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Two New Species of the Genus *Petaloscapus* Jeannel, 1958 (Staphylinidae: Pselaphinae) from Tsushima and Gotô Islands, Kyushu, Japan

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Abstract. Two new species of the genus *Petaloscapus* Jeannel, 1958 are described from Tsushima and Gotô Islands, Kyushu, Japan. Their new names and the type localities in parenthesis are as follows: *P. hirashimai* **sp. nov.** (Tsushima Is., Nagasaki Pref.), *P. morimotoi* **sp. nov.** (Fukuejima Is., Gotô Is., Nagasaki Pref.).

Key words: Gotô Is., new species, *Petaloscapus*, Pselaphinae, Staphylinidae, Tsushima Is.

Introduction

The genus *Petaloscapus* is an endemic genus of the supertribe Batrisitae of the subfamily Pselaphinae in Japan. This genus is easily distinguished from the other batrisine genera by having the head with a pair of strongly projected antennal tubercles in the male and the antennomere 1 with spatulate inner projection at apex in the male. Ten species and two subspecies have been known in the genus as shown in the checklist below. The genus is concerned to be highly diversified within the Japanese mainland (Honshu, Shikoku and Kyushu) (Nomura 2017, etc.). Many undescribed species of this genus are remained in this area. In Kyushu, the oldest species, *P. ornatus* (Sharp, 1874) has been known from Nagasaki. *P. fissifrons fissifrons* (Sharp, 1883) were described from “Higo”, which is the old name of Kumamoto Pref. This genus has not been known from small islands around Kyushu mainland.

In the present study, two new species were discovered by the author from Tsushima and Gotô Islands in northern Kyushu. It is the first record of this genus from small islands around Kyushu mainland. They are very characteristic in morphological characters, which are described herewith.

Materials and methods

The collected specimens were washed and

dissected in 70% ethanol or cleared in 10 % KOH water solution for detailed examination. Male genitalia were mounted in Canada balsam on a small glass slide on the same pin with the specimen as suggested by Maruyama (2004). Measurements of the body and parts were made with a stereo microscope (Leica MZ Apo). Body width in this part is shown by maximum width of the body (elytral width in this group). For the SEM observation, all specimens were air dried, uncoated, and illustrated with an SEM fit with a digital microscope system (KEYENCE VHX-2000 + VHX-D510) under AV 1.2 kv. The holotype and paratypes of this new species are deposited in the National Museum of Nature and Science, Tsukuba, Japan (NMNS).

Taxonomy

Genus *Petaloscapus* Jeannel

Petaloscapus Jeannel, 1958: 33. Type species by original designation: *Batrisus ornatus* Sharp, 1874.

Remarks. This genus was established by Jeannel (1958) including four species and two subspecies known from Japan. It is easily distinguished by the prolonged antennomere 1 in the inner apex, the median nodule on the clypeus and the strongly processed antennal tubercles on the frons in the male. The genus is mostly allied to the genus *Batrisodellus* Jeannel, 1958 (recently synonymized with *Batrisodes* Reitter,

1882 by Yin *et al.* 2015) in having the stout body, the pronotum with a pair of hook-like spines on the dorsal side, the elytra each with three basal foveae and the abdominal tergite IV with a pair of triangular paratergites in dorsolateral sides. However, it is distinct in the structure of male genitalia formed by subcylindrical median lobe with asymmetrical, lamellar projection(s) at apex, and endophallus consisting of some asymmetrical sclerites.

A checklist of species of the genus
Petaloscapus

- P. ornatus* (Sharp, 1874) Japan: Kyushu, Honshu (?).
P. basicornis (Sharp, 1883) Japan: Honshu (Chubu to Kanto Distrs.).
P. fissifrons fissifrons (Sharp, 1883) Japan: Honshu (Chugoku Distr.)
P. f. stricticollis Jeannel, 1958 Japan Kyushu (Kumamoto Pref.).
P. nasutus Jeannel, 1958 Japan: Honshu (Kanto to Tohoku Distrs.).
P. temporalis temporalis Jeannel, 1958 Japan: Honshu (Kinki Distr.).
P. t. yoshidai Nomura, 2001 Japan: Shikoku.
P. hirsutus Tanokuchi, 1986 Japan: Honshu (Chubu Distr.).
P. sasajii Nomura, 2001 Japan: Honshu (Chubu Distr.).
P. shirokanensis Nomura, 2017 Japan: Honshu (Chubu, Kanto, Tohoku Distrs.).
P. takakuwai, 2017 Japan: Honshu (Kanto Distr.).
P. niisatoi, 2017 Japan: Honshu (Chubu Distr.).

***Petaloscapus hirashimai* sp. nov.**

[Japanese name: Tsushima-higebuto-munetogearizukamusahi]

(Figs 1–3)

ZooBank taxon LSID:

zoobank.org:act:43707589-A92D-4D59-8938-33D3EC4848EC

Etymology. The new species is dedicated to the Professor Emeritus Dr. Yoshihiro Hirashima who was the professor when I was a student in the Entomological Laboratory, Kyushu University.

Holotype Male, Mt. Mitake, Kami-agata-cho, Tsushima Is., Nagasaki Pref., 28. iv. 1992, K. Ogata leg. **Paratypes:** 3 males, same data as holotype; 2 males, 2 females, same locality as above, 31. v. 1988, S. Nomura leg.; 1 female,

same data as above, but 28. iv. 1992; 1 male, 1 female, Iguchi-hama, Kami-agata-cho, Tsushima Is., Nagasaki Pref., 28. iv. 1992, K. Ogata leg.; 1 female, Mehoro, Tsushima Is., Nagasaki Pref., 20. x. 1983, S. Nomura leg.; 3 males, 6 females, Kamizaka, Tsushima Is., Nagasaki Pref., 27. iv. 1992, S. Nomura leg.; Mt. Hiratake, Tsushima Is., Nagasaki Pref., 23. v. 1991, H. Ebihara leg.; 1 female, Mt. Shiratake, Tsushima Is., Nagasaki Pref., 17. x. 1983, S. Nomura leg.; 2 females, Mt. Taterasan, Tsushima Is., Nagasaki Pref., 16–18. x. 1983, S. Nomura leg.; 1 male, Izuhara Hachiman Shrine, Tsushima Is., Nagasaki Pref., 29. iv. 1992, S. Nomura leg.

Description. Male (Figs 1A, C–E, 2A, C, E, G, 3A, C, E, G). Body length 2.33–2.60 mm, width 0.80–0.84 mm, large, elongate, stout, narrowed in head and prothorax; color blackish brown, partly shiny on dorsal surface.

Head (Figs. 2A, C, E) slightly longer than wide, nearly quadrate, thick; clypeus transverse, weakly angulate on anterior margin, with narrow, well-projected median nodule (Figs. 2C, E), and a pair of groups of short setae at base of median nodule; frons transverse covered with coarse punctures, with a pair of large, well-projected antennal tubercles, concave, smooth in median part; vertex slightly convex, with a pair of large, round dorsal tentorial pits, a short median carina between dorsal tentorial pits; postgenae rounded. Eyes small, weakly projected, each composed of 20–30 facets. Antennae 1.16–1.21 mm in length, elongate, thick; antennomere 1 about twice as long as wide, subcylindrical, flattened, densely covered with coarse punctures on apicomeral part; relative length (width) to the width of antennomere 1 of each segment from I to XI: 1.6 (1.0): 0.7 (0.6); 0.5 (0.5); 0.5 (0.5); 0.6 (0.5); 0.5 (0.5); 0.6 (0.6): 0.5 (0.5); 0.6 (0.7); 0.7 (0.7): 1.5 (0.9). Maxillary palpi short, palpomere 4 largest, fusiform.

Pronotum longer than wide, widest near middle, weakly angulate on lateral sides, with a pair of large hook-like spines at anterior 1/3; with a pair of large lateral foveae at posterior 1/3, with a pair of small lateral denticles at posterior 1/4, four small foveae just before posterior margin. Legs elongate, stout; mid femora each with a short spine (Fig. 3E white arrow) on posterior side at basal 1/4. Elytra large, wider than long, broadened posteriorly, nearly trapezoidal, each elytron weakly convex, with three basal foveae, almost straight broad

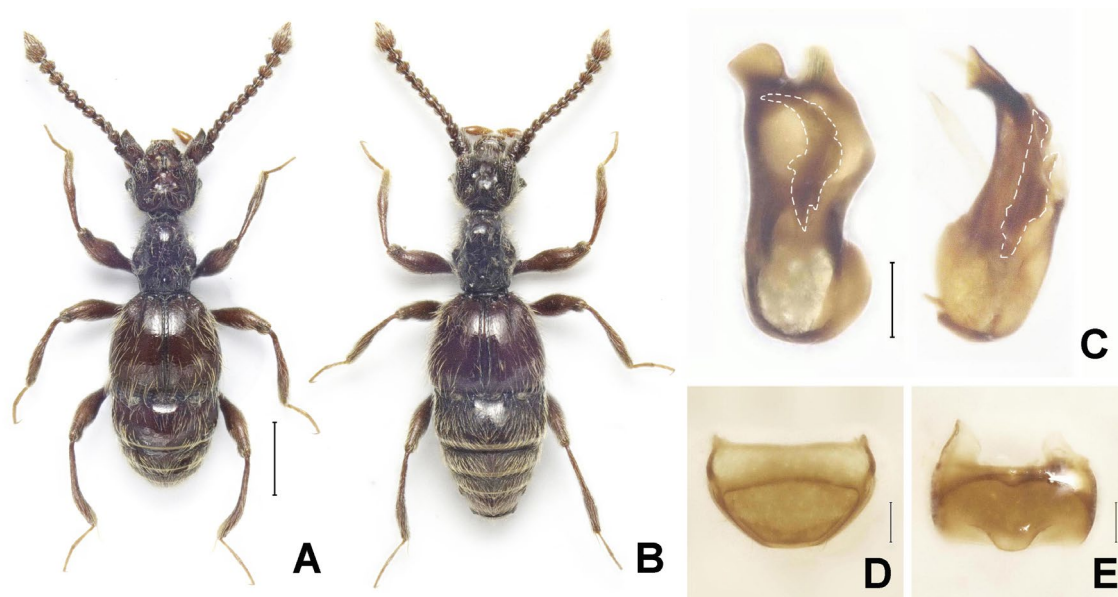


FIGURE 1. *Petaloscapus hirashimai* sp. nov. A, habitus, male; B, ditto, female; C, male genitalia in dorsal (left) and lateral (right) views; D, male tergite VIII; E, male sternite VIII. Scale for A, B = 0.5 mm; scale for C, D, E = 0.1 mm.

adsutural carina along median line, short, narrow longitudinal groove in basal 2/5. Hind wings reduced.

Abdomen broad, stout, wider than long, narrowed posteriorly, weakly flattened ventromedian part; tergites IV to VIII (Fig. 1D) each short, transverse, successively narrowed posteriad; sternite IV with a small trichome on posteromedian part (Fig. 3G right white arrow); sternite VIII (Fig. 1E) with a small group of erect hairs at center (Fig. 3G left white arrow). Male genitalia (Fig. 1C) large, strongly sclerotized; median lobe large, elongate, weakly narrowed at basal 1/3, with two short, asymmetrical projections at apex; endophallus (shown in Fig. 1C by white broken line) short, elongate, weakly curved rightward in ventral view (leftward in Fig. 1C-left).

Female (Figs. 1B, 2B, D, F, H, 3B, D, F, H). Body length 2.40–2.77 mm. Body width 0.79–0.84 mm. Similar to male, however differs in the following characters: clypeus without nodule, flat, pubescent (Figs 2D, F); eyes smaller than in male, composed of 15–20 facets; antennae 1.04–1.11 mm in length; antennomere 1 shorter than in male, about 1.5 times long as wide, weakly narrowed distad; mid femora without spine; abdominal sternite IV to VIII without trichome nor erect hair.

Distribution. Tsushima Is. (Nagasaki Pref.) (Fig. 6).

Remarks. This species is very distinct in the genus in having the prolonged pronotum with a pair of large hook-like spines at anterior 1/3, the narrowed small crypeal nodule, the very short inner projection on the apex of antennomere 1, the male genitalia with two short projections at apex.

***Petaloscapus morimotoi* sp. nov.**

[Japanese name: Gotô-higebuto-munetogearizukamushi]
(Figs 4, 5)

ZooBank taxon LSID:

zoobank.org:act:1522745A-8C34-4AF1-B8C3-ECE4ED01D78A

Etymology. The new specific name is given after the late Professor Emeritus Dr. Katsura Morimoto who was the professor of the Entomological Laboratory, Kyushu University when I was a graduate student and an assistant professor of the lab.

Holotype (Fig. 4A): Male, Dondon-buchi (11m alt.), Kômu, Kishiku-machi, Gotô-shi, Nagasaki Pref., 32.743456 ° N, 128.784968 ° E, 23. v. 2019, S. Nomura leg.

Description. Male (Figs. 4, 5). Body length 2.10 mm, width 0.72 mm, slightly smaller than *hirashimai* sp. nov., elongate, stout; color reddish brown, partly shiny on dorsal surface.

Head (Figs. 5A–C) slightly longer than wide,

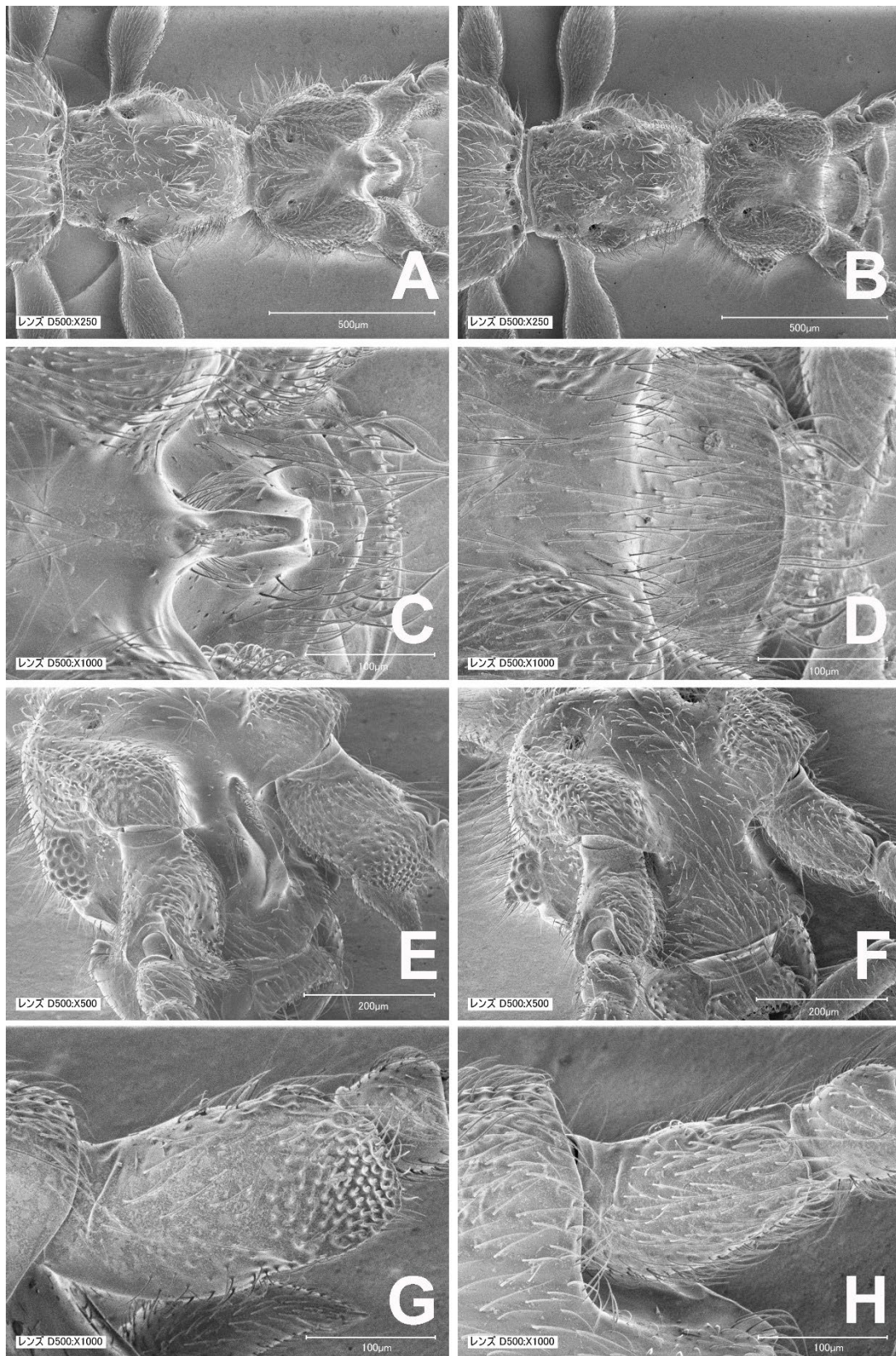


FIGURE 2. SEM photos of *Petaloscopus hirashimai* **sp. nov.** A, C, E, G, male; B, D, F, H, female. A, B, head and pronotum in dorsal view; C, D, clypeus in dorsal view; E, F, head in frontal view; G, H, antennomere 1 in internal view.

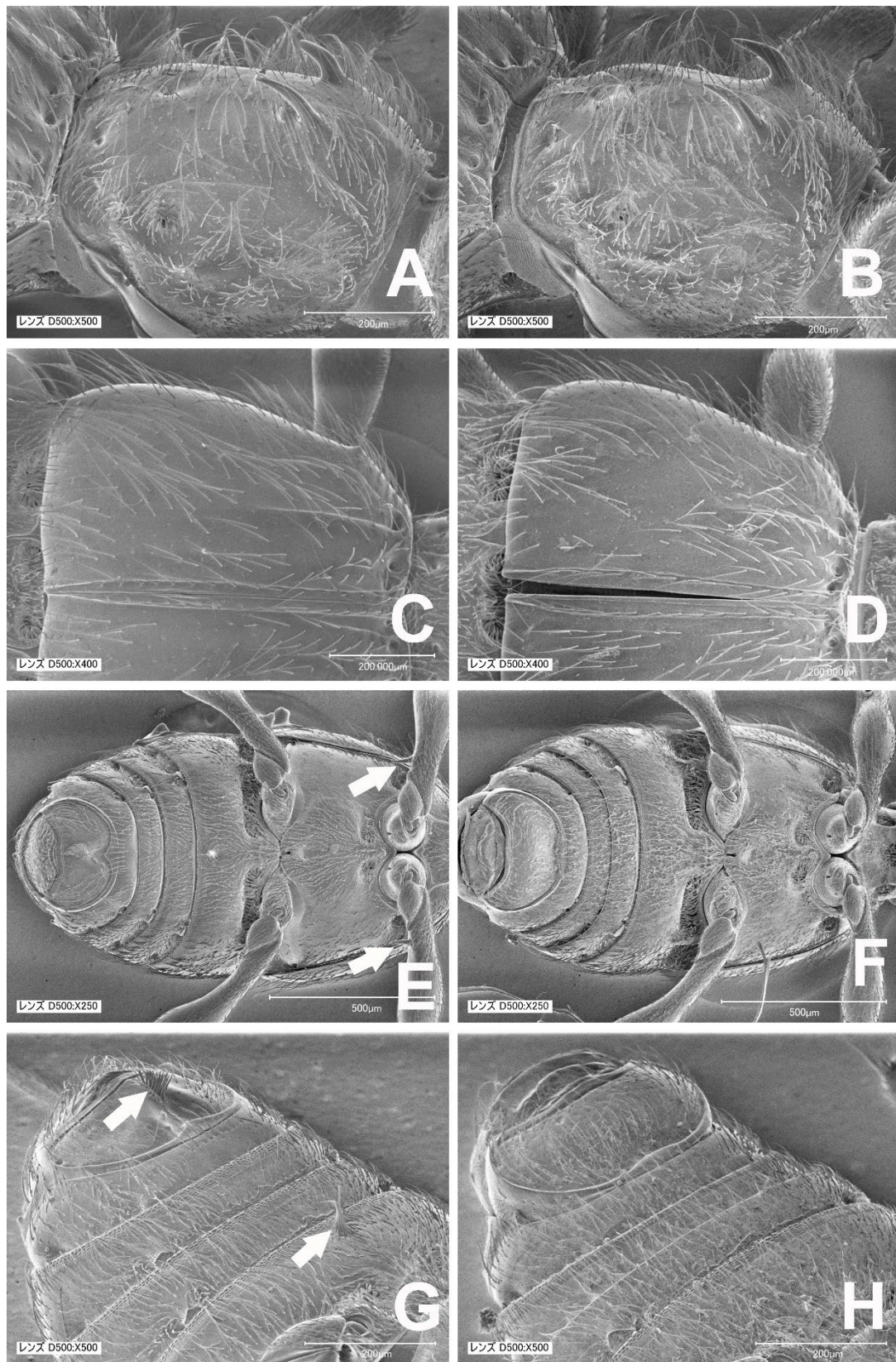


FIGURE 3. SEM photos of *Petaloscopus hirashimai* sp. nov. A, C, E, G, male; B, D, F, H, female. A, B, pronotum in lateral view; C, D, elytra in dorsal view; E, F, meso-, metathoraces and abdomen in ventral view; G, H, abdomen in ventral view.

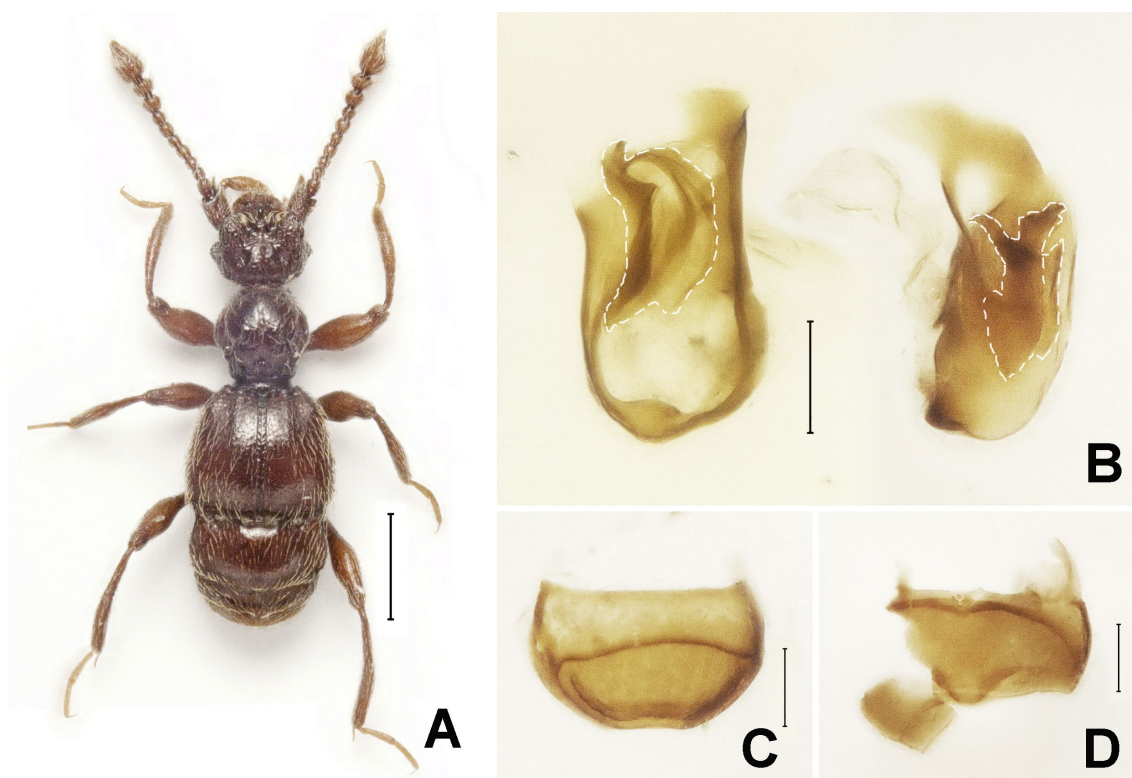


FIGURE 4. *Petaloscapus morimotoi* sp. nov. A, habitus, male; B, male genitalia in dorsal (left) and lateral (right) views; C, male tergite VIII; D, male sternite VIII. Scale for A = 0.5 mm; scale for B, C, D = 0.1 mm.

nearly quadrate, widest at just behind eyes; clypeus transverse, arcuate on anterior margin, with a small, well-projected, arrowhead-like nodule at center, a pair of small group of setae, a pair of very small trichomes at base of nodule; frons transverse, with a pair of large, well-projected antennal tubercles covered with coarse punctures on both sides, concave in median part; vertex slightly convex, with a pair of large, round dorsal tentorial pits, a short, indistinct median carina at base; postgenae rounded. Eyes well projected, hemispherical, each composed of about 20 facets. Antennae 1.00 mm in length, elongate, robust (Fig. 5D); antennomere 1 longer than wide, subcylindrical, with large, internally flattened projection at inner apex; relative length (width) to the width of antennomere 1 of each segment from I to XI: 1.9 (1.0): 0.8 (0.6); 0.5 (0.5); 0.5 (0.5); 0.6 (0.5); 0.4 (0.5); 0.6 (0.6): 0.5 (0.5); 0.7 (0.7); 0.7 (0.9): 1.8 (1.0). Maxillary palpi short, each elongate; palpomere 4 largest, fusiform.

Pronotum (Fig. 5A, F) slightly wider than long, subspherical, rounded on both lateral sides,

roundly convex, normally pubescent on dorsal side, with a pair of small hook-like spines at just behind middle, with a pair of large lateral foveae at posterior 1/3, with a pair of small lateral denticles at posterior 1/4, four small foveae just before posterior margin. Legs elongate, stout; mid femora each with a short spine on posterior side at basal 1/4. Elytra large, wider than long, broadened posteriorly, nearly trapezoidal, each elytron weakly convex, with three basal foveae, almost straight broad adsutural carina along median line, short, narrow longitudinal groove in basal 2/5. Hind wings reduced.

Abdomen large, stout, wider than long, narrowed posteriorly in posterior 1/2; tergite IV largest, transverse, slightly broadened posteriorly, weakly convex on dorsal surface, with a pair of small triangular paratergites on both lateral sides; tergite VIII (Fig. 4C) small, transverse, nearly trapezoid; sternite VIII (Fig. 4D) semicircular. Male genitalia longer than wide, asymmetrical; median lobe large, strongly sclerotized in lateral, ventral part, nearly membranous on dorsal side, with a large,

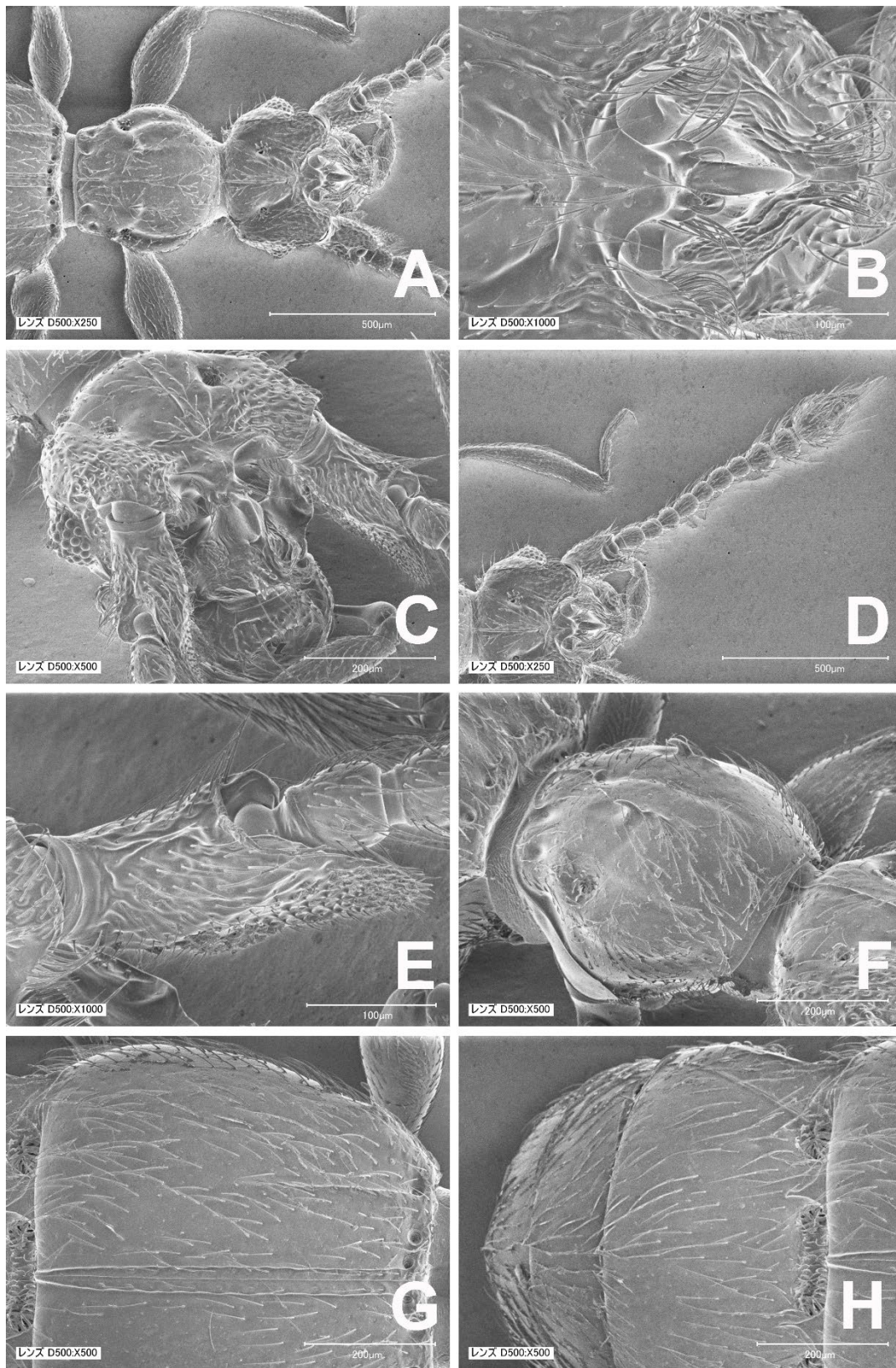


FIGURE 5. SEM photos of *Petaloscopus morimotoi* sp. nov. A, head and pronotum in dorsal view; B, clypeus in dorsal view; C, head in frontal view; D, antenna in dorsal view; E, antennomere 1 in internal view; F, pronotum in lateral view; G, elytra in dorsal view; H, abdomen in dorsal view.

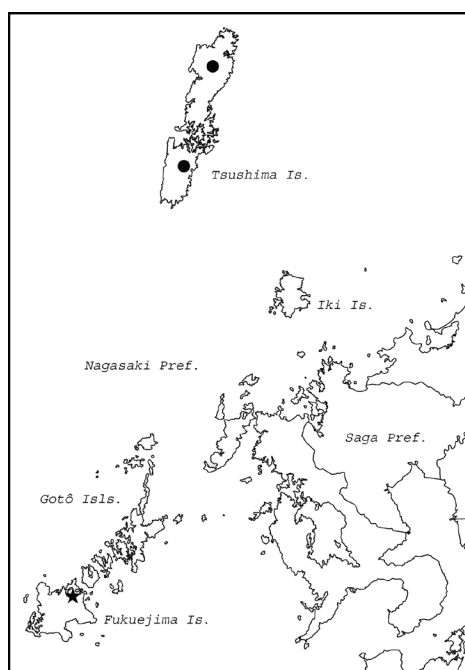


FIGURE 6. A map of distributional points of *Petaloscapus hirashimai* sp. nov. (black circles) and *P. morimotoi* sp. nov. (black star).

lamellar projection at apical part on left side in ventral view (right side in Fig. 4B-left); endophallus (shown in Fig. 1C by white broken line) composed of two elongate sclerite, right (left in Fig. 4B-left) sclerite twisted near middle in ventral view, left (right in Fig. 4B-left) sclerite arcuately curved in apical part in ventral view.

Female unknown.

Distribution. Fukuejima Is. (Goto Isls., Nagasaki Pref.) (Fig. 6).

Remarks. This new species and the former species are easily separated by the other *Petaloscapus* species by having the very small, narrow and well-projected nodule on the clypeus. This species differs from the former species by

the antennomere 1 with long projection on the inner apex and the subspherical pronotum with a pair of hook-like spines just behind the middle.

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