-sided and stout to near apex, with 8 or 10 short setae along distal half of inner margin.

Remarks. This specimen belongs to the genus *Microtendipes* Kieffer, 1915, since the basic structure is typical as a member of the *Polypedilum* group, but dorsal appendage is sickle-shaped and with several setae on the dorsal side and along inner margin, and anterior margin of eighth tergite is U-shaped (not V-shaped). Among the previously known species of this genus, it is very closely related to *M. amamihosoides* Sasa, 1990, which was so far collected only from the Nansei Islands, southmost part of Japan, but can be differentiated by the shape of dorsal appendage being stouter, more acutely curved, not apically pointed but apical portion nearly parallel-sided and apically rounded.

***Microtendipes shoukomaki* Sasa, 1989**

Three males, No.403:53-55, were collected with light trap on Sept. 2, 2000 at Ginzan. BL 5.16, 5.02, 4.46 mm, WL 2.65, 2.66, 2.34 mm, WW/WL 0.28, 0.27, 0.27. Lateral stripes of scutum and postnotum brown, other scutal portions and scutellum yellow. In the fore legs, femora largely yellow and a with brown apical ring, basal half and apical portion of tibiae brown and the rest portion yellow, fore tarsi yellow, mid and hind femora and tibiae yellow, abdominal tergites uniformly yellow. Eyes bare, ER 0.23, 0.21, 0.27. Antenna with 13 flagellar segments, AR 2.00, 2.04, 1.85, AHR 0.55, 0.63, 0.56. Palp very long, P/H 1.74, 1.79, 1.58. Anteprepronotum widely separated, with 2:3, 2:3, 3:3 lateral setae (quite characteristic). DM 0, 0, 4, DL 14:14, 14:15, 13:15, PA all 4, SC 24, 26, 26. SQ 24:24, 26:26, 13:14. R2+3 in contact with R1, VR 1.15, 1.16, 1.13, R/Cu 1.12, 1.13, 1.15. fLR 1.30, 1.31, mLR 0.65, 0.61, hLR 0.75, 0.75, fTR 0.30, 0.25, fBR 2.3, 2.8, mBR 4.8, 2.8, hBR 5.8, 4.4. Pulvilli large, brush-like.

Anal point relatively small, parallel-sided and apically rounded. Dorsal appendage sickle-shaped, slightly curved inwards and apically rounded, with one long basal seta arising from a tubercle, and 4 or 5 setae on dorsal side of middle portion. Ventral appendage finger-like, with 16 recurved setae but without long apical seta. Gonostylus widest at about middle, with 10 short setae along inner margin.

Remarks. This species belongs also to the genus *Microtendipes*, and the above structure and measurement data are almost identical with the specimens recorded first at Shou River (Toyama) by the name of *M. shoukomaki* Sasa, 1989, and later also at the sides of several rivers in Kyoto and Toyama.

***Pentapedilum ginzanfegeum* sp. nov.** (Figs. 14 a-k)

Five males, No.403:41-45, were collected with light trap on Sept. 2, 2000, at Ginzan. Holotype: No.403:42. Paratypes: other 4 specimens. Body largely yellow, scutal stripes and postnotum brownish. BL 2.62-2.84 (2.73 in average of 5) mm, WL 1.50-1.59 (1.53) mm, WW/WL 0.29-0.31 (0.30). Head in Fig. 14 a. Eyes bare, ER 0.28-0.36 (0.33). Antenna with 13 flagellar segments, AR 1.16-1.39 (1.27), AHR 0.45-0.54 (0.49). P/H 0.72-0.98 (0.84). SO 8-12 (9.6), CL 15-22 (18.0). Anteprenotum (Fig. 14 b) separated, without seta. DM 14-19 (16.6), DL 10-15 (11.6), as in Fig. 14 c.

Wing (Fig. 14 d) with macrotrichia on almost entire surface and on the principal veins. Squama with only 4-7 (5.0) fringe hairs. RR 0.18-0.36 (0.28), VR 1.22-1.25 (1.23), R/Cu 1.07-1.13 (1.11). Tip of fore tibia (Fig. 14 e) with a basally broad and apically pointed terminal scale, tips of mid and hind tibiae (Figs. 13 f,g) with two comb scales, one with a long spur and the other without spur. fLR 1.91-2.10 (1.98), MLR 0.58-0.64 (0.61), hLR 0.69-0.75 (0.72), fTR 0.30-0.33 (0.32), fBR 3.6-4.5 (4.0), mBR 4.8-7.7 (6.3), hBR 6.1-7.8 (7.1). Legs with large, brush-like pulvilli.

Hypopygium in Fig. 14 h. Anal point (also in Fig. 14 i, lateral view, No.430:44) very stout and apically rounded, with a median ridge and a large ventral lobe, ninth tergite with some 18 long setae in its basal portion. Dorsal appendage (Figs. 13 j, No.403:42; K, No.403:44) small, composed of a relatively narrow and high base bearing 2 inner setae, and a long, narrow and slightly curved distal horn bearing one long lateral seta arising from about basal 1/3 or about middle (lateral seta is sometimes absent, as in Fig. 14 k). Ventral appendage long, narrow and finger-like, with 8 recurved setae and a long, caudally directed apical seta. Gonostylus rather slender, with 8 setae along inner margin.

Remarks. This species is structurally typical as a member of genus *Pentapedilum* Kieffer, 1913, in that most morphological characters are in common with species of the genus *Polypedilum*, but wings with macrotrichia on almost entire surface. It is especially characterized in that anal point is very large and stout, and dorsal appendages are very small and with peculiar structure. Four males of this species were collected also in our previous survey and was recorded by the name of *Pentapedilum kasumiense* Sasa, 1979, but by detailed comparison with its type specimens it is considered better to describe them as a different new species, since in *P. kasumiense* basal portion of dorsal appendages is lower and broader, and its distal horn is shorter and stouter, lateral seta is arising from more distal portion. It is also considered now that the specimens collected from an acid hot spring of Unzen and recorded as *P. kasumiense* by Sasa (1991)* is also another new species, and named here as *Pentapedilum unzenum* Sasa et Suzuki, 2001, since they have 2-4 lateral setae on anteprenotum (anteprenotum is bare in the type specimens and also in the present specimens), and lateral seta

of dorsal appendage is arising from near the base (from distal portion in *P. kasumiense*).

*Sasa (1979): A morphological study of adult and immature stages of 20 Japanese species of the family Chironomidae (Diptera). *Res. Rep. Nat. Instit. Envir. Stud.* No. 7, p. 13

***Polypedilum (Polypedilum) asakawaense* Sasa, 1980** (Figs. 15 a-c)

Five males, No.403:56-60, were collected. In the measurement of No.403:60, BL 4.42 mm, WL 2.30 mm, WW/WL 0.31, ER 0.23, AR 2.05, AHR 0.56, SO 12:12, CL 32, PN 0:0, DM 15, DL 12:13, PA 4:4, SC 18, SQ 16:14, RR 0.17, VR 123, R/Cu 1.16, fLR 1.52, mLR 67, hLR 0.77, fTR 0.23, fBR 3.1, mBR 3.6, hBR 5.0. Hypopygium as in Fig. 15 a. Anal point (also in Fig. 15 b) roughly triangular, ninth tergite with 4 short setae on posterior margin flanking anal point. Dorsal appendages (also in Fig. 15 b) rectangularly curved, without basal and lateral setae. Ventral appendage (Fig. 15 c) finger-like, with 20 recurved setae and a long, caudally directed apical seta.

From the measurement data and structure, these specimens are considered as members of the *nubifer*-group of genus *Polypedilum*, and belong to *P. asakawaense* Sasa, 1980, which was first recorded from an upstream site of Tama River (Tokyo), and later also from several localities in northern Honshu at the side of unpolluted rivers.

***Polypedilum (Polypedilum) ginzangeheum* sp. nov.** (Figs. 16 a-j)

Three males, No.403:14, holotype, and No.403:15,17, paratypes, were collected. BL 3.04, 3.00, 3.48 mm, WL 1.72, 1.74, 1.97 mm, WW/WL all 0.29. Body almost entirely yellow, only postnotum slightly brownish. BL 3.04, 3.00, 3.48 mm, WL 1.74, 1.72, 1.97 mm, WW/WL all 0.29. Head in Fig. 16 a. Eyes bare, ER 0.22, 0.20, 0.31, AR 1.24, AHR 0.57 (antennae lost in the two paratypes), P/H 0.94, 0.92. SO 12:10, 15:16, 14:14, CL 18, 18, 30. Anteprepronotum (Fig. 16 b) widely separated, without setae. DM 14, 14, 16, DL 14:13, 18:18, 24:25, PA 5:5, 6:6, 7:7, SCC 18, 17, 23. SQ 10:11, 14:14, 15:15, R2+3 in contact with R1, VR 1.25, 1.27, 1.21, R/Cu 1.12, 1.18, 1.13. Tip of fore tibia (Fig. 16 c) with relatively narrow and sharply pointed process, tips of mid and hind tibiae (Figs. 17 d,e) with two comb scales, one with a long spur and the other without spur. fLR 1.82, 1.82, mLR 0.58, 0.53, 0.53, hLR 0.70, 0.70, 0.65, fTR 0.29, 0.32, fBR 4.2, 2.7, mBR 5.3, 4.3, 4.6, hBR 5.6, 6.3, 7.0.

Hypopygium in Fig. 16 f. Anal point (also in Fig. 16 g) relatively short, widest at base and tapering towards rounded apex. Dorsal appendages (Figs. 16 h,i) relatively wide, distal half curved inwards, with 3 setae arising at about middle of inner margin and a long lateral seta arising at about middle, a shape somewhat intermediate between the *nubeculosum* group and subgenus *Uresipedilum*. Ventral appendage (Fig. 16 j) finger-like, with 14-16 recurved setae arising on distal 1/3, and 1 or 2 long, caudally directed apical setae. Gonostylus widest at about middle and tapering towards pointed apex, with 4 long and 4 shorter setae on inner margin.

Remarks. The shape and structure of dorsal appendage of this species is somewhat intermediate between the *nubeculosum* group of genus *Polypedilum* and subgenus *Uresipedilum*, and is somewhat related to *P. (P.) tsukubaense* (Sasa, 1979), especially in that dorsal

appendage with inner setae at about middle and lateral seta also at middle, but in this species dorsal and ventral appendages are much narrower, and anal point is parallel-sided and more slender.

***Polypedilum (Polypedilum) ginzanheium* sp. nov.** (Figs. 17 a-h)

A male, No.403:52, holotype, was collected with light trap at Ginzan on Sept. 2, 2000. BL 4.16 mm, WL 2.14 mm, WW/WL 0.32. Scutal stripes and postnotum brown, other scutal portions, scutellum, legs and abdomen yellow. Head in Fig. 17 a. Eyes very large, bare, composed of very many ocelli, ER 0.13. Antenna with 13 flagellar segments, AR 0.80 (unusually small), AHR 0.47. Palp long, P/H 1.19. SO 25:25 (very many), CL 24. Anteprenotum (Fig. 17 b) narrowly separated, without setae. DM 20, DL 20:20, PA 7:7, SC 22 (Fig. 17 c).

Wing bare, squama with 32:32 fringe hairs, R2+3 in contact with R1, VR 1.24, R/Cu 1.19. Tip of fore tibia (Fig. 17 d) with a narrow and pointed spur, tips of mid and hind tibiae (Figs. 17 e,f) with two comb scales, one with a long spur and the other without spur. fLR 1.40, mLR 0.58, hLR 0.71, fTR 0.28, fBR 2.7, mBR 4.9, hBR 6.0. Hypopygium in Fig. 17 g. Anal point (also in Fig. 17 h) widest at base and tapering towards rounded apex. Dorsal appendage (also in Fig. 17 h) with a wide and low base bearing 4 basal setae, and a lateral seta arising at about middle. Ventral appendage (Fig. 17 i) finger-like, with 20 recurved setae and a long, caudally directed apical seta. Gonostylus widest at about middle, with 3 long setae and 5 shorter setae on inner margin.

Remarks. This specimen is morphologically typical as a member of the *nubeculosum* group of genus *Polypedilum*, especially in that dorsal appendage with a long lateral seta, eyes bare and ER is small, and anteprenotum is separated in the middle, and is most closely related to *P. pedestre* (Meigen, 1860), in that wing without dark marks, anteprenotum without setae, and abdominal tergites I to V yellow and VI to hypopygium brown, and AR is 0.80 and fLR is 1.40, but in *P. pedestre* scutum and postnotum are shining black (brown in the present species), dista 3/4 of fore femur is black and basal 1/4 yellow (entirely yellowish brown in the present species), and lateral seta of dorsal appendage is arising at about basal 1/3 (at about middle in the present species).

***Polypedilum (Polypedilum) ginzanijeum* sp. nov.** (Figs. 18 a-k)

Five males, No.403:66, holotype, and No.403:67,69,72,73, paratypes, were collected with light trap at Ginzan on Sept. 2, 2000. BL 3.10, 3.30, 2.90 mm, WL 1.72, 1.60, 1.54 mm, WW/WL 0.35, 0.35, 0.34 (wing very wide). Scutal stripes and postnotum brown, other thorax portions and abdomen almost uniformly yellowish brown, legs yellow. Head in Fig. 18 a. Eyes bare, ER 0.24, 0.33, 0.17. Antenna with 13 flagellar segments, AR 0.71, 0.71, 0.85 (remarkably small), AHR 0.30, 0.33. P/H 1.03, 0.91. Anteprenotum (Fig. 18 b) widely separated, without setae. DM 20,22, 21, DL 22:22, 23:24, 23:22, PA 5:6, 6:6, 5:4, SC 21, 19, 10 (Fig. 18 c). Wing (Fig. 18 d) bare, SQ 18:19, 21:22, R2+3 almost in contact with R1, RR 0.11, 0.12, 0.12. VR 1.34, 1.32, 1.33, R/Cu 1.16, 1.20, 1.15. Tip of fore tibia (Fig. 18 e) with a long, narrow and sharply pointed terminal process. Tips of mid and hind tibiae (Figs. 19

f,g) with two comb scales, one with a long spur and the other without spur. fLR 1.88, 1.83, mLr 0.47, 0.52, 0.52, hLR 0.71, 0.68, 0.72, fTR 0.29, 0.28, fBR 4.7, 3.4, mBR 3.5, 4.3, 4.2, hBR 5.7, 5.1, 7.5.

Hypopygium in Fig. 18 h; anal point, left dorsal appendage, right ventral appendage, left gonostylus also in Fig. 18 i; right dorsal appendage in (Fig. 18 j). Anal point (Fig. 18 i) long, slender, slightly tapering towards rounded apex. Dorsal appendage (Figs 18 i,j) sickle-shaped, not expanded basally, obtusely curved towards rounded apex, with 3 inner setae near base, and a long lateral setae arising near middle. Ventral appendage (Fig. 18 k) finger-like, with 10 recurved setae and a long, caudally directed apical seta. Gonostylus (Fig. 18 i) with 5 long and 6 shorter setae along inner margin.

Remarks. This species belongs to the *nubeculosum* group of genus *Polypedilum*, and body is almost uniformly brown or yellowish brown, and is especially characteristic in that antennal ratio is unusually small (both 0.71) and in the structure in hypopygium. It is somewhat similar in body coloration and structure to *P. kyotoense* (Tokunaga, 1938), but this species can be easily differentiated from the present species by that the narrow zones between scutal stripes are darker than the stripes themselves, and the value of AR is much larger, as described in the following section.

***Polypedilum (Polypedilum) kyotoense* (Tokunaga, 1938)**

Five males, No.403:61,62,64,65,68, were collected. This species was first recorded at Kitashirakawa (Kyoto), and is very common in Japan. Massive emergence was observed in the rice paddy areas of Toyama, and was found to be an important allergen causing bronchial asthma (Sasa, 1985). This species is especially characteristic in that the narrow areas between median and lateral stripes on scutum are darker in color than the stripes themselves.

***Polypedilum (Tripodura) japonicum* (Tokunaga, 1938)**

Four males, No.403:79-82, were collected. BL 2.84-3.24 (2.98 in average of 4) mm, WW 1.48-1.68 (1.57) mm, WW/WL 0.30-0.33 (0.32), ER 0.14-0.24 (0.21), AR 1.42, 1.60, AHR 0.55, 0.52, P/H 0.73-0.92 (0.83). SO 8-11 (9.1), CL 16-17 (16.3). Anteprepronotum tapering towards middle and widely separated. DM 13-16 (16.3), DL 12-15 (13.1), PA 3-5 (4.0), SC 6-14 (10.8). Wing bare, squama with 6-10 (7.2) fringe hairs, RR 0.22-0.26 (0.24), VR 1.20-1.25 (1.22), R/Cu 1.13-1.14. fLR 2.14-2.29 (2.22), mLr 56-61 (58), hLR 70-75 (73), fTR 0.31-0.36 (0.34), fBR 3.2-3.4 (3.3), mBR 3.3-4.3 (3.9), hBR 5.3-7.3 (6.4). These specimens show the structure and measurement data typical as members of *P. japonicum* (Tokunaga, 1938).

***Polypedilum (Tripodura) tamahinoense* Sasa et Ichimori, 1983**

A male, No.403:83, was collected. BL 2.992 mm, WL 1.56 mm, WW/WL 0.32. Antenna both lost. ER 0.21, P/H 0.83, SO 10:10, CL 14. Anteprepronotum widely separated, without seta. DM 12, DL 10:14, PA :3, SC 13. Wing bare, SQ 8:8, RR 0.23, VR 1.26, R/C 1.09. fLR 1.86, mLr 0.60, hLR 0.71, fBR 4.0, mBR 4.9, BR 7.5. Anal point very stout and sickle-shaped, posterior margin of ninth tergite with a pair of prominent processes flanking anal point.

From the above measurement data and structure, this specimen is considered as belonging to *P. tamahinoense* Sasa et Ichimori, 1983.

***Polypedilum (Uresipedilum) cultellatum* Goetghebuer, 1931**

Three males, No.403:47-49, were collected, and considered as belonging to the above species, which is cosmopolitan in distribution, and has been recorded from more than 10 localities in Japan (Sasa and Kukuchi, 1995, p.41).

***Polypedilum (Uresipedilum) hirosimaense* Kawai et Sasa, 1985**

Three males, No.403:22,25,33, were collected. BL 3.38, 2.90, 3.32 mm, WL 1.80, 1.44, 1.72 mm, WW/ WL 0.32, 0.35, 0.30, ER 0.40, 0.34, 0.23, AR 1.76, 1.51, AHR 0.59, 0.48, P/H 0.91, 1.03, 0.93, SO 14:14, 12:10, 16:16, CL 17, 14, PN all 0, DM 15, 14, 16, DL 14:14, 11:10, 14:15, PA 4:5, 4:4, 7:7, SC 17, 12, 18, SQ 14:14, 8:9, 11:13, R2+3 in contact with R1, VR 1.22, 1.23, 1.22, R/Cu 1.14, 1.14, 1.14, fLR 1.62, 1.89, mLR 0.64, 0.56, 0.55, hLR 0.86, 0.77, 0.70 fTR 0.29, 0.29, fBR 2.6, 2.8, mBR 5.3, 5.2, 3.3, hBR 7.5, 8.8, 6.6.

This species was first recorded from Ohta River (Hiroshima), and later also from Toga (Toyama).

***Tanytarsus ginzanjekeus* sp. nov. (Figs. 19 a-k)**

Three males, No.403:29, holotype, and No.403:28,31, paratypes, were collected at Ginzan on Sept. 2, 2000. BL 2.86, 2.80, 2.62 mm, WL 1.54, 1.64, 1.59 mm, WW/WL 0.29, 0.26, 0.30. Body almost entirely pale, even scutal stripes not discernible by color. Head in Fig. 19 a. Eyes bare, each with a long dorsomedial projection, ER 0.78, 0.92, 0.96. Antenna with only 12 flagellar segments, AR 1.09, 1.06, 1.17, AHR 0.55, 0.54. Frontal tubercles absent. Anteprepronotum (Fig. 19 b) widely separated, without setae. DM 10, 8, 8, DL 8:8, 7:7, 6:6, PA all 1, SC all 4 (Fig. 19 c). Wing (Fig. 19 d) with macrotrichia on almost entire surface, SQ all 0, RR 0.43, 0.49, 0.47, VR 1.23, 1.28, 1.28, R/Cu 1.12, 1.01, 1.08. Tip of fore tibia (Fig. 19 e) with a narrow and pointed process, tips of mid and hind tibiae (Figs. 19 f,g) with two comb scales, both with a long spur. fLR 3.00 (very high, holotype, fore tarsi lost in the paratypes). mLR 0.59, 0.59, 0.63, hLR 0.66, 0.74, 0.66, fTR 0.43, fBR 3.2, mBR 8.5, 4.8, 4.6, hBR 6.4, 7.5, 6.2.

Hypopygium in Fig. 19 h. Anal point (also in Fig. 19 i) with lateral ridges, and with 3 or 4 spine clusters between them. Dorsal appendages (Figs. 19 j, left, dorsal view; k, right, ventral view) oval in shape, with 7 setae on dorsal side, and a small basal seta arising on a small tubercle. Digitus absent. Median and ventral appendages in Fig. 19 m; the former relatively short, about half as long as the ventral appendage, with 8 simple setae: ventral appendage finger-like, bearing 8 recurved setae and 3 relatively short and caudally directed apical setae near the tip. Gonostylus (Fig. 19 h) nearly parallel-sided, with 8 short setae along inner margin.

Remarks. This species belongs to the *oyamai* group of genus *Tanytarsus* van der Wulp, 1846, and is characterised in that anal point with lateral ridges and 3 or 4 spine

clusters, and digitus is absent. Its antenna is 12 segmented, and AR is slightly larger than 1.0. Dorsal appendage is oval in shape, and without processes and grooves. Median appendage is relatively short, and about half as long as ventral appendage, and setae are all short, simple and directed inwards and backwards. Therefore, it is most closely related in morphology to *T. miyakoflavus* Sasa et Hasegawa, 1988 recorded first from Miyako Island, Okinawa, and later also from rivers in Tokushima and Toyama (Sasa and Kikuchi, 1995, p.49), but this species has prominent frontal tubercles, ER is 0.54-0.77 and smaller, antenna with 13 flagellar segments and AR is 0.86-1.11, fLR 2.56-2.92 (smaller), and median appendage has broad, leaf-like setae (all narrow and simple in the present species).

***Tanytarsus ginzankeleus* sp. nov.** (Figs. 20 a-m)

A male, No.403:32, holotype, was collected with light trap at Ginzan on Sept. 2, 2000. BL 2.68 mm, WL 1.48 mm, WW/WL 0.27 (wing very narrow). Body almost entirely pale, even scutal stripes not discernible by color. Head in Fig. 20 a. Eyes bare, both with strong dorsomedial extension, ER 0.37. Antenna with 13 flagellar segments, AR 0.67, AHR 0.54. Palp long, P/H 1.18. SO 8:8, CL 12. Anteprenotum (Fig. 20 b) widely separated, without seta. Distribution of setae on scutum and scutellum in Fig. 20 c; DM 12, DL 8:8, PA 1:1, SC 6.

Wing (Fig. 20 d) almost entirely clothed in macrotrichia, squama bare, anal lobe nerly flat. R2+3 in contact with R4+5. VR 1.46 (very high), R/Cu 1.03. Tip of fore tibia (Fig. 20 e) with a narrow and apically pointed terminal process. Tip of mid and hind tibiae (Figs. 20 f,g) with two comb scales, both with a long spur. fLR 1.64, mLR 0.61, LR 0.79, fTR 0.14, fBR 3.8, mBR 12.2, hBR 8.2 (both very high). Pulvilli absent, empodium very small.

Hypopygium in Fig. 20 h. Anal point (also in Fig. 20j) long, narrow, almost parallel-sided, with lateral ridges but without spine clusters. Dorsal appendage (Figs. 20 j, dorsal; 20 k, ventral view) nearly oval, with 5 setae on dorsal side and one basal seta arising on a small tubercle at the base of ventral side. Digitus absent. Median and ventral appendages in Fig. 20 m; the former peculiarly shaped, with a long and curved shaft, and 4 simple setae on basal 1/3 of inner margin and numerous simple setae on both inner and lateral margin of distal half. Ventral appendage long, finger-like, with 7 recurved setae on dorsal side and 2 caudally directed setae on ventral side of apical portion. Gonostylus (Fig. 20 h) long, slender, nearly parallel-sided, with 8 short setae along inner margin.

Remarks. This specimen belongs to the *usmaensis* group of genus *Tanytarsus* van der Wulp, 1874, since anal point with lateral ridges but without spine clusters, and is quite characteristic especially in the structure and shape of anal point, dorsal and median appendages, and in the absence of digitus.

***Tanytarsus ginzanlemeus* sp. nov.** (Figs. 21 a-k)

Three males, No.403:38,39, paratypes, and No.403:40, holotype, were collected at Ginzan on Sept. 2, 2000. A very small species, BL 1.96, 1.69, 1.59 mm, WL 1.02, 0.79, 0.84 mm, WW/WL 0.34, 0.38, 0.36 (wing much shorter but wider than the above species). Body almost entirely pale, only scutal stripes and postnotum slightly yellowish. Head in Fig. 21 a.

Eyes reniform, ER 1.38, 1.44, 1.66. Antenna with only 10 flagellar segments, AR 0.63, 0.65, 0.63, AHR 0.37, 0.32, 0.43. P/H 1.20, 0.97, 0.99. SO 12:12, 7:7, 8:8, CL 14, 16, 12. Anteprepronotum (Fig. 21 b) widely separated, without setae. DM 12, 12, 8, DL 8:8, 7:6, 4:4, PA all 1, SC 6, 8, 4 (Fig. 21 c).

Wing (Fig. 21 d) with very small numbers of macrotrichia, in a few rows along distal margin, and only about 10 on a line between veins R4+5 and M. Squama bare, R2+3 in contact with E4+5, VR 1.33, 1.23, 1.39, R/Cu all 1.02. Tip of fore tibia (Fig. 21 e) with a very narrow and long spur, tips of mid and hind tibiae (Figs. 19 f,g) with two comb scales, both narrow and with a long spur. fLR 1.72, 1.63, mLR 0.49, 0.48, 0.48 (all very small), hLR 0.55, 0.53, 0.52, fTR 0.28, 0.29, fBR 2.4, 2.4, mBR 5.7, 4.2, 3.1, hBR 4.6, 3.4, 4.4.

Hypopygium in Fig. 21 h. Anal point (also in Fig. 21 i) very low, broad and rounded, entirely clothed in microtrichia, and with 8 marginal short setae and 4 pairs of short basal setae, a quite characteristic structure. Dorsal appendages (Figs. 21 j, dorsal; k, ventral view) composed of an oval base, and a sickle-shaped distal process, bearing 6 setae on dorsal side but without basal and ventral setae. Median and ventral appendages in Fig. 21 i; the former relatively short and bearing simple setae along inner margin and 5 short apical setae; ventral appendage finger-like, with 20 very short recurved setae on inner and posterior margin and 2 short apical setae on ventral side of apical portion. Gonostylus nearly parallel-sided and apically rounded, with 12 short setae along inner margin.

Remarks. This species is morphologically a typical member of genus *Tanytarsus*, and belongs to the *kirai* group of Sasa and Kikuchi, 1995 (p.134), in that anal point is broad, short, rounded and without lateral ridges and spine clusters, such as seen in *T. oyabeparvulus* Sasa, Kawai et Ueno, 1988, and in *T. okamotoi* Sasa, 1989. However, this species is quite characteristic in that anal point is entirely clothed in microtrichia and with some 12 short setae but without spines such as seen in the above two species, and dorsal appendage is also quite different in the above two species, in which it is composed of apically pointed single blade and without a finger-like process such as seen in the present species.

***Tanytarsus ginzanquartus* Sasa et Suzuki, 1998** (Figs. 22 a-c)

A male, No.403:30, was collected. BL 2.74 mm, WL 1.48 mm, WW/WL 0.31. ER 0.39, AR 0.58, P/H 1.15, SO 8:8, CL 8, PN 0:0, DM 12, DL 8:8, PA 1:1, SC 8, SQ 0:0, R2+3 in contact with R1, VR 1.45, R/Cu 1.08, mLR 0.61. This specimen is morphologically almost identical with those recorded in our previous paper from Ginzan by the above scientific name, but the setae on median appendages are much longer than in the type specimens, and their tips are strongly recurved, as in Fig. 22 c (showing M, median appendage; V, ventral appendage, both dorsal view). Dorsal appendage roughly oval, with 5 setae on dorsal side (Fig. 22 a) and digitus on ventral side (Fig. 22 b).

***Paratrichocladius tamaater* Sasa, 1981**

Five males, No.403:99,100, 404:01-03, were collected. WL 1.36-1.55 (1.49 in average of 5) mm, AR 1.07-1.23 (1.16). Eyes pubescent, ER 0.52-0.77 (0.66), DM 6-8 (7.0, extremely

small), DL 10-15 (11.8 in average of 10), all well developed and arising from large pale pits, PA 3-5 (3.9), SC 6-8 (6.8). Wing bare, squama with 32:32 fringe hairs, R2+3 in contact with R1, VR 1.24, R/Cu 1.19. Tip of fore tibia with a long, narrow and pointed spur. Tip of mid tibia with two relatively short spur. Tip of hind tibia with a long and a shorter spur, and a comb composed of 10 free spininess. fLR 0.60-0.64 (0.62). Lateral setae of abdominal tergites are mostly 4. Hypopygium as illustrated in the original description and also in Fig. 54 A of Sasa and Kikuchi (1995, p.266). Anal point absent, inner lobe of gonocoxite single and nearly triangular, gonostylus with a small rectangular preapical tooth. Body almost entirely dark brown.

Two closely related species of *Paratrichocladus* have been recorded, *P. tamaater* Sasa, 1981, originally recorded from Tama River (Tokyo), and a cosmopolitan species *P. rufiventris* (Meigen, 1830) originally recorded from Europe, both from some 10 localities in Japan (Sasa and Kikuchi, 1995, p.57, p. 153). In the former, WL 1.50-1.68 mm, AR 1.05-1.26, DM 8-11 (all minute), DL 11-17 (all robust), SC 10-14, fLR 0.58-0.62, while in the latter WL 2.21-2.62 mm, AR 128-160, DM about 12 (larger than in the former species), DL 15-18, SC 12-14, fLR 0.56-0.62. From the previous records of the two species, the former seems to be breeding in less polluted portion of a river. The above measurement data of the present species fit to those of *P. tamaater*. This is the first record of this species from Hokkaido.

***Rheocricotopus chalybeatus* (Edwards, 1929)**

A male, No.404:04, was collected. BL 2.36 mm, WL 1.32 mm, WW/WL 0.33. Body almost entirely dark brown. ER 1.52, AR 1.09, P/H 1.09, SO 8:8, CL 10, PN 4:4, DM not detectable, DL 12:13, all arising from large pale pits, PA 3:3, SC 10, SQ 4:4, RR 0.59, VR 1.11, R/Cu 1.09, fLR 0.64, mLR 0.53, hLR 0.58, fTR 0.14, fBR 1.8, mBR 2.6, hBR 3.2. Anal point large, tapering towards pointed apex, with lateral setae. Inner lobe of gonocoxite large, with rounded posterior process. Gonostylus curved inwards near apex, with a small preapical tooth.

From the above measurement data and structure, this specimen is considered as belonging to the cosmopolitan species *R. chalybeatus* (Edwards, 1929), which has already been recorded also from more than 10 localities in Japan (Sasa and Kikuchi, 1995, p. 155).

***Eukiefferiella ginzanopea* sp. nov.** (Figs. 23 a-h)

A male, No.403:97, holotype, was collected at Ginzan on Sept. 2, 2000. BL 1.94, mm, WL 1.10 mm, WW/WL 0.31. Scutal stripes and postnotum brown, other scutal portions, scutellum, legs and abdomen almost uniformly yellow. Head in Fig. 23 a. Eyes bare, reniform, ER 1.50 (very high). Antenna with 13 flagellar segments, AR 0.67, AHR 0.43. Palp very short, P/H 0.53. SO 1+3:1+3, CL 6. Anteprenotum (Fig. 23 b) very narrow but united in the middle, lateral seta not detectable. Distribution of setae on scutum and scutellum in Fig. 23 c. DM 0, DL 6:6, PA 1:1, SCC 4.

Wing bare (Fig. 23 d), SQ 6:6, RR 0.47, VR 1.24. Costa not extended beyond tip of R4+5, which is proximal to tip of Cul, R/Cu 1.02. Cu2 nearly straight. Tip of fore tibia (Fig.

23 e) with a long and simple spur, tip of mid tibia (Fig. 23 f) with two short and barbed spurs, tip of hind tibia (Fig. 23 g) with two spurs, both barbed, and a comb composed of 8 simple spines. fLR 0.60, mLR 0.47, hLR 0.55, fTR 0.15, fBR 2.2, mBR 2.6, hBR 2.8.

Setae on abdominal tergites are very small in the numbers, 12 on I, 14 on II, 12 on III to VI, and 12 on VIII. Hypopygium in Fig. 23 h. Anal point small, longer than wide and apically rounded, with 3 pairs of basal setae. Inner lobe of gonocoxite small, longer than wide and apically pointed. Gonostylus simple, with a conspicuous preapical seta on inner margin.

Remarks. This specimen is provisionally classified into the genus *Eukiefferiella* Thienemann, 1926, since the basic structures are typical as a member of Orthocladiinae but eyes are reniform and ER is 1.50, and setae on abdominal tergites are very small on the numbers. It is considered as representing a new species, since the structure of head, scutum and wings are quite characteristic, and the shape of anal point and inner lobe of gonocoxite is quite peculiar.

***Eukiefferiella ginzanpequea* sp. nov.** (Figs. 24 a-h)

A male, No.403:98, holotype, was collected at Ginzan on Sept. 2, 2000. Small species, BL 2.08 mm, WL 0.96 mm, WW/WL 0.31. Head in Fig. 24 a. ER 1.40, AR 0.43, AHR 0.441. Palp very short, P/H 0.54. SO 0+3:0+3. CL 6. Anteprepronotum (Fig. 24 b) narrowly united, without seta. Distribution of setae on scutum and scutallum in Fig. c. DM 0, DL 8:8, PA 3:2, SC 6. Wing (Fi. 24 d) bare, SQ 3:3 (very small), RR 0.60, VR 1.47 (very high). Costa extended beyond tip of R4+5, which is proximal to tip of Cu1, R/Cu 0.93. Tip of fore tibia (Fig. 24 e) with a simple long spur, tip of mid tibia (Fig. 24 f) with two barbed spurs, tip of hind tibia (Fig. 24 g) with two barbed spurs and a comb composed of 9 free spines. fLR 0.85 (relatively high), mLR 0.47, hLR 0.52, fTR 0.19, fBR 2.6, mBR 2.7, hBR 7.2 (very high).

Hypopygium in Fig. 24 h. Anal point much longer than wide, widest at base and apically pointed, with microtrichia on basal 1/3, apical 2/3 bare, without basal setae. Virga conspicuous, composed of 3 stout codes 25 μ m long. Inner lobe of gonocoxite broad and rounded, with some 9 short setae along inner margin. Gonostylus nearly straight and widest near apex, without preapical expansion.

Remarks. This specimen is also classified into the genus *Eukiefferiella*, but is considered as representing another new species, in that body is very small, ER very large, AR is very small, palp very short, DM 0, SQ very small, R/Cu smaller than 1.0, terminal structures of tibiae are almost the same as in the previous species, ninth tergite with a small, narrow triangular and apically pointed anal point, inner lobe of gonocoxite is broad and rounded, and gonostylus is nearly straight and widest near apex.

***Hydrobaenus ginzanneous* sp. nov.** (Figs. 25 a-h)

A male, No.403:63, holotype, was collected at Ginzan on Sept. 2, 2000. BL 3.24 mm, WL 1.65 mm, WW/WL 0.29. Scutal stripes and postnotum dark brown, other scutal portions, scutellum legs and abdomen almost uniformly brown. Head in Fig. 25 a. Eyes bare, reniform, ER 0.66. Antenna with 13 flagellar segments, AR 1.71, AHR 0.56. Palp very long, P/H 1.35.

SO 12:12, CL 14. Antep pronotum (Fig. 25 b) united, with 10:8 lateral setae. DM 20, DL 32:32 (Very many), mostly in two rows. PA 13:12 (also very many), SC 14 (Fig. 25 c).

Wing (Fig. 25 d) bare, smooth, SQ 12:11, RR 0.47, VR 1.07, R/Cu 1.03. Costa not extended beyond tip of R 4+5. Cu2 nearly straight. Tip of fore tibia (Fig. 25 e) with a long and heavily barbed spur, tip of mid tibia (Fig. 25 f) with a long and a short spur, both barbed, and a comb composed of 6 simple spines, Tip of hind tibia (Fig. 25 g) with two barbed spurs, and a comb composed of 12 free spines. Pulvilli absent. fLR 0.72, mLR 0.52, hLR 0.63, fTR 0.12, fBR 2.7, mBR 2.8. Setae on abdominal tergites are 36 on I, 56 on II, 64 on III, 72 on IV, 76 on V to VII, and 48 on VIII.

Hypopygium in Fig. 25 h. Anal point small, triangular, transparent and difficult to be detected (quite unusual character). Virga composed of 4 narrow codes 70 μ m long. Ninth tergite with a transverse row of 12 setae in the middle portion. Inner lobe of gonocoxite roughly rectangular, with numerous short setae. Gonostylus nearly straight, inner margin slightly convex, with a large megaseta, but preapical tooth absent.

Remarks. This specimen belongs to the *Orthocladius* complex in the basic structure, and is provisionally placed in the genus *Hydrobaenus* Fries, 1830, but is quite characteristic in that the numbers of setae on antep pronotum, scutum and abdominal tergites are very large, DL is arranged into two rows, anal point is small, transparent and without setae, inner lobe of gonocoxite is nearly rectangular and bearing numerous short setae, and gonostylus is nearly straight and without preapical tooth.

***Limnophyes minimus* (Meigen, 1818)** (Figs. 26 a-c)

A male, No.404:13, was collected. BL 1.86 mm, WL 1.04 mm, WW/WL 0.31. Eyes bare, reniform, ER 1.69. Antenna with 13 flagellar segments, AR 0.84, AHR 0.54. P/H 0.86. SO 2:2, CL 12. Antep pronotum (Fig. 26 a) united in the middle, each with 1 middle-upper seta and 3 or 2 basolateral setae. DM 0, DL 10:10, PA 5:4, SC 4. Wing bare, SQ 2:3, RR 0.31, VR 1.33, R/Cu 1.07. fLR 0.52, mLR 0.49, hLR 0.57, fTR 0.14, fBR 1.7, mBR 2.9, hBR 3.2. Hypopygium in Fig. 26 c, quite characteristic to this species.

This species has been shown to be cosmopolitan in distribution, and was collected also from more than 10 localities in Japan, including Toya Lake and Osaru River in Hokkaido (Sasa and Kikuchi, 1995, p.57).

***Thienemanniella ginzanquerea* sp. nov.** (Figs. 27 a-j)

Eight males, No.404:22-29, were collected. BL 1.20-1.52 (1.39 in average of 8) mm, WL 0.76-0.92 (0.72) mm, WW/WL 0.39-0.43 (0.41, very wide). Head in Fig. 27 a. Eyes pubescent, reniform, ER 1.56-1.82 (1.73). Antenna all with 12 flagellar segments, AR 0.48-0.63 (0.55). Palp short, P/H 0.66-0.75 (0.71). Antep pronotum (Fig. 27 b) tapering towards middle and united with a point, with 2-4 (2.7) lateral setae. Setae on scutum and scutellum in Fig. 27 c; DM all 0, DL 7-10 (8.4), PA 2 or 3 (2.6), SC all 2. Wing bare, venation as in Fig. 27 d; VR 0.53-0.68 (0.60), R/Cu 0.33-0.41 (0.38). Tip of fore tibia (Fig. 27 e) with a long simple seta, tip of mid tibia (Fig. 27 f) also with one spur, arising on a tubercle, tip of hind tibia (Fig. 27

g) with a long and a short spur, and a comb composed of 13 free spines. fLR 0.83-0.86 (0.84), mLR 0.72-0.73, hLR 0.63-0.67 (0.65), fTR 0.11-0.14 (0.13), fBR 2.1-2.7 (2.5), mBR 3.5-4.3 (3.9), hBR 3.1-5.0 (4.1). Pulvilli absent.

Abdominal tergite I with a pair of lateral pale holes, both bearing 3 short setae; II with 4, III to IV with 5, V and VI with 4 setae (Fig. 27 h). Hypopygium in Figs. 27 i,j. Anal point narrow triangular and apically pointed. Posterior margin of ninth tergite concave in the middle. Inner lobe of gonocoxite prominent and with rounded margin.

Remarks. These specimens belong to the genus *Thienemanniella* Kieffer, 1911, but are quite characteristic and can be differentiated in having a triangular anal point, and abdominal tergite I with a pair of rounded hole bearing 3 setae.

***Conchapelopia ginzanuvea* sp. nov.** (Figs. 28 a-j)

Three males, No.403:86, holotype, and No.403:84,85 were collected. BL 4.26, 4.28, 4.36 mm, WL 2.30, 2.14, 2.26 mm, WW/WL 0.26, 0.32, 0.30 (highly variable). Body largely yellow and brown marks. Scutal stripes largely brown, median stripes dark brown along anterior margin and with a pair of brown spots on lateral margin in the middle portion, lateral stripes with a pair of dark areas along anterior margin and on the anterior half of lateral margins, scutellum pale, postnotum dark brown; abdominal tergites largely yellow but tergite VII and anterior half of VIII brown. Legs largely yellow but all femora with a dark apical ring.

Head in Fig. 28 a. Eyes bare, each with a long and narrow dorsomedial extension, ER 0.19, 0.30. Antenna with 14 flagellar segments, last segment very short, AR 2.12, 1.53, 1.76 (highly variable), AHR 0.53, 0.53. P/H 1.53, 0.92, 1.51 (also highly variable). SO 20:20, 20:22,23:20, CL 29, 20, 30. Anteprenotum (Fig. 28 b) slightly separated, setae not detectable. Distribution of setae and dark areas on scutum and scutellum in Fig. 28 c. DM 60, 40, 58, DL 42:45, 32:31, 23:20, PA 22:23, 16:15, 12:10, SC 62, 40, 51.

Wing (Fig. 28 d) bare, squama with 28:28, 36:30, 38:38 fringe hairs. R2+3 is forked into two branches, and R2 is connected with the tip of R1. RR 0.41, 0.43, 0.44, VR 0.92, 0.87, 0.95, R/Cu 1.11, 1.05, 1.10. Tip of fore tibia (Fig. 28 e) with one broad and low comb scale, tip of mid tibia (Fig. 28 f) with two long and narrow comb scales, tip of hind tibia (Figs. 28 g,h) with two long and narrow comb scales and a row of 5 terminal spines. fLR 0.84, mLR 0.62, 0.59, hLR 0.74, fTR 0.13, fBR 4.2, mBR 7.3, hBR 4.3. Tarsi V (Fig. 28 i) very long, claws are simple, pulvilli very small, empodium vestigial.

Hypopygium in Fig. 28 j. Ninth tergite very small. Gonocoxites large and almost globular, and with a pair of rounded basal lobes entirely clothed in short setae, and with a long and narrow lateral processes bearing short setae, a quite peculiar structure. Gonostylus long, narrow and slightly curved, with a strong terminal spine but without preapical tooth.

Remarks. This species seems to belong to Pentaneurini and to the genus *Conchapelopia* Fittkau, 1957, since tarsi IV are cylindrical, fCu is proximal to M-Cu, postnotum is bare, and gonocoxite with a basal lobe. It has no basolateral arm on the lobe of gonocoxite. However, all the previously known species of this group has long lateral setae on the basal lobe, while the basal lobe of present species has no long setae but a peculiar lateral arm. The

terminal structure of tibiae is also quite unusual in the present species.

***Conchapelopia ginzanvevea* sp. nov.** (Figs. 29 a-k)

A male, 403:87, was collected. BL 4.58 mm, WL 2.28 mm, WW/WL 0.31. Body largely yellow and with conspicuous brown marks, as in Fig. 29 e. Each of the median and lateral stripes of scutum with two brown spots, 8 in total of a scutum; scutellum entirely pale, postnotum with a pair of brown spots, abdominal tergites I and II entirely pale, III to VI and VIII each with a pair of brown spots, VII largely yellowish brown, hypopygium pale; all femora with an apical brown ring, tibiae with a basal and apical brown rings, tarsi almost entirely pale.

Head in Fig. 29 a. Eyes bare, each with a long and narrow dorsomedial extension, ER 0.34. AR 1.86, AHR 0.55. Palp very long, P/H 1.53. SO 16:16, CL 26. Anteprepronotum (Fig. 29 b) widely separated, with 10:10 (very many) lateral setae. DM 36, DL 36:37, PA 32:28, SC 32 (Fig. 29 c).

Wing (Fig. 29 e) almost entirely clothed in macrotrichia, SQ 28:34. Cross vein M-Cu present, fCu is proximal to it. R2+3 forked, RR 0.51, VR 0.86, R/Cu 1.13. Tip of fore tibia (Fig. 29 f) with one comb scale, tip of mid tibia (Fig. 29 g) with two comb scales, tip of hind tibia (Fig. 29 h) with two comb scales and with 7 spines. fLR 0.80, mLR 0.60, hLR 0.72, fTR 0.12, fBR 0.68, mBR 6.6, hBR 5.9. Legs with small brush-like pulvilli.

Hypopygium in Figs. 29 i,j. Ninth tergite with a low broad and rounded anal point. Basal lobe of gonocoxite typical as a member of this genus, composed of a low and long base, and a distal blade bearing one long, stout and laterally directed seta, and 4 or 5 short, narrow setae along lateral margin. Gonocoxite large and almost globular. Gonostylus (Fig. 29 k) long and smoothly curved, tapering towards apex and with a large apical spine.

Remarks. This specimen belongs to the genus *Conchapelopia* Fittkau, 1957, since wing venation and basic structure are typical as a member of Pentaneurini and gonocoxite with only one basal lobe and body coloration and shape of hypopygium is most closely related to *C. japonica* (Tokunaga, 1937), redescribed in details by Sasa and Kawai, 1991 p.151, but this species differs from the present one at least in that the dark marks on anterior margin of median stripes are smaller, anteprepronotum is united in the middle and with 4-10 lateral setae, anal point is absent, and basal lobe of gonocoxite with 4 long apical setae (only 1 in the present species). The present species is considered as belonging to the same genus as the above described new species, but differs from the former in that body with more numerous dark spots, wing with macrotrichia, and the structure of basal lobe of gonocoxite is quite different.

***Procladius sagittalis* Kieffer, 1909**

Three males, No.403:94-96, were collected. This species was recorded by Tokunaga (1937) from Kyoto, and by Sasa (1988) from Lake Utonai (Hokkaido), by Sasa (1991) from Lake Towada, and by Sasa (1993) from Lake Hibara.

ACKNOWLEDGEMENTS

Many thanks are due to Professor Masao Kamiya and Dr. Yasuyuki Morishima, Hokkaido University, for valuable assistances in the collection of the chironomid specimens in Hokkaido.

REFERENCES

Most references to the species of the insect family Chironomidae were quoted in the following 3 reports.

- 1) Sasa, M. and Kikuchi, M. (1995): Chironomidae of Japan. 333 pp. Univ. Tokyo Press.
- 2) Sasa, M. (1998): Chironomidae of Japan, 1998. 156 pp. Res. Rep. Inst. Environm. Welf. Studies, 135-3, Aramata, Kurobe-shi. Japan 938-0001
- 3) Sasa, M. and Suzuki, H. (2001): Systematic studies on the species of Chironomidae recorded from Japan during the period from September 1997 to August 2000. *Med. Entom. Zool.* 52 (1): 1-9
References to Chironomidae of Hokkaido:
- 4) Sasa, M. and Kamimura, K. (1987): Chironomid midges collected on the shore of Akan National Park, Hokkaido. *Res. Rep. NIES*, No.104:pp.9-61
- 5) Sasa, M. (1988a): Studies on the chironomid midges collected from lakes and streams in the southern region of Hokkaido. *Res. Rep. NIES* No.121:9-76
- 6) Sasa, M. (1988b): Chironomid midges collected on the shore of Lakes in the coastal region of Abashiri, northern Hokkaido. *Res. Rep. NIES* No.121:77-90
- 7) Sasa, M. and Suzuki, H. (1998): Studies on the chironomid midges collected in Hokkaido and northern Honshu. *Trop.Med.*,40(1):9-43
- 8) Sasa, M. and Suzuki, H. (2000): Studies on the Chironomid species collected at five localities in Hokkaido in September, 1998 (Diptera, Chironomidae). *Trop.Med.*, 42(3/4), 175-199



Plate 1. Fig. 1. *Polypedium (Polypedium) chubetuaceum* sp. nov.
 Fig. 2. *Polypedium (Polypedium) chubetubeceum* sp. nov.
 Fig. 3. *Polypedium (Polypedium) chubetuceceum* sp. nov.

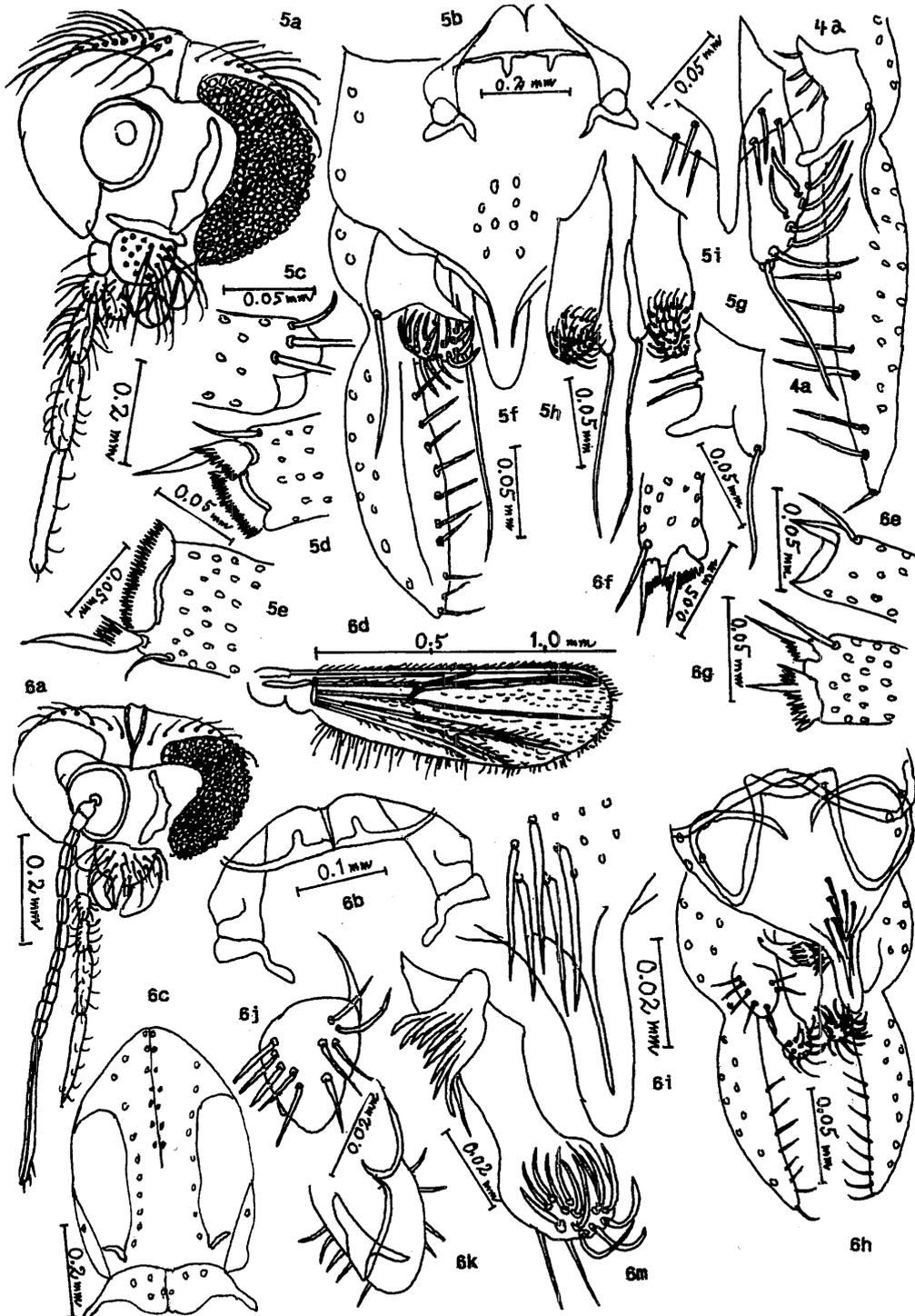


Plate 2. Fig. 4. *Polypedium (Polypedium) convictum* (Walker, 1856)
 Fig. 5. *Polypedium (Polypedium) chubetudeeum* sp. nov.
 Fig. 6. *Tanytarsus chubetuefeus* sp. nov.

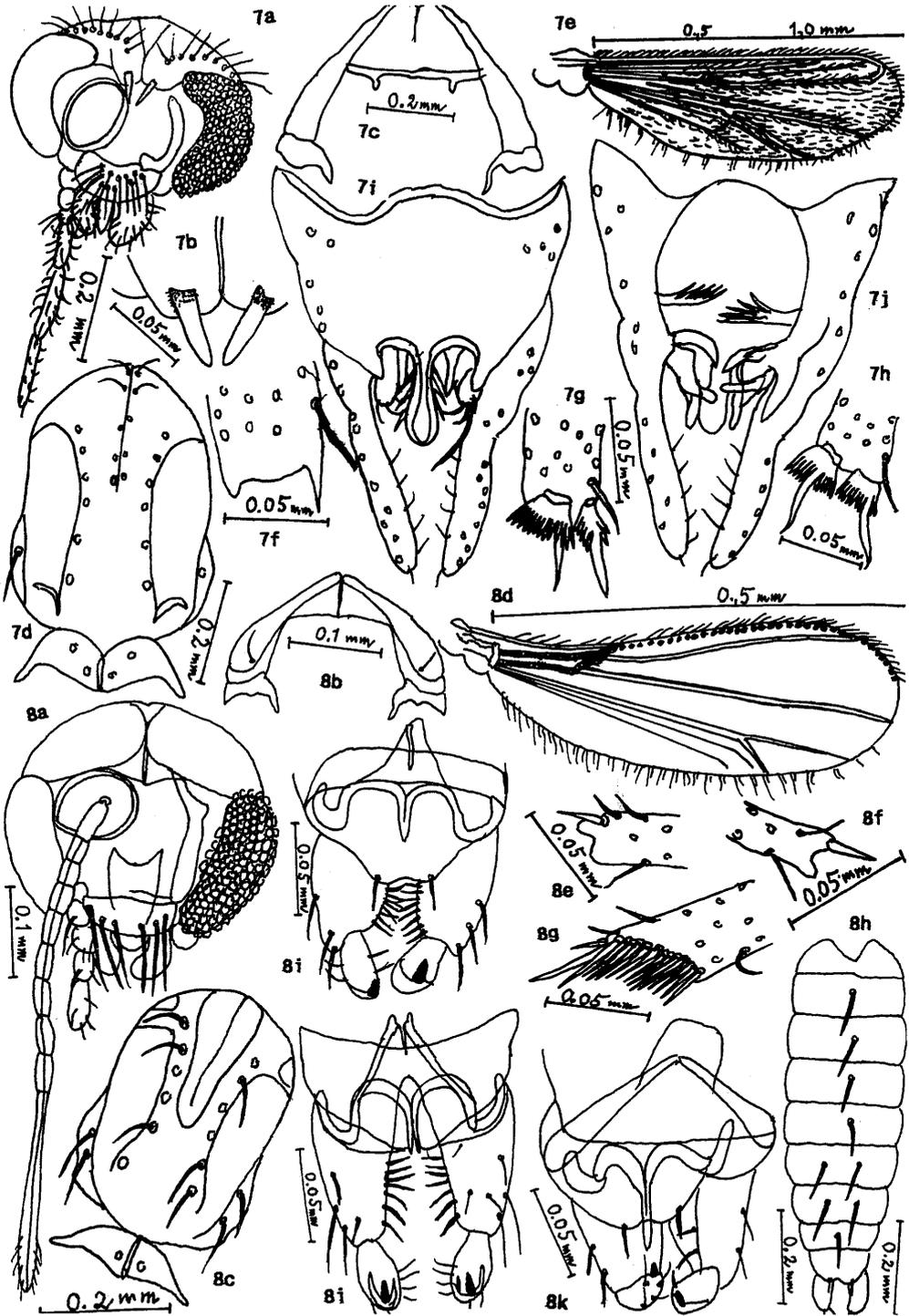


Plate 3. Fig. 7. *Tanytarsus sorachiabeus* sp. nov.

Fig. 8. *Corynoneura sorachibecea* sp. nov.

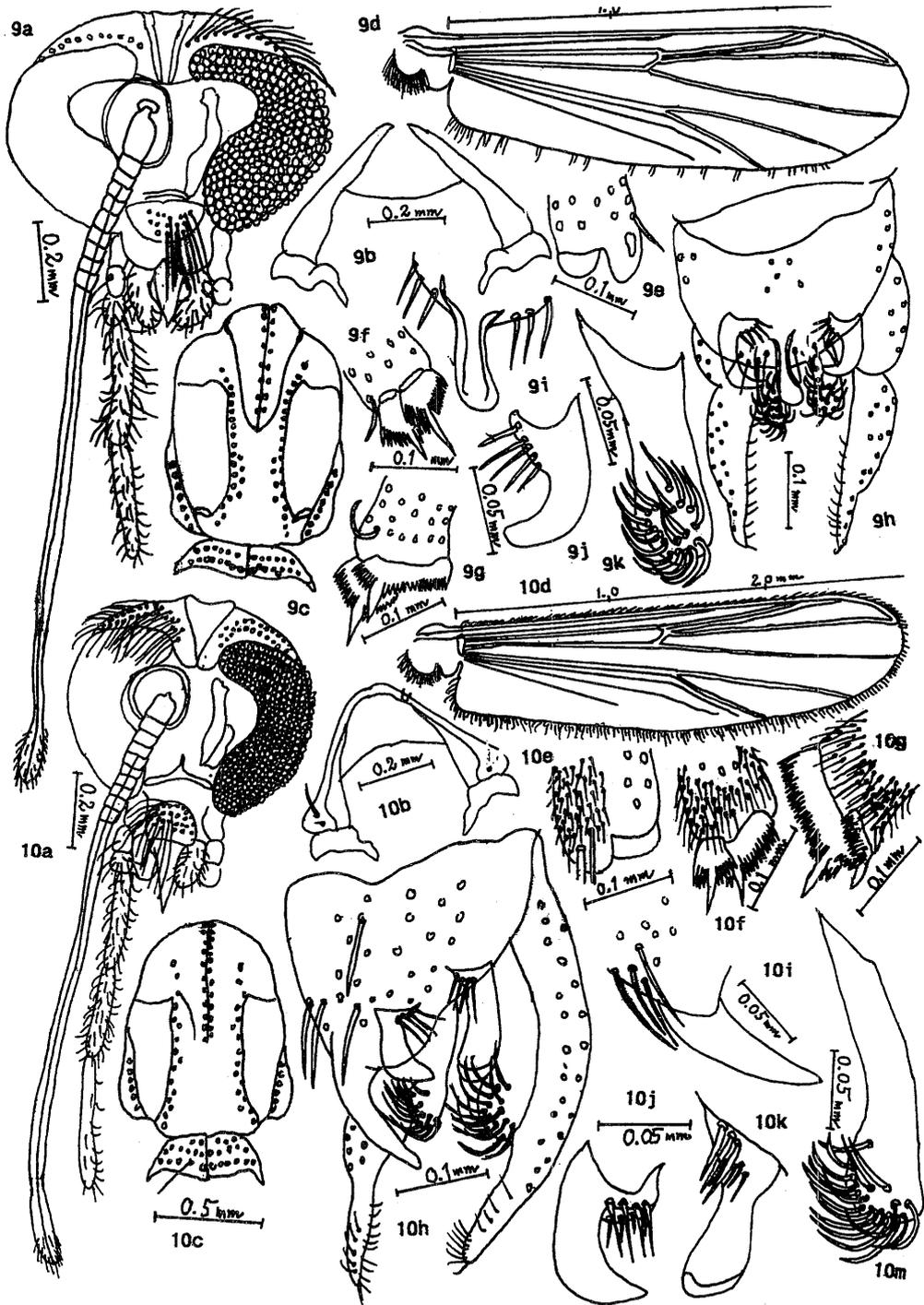


Plate 4. Fig. 9. *Chironomus ginzanabeus* sp. nov.
 Fig. 10. *Chironomus ginzanbeceus* sp. nov.

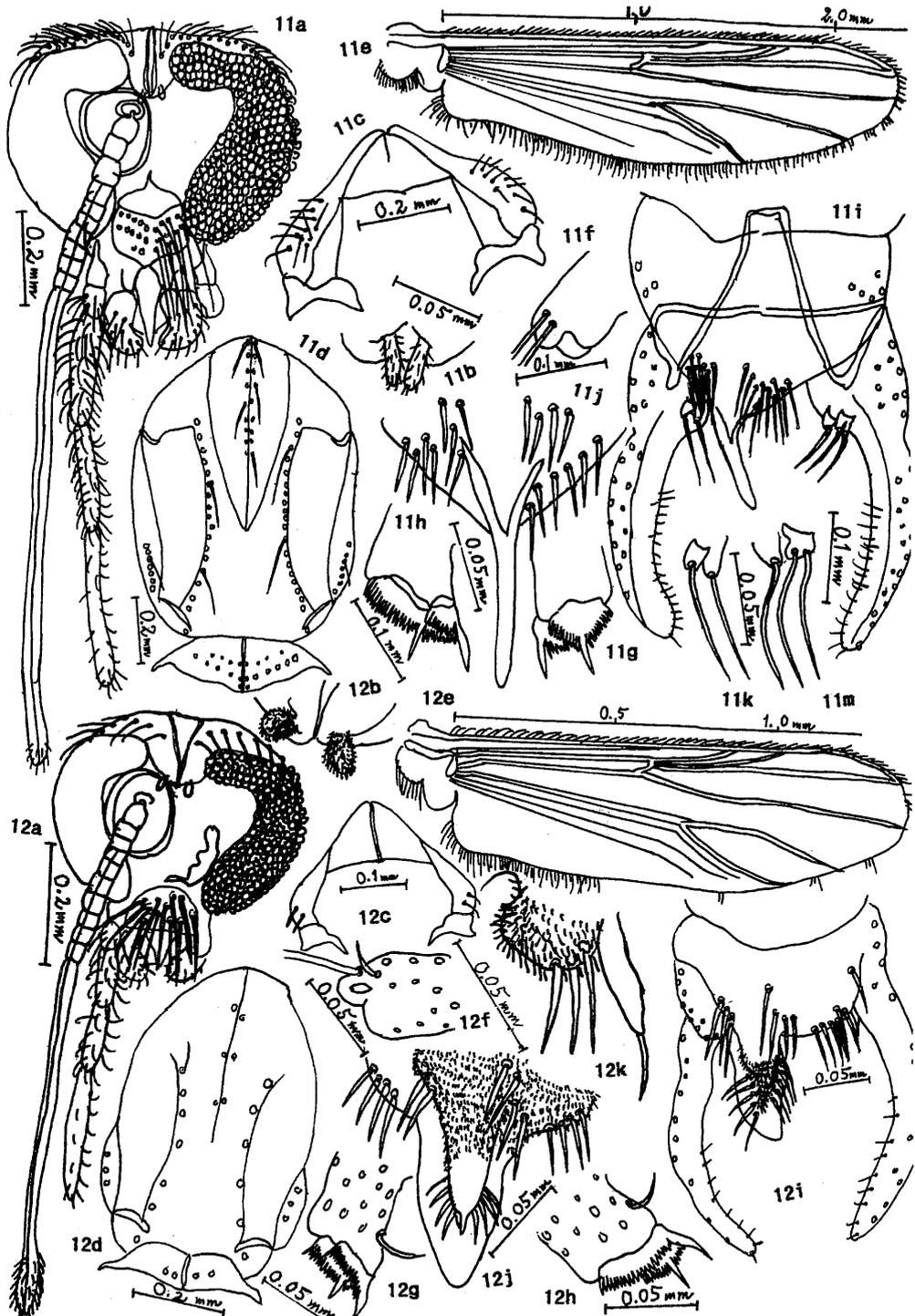


Plate 5. Fig. 11. *Demicryptochironomus ginzancedeus* sp. nov.
 Fig. 12. *Harnischia ginzandeeus* sp. nov.

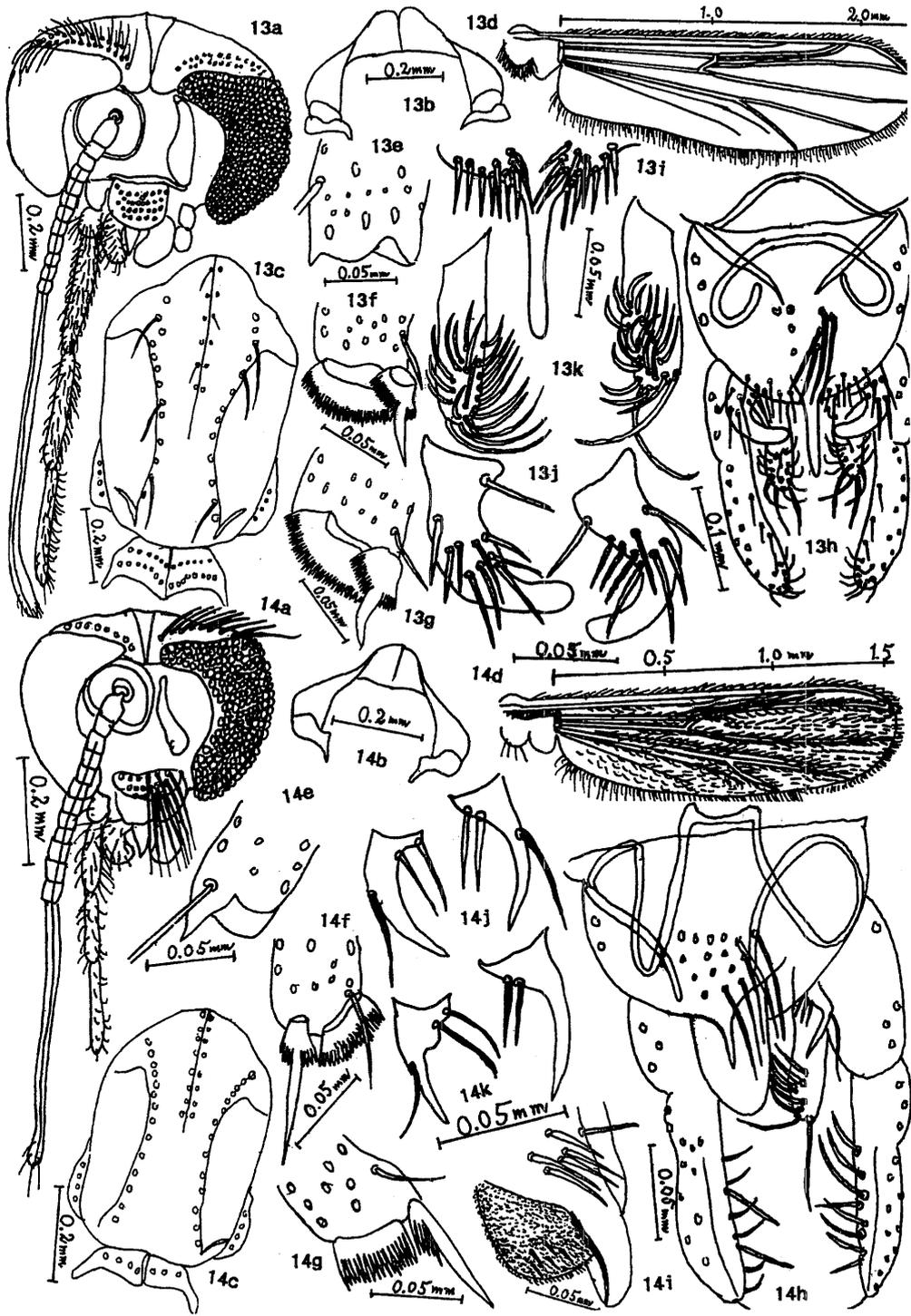


Plate 6. Fig. 13. *Microtendipes ginzaneffus* sp. nov.
 Fig. 14. *Pentapedilum ginzaneffeum* sp. nov.

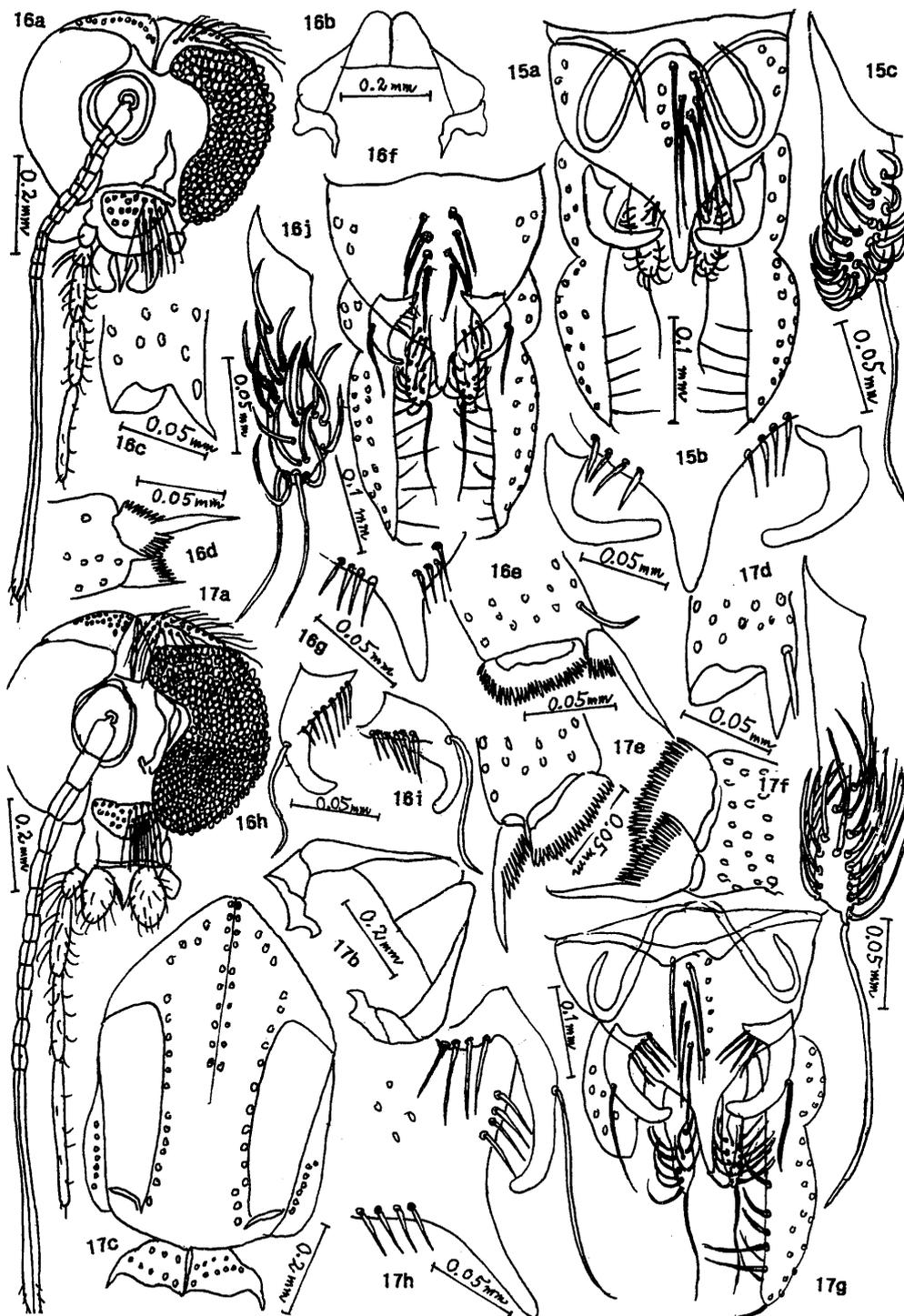


Plate 7. Fig. 15. *Polypedium (Polypedium) asakawaense* Sasa, 1980
 Fig. 16. *Polypedium (Polypedium) ginzangeheum* sp. nov.
 Fig. 17. *Polypedium (Polypedium) ginzanheium* sp. nov.



Plate 8. Fig. 18. *Polypedilum (Polypedilum) ginzanijeum* sp. nov.
 Fig. 19. *Tanytarsus ginzanjekeus* sp. nov.

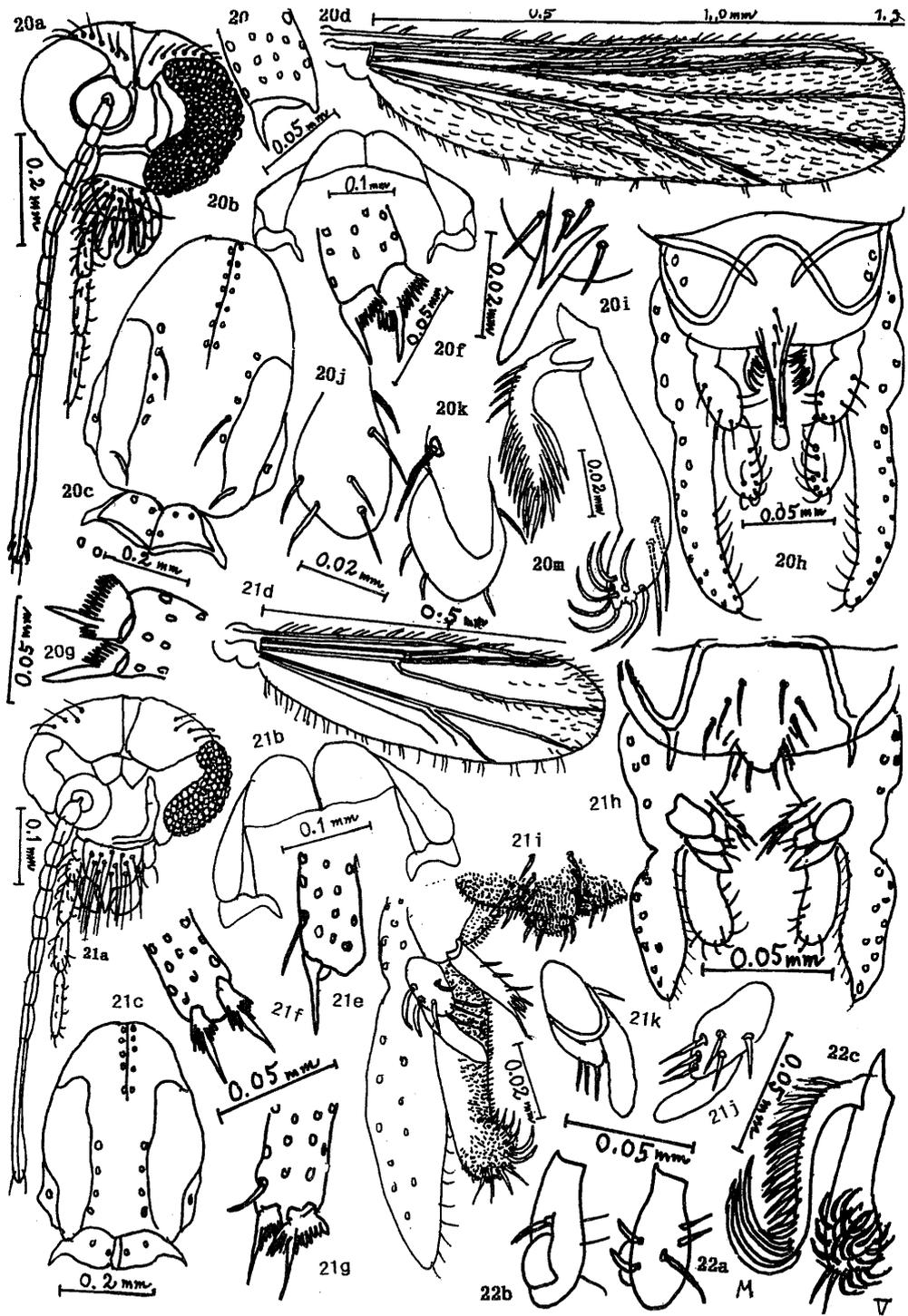


Plate 9. Fig. 20. *Tanytarsus ginzankeleus* sp. nov.
 Fig. 21. *Tanytarsus ginzanlemeus* sp. nov.
 Fig. 22. *Tanytarsus ginzanquartus* Sasa et Suzuki, 1998

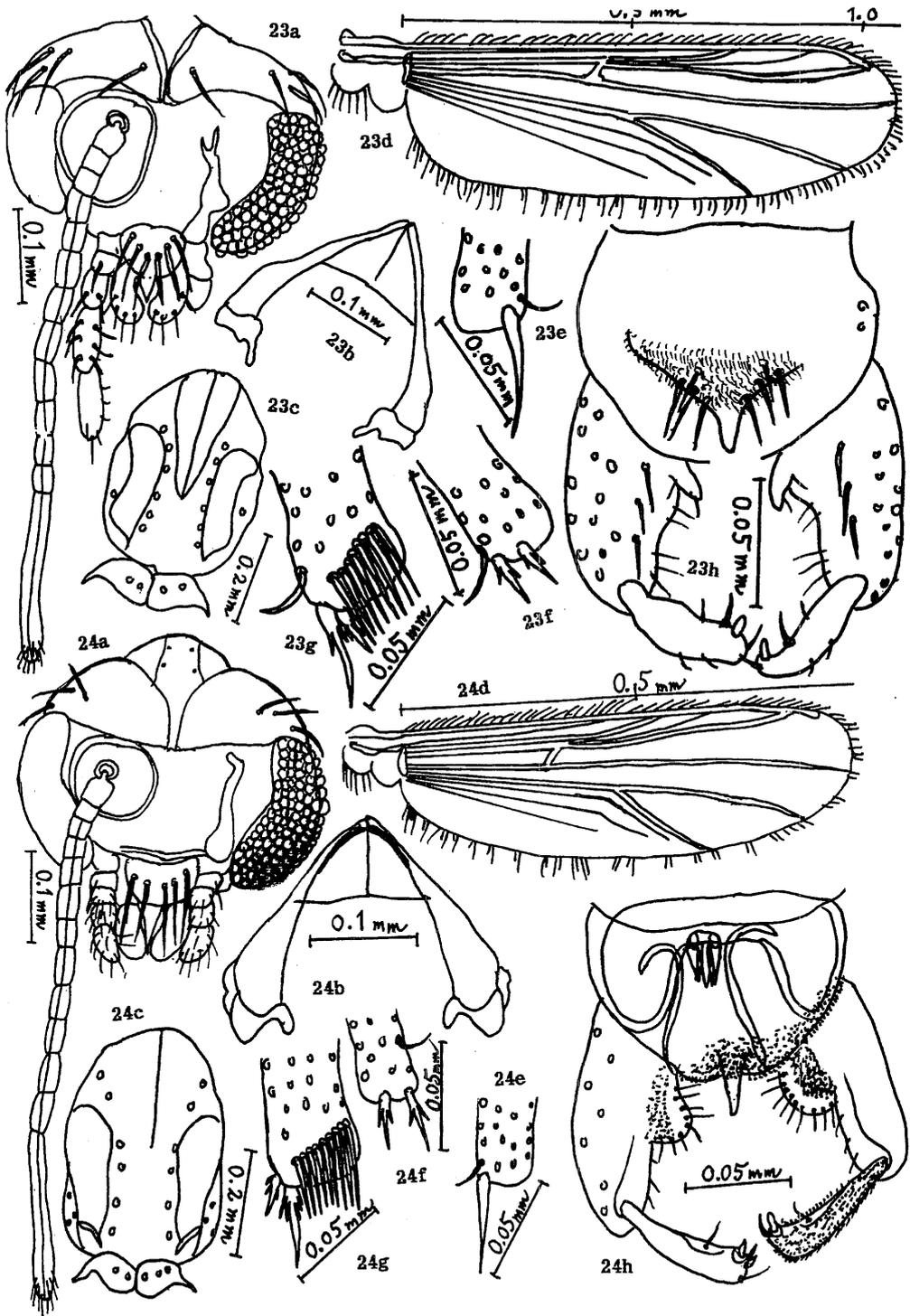


Plate 10. Fig. 23. *Eukiefferiella ginzanoepa* sp. nov.

Fig. 24. *Eukiefferiella ginzanpequea* sp. nov.

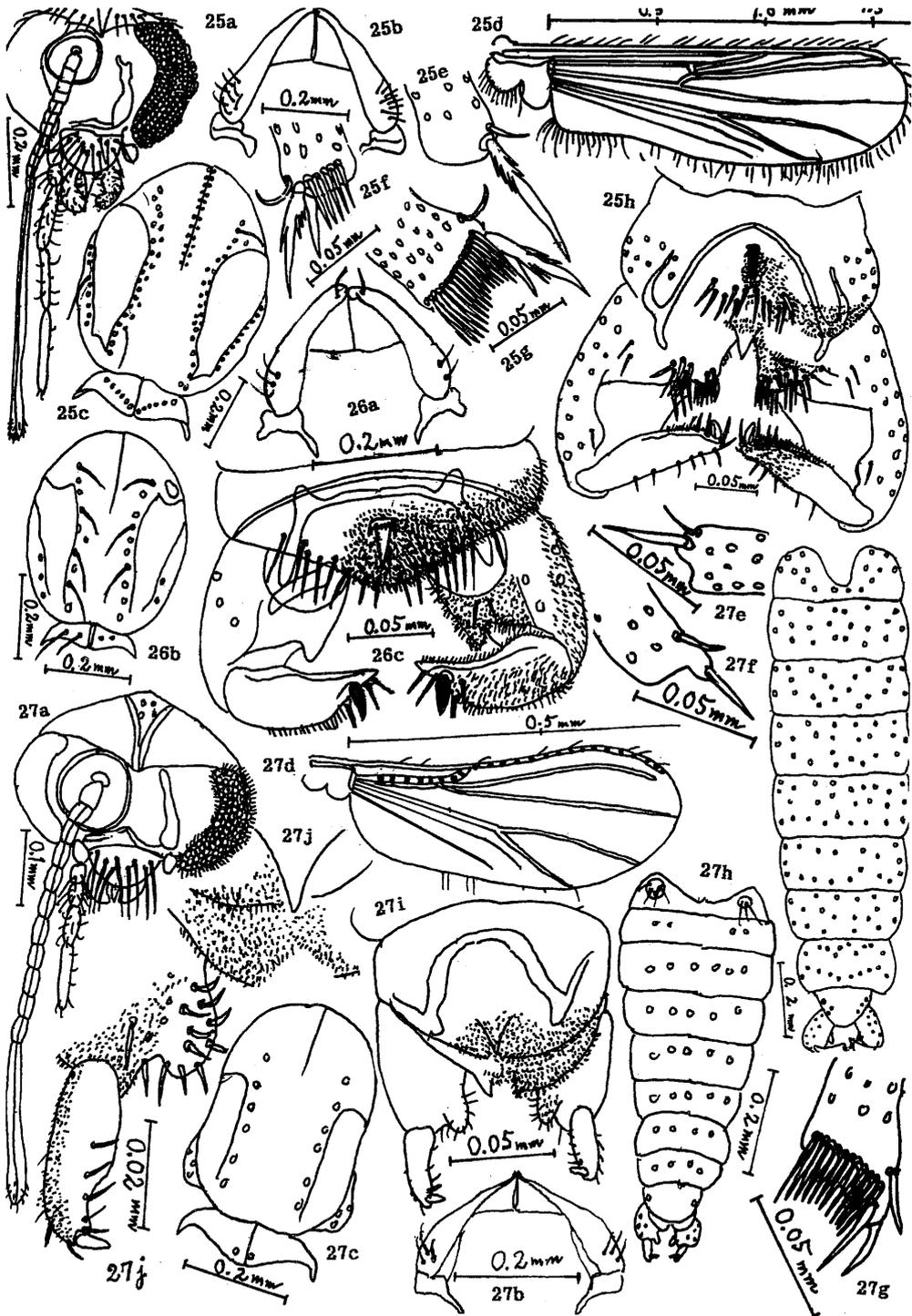


Plate 11. Fig. 25. *Hydrobaenus ginzanneus* sp. nov.
 Fig. 26. *Limnophyes minimus* (Meigen, 1818)
 Fig. 27. *Thienemanniella ginzanquerea* sp. nov.

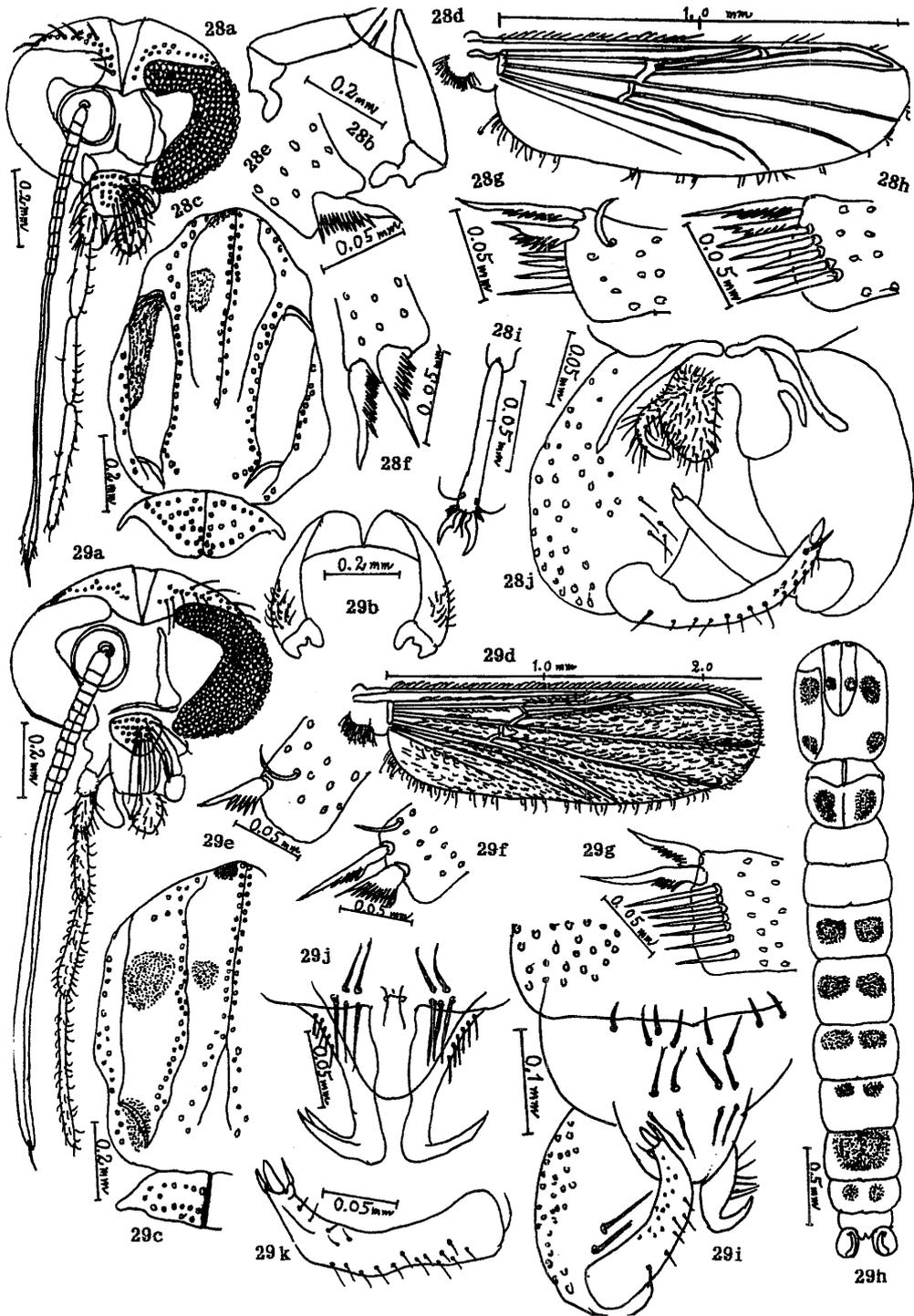


Plate 12. Fig. 28. *Conchapelopia ginzanuuea* sp. nov.
 Fig. 29. *Conchapelopia ginzanvewea* sp. nov.