

Taxonomic Studies of the Japanese Formicidae, Part 5. Genus *Paratrechina* Motschoulsky

Mamoru TERAYAMA*

Laboratory of Applied Entomology, Faculty of Agriculture, The University of
Tokyo, 1-1-1, Yayoi, Bunkyo-ku, Tokyo, 113-0032 Japan

Abstract. Six new species of the genus *Paratrechina* are described and illustrated: *P. otome* and *P. yaeyamensis* from the Yaeyama Is., *P. yambaru* from Okinawa I., *P. ryukyuensis* from the Ryukyus, *P. ogasawarensis* from the Ogasawara Is. and *P. nubatama* sp. nov. from Shikoku and Amami-osima I. *Paratrechina amia* (FOREL) stat. nov. is recorded from Shikoku, Kyushu, the Ogasawara Is., and the Ryukyus. A key to the Japanese species of this genus is presented.

Introduction

The genus *Paratrechina* MOTSCHOULSKY is distributed almost worldwide, and comprises about 110 described species (BOLTON, 1995a). *Paratrechina* species nest in dead branches, leaf litter, decaying stumps and in the soil. They forage on trees and grasses and in leaf litter, and feed mainly on liquids, such as flower nectar.

Among four species mentioned by ONOYAMA & MORISITA (1991), three had scientific names: *P. flavipes* (Fr. SMITH), *P. sakurae* (ITO) and *P. longicornis* (LATREILLE). In this paper I describe the remaining one and newly discovered six species. Measurements and indices used in the paper followed in TERAYAMA & HASHIMOTO (1996). The holotypers are preserved in the collection of the Museum of Nature and Human Activities, Sanda, Hyogo, Japan.

Genus *Paratrechina* MOTSCHOULSKY

[Japanese name: Ameiro-ari-zoku]

Paratrechina MOTSCHOULSKY, 1863, *Bull. Soc. Imp. Nat. Moscou*, **36**: 16.

Type species: *Paratrechina currens* MOTSCHOULSKY, 1863

[Junior synonym of *longicornis*; EMERY, 1892.]

Nylanderia EMERY, 1906, *Ann. Soc. Ent. Belg.*, **50**: 133.

Type species: *Formica vividula* NYLANDER, 1864

[As subgenus of *Prenolepis*; synonymized by TRAGER, 1984.]

Paraparatrechina DONISTHORPE, 1947, *Ann. Mag. Nat. hist.*, **14**: 192.

*Correspondence: M.TERAYAMA c/o MATSUMOTO's Laboratory, Department of Biology, The University of Tokyo, Komaba, Meguro-ku, Tokyo, 153-8901 Japan

Type species: *Paratrechina pallida* DONISTHORPE, 1947

[As subgenus of *Paratrechina*; synonymized by TRAGER, 1984.]

Andragathus EMERY, 1922, *Ann. Hist. Nat. Mus. Nat. Hung.*, **19**:111.

Type species: *Andragathus huberechti* EMERY, 1922

[Synonymized by AGOSTI & BOLTON, 1990a.]

Diagnosis. Small ants: total length of workers around 1.5 - 3.5 mm. Eye medium size, situated anteriorly on head capsule. Ocelli obscure or absent. Antenna 12-segmented. Antennal scrobe present near posterior margin of clypeus. Scape exceeding occipital margin, often longer than head length. Masticatory margin of mandible with 5 or 6 teeth. Labial and maxillary palpi long, palpal formula 6 : 4. Male genitalia large, cerci lacking.

Japanese species. *P. amia* (FOREL) stat. nov., *P. flavipes* (Fr. SMITH), *P. longicornis* (LATREILLE), *P. nubatama* sp. nov., *P. ogasawarensis* sp. nov., *P. otome* sp. nov., *P. ryukyuensis* sp. nov., *P. sakurae* (ITO), *P. yaeyamensis* sp. nov., *P. yambaru* sp. nov.

Key to the Japanese species of *Paratrechina*

- 1 Antennal scape relatively long, exceeding posterior margin of head by more than half its length; eye large, the distance from its posterior margin to posterior margin of head 1-1.5 times the length of eye 2
- Antennal scape relatively short, exceeding posterior margin of head by less than half its length; eye smaller, the distance from its posterior margin to posterior margin of head about 3 times the length of eye 4
- 2 Femur and tibia of hind leg with setae; mandible with 5 teeth *P. longicornis* (LATREILLE)
- Femur and tibia of hind leg without setae; mandible with 6 teeth 3
- 3 Head and lateral surface of mesosoma pale brown, and dorsum of mesosoma and legs brownish white; dorsal surface of mesosoma smooth and shining *P. otome* sp. nov.
- Head, mesosoma, and legs dark brown; dorsal surface of mesosoma microreticulate *P. yambaru* sp. nov.
- 4 Flagellar segments 2 to 4 each longer than wide; antennal scape with several subdecumbent hairs; propodeum lacking setae 5
- Flagellar segments 2 to 4 each wider than long; antennal scape without subdecumbent hairs; propodeum with a pair of setae

- *P. sakurae* (ITO)
- 5 Pronotal dorsum with two pairs of setae; antennal scape with less than 10 suberect hairs in full face view 6
- Pronotal dorsum with more than four pairs of setae; antennal scape with more than 15 suberect hairs in full face view 9
- 6 Anterior half of 2nd and 3rd gastral tergites yellowish brown, and posterior half of those tergites dark brown *P. yaeyamensis* sp. nov.
- Second and 3rd gastral tergites concolorous blackish brown 7
- 7 Suberect hairs on antennal scape relatively long, which are longer than the width of scape; head and mesosoma brown *P. ryukyuensis* sp. nov.
- Suberect hairs on antennal scape shorter, which are shorter than the width of scape; head and mesosoma blackish brown (*P. nubatama*) or yellow to yellowish brown (*P. flavipes*) 8
- 8 Head, mesosoma and gaster concolorous blackish brown; antennal scape with moderately abundant subdecumbent pubescences *P. nubatama* sp. nov.
- Mesosoma usually yellow to yellowish brown, and lighter than head and gaster; subdecumbent pubescences on scape shorter and sparser *P. flavipes* (Fr. SMITH)
- 9 Body dark to blackish brown; mesonotal dorsum with more than two pairs of erect hairs *P. amia* (FOREL) stat. nov.
- Head and mesosoma yellow to yellowish brown, and gaster dark brown; mesonotal dorsum with two pairs of erect hairs *P. ogasawarensis* sp. nov.

***Paratrechina nubatama* sp. nov.**

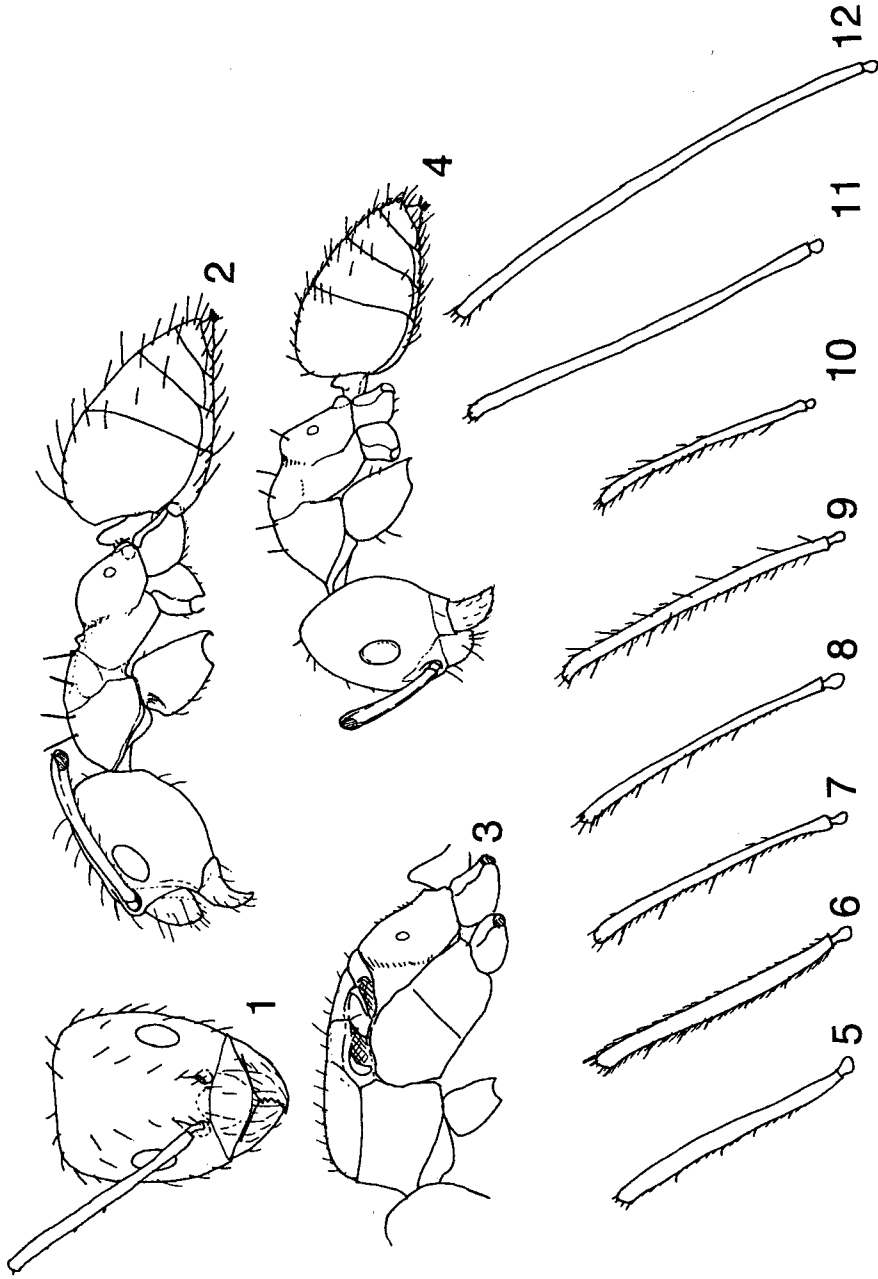
[Japanese name: Kuro-sakura-ari]

(Figs. 6, 14, 15)

Paratrechina sp. (nr *flavipes*): MORISITA, 1985, *Ari*, 13: 5.

Paratrechina sp. 7: TERAYAMA & KIHARA, 1994, *Distribution Maps of Japanese Ants*: 34.

Diagnosis. Total length of workers around 2 mm. Body color uniform blackish brown; antennal scape and legs yellowish brown. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by 2/5 its length; with short suberect hairs which are shorter than the width of scape; subdecumbent pubescences relatively long and



Figs. 1-12. Japanese species of *Paratrechina* — 1, *P. flavipes* (Fr. SMITH), worker, head in full face view; 2, ditto, body in profile; 3, *P. flavipes* (Fr. SMITH), queen, mesosoma in profile; 4, *P. sakurazae* (ITO), worker, in profile; 5, antennal scape, worker, *P. flavipes* (Fr. SMITH); 6, ditto, *P. nubatama* sp. nov.; 7, ditto, *P. ryukyuenensis* sp. nov.; 8, ditto, *P. yaeyamensis* sp. nov.; 9, ditto, *P. amia* (FOREL) stat. nov.; 10, ditto, *P. ogasawarenensis* sp. nov.; 11, ditto, *P. otome* sp. nov.; 12, ditto, *P. longicornis* (LATREILLE).

moderately abundant. Antennal 3rd to 5th segments each longer than wide. Eye moderate in size. Pronotal dorsum convex in profile; mesonotal dorsum straight; metanotal groove incised dorsally. Head and gaster with erect hairs. Pronotal dorsum with four long setae, mesonotal dorsum with four, and none on propodeum. Hind femur and tibia with suberect hairs.

Queens with black coloration; mesonotum thin anteriorly, posterior margin moderately convex in profile.

Description of holotype. (Worker). HL 0.60 mm; HW (including eyes) 0.50 mm; SL 0.63 mm; CI 83; SI 125; WL 0.63 mm; AW 0.31 mm; TL 1.8 mm.

Head 1.20 times as long as wide with even convex posterior margin and round posterolateral corners in full face view. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by $2/5$ its length, with short suberect hairs which are shorter than the width of scape; subdecumbent pubescences relatively long and moderately abundant. Funicular segments each slightly longer than wide. Eye 0.16 mm in maximum diameter.

Pronotal dorsum convex in profile; mesonotal dorsum straight; metanotal groove incised dorsally.

Head and gaster with erect hairs. Pronotal dorsum with four long setae which are ca. 0.15 mm long, mesonotal dorsum with four, the length ca. 0.15 mm, and none on propodeum. Hind femur and tibiae with suberect hairs.

Body color uniform blackish brown; antennal scape and legs yellowish brown.

Queen. HL 0.78 mm; HW (including eyes) 0.80 mm; SL 0.80 mm; CI 103; SI 100; WL 1.39 mm; TL 4.5 mm.

Head as long as wide, with straight posterior margin in full face view. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by $2/5$ its length. Eye 0.24 mm in maximum diameter. Ocelli forming an obtuse triangle.

Dorsum of mesosoma straight in profile; mesonotum thin, anterodorsal corner not angulate; posterior margin of propodeum moderately convex; mesoscutum in dorsal view 0.95 mm in maximum width.

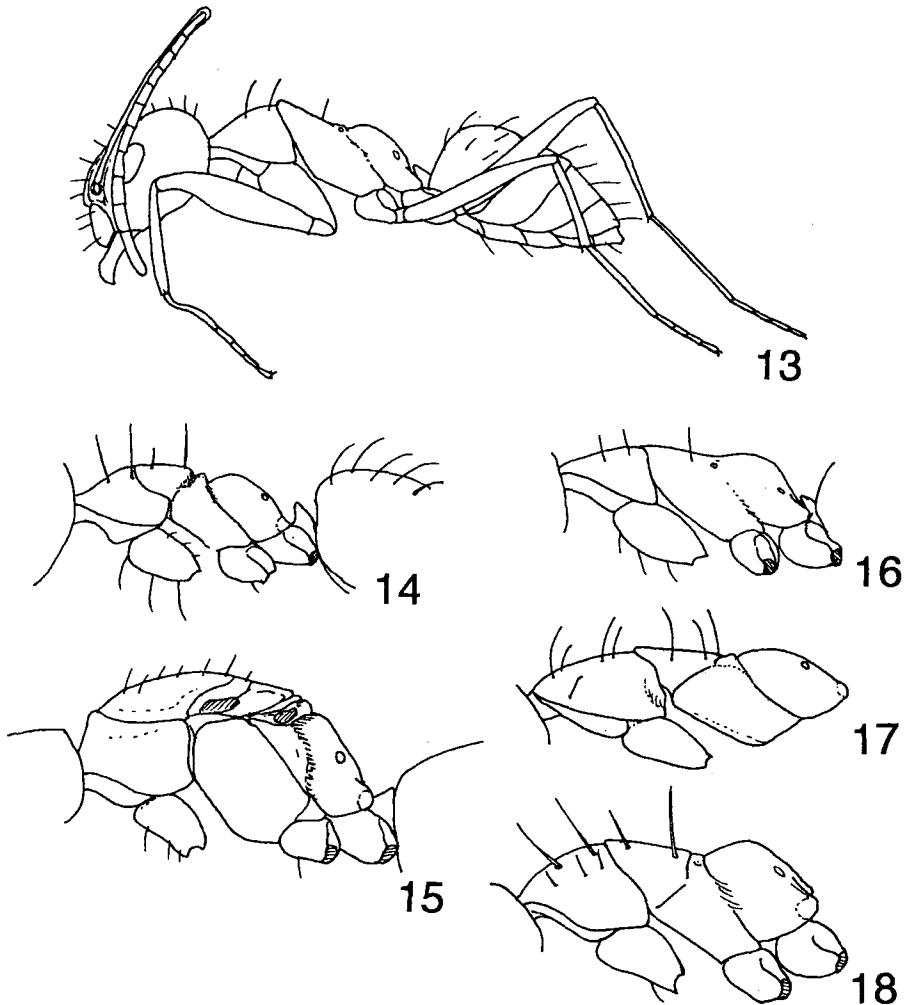
Body concolorous blackish brown; mandible, antenna and legs yellowish brown.

Holotype. Worker, Cape Muroto, Kochi Pref., 18. V. 1987, M. MORISITA leg.

Paratypes. 1 worker, same data as holotype; 1 worker, 1 queen, Godaisan, Kochi-shi, Kochi Pref., 14. V. 1987, M. MORISITA leg.

Distribution. Shikoku (Kochi Pref.), Amami-oshima (MORISITA, 1985).

Remarks. This species resembles *P. flavipes*, *P. ryukyuensis* sp. nov., and *P. yaeyamensis* sp. nov. However, it is distinguished from the latter in workers by the dark coloration of body, and shorter suberect hairs and moderately abundant pubescences of antennal scapes, and in queens by the dark coloration and thin mesonotum in profile.



Figs. 13-18. Japanese species of *Paratrechina* — 13, *P. otome* sp. nov., worker, body in profile; 14, *P. nubatama* sp. nov., worker, mesosoma in profile; 15, *ditto*, queen, mesosoma in profile; 16, *P. yambaru* sp. nov., worker, mesosoma in profile; 17, *P. longicornis* (LATREILLE), worker, mesosoma in profile; 18, *P. ogasawarensis* sp. nov., worker, mesosoma in profile.

***Paratrechina ogasawarensis* sp. nov.**

[Japanese name: Ogasawara-ameiro-ari]

(Figs. 10, 18)

Paratrechina sp.: SHINDO, 1979, *Nature and Insects*, 14 (10) : 28.*Paratrechina* sp. 9: TERAYAMA & KIHARA, 1994, *Distribution Maps of Japanese Ants*: 34.

Diagnosis. Total length of workers around 2-2.5 mm. Head and mesosoma yellowish brown; gaster dark brown. Antennal scape with more than 15 suberect hairs in full face view. Pronotal dorsum with two pairs of long setae and three pairs of short ones; mesonotal dorsum with two pairs of long setae; none of propodeal dorsum. Very similar to *P. amia* stat. nov.: head and mesosoma lighter to that of *amia* (dark to blackish brown); mesonotal dorsum with two pairs of setae (more than two pairs in *amia*).

Description of holotype. Worker. HL 0.55 mm; HW 0.49 mm; SL 0.65 mm; CI 89; SI 133; WL 0.73 mm; PW 0.35 mm; TL 2.1 mm.

Head 1.12 times as long as wide, with convex posterior margin and round posterolateral corners in full face view. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by $2/5$ its length, with more than 15 suberect hairs; those length subequal to the width of scape; subdecumbent pubescences short, moderately abundant. Antennal 3rd to 5th segments each longer than wide. Eye 0.14 mm in diameter.

Pro- and mesonotal dorsum convex in profile; metanotal groove incised; posterodorsal corner of propodeum convex. Hind femur and tibia 0.65 and 0.60 mm long, respectively.

Pronotal dorsum with two pairs of long setae and three pairs of short ones; the longest seta 0.18 mm; mesonotal dorsum with two pairs of long setae which are ca. 0.18 mm long; none on propodeal dorsum; hind tibiae with suberect hairs.

Head and mesosoma yellowish brown; gaster dark brown.

Holotype. Worker, Chichi-jima, Ogasawara Is., Tokyo, VII. 1977, M. SHINDO leg.

Paratypes. 4 workers, same data as holotype.

Distribution. Ogasawara Is.

Remarks. This species is very similar to *P. amia* stat. nov.: head and mesosoma lighter to that of *amia* (dark to blackish brown); mesonotal dorsum with two pairs of setae (more than two pairs in *amia*). The species is found in dry habitats and nests in the soil and under stone.

Paratrechina otome sp. nov.

[Japanese name: Hiyowa-ameiro-ari]

(Figs. 11, 13)

Paratrechina sp. 4: ONOYAMA & MORISITA, 1991, In MYMECOLOGICAL. SOC. JAPAN (ed.), *A Guide for the Identification of Japanese Ants (II)*: 22.

Paratrechina sp. 4: TERAYAMA & KIHARA, 1994, *Distribution Maps of Japanese Ants*: 34.

Diagnosis. Total length of workers around 2 mm. Head and lateral surface of mesosoma pale brown; antennal scape long, exceeding posterior margin of head by half its length, and without erect hairs; dorsum of mesosoma, petiole and legs brownish white; gaster brown.

Description of holotype. Worker. HL 0.63 mm; HW 0.49 mm; SL 0.93 mm; CI 78; SI 190; WL 0.70 mm; PW 0.35 mm; TL 2.1 mm.

Head longer than wide, with convex posterior margin in full face view. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by half its length; without erect hairs. Eye 0.15 mm in diameter; maximum eye length less than the 1/4 head length. Ocelli distinct.

Mesosoma relatively long; mesonotal dorsum straight in profile; metanotal groove very weakly incised; propodeal dorsum convex. Legs long; hind femur and tibia 0.90 mm and 0.80 mm long, respectively.

Head with sparse erect hairs. Pronotal dorsum with 2 pairs of setae; anteriormost seta 0.25 mm long; mesonotal dorsum with a pair of setae which are ca. 0.15 mm long; propodeum without setae. Gaster with erect or suberect hairs which are moderately spaced. Hind femur and tibia without erect hairs.

Head and lateral surface of mesosoma pale brown; dorsum of mesosoma, petiole and legs brownish white; gaster brown. Body cuticle thin, easily collapsed.

Holotype. Worker, Iriomote-jima, Yaeyama Is., Okinawa Pref., 27. III. 1991, M. TERAYAMA leg.

Paratypes. 2 workers, same data as holotype.

Distribution. Yaeyama Is. (Ishigaki-jima, Iriomote-jima).

Remarks. This species resembles *P. longicornis* and *P. yambaru* sp. nov., but is easily distinguished from *longicornis* by the shorter antennal scapes and 3 pairs of setae on the mesosomal dorsum, and from *yambaru* by the distinctive coloration. This species is found in grasslands and forest margins.

Paratrechina ryukyuensis sp. nov.
 [Japanese name: Ryūkyū-ameiro-ari]
 (Fig. 7)

Paratrechina sp. 6: TERAYAMA & KIHARA, 1994, *Distribution Maps of Japanese Ants*: 34.

Diagnosis. Total length of workers around 2 mm. Head, mesosoma, and 1st gastral tergite brown; 2nd to terminal segments dark brown. Antennal scape with moderately abundant subdecumbent pubescences and with several suberect hairs; the erect hairs longer than the width of scape. Very similar to *P. flavipes* and *P. yaeyamensis*: mesosoma darker to that of *P. flavipes* (usually yellow to yellowish brown, and lighter than head and gaster), and gaster uniformly dark brown excluding 1st tergite brown (2nd and 3rd tergites each with yellowish brown anterior half and dark brown posterior half). Erect hairs on antennal scape longer than that of *P. flavipes*.

Queens with head and mesosoma brown, and gaster largely uniform dark brown.

Description of holotype. (Worker). HL 0.59 mm; HW 0.58 mm; SL 0.63 mm; CI 98; SI 109; WL 0.73 mm; PW 0.34 mm; TL 2.3 mm.

Head as long as wide, with weakly convex sides and weakly convex posterior margin in full face view; posterolateral corner forming a dull angle. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by $2/5$ its length, with moderately abundant subdecumbent pubescences and several erect hairs; the erect hairs longer than the width of scape. Antennal 3rd to 5th segments each slightly longer than wide.

Pro- and mesonotal dorsum convex in profile; metanotal groove incised dorsally; propodeal dorsum convex. Hind femur and tibia 0.65 and 0.55 mm, respectively.

Head with moderately abundant erect hairs. Pronotal dorsum with two pairs of setae; anterior one 0.18 mm long; mesonotal dorsum with a pair of setae which are ca. 0.13 mm long; propodeum without setae. Gaster with moderately abundant suberect hairs; hind tibia with suberect hairs.

Head, mesosoma, and 1st gastral tergite brown; 2nd to terminal segments dark brown.

Queen. HL 0.75 mm; HW 0.75 mm; SL 0.81 mm; CI 100; SI 108; WL 1.30 mm; TL 3.6 mm.

Head as long as wide, with straight posterior margin in full face view. Antennal scape exceeding posterior margin of head by $2/5$ its length. Eye 0.20 mm in diameter. Ocelli forming an obtuse triangle.

Dorsum of mesosoma straight in profile; metanotum thick, anterodorsal corner dully angulate; posterior margin of propodeum very weakly convex and abruptly declivitous; mesoscutum 0.90 mm in maximum width.

Head and mesosoma brown, and gaster largely uniform dark brown.

Holotype. Worker, Sueyoshi, Naha-shi, Okinawa Pref., 13. III. 1984, K. YAMAUCHI leg.

Paratypes. 2 workers, 1 queen, same data as holotype; 15 workers, 1 queen, Yuwan-dake, Amami-oshima, Kagoshima Pref., 1. VII. 1983, M. TERAYAMA leg.; 11 workers, Omoto-dake, Ishigaki-jima, Okinawa Pref., 16. VII. 1984, M. TERAYAMA leg.

Distribution. Nansei Is.

Remarks. This species is very similar to *P. flavipes* and *P. yaeyamensis* sp. nov.: mesosoma darker to that of *flavipes* (usually yellow to yellowish brown, and lighter than head and gaster), and gaster uniformly dark brown excluding 1st tergite brown (2nd and 3rd tergites each with yellowish brown anterior half and dark brown posterior half). The species nests in leaf litter, decaying wood, and in the soil of grasslands and forests.

***Paratrechina yaeyamensis* sp. nov.**

[Japanese name: Yaeyama-ameiro-ari]

(Figs. 8, 19)

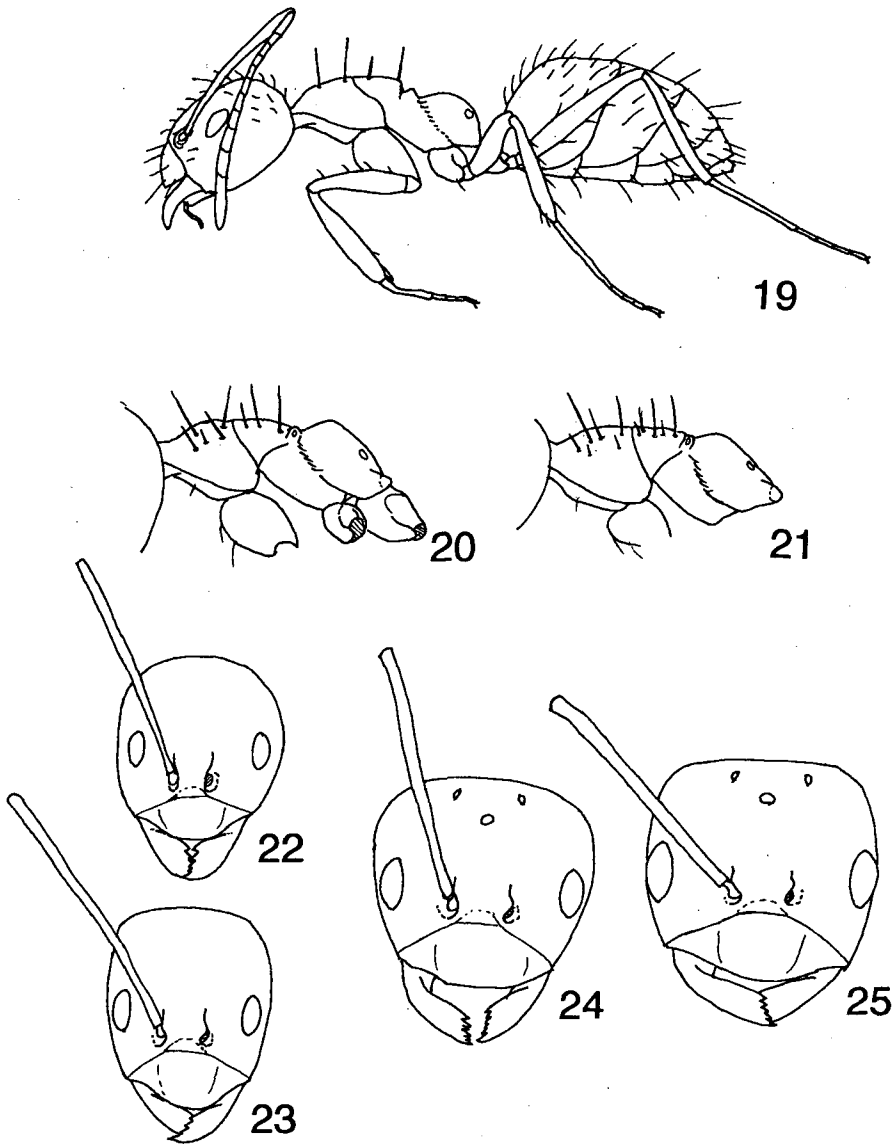
Paratrechina sp. 8: TERAYAMA & KIHARA, 1994, *Distribution Maps of Japanese Ants*: 34.

Diagnosis. Total length of workers around 2 mm. Head and mesosoma yellowish brown; 1st gastral tergite yellowish brown; anterior half of 2nd tergite and anterior 1/3 of 3rd gastral tergite yellowish brown, the rest of gaster dark brown; antenna and legs yellowish. Antennal scape with sparse subdecumbent pubescences and suberect hairs; the erect hairs longer than the width of scape. Pronotal dorsum with two pairs of setae; mesonotal dorsum with two pairs; none of propodeal dorsum.

Queens with head and mesosoma reddish brown; anterior half of each 1st to 3rd gastral tergites yellowish brown and posterior half of those tergites dark brown; 4th and 5th tergites dark brown.

Description of holotype. (Worker). HL 0.63 mm; HW 0.53 mm; SL 0.70 mm; CI 84; SI 133; WL 0.73 mm; PW 0.38 mm; TL 2.2 mm.

Head 1.19 times as long as wide, with convex sides and almost straight posterior margin in full face view; posterolateral corner



Figs. 19-25. Japanese species of *Paratrechina* — 19, *P. yaeyamensis* sp. nov., worker, body in profile; 20, 21, *P. amia* (FOREL), worker, mesosoma in profile; 22, *P. yaeyamensis* sp. nov., worker, head in full face view; 23, *P. ryukyuensis* sp. nov., ditto; 24, *P. yaeyamensis*, sp. nov., queen, head in full face view; 25, *P. ryukyuensis* sp. nov., ditto.

rounded, not forming a dull angle. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by half its length, with sparse subdecumbent pubescences and erect hairs; the erect hairs longer than the width of scape; 3rd to 5th antennal segments each slightly longer than wide. Eye 0.14 mm in maximum diameter.

Pronotal dorsum convex in profile; mesonotal dorsum straight; metanotal groove incised; propodeal dorsum convex. Hind femur and

tibia 0.65 and 0.53 mm long, respectively.

Head with long erect hairs. Pronotal dorsum with two pairs of setae; the longest seta 0.15 mm long; mesonotal dorsum with two pairs of setae which are ca. 0.15 mm long; none of propodeal dorsum. Gaster with moderately abundant erect hairs.

Head and mesosoma yellowish brown; 1st gastral tergite yellowish brown; anterior half of 2nd tergite and anterior 1/3 of 3rd gastral tergite yellowish brown, the rest of gaster dark brown; antenna and legs yellowish.

Queen. HL 0.74 mm; HW 0.74 mm; SL 0.79 mm; CI 100; SI 107; WL 1.33 mm; TL 4.1 mm.

Head as long as wide, widest at behind eyes, with convex sides and straight posterior margin in full face view. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by half its length. Eye 0.20 mm in maximum diameter.

Dorsum of mesosoma straight; mesonotum thick, anterodorsal corner bluntly angulated; posterodorsal margin of propodeum weakly convex and abruptly deculvitous; mesoscutum in dorsal view 0.7 times as long as wide and 0.88 mm in maximum width.

Head and mesosoma reddish brown; anterior half of each 1st to 3rd gastral tergites yellowish brown and posterior half of those tergites dark brown; 4th and 5th tergites dark brown.

Holotype. Worker, Ishigaki-jima, Yaeyama Is., Okinawa Pref., 3. VIII. 1984, M. TERAYAMA leg.

Paratypes. 5 workers, 2 alate queens, same data as holotype; 3 workers, 1 queen, Yonaguni-jima, Yaeyama Is., Okinawa Pref., III. 1989, H. TAKAMINE leg.

Distribution. Yaeyama Is. (Ishigaki I., Iriomote I., Yonaguni I.).

Remarks. This species is distinguished from the other Japanese congeners in workers and queens by the coloration of gaster. This species nests in leaf litter, decaying wood, and in the soil of forests.

***Paratrechina yambaru* sp. nov.**

[Japanese name: Yanbaru-ameiro-ari]

(Fig. 16)

Diagnosis. Total length of workers around 1.5 mm. Head, mesosoma, and legs dark brown; antenna, dorsum of mesosoma, and gaster blackish brown. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by half its length; without hairs. Eye relatively small; maximum eye length less than the 1/4 head length. Ocelli distinct. Mesosoma relatively long; dorsum strongly microreticulate.

Metanotal groove not incised dorsally. Head and gaster with moderately abundant erect hairs. Pronotal dorsum with two pairs of setae. Mesonotal dorsum with a pair of setae. Propodeum, hind femur and tibia without erect hairs. Body cuticle thin, easily collapsed.

Description of holotype. Worker. HL 0.65 mm; HW 0.49 mm; SL 0.98 mm; CI 75; SI 200; WL 0.80 mm; PW 0.38 mm; TL 1.4 mm.

Head longer than wide, with convex posterior margin in full face view. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by half its length; without hairs. Eye relatively small, 0.19 mm in length; maximum eye length less than the $1/4$ head length. Ocelli distinct.

Mesosoma relatively long; dorsum strongly microreticulate. Metanotal groove not incised dorsally; propodeal dorsum weakly convex.

Head and gaster with moderately abundant erect hairs. Pronotal dorsum with two pairs of setae; the longest seta ca. 0.10 mm. Mesonotal dorsum with a pair of setae which are ca. 0.08 mm long. Propodeum, hind femur and tibia without erect hairs. Body cuticle thin, easily collapsed.

Head, mesosoma, and legs dark brown; antenna, dorsum of mesosoma and gaster blackish brown.

Holotype. Worker, Minamoto-gawa, Okinawa-jima, Okinawa Pref., 1. VII. 1995, H. TAKAMINE leg.

Paratypes. 9 workers, same data as holotype; 3 workers, Kunigami-son, Okinawa-jima, Okinawa Pref., 28. VII. 1996, K. YAMAUCHI leg.; 2 workers, Kunigami-son, Okinawa-jima, Okinawa Pref., 21. VIII. 1991, A. HIRAMINE leg.

Distribution. Northern part of Okinawa Island.

Remarks. This species resembles *P. otome* sp. nov., but is distinguished by its strongly microreticulate mesosoma and distinctive darker coloration. This species is restricted in the Okinawa Island and is found in grasslands and forest margins.

Paratrechina amia (FOREL) stat. nov.

[Japanese name: Kebuka-ameiro-ari]

(Figs. 20, 21)

Prenolepis (Nylanderia) bourbonica var. *amia* FOREL, 1913, *Arch. Naturg.*, 79(A) : 197.

Paratrechina (Nylanderia) bourbonica amia: EMERY, 1925, *In* WYTSMAN, M. P. (ed.), *Genera Insectorum*, fasc. 183: 219.

Paratrechina bourbonica: SHINDO, 1979, *Nature and Insects*, 14(10) : 28.

Paratrechina sp.: TERAYAMA et al., 1994, *Ari*, 18: 14.

Paratrechina sp. (nr. *bourbonica*): OGATA et al., 1994, *Ari*, 18: 21.

Paratrechina sp. 5: YAMANE et al., 1994, *The Ants of the Mainland of Kagoshima*: 156.

Paratrechina sp. 5: TERAYAMA & KIHARA, 1994, *Distribution Maps of Japanese Ants*: 33.

Diagnosis. Total length of workers around 2.5-3 mm. Body dark to blackish brown; legs dark brown excepting trochanters and tibiae brown. Mandible with 6 teeth. Antennal scape exceeding posterior margin of head by half its length, with relatively abundant erect hairs. Each funicular segments longer than wide. Eye moderately large. Mesosoma slightly longer than head length; pronotal dorsum convex in profile; mesonotal dorsum almost straight; metanotal groove deeply incised; propodeal dorsum convex. Head and gaster with abundant erect hairs. Pronotal dorsum with two pairs of long setae and 3-6 pairs of shorter ones; mesonotal dorsum with 3-6 pairs, and none on propodeum. Hind femur and tibia with erect or suberect hairs.

Specimens examined. **Japan** - 3 workers, Yuwan, Amami-oshima, Kagoshima Pref., 2. VII. 1983, M. TERAYAMA leg.; 3 workers, Yoronjima, Kagoshima Pref., 6. VIII. 1972, T. NAMBU leg.; 20 workers, Chibana, Okinawa-jima, Okinawa Pref., 29. XII. 1989, M. TERAYAMA leg.; 3 workers, Benoki, Okinawa-jima, Okinawa Pref., 22. VIII. 1991, A. HIRAMINE leg.; 8 workers, Ishigaki-jima, Okinawa Pref., 16. VII. 1984, M. TERAYAMA leg.; 2 workers, Shirahama, Iriomote-jima, Okinawa Pref., 12. VIII. 1979, M. TERAYAMA leg.; 9 workers, Kobama-jima, Yaeyama Is., Okinawa Pref., 11. V. 1984, K. YAMAUCHI leg.; 2 workers, Taketomijima, Yaeyama Is., Okinawa Pref., 18. VIII. 1978, M. TERAYAMA leg.; 5 workers, Yonaguni-jima, Yaeyama Is., Okinawa Pref., VIII. 1989, H. TAKAMINE leg.; 3 workers, Chichi-jima, Ogasawara Is., Tokyo, 15. XI. 1986, K. MASUKO leg. **Taiwan** - 10 workers, Nanshanchi, Nantou Hsien, 18. VIII. 1989, M. TERAYAMA leg.; 3 workers, Puli, Nantou Hsien, 26. III. 1989, M. TERAYAMA leg.; 3 workers, Huan-shan, 13. X. 1977, K. YAMAUCHI leg.; 2 workers, Songkang, Nantou Hsien, 11. X. 1977, K. YAMAUCHI leg.

Distribution. Honshu (Hiroshima Pref.), Kyushu, Yaku-shima I., Nansei Is., Ogasawara Is.; Taiwan.

Remarks. This species is most resembling *P. bourbonica* (FOREL) which is widely distributed in the tropics and often introduced from other countries by human commerce. TRAGER (1984) mentioned that the Taiwanese population is distinguished from *bourbonica* by the size, head width, pubescence and genital structure. I treat here the Taiwanese and Japanese population as distinct species from *bourbonica*. This species is

found in rather dry habitats and nests in leaf litter, decaying wood, and in the soil of grassland and forest margins. Common on the Nansei Islands.

Acknowledgments

I would like to thank Messrs. H. TAKAMINE (Naha-shi), S. KUBOTA (Tokyo), M. SHINDO (Tokyo), A. HIRAMINE (Osaka), K. KINOMURA (Gifu-shi) and Drs. K. YAMAUCHI (Gifu Univ.), K. MASUKO (Senshu Univ.) and the late Dr. M. MORISITA, for their kindness in offering valuable material. I am thankful to Drs. K. ONOYAMA (Obihiro Univ. Agri. & Veter. Med.) and K. OGATA (Kyushu Univ.) giving useful informations. Thanks are also due to Dr. R. W. TAYLOR (CSIRO, Australia) for his helping the improvement of several parts of the manuscript.

References

- AGOSTI, D. & B. BOLTON, 1990a. The identity of *Andragnathus*, a forgotten formicine ant genus (Hym., Formicidae). *Ent. Mon. Mag.*, **126**: 75-77.
- AGOSTI, D. & B. BOLTON, 1990b. New characters to differentiate the ant genera *Lasius* F. and *Formica* L. (Hymenoptera: Formicidae). *Ent. Gaz.*, **41**: 149-156.
- BOLTON, B., 1995a. A taxonomic and zoogeographical census of the extant ant taxa (Hymenoptera, Formicidae). *J. Nat. Hist.*, **29**: 1037-1056.
- BOLTON, B., 1995b. *A New General Catalogue of the Ants of the World*. 504 pp. Harvard University Press.
- DONISTHORPE, H., 1947. Some new ants from New Guinea. *Ann. Mag. Nat. Hist.*, **14**: 183-197.
- EMERY, C., 1906. Note sur *Prenolepis vividula* Nyl. et sur la classification des espèces du genre *Prenolepis*. *Ann. Soc. Ent. Belg.*, **50**: 130-134.
- EMERY, C., 1922. Quelques fourmis nouvelles minuscules. *Ann. Hist. Nat. Mus. Nat. Hung.*, **19**: 107-112.
- EMERY, C., 1925. Hymenoptera, Formicidae, Formicinae. In WYTSMAN, M. P. (ed.), *Genera Insectorum*, fasc. **183**: 1-302. La Haye.
- FOREL, A., 1913. H. SAUTER's Formosa-Ausbeute: Formicidae 2. *Arch. Nat.* **79(A)**: 183-202.
- MOTSCHOULSKY, V. de., 1863. Essai d'un catalogue des insectes de l'île Ceylan. *Bull. Soc. Imp. Nat. Moscou*, **36**: 1-153. (Indirectly cited.)
- MORISITA, M., 1985. Some questions in *Paratrechina flavipes* and *Cardiocondyla emeryi*. *Ari*, **13**: 5. (In Japanese.)
- MYMECOLOGICAL SOCIETY OF JAPAN, 1988. *A List of the Ants of Japan with Common Japanese Names*, 50 pp. (In Japanese.)

- OGATA, K., TOUYAMA, Y., & CHOI, B.-M., 1994 Ant fauna of Hiroshima Prefecture, Japan. *Ari*, 18: 18-25. (In Japanese.)
- ONOHAMA, K., 1976. A preliminary study on the ant fauna of Okinawa-Ken, with taxonomic notes (Japan; Hymenoptera: Formicidae). In IKEHARA S. (ed.), *Ecological Studies of Nature Conservation of the Ryukyu Islands - (II)*, pp. 121-141. University of Ryukyus, Naha.
- ONOHAMA, K., 1980. An introduction to the ant fauna of Japan, with a check list (Hymenoptera, Formicidae). *Kontyû, Tokyo*, 48: 193-212.
- ONOHAMA, K. & M. MORISITA, 1991. Genus *Paratrechina*. In MYMECOLOGICAL SOCIETY OF JAPAN (ed.), *A Guide for the Identification of Japanese Ants (II) Dolichoderinae and Formicinae (Hymenoptera: Formicidae)*, pp. 20-22. The Myrmecological Society of Japan, Tokyo. (In Japanese.)
- SHINDO, M., 1979. Ants of the Ogasawara Islands. *Nature and Insects*, 14 (10): 24-28. (In Japanese.)
- TERAYAMA, M. & Y. HASHIMOTO, 1996. Taxonomic studies of the Japanese Formicidae, Part I. Introduction to this series and descriptions of four new species of the genera *Hypoponera*, *Formica* and *Acropyga*. *Nature and Human Activities*, 1: 1-8.
- TERAYAMA, M. & A. KIHARA, 1994. *Distribution Maps of Japanese Ants*. 63 pp. Myrmecological Society of Japan, Tokyo. (In Japanese.)
- TERAYAMA, M., K. OGATA & B.-M. CHOI, 1994. Distribution records of Japanese ants in each prefecture. *Ari*, 18: 5-17. (In Japanese.)
- TRAGER, J. C., 1984. A revision of the genus *Paratrechina* (Hymenoptera: Formicidae) of the continental United States. *Sociobiology*, 9: 49-162.
- YAMANE, Sk., K. TSUDA & Y. HARADA, 1994. *The Ants of the Mainland of Kagoshima*. 137 pp. Nishi-nippon-shinbunsha. (In Japanese.)