

Two New Species of the Ant Genus *Probolomyrmex* (Hymenoptera, Formicidae) from Japan¹⁾

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Abstract Two new species of the ant genus *Probolomyrmex*, *P. okinawensis* and *P. longinodus*, are described and illustrated from the Ryukyus, Japan.

The genus *Probolomyrmex* is one of the rare ants belonging to the subfamily Ponerinae. The genus is characteristic in having the anteriorly produced fronto-clypeal region which covers small mandibles, the exposed antennal insertions which are separated by the thin vertical lamella, the slender trunk which lacks any sutures dorsally. TAYLOR (1965) revised the genus and listed 9 species from the world. Later, BROWN (1975) described 2 species and listed 10 species with 2 additional synonyms. TANAKA (1974) described 1 species from Malaysia which was overlooked by BROWN. Thus, the genus is represented by 11 species: 2 from the Neotropical, 3 from the Ethiopian and 6 from the Indo-Australian Regions.

In Japan, ONOYAMA (1976) reported an undetermined species from Okinawa Island, the Ryukyus. OGATA (1987) gave an illustration of *Probolomyrmex* sp. from Ishigaki Island, the Ryukyus, and stated the occurrence of two species in the Ryukyus.

In the course of our study on the ant fauna of Japan, we were able to examine the specimens which ONOYAMA (1976) mentioned, and additional ones from Okinawa Island. As the result, we recognized two species in the Ryukyus and confirmed that both are new to science. In the present paper, these two new species, *Probolomyrmex okinawensis* and *P. longinodus* are described and illustrated.

Measurements, indices and their abbreviations used in this paper are listed below, which follow those in TAYLOR (1965) and BROWN (1975) (generally L means

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maximum length, W means maximum width): head length (HL); head width (HW); scape length (SL); cephalic index (CI: $HW \times 100/HL$); scape index (SI: $SL \times 100/HW$); WEBER's length of trunk (WL); pronotal width (PW) — workers only; mesonotal width (MW) — queens only; petiolar node width (PNW); petiolar node index (PNI: $PNW \times 100/PW$) — workers only; petiole height (petiole H); petiolar node length (PNL); lateral petiolar index (LPI: $PNL \times 100/\text{petiole H}$); total length (TL).

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Probolomyrmex okinawensis n. sp.

(Figs. 1-5)

Worker. HL 0.50–0.53 mm; HW 0.33–0.35 mm; SL 0.30–0.33 mm; CI 65–68; SI 92–93; WL 0.65–0.70 mm; PW 0.25 mm; PNW 0.15 mm; PNI 60; petiolar H 0.22–0.23 mm; PNL 0.20–0.21 mm; LPI 89–94; TL 1.9–2.0 mm. (Three individuals were measured.)

Smaller species. Head with convex sides and shallowly concave occipital border, posterolateral corners rounded. Mandibles small, covered by frontoclypeal projection, elongate triangular, each with a larger acute apical tooth followed by a series of four small denticles. Labio-maxillary complex not dissected. Antennae 12-segmented; scapes short, not reaching the middle of head length; 2nd antennal segment longer than broad, $1.5 \times$ as long as broad; 3rd to 11th each broader than long; apical segment $1.5 \times$ as long as broad, slightly longer than three preceding segments together. Eyes absent.

General form of trunk and petiole as in Fig. 2. Dorsal outline of trunk straight; posterolateral corners of propodeum pronounced, forming blunt angles; posterior declivity of propodeum strongly concave in dorsal view; dorsal sutures of trunk absent. Legs long; middle and hind tibiae each with a distinct pectinate spur, but lacking smaller simple spur. Petiole including subpetiolar process higher than long; anterior portion bending to form convex anterior face and arched dorsal face; posterior face almost vertical and marginate laterally; posterodorsal margin transversely straight in dorsal view. Subpetiolar process developed; anteroventral portion distinctly projected, with rounded corner; posteroventral portion forming obtuse angle without acute tooth. Anterior margin of first gastric segment rounded in dorsal view; second gastric tergum excluding acrotergite about $0.8 \times$ as long as first one; sting well developed.

Head, trunk, petiole and gaster shagreened, with overlying punctures; antennal

scapes and legs slightly less so. Pilosity reduced. Color reddish brown.

Female (dealated). HL 0.54–0.56 mm; HW 0.36–0.38 mm; SL 0.32 mm; CI 66.7–67.9; SI 84.2–88.9; WL 0.70–0.72 mm; MW 0.26 mm; PNW 0.16–0.18 mm; petiolar H 0.28 mm; PNL 0.22 mm; LPI 78.6; TL 1.7–1.8 mm. (Two individuals were measured.)

Posterior margin of head straight. Mandibles with one large apical, one sub-apical and 3 minute teeth. Labio-maxillary complex not dissected. Antennal scapes exceeding beyond the level of eyes, but not reaching anterior ocellus.

Eyes large but not convex, situated anterior to the middle of sides of head; its greatest diameter ca. 0.08 mm in length. Ocelli distinct but less convex. General form and the remainder of head like those of worker.

Trunk large and robust. Pronotum not overhung by mesoscutum. Mesoscutum and mesoscutellum gently arched above; notauli absent, parapsidal furrows weakly developed on mesoscutum; mesoscutum long, more than twice as long as mesoscutellum; mesepisternum with oblique furrow; epimeral lobe absent. Metanotum narrow but distinct, not overhung by mesoscutellum. Propodeum with rounded dorsal face and concave posterior face which bears lateral margination as in worker. Legs, petiole and gaster like those of worker but more massive. Surface sculpture, pilosity and body color as in worker.

Male. Unknown.

Holotype: Worker, Chibana, Okinawa-hontou Is., Ryukyus, 19. iii. 1983, T. MIZUKAMI leg. (Type No. 2601, Kyushu University). Paratypes: 4 workers (from the same nest as holotype); 1 female (dealated) and 1 worker, Nakasone, Okinawa-hontou Is., 20. xi. 1975, T. ABE leg.; 1 female (dealated), Nakijinjoushi, Okinawa-hontou Is., 7. iii. 1984, K. ONOYAMA leg.

Remarks. This species is similar to *P. salomonis* TAYLOR from the Solomon Isls. and *P. greavesi* TAYLOR from East Australia, in having the shorter petiolar node and the shorter antennal scapes. However, it is distinguished from them by the shape of the subpetiolar process which bears distinct anterior projection but lacks posterior tooth. This species corresponds to *Probolomyrmex* sp. of ONOYAMA (1976).

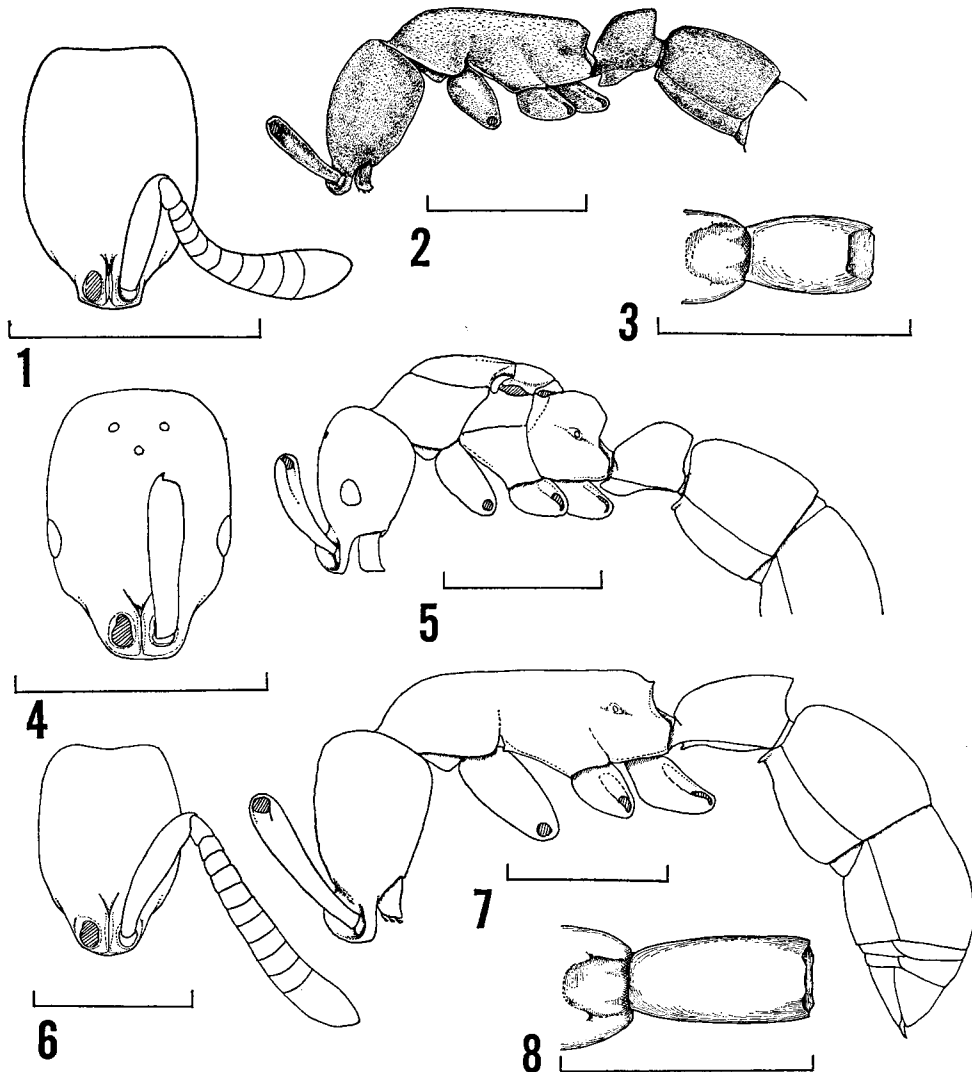
According to Mr. MIZUKAMI (pers. comm.), the colony collected by him was found under a stone on the floor of evergreen forest.

Probolomyrmex longinodus n. sp.

(Figs. 6–8)

Worker. HL 0.66 mm; HW 0.44 mm; SL 0.51 mm; CI 66.7; SI 117.1; WL 0.90 mm; PW 0.34 mm; PNW 0.19 mm; PNI 55.6; petiolar H 0.25 mm; PNL 0.36 mm; LPI 145; TL ca. 2.6 mm.

Smaller species. Head longer than broad with shallowly concave posterior margin and slightly convex sides in full face view. Mandibles small, covered by



Figs. 1-8. — 1-5. *Probolomyrmex okinawensis* n. sp.; 1, worker, head, frontal view; 2, worker, lateral view; 3, worker, petiole, dorsal view; 4, female, head, frontal view; 5, female, lateral view. — 6-8. *Probolomyrmex longinodus* n. sp.; 6, worker, head, frontal view; 7, worker, lateral view; 8, worker, petiole, dorsal view.

fronto-clypeal projection. Mouth parts not dissected, but at least one acute apical tooth of masticatory margin and short setae on mandible are recognizable. Antennae 12-segmented; scapes reaching posterior 1/4 of head length; 2nd and 3rd antennal segments each longer than broad, about $1.2\times$ as long as broad; 4th to 11th segments each broader than long; apical segment large, almost as long as three preceding segments together. Eyes absent.

General form of trunk and petiole as in Fig. 7. Trunk slender, with arched node, without any sutures dorsally; dorsal outline of trunk straight. Propodeum marginate posteriorly, with a pair of small dentiform projections posterodorsally; posterior declivity concave. Legs long; middle and hind tibiae each with a distinct pectinate spur, but lacking smaller simple spur; claws small and simple. Petiole narrow, distinctly longer than high, gently curved anteriorly and abruptly descent posteriorly; posterior face slightly concave and marginate; posterodorsal margin transversely straight in dorsal view; posterolateral margin slightly concave in lateral view; subpetiolar process low, with small anterior projection and concave ventral edge, but not forming posteroventral corner. Anterior portion of first gastric sternum strongly marginate; second gastric tergum excluding acrotergite, as long as first one.

Body surface finely shagreened, with overlying punctures, lacking distinct standing hairs; color reddish brown.

Female and male. Unknown.

Holotype: Worker, Yonehara, Ishigaki Is., Ryukyus, 15. iii. 1984, Y. FUKUMOTO leg. (Type No. 2602, Kyushu University).

Remarks. This species is easily distinguished from another Japanese species *P. okinawensis* by the relatively large size (HW > 0.4 mm in *longinodus*; HW < 0.4 in *okinawensis*), the longer scapes (exceeding beyond the middle of head in *longinodus*; not reaching the middle of head in *okinawensis*) and the longer petiole (longer than high in *longinodus*; higher than long in *okinawensis*). Rather this species is similar to *P. dammermani* WHEELER from Java and the Philippines, *procne* BROWN from South India and *P. watanabei* TANAKA from Malaysia, in having the elongate petiolar node and the low subpetiolar process. But it is distinguished from *dammermani* by more angulate propodeal teeth and more elongate petiolar node (longer than PW in *longinodus*; shorter than PW in *dammermani*), and from *procne* and *watanabei* by the transversely straight posterodorsal margin of petiolar node (concave in *procne* and convex in *watanabei*). This species corresponds to that figured as *Probolomyrmex* sp. in OGATA (1987).

This species is known only from the holotype worker, which was collected on the floor of evergreen forest by FUKUMOTO.

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