Two new subspecies of Diartiger fossulatus Sharp (Coleoptera, Staphylinidae, Pselaphinae) from Japan

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Two New Subspecies of *Diartiger fossulatus* Sharp (Coleoptera, Staphylinidae, Pselaphinae) from Japan

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Abstract. Two new subspecies of the clavigerine species, *Diartiger fossulatus, D. f. tadauchii* and *D. f. toshioi* are described. The former is described from Tsushima Is., Nagasaki Prefecture, and the latter from Mikurajima Is., Izu-shotô Isls., Tokyo Prefecture

Key words: Pselaphinae, Staphylinidae, *Diartiger*, new taxa, Japan.

The clavigerine species *Diartiger fossulatus* Sharp is the most popular myrmecophilous pselaphine species in Japan. It is distributed in the mainland of Japan and Korea. It is classified into seven subspecies by Nomura (1997).

In the present study, two new subspecies of *D. fossulatus*, *D. f. tadauchii* from Tsushima Is., Nagasaki Prefecture and *D. f. toshioi* from Mikurajima Is., Izu Isls., Tokyo Prefecture are described below. A key to subspecies of *Diartiger fossulatus* is given.

Materials and Methods

Some important characters of the new species and the new subspecies were observed and illustrated with a stereo microscope (Leica MZ Apo). The material was also examined by a scanning electron microscope (SEM: JEOL JSM-6380LV). For the SEM observations, all materials were non-coated and examined with a low acv 0.9 kV. All materials were digital-micrographed from various angles. Scale bars in all figures are in micrometres. The types are preserved at the National Museum of Nature and Science, Tokyo (NSMT).

Diartiger fossulatus Sharp

[Japanese name: Ko-yamato-higebuto-arizukamushi]

Diartiger fossulatus Sharp, 1883, Trans. ent. Soc. London, 1883: 330. See Nomura (1997) for historical review.

Distribution. Japan (Hokkaido, Honshu, Izu Isls., Shikoku, Tsushima Is., Kyushu); Korea.

Remarks. This species is clearly separated by the following characters from the other congeneric species: the male genitaria are comprising of very large basal capsule of the aedeagus and very small apical lobe.

Key to the Subspecies of *Diartiger fossulatus* Sharp

1. Mid femora each with or without a very small denticle on posterior side in male 2
— Mid femora each with a large denticle on posterior side in male 4
2. Mid femora each with a very small denticle in many cases in male; mid trochanters each with a truncate and flattened spine at apex in male ..... *D. f. dentipes* Nomura et Lee
— Mid femora each without denticle on posterior side in many cases in male; mid trochanters each with a simply sharpened spine at apex in male 3
3. Antennal segment IV long, more than twice as long as III ..... *D. f. tadauchii* subsp. nov.
— Antennal segment IV short, less than twice as long as III ..... *D. f. ispartae* (Karaman)
4. Mid femora each with a denticle at base in male

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..... *D. f. toshioi* subsp. nov.

— Mid femora each with a large denticle near middle in male 5

5. Antennal segment IV thick, less than 2.3 times as long as wide; composite abdominal tergum with a pair of hardly sharpened basi-lateral trichome ..... *D. f. fossulatus* Sharp

— Antennal segment IV slender, more than 2.3 times as long as wide; composite abdominal tergum with a pair of more or less sharpened basi-lateral trichomes 6

6. Body larger than 2.2 mm; basi-lateral trichome of composite abdominal tergum sharpened and curled distally ..... *D. f. izuinsulicola* Nomura

— Body smaller than 2.2 mm; if large, basi-lateral trichome of composite abdominal tergum weakly sharpened and scarcely curled distad 7

7. Body large, 2.08 - 2.24 mm; basi-lateral trichome of composite abdominal tergum weakly sharpened and hardly curled distad ..... *D. f. morimotoi* Nomura

— Body small, 1.88 - 2.13 mm; basi-lateral trichome of composite abdominal tergum strongly sharpened and curled distad 8

8. Basi-lateral trichome of composite abdominal tergum large and strongly curled distad ..... *D. f. imasakai* Nomura

— Basi-lateral trichome of composite abdominal tergum small and scarcely curled distad ..... *D. f. hirashimai* Nomura

Diartiger fossulatus tadauchii subsp. nov. (Figs. 1-3)

Etymology. This new subspecies was dedicated to Dr. Osamu Tadauchi, a hymenopterologist in Kyushu University for his great contribution to entomology.

Holotype male, Izuhara, Tsushima-shi, Nagasaki Pref., Kyushu, Japan, from ant nest: *Lasius hayashi*, 28. iv. 2008, T. Komatsu leg. Paratypes: 2 males, 3 females, same as holotype.

Description. Male (Fig.1 A, B). Body length 2.17 - 2.20 mm, width 0.84 - 0.97 mm. Head and pronotum densely covered with rugose microstructure (Fig. 2 A, B). Antennae 0.55 - 0.56 mm in length, each short and thick (Fig. 2 C), segments I and II very short, III and IV each large, each longer than wide, IV the longest, 2.1 to 2.4 times as long as III, 2.8 to 3.1 times as long as wide; mid legs stout (Fig. 2 E, F), each similar to that of subsp. *ispartae*; trochanters each thickened distally, with large, obliquely truncate spine on ventral side; femora each robust, weakly concave on posterior side; tibiae almost straight, flattened on internal and external sides, with a very small denticle near middle on ventral side. Elytra and abdomen (Fig. 2 D, G, H) very similar to those of subsp. *ispartae*. Male genitalia strongly sclerotized (Fig. 3 A-C); median lobe stick, subparallel-sided on both lateral sides, rounded at base, with well projected large basal foramen on ventral side, with elliptical membranous part on dorsal side, with a very small trapezoidal apical lobe at apex.

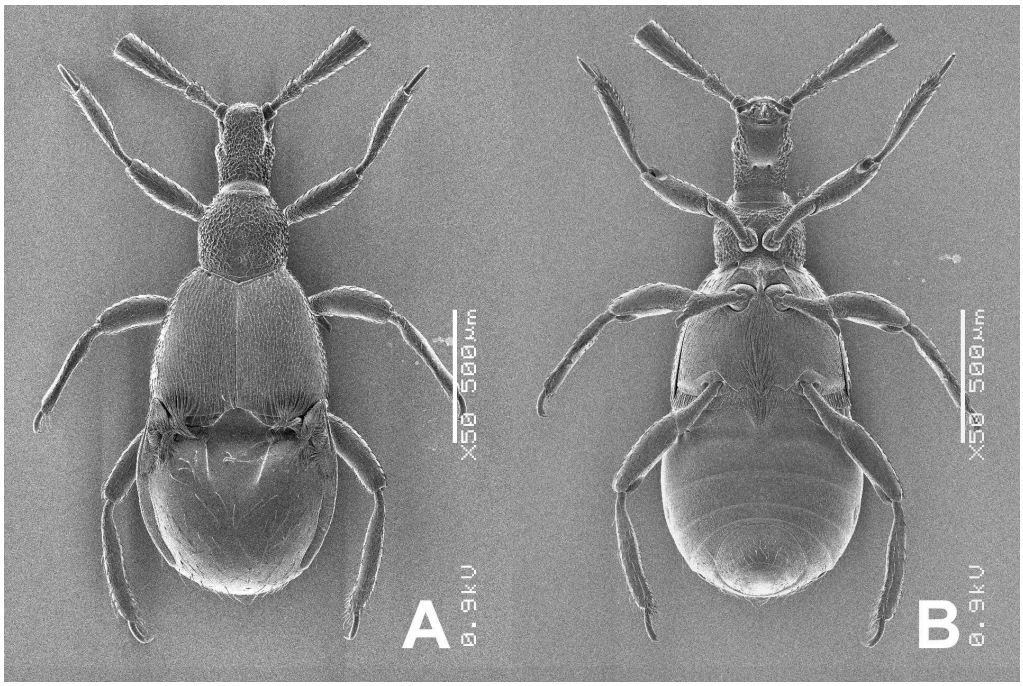

Fig. 1. *Diartiger fossulatus tadauchii* subsp. nov.: A, habitus in dorsal view, holotype, male; B, ditto in ventral view.

Female. Body length 2.22-2.29 mm, width 0.84 - 0.92 mm, very similar to male, but different by the following characters: antennae each very slightly shorter than that of male, 0.53 - 0.55 in length, segment IV the largest, 2.0 to 2.2 times as long as III, 2.7 to 2.9 times as long as wide; mid legs each slenderer than that of male; trochanters without spine; femora each almost straight; tibiae each almost straight, scarcely flattened, without denticle.

Distribution. Tsushima Is., Kyushu, Japan.

Host record: *Lasius hayashi* Yamauchi et Hayashida: Tsushima Is. (present study).

Remarks. This new subspecies is most closely allied to

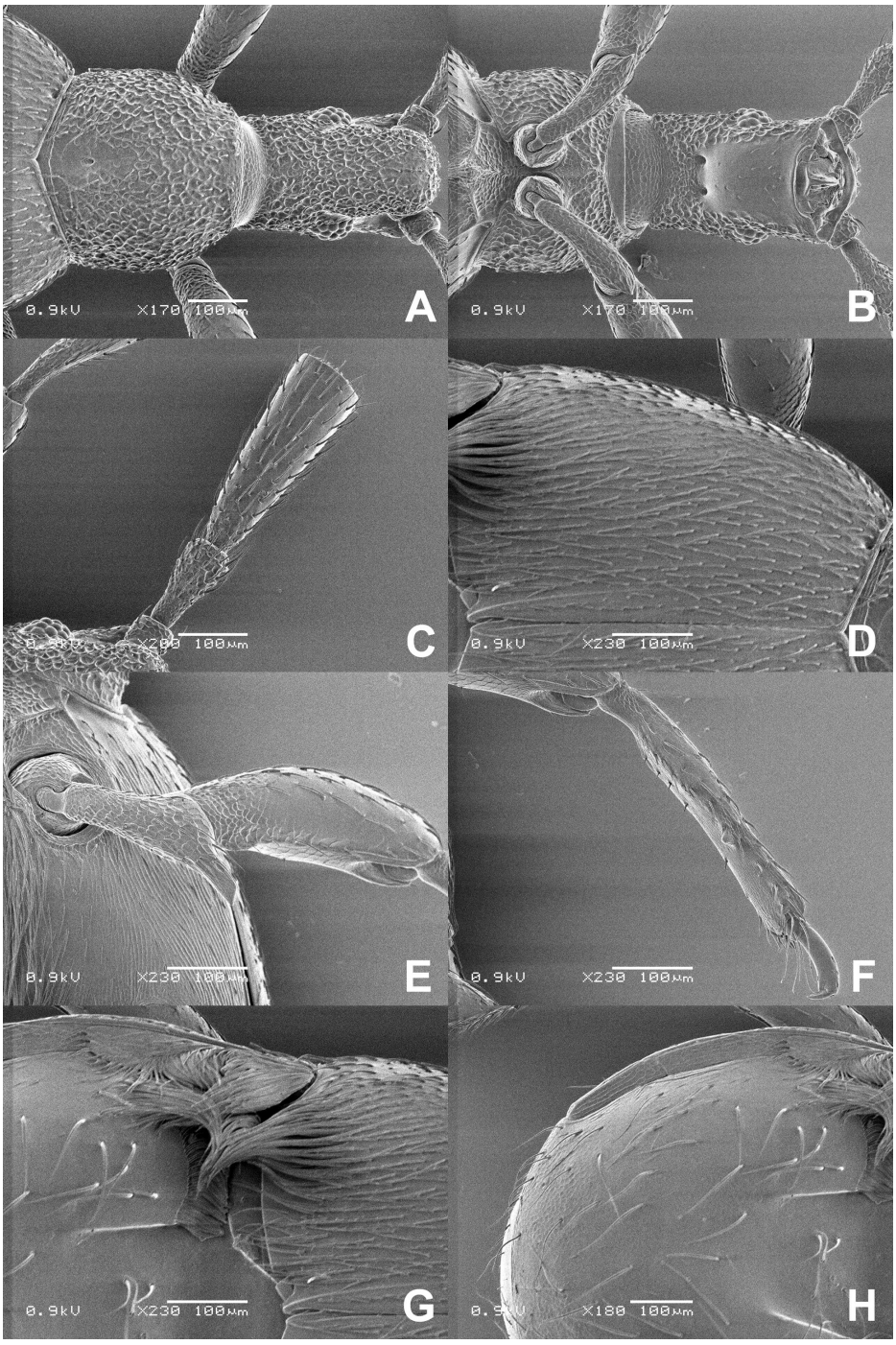

Fig. 2. *Diartiger fossulatus tadauchii* subsp. nov.: A, head and pronotum in dorsal view, holotype, male; B, ditto in ventral view; C, antenna in dorsal view; D, left elytron in dorsal view; E, left mid trochanter and femur in ventral vierw; F, left mid tibia and tarsus in ventral view; G, trichomes on elytra and abdomen; H, abdomen in dorsal view.

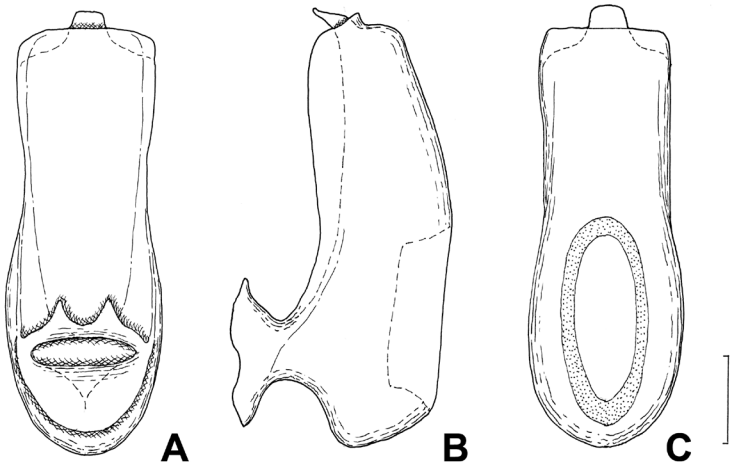

Fig. 3. *Diartiger fossulatus tadauchii* subsp. nov.: A, male genitalia in ventral view; B, ditto in lateral view; C, ditto in dorsal view. Scale: 0.1 mm.

the subspecies *D. f. ispartae* (Karaman) in having the mid legs each with a large and obliquely truncate spine at apex on trochanter and without spine on femur in the male. However, it is separable from subsp. *ispartae* by the long antennal segment IV more than twice as long as III (in *ispartae,* IV / III = 1.8 - 1.9 in the male, 1.9 - 2.0 in the female).

Diartiger fossulatus toshioi subsp. nov.
(Figs. 4-7)

Etymology. The new subspecific name is associated to the collector of the holotype, Dr. Toshio Kishimoto, who is a staphylinidologist in Tokyo.

Holotype male, nr. Boro-sawa, from ant nest, 390 m alt., Mikurajima Is., Izu-shotô Isls., Tokyo Pref., 13. v. 1999, T. Kishimoto leg. Paratype: 1 female, Mt. Oyama, 800 m alt., Mikurajima Is., Izu-shotô Isls., Tokyo, Japan, 7. vi. 1996, M. Maruyama leg.

Description. Male (Fig. 4 A, B). Very similar to nominotypical subspecies of *D. fossulatus*, but differs in the following characters. Body length 2.43 mm, width 0.88 mm, middle-sized, slightly narrower than *D. f. fossulatus*. Antennae 0.63 mm in length, each elongate (Fig. 5 C, D),

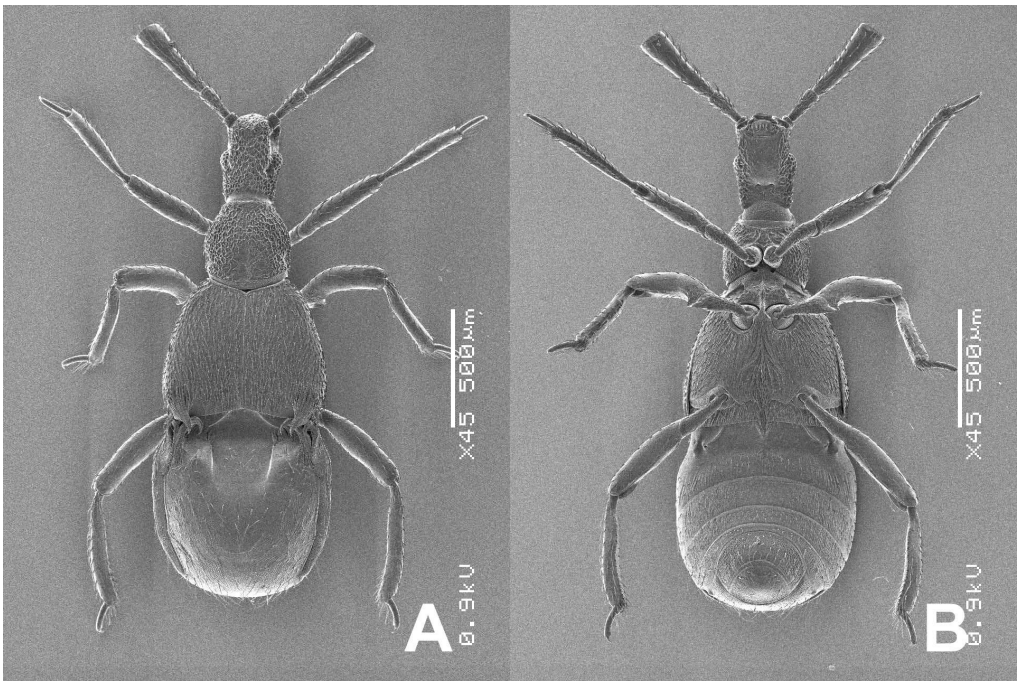

Fig. 4. *Diartiger fossulatus toshioi* subsp. nov.: A, habitus in dorsal view, holotype, male; B, ditto in ventral view.

slightly thickened distad; segment III 2.7 times as long as wide, weakly thickened distad; IV the largest, 2.1 times as long as III, 3.6 times as long as wide. Mid legs each slightly slenderer than that of *D. f. fossulatus*; trochanters each elongate, thickened distally, with a short and acute spine at apex on ventral side; femora nearly straight, each slightly thickened near middle, with a small denticle at base on posterior side; tibiae elongate, each very slightly sinuate internally. Abdomen densely covered with microreticulation on dorsal and ventral side in posterior part. Male genitalia strongly sclerotized (Fig. 7 A-C); median lobe nearly ovoid, weakly rounded on lateral and basal sides, with a small trapezoidal apical lobe at apex, with well-projected basal foramen on ventral side, with an ovoid membranous part on dorsal side.

Female body length 2.43 mm, width 0.93 mm, antennal length 0.64 mm. Very similar to male, but antennae each slightly shorter than that of male; segment III 2.6 times as long as wide; IV the largest, 2.3 times as long as III, 2.9 times as long as wide, more thickened distally in apical part than in male; mid legs each without spine nor denticle on trochanter and femur, tibiae each straight.

Distribution. Mikurajima Is., Izu-shotô Isls., Japan.

Host record: *Lasius japonicus* Santschi: Mikurajima Is. (present study).

Remarks. This subspecies is separated from the other subspecies of *D. fossulatus* by the slender antennae and the mid femora each with a small denticle at base on ventral side.

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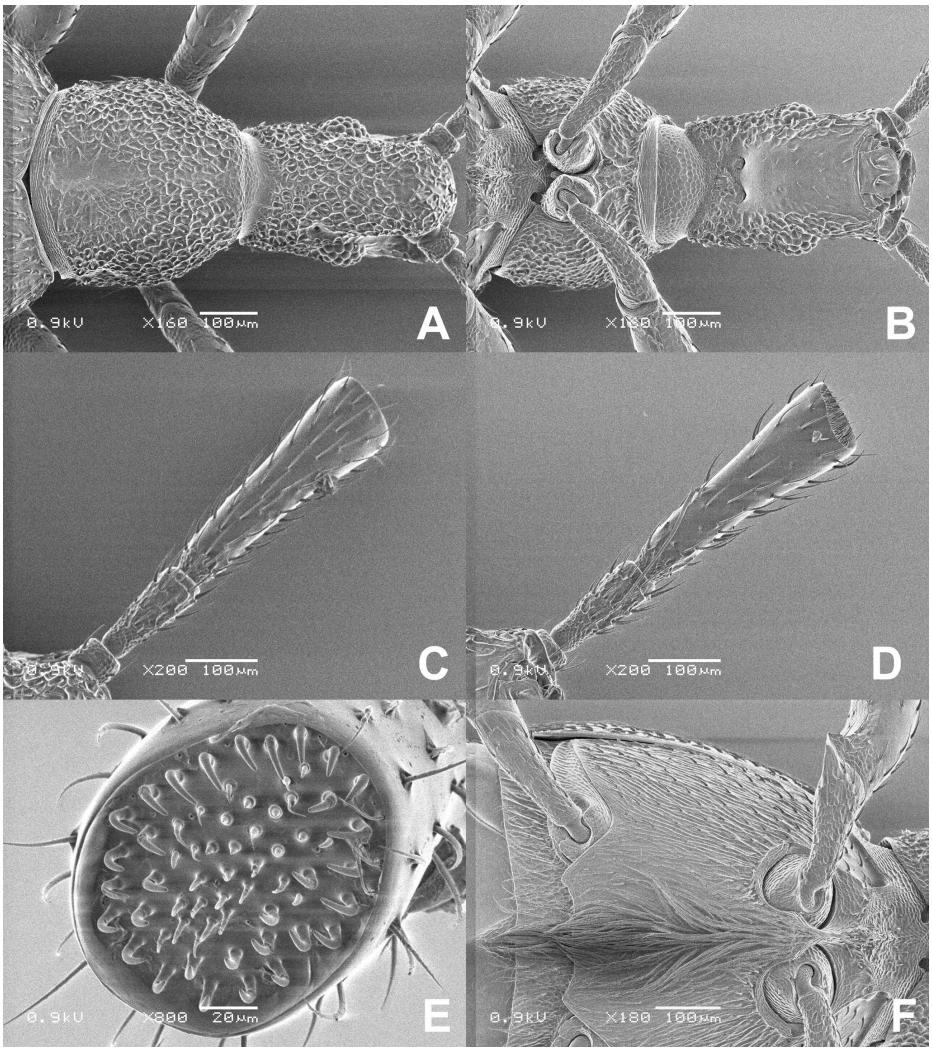

Fig. 5. *Diartiger fossulatus toshioi* subsp. nov.: A, head and pronotum in dorsal view, holotype, male; B, ditto in ventral view; C, antenna in dorsal view; D, ditto in ventral view; E, ditto in apical view; F, meso- and metathoraces in ventral view.

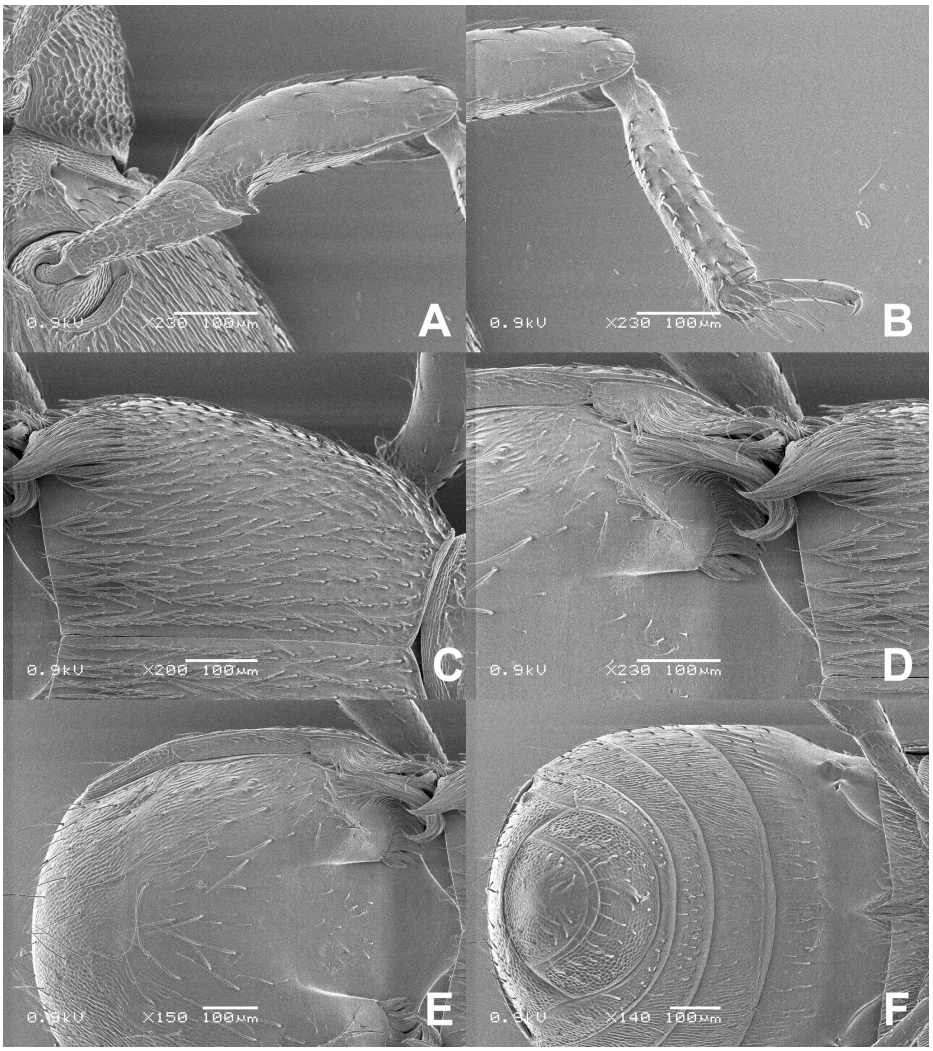

Fig. 6. *Diartiger fossulatus toshioi* subsp. nov.: A, mid trochanter and mid femur in ventral view; B, mid tibia and mid tarsus in ventral view; C, left elytra in dorsal view; D, trichomes on elytra and abdomen in dorsal view; E, abdomen in dorsal view; F, ditto in ventral view.

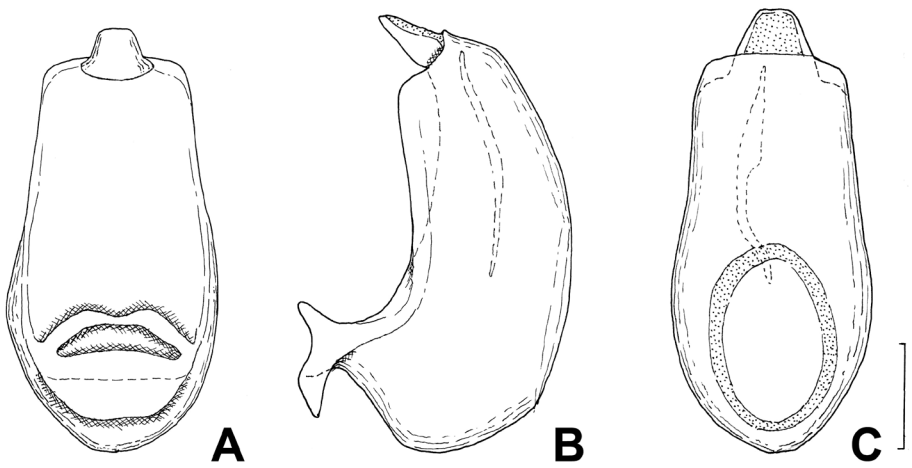

Fig. 7. *Diartiger fossulatus toshioi* subsp. nov.: A, male genitalia in ventral view; B, ditto in lateral view; C, ditto in dorsal view. Scale: 0.1 mm.

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Reference

Nomura, S. (1997) A systematic revision of the Clavigerine genus *Diartiger* Sharp from East Asia (Coleoptera, Staphylinidae, Pselaphinae). *Esakia*, (37): 77-110.