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The Japanese *Hyperoscelis* (Diptera, Canthyloscelidae)

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Abstract The Japanese *Hyperoscelis* is discussed. *H. veternosa* is recorded from Hokkaido for the first time, and *H. eximia insignis*, collected in Honshu, Shikoku and Kyushu, is here revived as subspecies.

The genus *Hyperoscelis* contains the following 2 species and 1 subspecies: *eximia eximia* recorded from Sweden, Czechoslovakia and Siberia; *eximia insignis* from Japan (Honshu, Shikoku and Kyushu); *veternosa* from Finland, Rumania, Ukraine and Japan (Hokkaido, new record).

HARDY and NAGATOMI (1960) compared a single male specimen from Japan (Honshu) with that of Finland, which was not *eximia* but *veternosa*. They named the former specimen as *insignis*, new to science. HUTSON (1977) treated *insignis* as a synonym of *eximia* on the basis of the structural characters.

We have examined 3 ♂♂, 2 ♀♀ of Honshu and Kyushu and 1 ♂, 1 ♀ of Hokkaido, and have concluded that the material of Hokkaido is *veternosa* and that of Honshu and Kyushu, i. e. *insignis*, may be different subspecifically from *eximia*.

Family Names Hyperoscelidae and Canthyloscelidae

Among the family-group names Corynoscelinae ENDERLEIN, 1912, Synneurinae ENDERLEIN, 1936 and Canthyloscelididae "RODENDORF, 1951", the first-mentioned one is the oldest. But *Corynoscelis* BOHEMAN, 1858 is a homonym of *Corynoscelis* BURMEISTER, 1847, so the former is replaced by the new name *Hyperoscelis* HARDY and NAGATOMI, 1960 and the family name by Hyperoscelidae "in order to preserve the original family concept." The Synneuridae and Canthyloscelidae were erected before 1961 but it is difficult to regard that each of them is "a widely accepted family-group name." The name Hpyeroscelidae had to be continued to use according to article 39(a) of the International Code of Zoological Nomenclature published in 1961. The name Synneuridae is valid if *Synneuron* is independent of Hyperoscelidae and Scatopsidae.

However, the article 39(a) was deleted in recent edition of the code, so the name Canthyloscelidae is adopted here instead of Hyperoscelidae as pointed out by HUTSON (1977).

Dr. Curtis W. SABROSKY of U. S. National Museum kindly replied (on 25th

January, 1984) to our question as follows: "I agree with your use of Canthyloscelidae, following HUTSON (1977). I would point out, however, that the earliest use of Canthyloscelidae was by SHANNON, 1927, Rev. Soc. Ent. Argentina 2: 13, 32. This has been overlooked by HUTSON (1977), and all other authours, I believe. This point is especially important because if the Synneuridae are combined with Canthyloscelidae, the latter is the oldest name for the combined family, not Synneuridae as most authors have assumed."

Genus *Hyperoscelis* HARDY and NAGATOMI

Corynoscelis BOHEMAN, 1858, Öfvers. K. Vetensk. Akad. Förh. Stockholm, **15**: 56 (preoccupied by *Corynoscelis* BURMEISTER, 1847). Type-species: *Corynoscelis eximia* BOHEMAN, 1858 (by monotypy).

Hyperoscelis HARDY and NAGATOMI, 1960, Pac. Ins., **2**: 264 (new name for *Corynoscelis* BOHEMAN).

The sister-group of *Hyperoscelis* is *Canthyloscelis* EDWARDS, 1922 of South America (Chile and Argentina) and New Zealand. The latter is distinguished from the former by the following characters: claw thickened basally and with several teeth; base of vein M_2 absent and not connected with vein M_1; antenna not shorter than thorax, and basal joint of antennal flagellum longer than wide.

The diagnosis of *Hyperoscelis* given below is based on *eximia insignis* and *veternosa*.

Head: small and much narrower than thorax; eyes almost or practically contiguous for short distance in both sexes at middle of front; area just above antennae small and obtuse-angled triangular in shape; face narrow and nearly parallel-sided except just below antennae and just above proboscis; face protruded somewhat beyond eye margin; eye longer than wide; ocellar triangle closely situated at eye margin; median ocellus much smaller than lateral ocelli; occiput well developed behined eye and lower occiput viewed from the side longer than minor axis of eye; upper occiput not making an acute angle with vertex but gradually leaning to neck; cheek not developed below eye; antenna distinctly shorter than thorax, 2+14 segmented, with each segment not longer than wide except last joint of flagellum; palpus not shorter than face, 4-segmented (although basal segment is easily overlooked), at least apical 3 segments longer than wide, and segment 4 longer than segment 3; proboscis shorter than face and fleshy.

Thorax: lateral parts of pronotum well developed and swollen; mesonotum more or less wider posteriorly; metapleura fused with pteropleura and postscutellum; postscutellum longer than scutellum; anterior spiracle situated on mesopleuron.

Wing: large and longer than body; costa ending beyond vein R_{4+5} and before wing apex; subcosta incomplete and only its base present; vein R_{2+3} short and sometimes incomplete; a short vein (r-m) present between basal and marginal cells; vein M_1+M_2 arising from marginal cell; vein M_{3+4} arising from basal cell, that is, m-cu present; veins Cu_1 and 1A complete, and the latter reaching to wing base; wing

margin in axillary not angulate but gently curved.

Legs: mid coxa shortest and narrowest and hind coxa longest and widest; femora gradually longer in posterior legs; hind femur club-shaped and its apical over half swollen; base of hind tibia strongly curved (ventral surface concave); fore and mid tibiae with one terminal spur which is minute and may easily be overlooked; claws simple and empodium rounded, fleshy and minute pilose; pulvilli absent.

Abdomen: flattened dorso-ventrally and more or less wider posteriorly.

Male genitalia: hypopygium (here defined as the genitalia excepting cerci, tergum 9 and sternum 10) is situated beneath tergum 8 and wider than long; gonocoxite consists of lateral and small ventral surfaces and has no (or membranous) dorsal surface; gonostylus T-shaped and with ventral projection longer and wider than dorsal projection, situated at the apex of gonocoxite and shorter than gonocoxite; sternum 9 separated from gonocoxite by an open space (or a membranous area), and with a pilose median process, a pair of posterolateral processes, and a median notch at the posterior margin; between anterior parts of gonocoxites there is a bridge running over sternum 9; aedeagus consisting of a gourd-shaped main body, a long tube, a ventral large attachment having lateral elongation, a pair of ventral lamellae arising from the broad part of main body; cercus small, elongate, wider basally and with rounded apex; tergum 9 is W- or U-shaped, its transverse anterior bar has a median plate directed postero-ventrally and rectangular in shape, and its lateral bars may be connected at apices with each other by a membrane; sternum 10 is small, wider basally, and may have a median desclerotized line; tergum 8 covers hypopygium, cerci, tergum 9 and sternum 10, is wider than long and has a median concavity at posterior margin.

Hyperoscelis eximia insignis HARDY and NAGATOMI

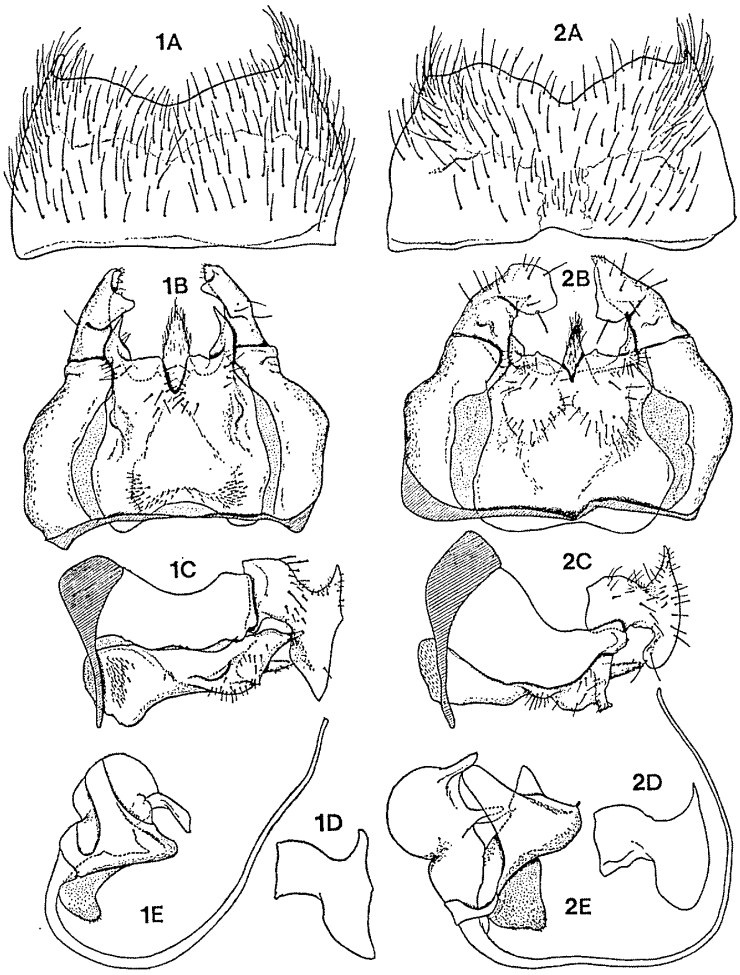
(Figs. 1& 3)

(Japanese name: Magari-sune-ka)

Hyperoscelis insignis HARDY and NAGATOMI, 1960, Pac. Ins., **2**: 265. Type-locality: Hataganaru, Ôginosen, Hyogo Pref., Honshu, Japan.

HUTSON (1977) treated *H. insignis* as a synonym of *H. eximia* (BOHEMAN, 1858) (Öfvers. K. Vetensk. Akad. Förh. Stockh., **15**: 56; type-locality: Sweden). But the former is revived here as a subspecies of the latter. *H. eximia insignis* is easily distinguished from *H. eximia eximia* and *H. veternosa* by having the mesonotum with 3 broad black stripes. We have examined 3 ♂♂, 2 ♀♀ (plus ♂ type) of *eximia insignis* and have found that the stripes on mesonotum are always distinct.

Male. Head: dark brown to black; antenna especially segment 2, palpus and proboscis may be yellowish brown to brown; head including eyes and appendages short pale pilose; ocellar triangle, occiput and paplus pale gray pollinose; head 1.2–1.3 times as long as wide from a direct frontal view, 1.0–1.1 times as long as its



Figs. 1–2. Male genitalia of *Hyperoscelis* spp. —— 1, *H. eximia insignis*; 2, *H. veternosa*. A, tergum 8, dorsal aspect; B, gonopods and sternum 9, ventral aspect; C, ditto, lateral aspect; D, left gonostylus, posterolateral aspect; E, aedeagus, lateral aspect.

height (including ocellar tubercle) and 1.9–2.3 times as long as width of eye (=distance from face to occiput) from a lateral view; face at narrowest point 0.2–0.3 times as wide as face just below antennae and 0.2–0.4 times as wide as one eye; ocellar triangle 0.7–0.8 times as wide as long; antenna 1.2–1.4 times as long as mesonotum; 1st flagellomere 0.8–1.0 times, last flagellomere 1.3–1.5 times, and last joint of palpus 7.5–8.7 times as long as wide respectively.

Thorax: mesonotum yellowish brown, with 3 broad dark brown to black stripes, of which median one begins at anterior margin, ends opposite wing base, and tapers posteriorly, while lateral ones begin opposite anterior spiracle and end nearly at posterior margin; rest of thorax dark brown to black, but pronotum (lateral swollen parts may be mistaken as humeral calli), antero-lower margin of mesopleura, areas surrounding anterior and posterior spiracles, and often propleura and anterior border (except middle) of postscutellum yellowish brown; cervical sclerite always

dark brown to black; thorax pale yellow pilose but bare on sterno-, ptero-, hypo-, metapleura and postscutellum, of which the latter two are pale gray pollinose; halter pale brown.

Wing: membrane tinged with yellowish brown to brown, but costal cell, a spot at apical portion of vein R_{4+5}, and marginal cell (except apical portion) darkened; membrane covered with macrotrichia which is absent on subcostal (except apical portion), basal, about basal 1/3 of 3rd posterior, and bases of 4th posterior, anal cells and axillary; (a) wing margin between R_1 and R_{2+3} 1.3–1.7 times as long as vein R_{2+3}; (b) basal section of R_{2-5} (vein between M and P1) 0.8–0.9 times as long as vein R_{4+5}; (c) 2nd section of $R_{2-5}+M_{1-2}$ (vein between M and P3) 0.4–0.6 times as long as vein R_{4+5}; (d) in 1st section of $R_{2-5}+M_{1-2}$ (vein between B and P3), basal thin (or pale) part 0.8–1.0 times as long as apical thick (or dark) part; (e) m-cu cross-vein (vein between B and P4) 0.8–1.1 times as long as apical thick part in 1st section of $R_{2-5}+M_{1-2}$.

Legs: yellowish brown; coxae except apical and ventral parts (yellowish brown area varies with individual), hind femur and hind tibia except basal parts, and often mid femur and mid tibia except bases and tarsal segments 1–5 (of each leg) except bases darkened; legs pale yellow pilose; relative lengths of segments (excluding coxa and trochanter) of fore leg 81(80–81): 100: 25(22–26): 17(17–18): 15(13–16): 12(11–13): 21(19–22), of mid leg 107(102–111): 102(98–104): 32(30–34): 21(20–22): 17(15–19): 13(12–14): 19(19), of hind leg 193(185–202): 125(120–132): 36(31–38): 24(22–27): 20(19–22): 14(13–15): 20(19–22) and in hind leg viewed from the side relative widths of femur, tibia and tarsomeres 1–3, 37(35–40): 14(13–15): 10(9–11): 9(8–9): 8(7–9) (tarsomeres 1–3, 0.3, 0.3–0.4, and 0.4 times as wide as long respectively).

Abdomen: dark brown to black, but each of terga 1(2)–7, near base, with a small, median yellowish brown spot which is absent or indistinct in some segments or individuals and sterna 1–6 often yellowish brown at middle of over almost whole surface; anterior border (except sides) or tergum 1, lateral and posterior margins of terga 1–7 and sterna 1–7 may be pale yellow; genitalia yellowish brown; abdomen above and below pale yellow recumbent pilose.

Genitalia (Figs. 1 & 3): no significant difference is found between the male genitalia of *eximia eximia* (judging from Figs. 13, 15–17 by HUTSON, 1977) and those of *eximia insignis* (here described and figured), although the detail of aedeagus may not be identical; sternum 9 raised anteromedially, clothed with short setulae around the raised portion, keeled sublaterally near middle, deeply notched medially on posterior margin, and with posterolateral processes long, pointed, 1/2 as long as gonostylus; gonostylus with ventral projection bluntly pointed apically; in aedeagus, lateral elongation of ventral attachment running dorsally, space between top of attachment and that of lamella short, and 2 lamellae are connected by a median short lamella; in tergum 9, median plate somewhat wider apically and wholly colorless; tergum 8 with a ventral flap at each side and with median concavity (at posterior margin) wide.

Length: body 3.5–4.9 mm; wing 4.8–6.5; fore tibia 0.9–1.3.

Female. Similar to male except as follows: Head: structural characters almost fit the description of ♂ but in 2 specimens measured, last joint of palpus 4.3–5.3 times as long as wide, antenna 0.9–1.0 times as long as mesonotum, basal and last joints of antennal flagellum 0.6–0.8 times and 1.4–1.7 times as long as wide respectively.

Thorax: sides of scutellum often yellowish brown (this may be so in ♂).

Wing: (a) 1.0–1.5 times, (b) 0.9–1.0 times, (c) 0.5–0.6 times, (d) 0.4–1.1 times, and (e) 0.4–1.0 times (based on 2 specimens).

Legs: relative lengths of segments of fore leg 80(77–82): 100: 24(23–24): 17(16–17): 15(14–15): 11(10–12): 22(20–23), of mid leg 107(106–108): 103(98–108): 34(33–35): 23(20–25): 17(16–17): 12(10–13): 21(20–21), of hind leg 194(193–194): 123(122–123): 41(37–44): 25(22–27): 18(16–19): 14(12–15): 22(20–23) and in hind leg viewed from the side relative widths of femur, tibia, and tarsal segments 1–3, 38(37–38): 13(12–13): 10(10): 10(10): 10(9–10) (tarsal segment 1, 0.2–0.3, segment 2, 0.4–0.5, segment 3, 0.5–0.6 times as wide as long) (based on 2 specimens).

Abdomen: terga 1–6 has a median longitudinal yellowish brown stripe in one specimen (from Honshu) and abdomen above and below (except genitalia) is almost wholly dark brown to black in another specimen (from Kyushu) but these may be so in some specimens of ♂.

Length: body 5.0 mm; wing 6.1–7.1; fore tibia 1.3.

Distribution. Japan (Honshu, Shikoku and Kyushu).

Specimens examined: Honshu: 2 ♂♂, Mt. Senjô, Nagano Pref., 4. vii. 1963, T. NAITO; 1 ♂, Hirogawara, Akaishi Range, Yamanashi Pref., 13. vi. 1966, A. KATO; 1 ♀, Hayakawa-one, Akaishi Range, Yamanashi Pref., 24. vii. 1962, A. KATO. Kyushu (**new record**): 1 ♀, Mt. Shiratori-yama, Gokanosho, Kumamoto Pref., 26. v. 1978, K. ÔHARA.

The record from Shikoku is after ITO (1977).

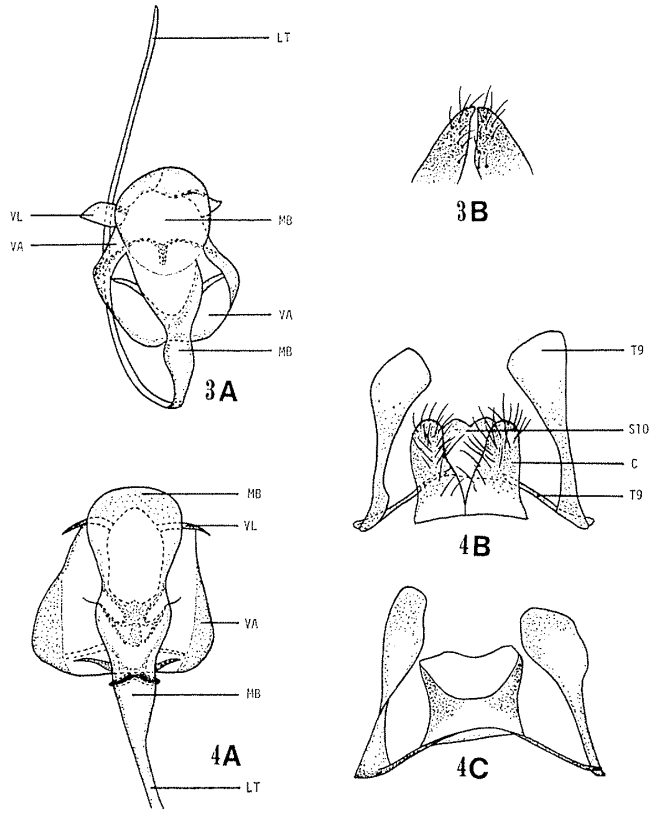
Hyperoscelis veternosa MAMAEV and KRIVOSHEINA

(Figs. 2, 4–5)

(Japanese name: Kuro-magari-sune-ka)

Hyperoscelis veternosa MAMAEV and KRIVOSHEINA, 1969, Ent. Obozr., **48**: 936. Type-locality: Ukraine.

This species is distinguished from *eximia* by the differences of the larval characters (MAMAEV & KRIVOSHEINA, 1969) and the male genitalia. Further, MAMAEV and KRIVOSHEINA (1969) and HUTSON (1977) used the following 2 distinguishing characters: vein between submarginal and 1st posterior cells is shorter than (in *veternosa*) or as long as (in *eximia*) that between marginal and 1st posterior cells and thickened part of the vein between basal and 3rd posterior cells is parallel (in *veternosa*) or not parallel (in *eximia*) with vein R_1. However, these 2 characters



Figs. 3–4. Male genitalia of *Hyperoscelis* spp. —— 3, *H. eximia insignis* (A, aedegus, dorsal aspect; B, sternum 10, ventral aspect). 4, *H. veternosa* (A, aedeagus, dorsal aspect; B, cerci, tergum 9 and sternum 10 [median plate of tergum 9 is excluded], dorsal aspect; C, tergum 9, ventral aspect). C, cercus; LT, long tube (in aedeagus); MB, main body (in aedeagus); S10, sternum 10; T9, tergum 9; VA, ventral attachment (in aedeagus); VL, ventral lamella (in aedeagus).

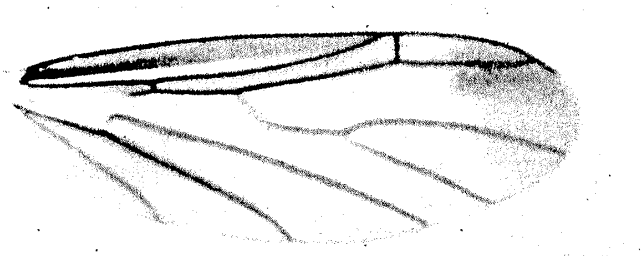
may be variable and may not be relied upon.

Male. Similar to *eximia insignis* except as follows: Head: in 1 specimen measured, last joint of antennal flagellum 2.3 times as long as wide and last joint of palpus 3.5 times as long as wide; it is uncertain whether or not these differences are significant between *veternosa* and *eximia insignis.*

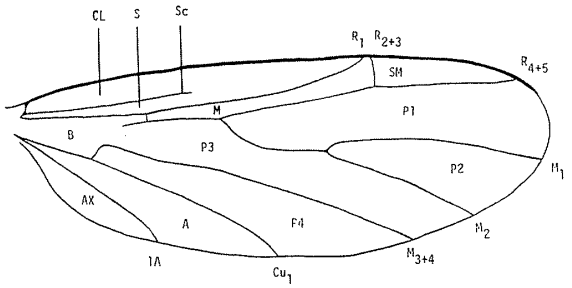
Thorax: mesonotum, pronotum and propleura entirely dark brown to black.

Wing: darkened parts (mentioned in *eximia insignis*) may not be very contrasted with the rest of membrane which may be darker than in *eximia insignis*; vein R_{2+3} incomplete and only its base present (this condition may be accidental in only the examined specimen); basal cell and bases of 3rd posterior, 4th posterior, anal cells and axillary with macrotrichia; in 1 specimen measured, (b) 1.0 times, (c) 0.6 times, (d) 0.6 times and (e) 0.8 times (for explanation of (a)-(e), see description of male wing in *eximia insignis*).

Legs: coxa largely or almost wholly dark brown to black; relative lengths of



5A



5B

Fig. 5. Female wing of *Hyperoscelis veternosa*. A, anal cell; AX, axillary; B, basal cell; CL, costal cell; M, marginal cell; P1, P2, P3, P4, 1st, 2nd, 3rd, 4th posterior cell respectively; S, subcostal cell; SM, submarginal cell.

segments (excluding coxa and trochanter) of fore leg 77: 100: 25: 19: 17: 13: 23, of mid leg 104: 102: 30: 25: 17: 13: 19, of hind leg 187: 123: 38: 25: 17: 13: 21 and in hind leg viewed from the side relative widths of femur, tibia, and tarsal segments 1–3, 36: 13: 9: 8: 8 (tarsal segment 1, 0.25, segment 2, 0.3, segment 3, 0.4 times as wide as long) (based on 1 specimen).

Abdomen: above and below (except genitalia) almost wholly dark brown to black (this is so in some specimens of *eximia insignis*).

Genitalia (Figs. 2 & 4): sternum 9 flattened and bare anteromedially, with a pair of weak and setose swellings beyond the middle, rather weakly notched medially on posterior margin, and with posterolateral processes short, blunt, shorter than 1/2 length of gonostylus; gonostylus with ventral projection broadly rounded apically; in aedeagus, lateral elongation of ventral attachment running toward ventarl lamella, space between top of attachment and that of lamella long, and no short lamella present between 2 long lamellae; in tergum 9, median plate almost right rectangular and with basal and lateral parts sclerotized; tergum 8 without a ventral flap at each side and with median concavity (at posterior margin) narrow.

Length: body 5.0 mm; wing 6.0; fore tibia 1.3.

Female. Similar to male except as follows: Head: antenna 0.9 times as long as mesonotum; last joint of antennal flagellum 1.7 times as long as wide; last joint of palpus 3.5 times as long as wide as in ♂.

Wing (Fig. 5): vein R_{2+3} complete (this may be so in some specimen of ♂); in 1 specimen measured, (a) 0.7 times, (b) 1.2 times, (c) 0.6 times, (d) 0.5 times, and (e) 0.7 times.

Legs: relative lengths of segments of fore leg 77: 100: 19: 18: 14: 11: 21, of mid leg 104: 102: 33: 19: 16: 12: 19, of hind leg 182: 123: 37: 21: 16: 12: 19 and in hind leg viewed from the side relative widths of femur, tibia, and tarsal segments 1–3, 37: 14: 9: 7: 7 (tarsal segment 1, 0.25, segment 2, 0.3, segment 3, 0.4 times as wide as long) (based on 1 specimen).

Length: body 5.3 mm; wing 6.4; fore tibia 1.4.

Distribution. Finland, Rumania, Ukraine, and Japan (Hokkaido).

Specimens examined: Hokkaido (**new record**): 1 ♂, Aizankei, Mt. Daisetsu, 7. vii. 1964, A. NAGATOMI; 1 ♀, Kamiwashippu, Ashoro, Tokachi, 19. vi. 1967, T. SAIGUSA.

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References

HARDY, D. E. & A. NAGATOMI, 1960. An unusual new Nematocera from Japan (Diptera), and a new family name. *Pacif. Insects*, **2**: 263–267.

HUTSON, A. M., 1977. A review of the families Synneuridae and Canthyloscelidae (Diptera). *Bull. Br. Mus. nat. Hist.* (*Ent.*), **35**: 67–100.

ITO, S., 1977. Hyperoscelidae. *In* ITO, OKUTANI & HIURA (eds.), *Colored Illustrations of Insects of Japan*, **2**: 228. Hoikusha Publishing Co., Ltd., Osaka.

MAMAEV, B. M. & N. P. KRIVOSHEINA, 1969. New data on the morphology and ecology of the Hyperoscelidae (Diptera, Nematocera). *Ent. Obozr.*, **48**: 933–942. [In Russian; translated in *Ent. Rev.*, **48**: 594–599.]