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The Ant Tribe Myrmecinini (Hymenoptera: Formicidae) of Taiwan

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ABSTRACT

The ant tribe Myrmecinini from Taiwan is revised. Seven species are recognized, i.e., *Acanthomyrmex crassispina* Wheeler, *Myrmecina sauteri* Forel, *M. taiwana* Terayama, *Myrmecina strigis* sp. nov., *Pristomyrmex brevispinosus* Emery (new record), *P. pungens* Mayr, and *P. formosae* stat. nov. The keys to genera and species are provided in this paper.

Key words: Hymenoptera, Formicidae, Myrmecinini, Taiwan, new species.

Introduction

The tribe Myrmecinini of the subfamily Myrmicinae was established by Ashmead (1905). This tribe contains 4 genera and 77 species in the world (Bolton, 1995a). The genera include *Acanthomyrmex* Emery, *Myrmecina* Curtis, *Perissomyrmex* Smith, and *Pristomyrmex* Mayr. *Acanthomyrmex* is represented by 12 species, and it is endemic to the Oriental and Indo-Australian regions (Moffett, 1986). The genus *Pristomyrmex* includes around 38 named species, but the species-level taxonomy is generally unresolved. It is widely distributed in the tropical regions of the Old World, particularly 25 forms in the Indo-Australian region (Bolton, 1995b). Although 26 species of *Myrmecina* have been recorded from all zoogeographical regions excepting the Afrotropical and Malagasy, there are 15 species published from the Indo-Australian region alone. Only 2 species of *Perissomyrmex* are recorded from around the world: *P. monticola* occurs in Bhutan, and *P. snyderi* in Guatemala (Baroni Urbani and De Andrade, 1993).

Forel (1912) described 3 forms from Taiwan in the tribe Myrmecinini, i.e., *Pristomyrmex japonica* Forel, *P. brevispinosus sulcatus* var. *formosae* Forel, and *Myrmecina sauteri* Forel. This was the first record of the tribe from Taiwan. But *P. japonica* was synonymized with *P. pungens* by Viehmeyer (1922). Wheeler (1930) described a new species, *Acanthomyrmex crassispina*, from Orchid Island, southeastern Taiwan. Recently, Terayama (1985) described a new species *Myrmecina taiwana* from Meichih (Nantou Hsien), central Taiwan. According to Article 45 of ICZN (International Code of Zoological Nomenclature, 3rd ed.), Ogata (1991) provisionally treated the unavailable species name of *P. brevispinosus sulcatus* var. *formosae* as *P. brevispinosus sulcatus*. Thus 5 species of the tribe Myrmecinini have hitherto been found in Taiwan.

In this study, 1 new species and 1 newly recorded species of the tribe Myrmecinini are added to the Taiwanese fauna. The Taiwanese form of *Pristomy-*

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rmex was raised as *P. formosae* to a new status. Keys to genera and species of the tribe in Taiwan are also provided in this paper.

The measurements and indices used in this paper mainly follow those in Terayama and Kubota (1989) and Lin and Wu (1996), as in Fig. 1.

Tribe Myrmecinini Ashmead

Myrmecinini Ashmead 1905, Can. Entomol. 37: 383 (as tribe of Myrmicinae). Type-genus: *Myrmecina* Curtis.

Archaeomyrmicini Mann, 1921, Bull. Mus. Comp. Zool. 64: 449. (Synonymy by Brown, 1971, Breviora 365: 2.)

Key to the Genera of the Tribe Myrmecinini in Taiwan (Worker and female)

1. Antenna with 11 segments ..... Genus *Pristomyrmex* Mayr
- Antenna with 12 segments 2
2. Anterolateral corners of propodeum with triangular teeth; pronotum without dorsolateral spines; monomorphism in worker caste ..... Genus *Myrmecina* Curtis
- Anterolateral corners of propodeum without teeth; pronotum generally armed with dorsolateral spines; complete dimorphism in worker caste, presenting minor and major worker sub-

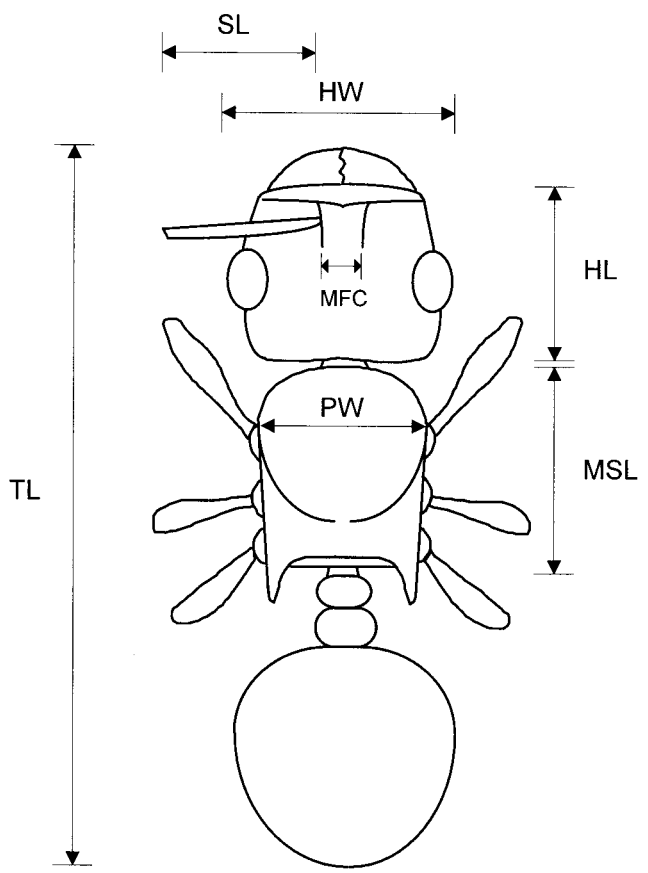


Fig. 1. Illustrations of some measurements used for ants. HL, head length; HW, head width; MFC, minimum frontal carinal distance; PW, pronotal width; SL, scape length; TL, total length; MSL, trunk length.

castes·Genus *Acanthomyrmex* Emery

Genus *Acanthomyrmex* Emery

Acanthomyrmex Emery, 1893, Bull. Bimen. Soc. Entomol. France 61: 276. Type species: *Acanthomyrmex luciolae* Emery, 1893, by subsequent designation of Bingham, 1903, The Fauna of British India, Including Ceylon and Burma. Hymenoptera 2. Ants and Cuckoo Wasp: 191.

Diagnosis: Complete dimorphism in worker caste, presenting minor and major worker subcastes.

Minor Worker:

1. Head orbicular.
2. In full-face view, posterior margin of head deeply concave; occipital carina present.
3. Frontal carinae and antennal scorbes present; the frontal carinae extending back to the dorsalmost borders of scabe, and feeble scorbe usually present to eyes.
4. Frontal lobe small; frontal-clypeal suture present.
5. A pair of clypeal carina well developed; anterior margin of clypeus with a pair of projecting clypeal teeth, and with a medial clypeal seta and a pair of lateral clypeal setae.
6. Antenna 12-segmented, with a conspicuous apical club of 3 segments.
7. Eyes moderately large, located at mid-lateral of head in full-face view.
8. Mandible massive, with a wide subtriangular blade which curves ventrad toward apex; masticatory margin with 1 apical and 3 preapical teeth, followed by a continuous series of irregular small denticles.
9. Palp formula 4, 4.
10. Trunk robust and very short.
11. Pronotum generally armed with dorsolateral spines; promesonotal suture vestigial.
12. Mesopleural groove and mesepisternal process absent.
13. Metanotal groove vestigial.
14. Propodeal spines well developed and long; propodeal lobe distinct.
15. Middle and hind legs each with a simple and single basal spur.
16. Petiole with a distinct, fairly long peduncle; node with dorsolateral spines or denticles.
17. Subpetiole process small and tooth-like.
18. Postpetiole reduced, rounded dorsally and lower than node of petiole.
19. Gaster oval.

Major worker:

1. Head oblong, enormous.
2. In full-face view, posterior margin of head deeply concave; occipital carina present.
3. Frontal carinae and antennal scorbes present; the frontal carinae extend back to the dorsalmost borders of scabe, and feeble scorbe usually present to eyes.
4. Frontal lobe small; frontal-clypeal suture present.
5. Clypeus smooth, without small projecting lobes or teeth and without any clypeal seta along anterior margin; anterior clypeal margin deeply conave medially.
6. Antenna 12-segmented, similar in size to that of minor worker.
7. Ocelli lacking; eye similar to that of minor worker, but situated slightly more anterior on head.
8. Mandible massive, similar to that of minor worker but smaller in size; masticatory margin worn, without distinct teeth.
9. Trunk, waist, and gaster similar to those of minor worker, but pronotal spine absent and the propodeal spine more blunt apically.

Notes on taxonomy and distribution

Twelve species of *Acanthomyrmex* are known. The genus is endemic to the Oriental and Indo-Australian regions,

including Sri Lanka, Thailand, Malaysia, Borneo, Sulawesi, and Taiwan. Moffett (1986) used a cladistic analysis to build a phylogenic tree of the genus *Acanthomyrmex* and to divide the genus into 2 species groups (*notabilis* and *luciolae* groups).

***Acanthomyrmex crassispina* Wheeler** (Figs. 2-8)

Acanthomyrmex crassispina Wheeler, 1930. Proc. N. Engl. Zool. Club 11: 101

Minor worker: HL 1.04-1.07 mm; HW 1.25-1.28 mm; MFC 0.46-0.49 mm; ML 0.41-0.44 mm; MSL 1.17-1.20 mm; PW 0.81-0.84 mm; SL 1.04-1.07 mm; TL 4.4-4.7 mm; CI 117-120; FCI 35-39; MI 38-41; MSI 70-75; SI 99-102.

Head in full-face view orbicular, posterior margin concave across. Head with round, thick-walled favose sculpture and dorsal portion with few, scattered erect hairs. Antennal scapes smooth, without feebly rugose; a distinctive lateral flange extending longitudinally at base. A pair of well-developed clypeal carinae extends backward from each of the medial clypeal tooth, separating a smooth medial clypeal region from the most lateral areas; anterior margin of clypeus with a pair of projecting clypeal tooth, and with a medial clypeal seta and a pair of lateral clypeal setae. Mandible massive, in full-face view, broad; in lateral view, with a wide subtriangular blade curved ventrad; masticatory margin with 1 apical and 3 preapical teeth, followed by a continuous series of irregular small denticles. Eye moderately large, 0.19 mm in maximum diameter.

Trunk with round, thick-walled favose sculpture, dorsal part with few, scattered erect hairs. Pronotal angle without feeble tooth. Pronotal and propodeal spines long and slightly curved caudad. Propodeal spines somewhat longer than pronotal spines. The lengths of propodeal and pronotal spines about 2.5 times longer than wide at base of spine. Propodeal lobes well developed and teethlike. Femora lacking hairs except on basal area.

Peduncle of petiole relatively short; node of petiole with a single pair of dorsolateral short teethlike spines and lacking the single pair of hairs on caudal face. Postpetiole subrectangular, in dorsal view almost as long as wide, dorsal part with a single pair of erect hairs. Gaster oval and virtually without pilosity.

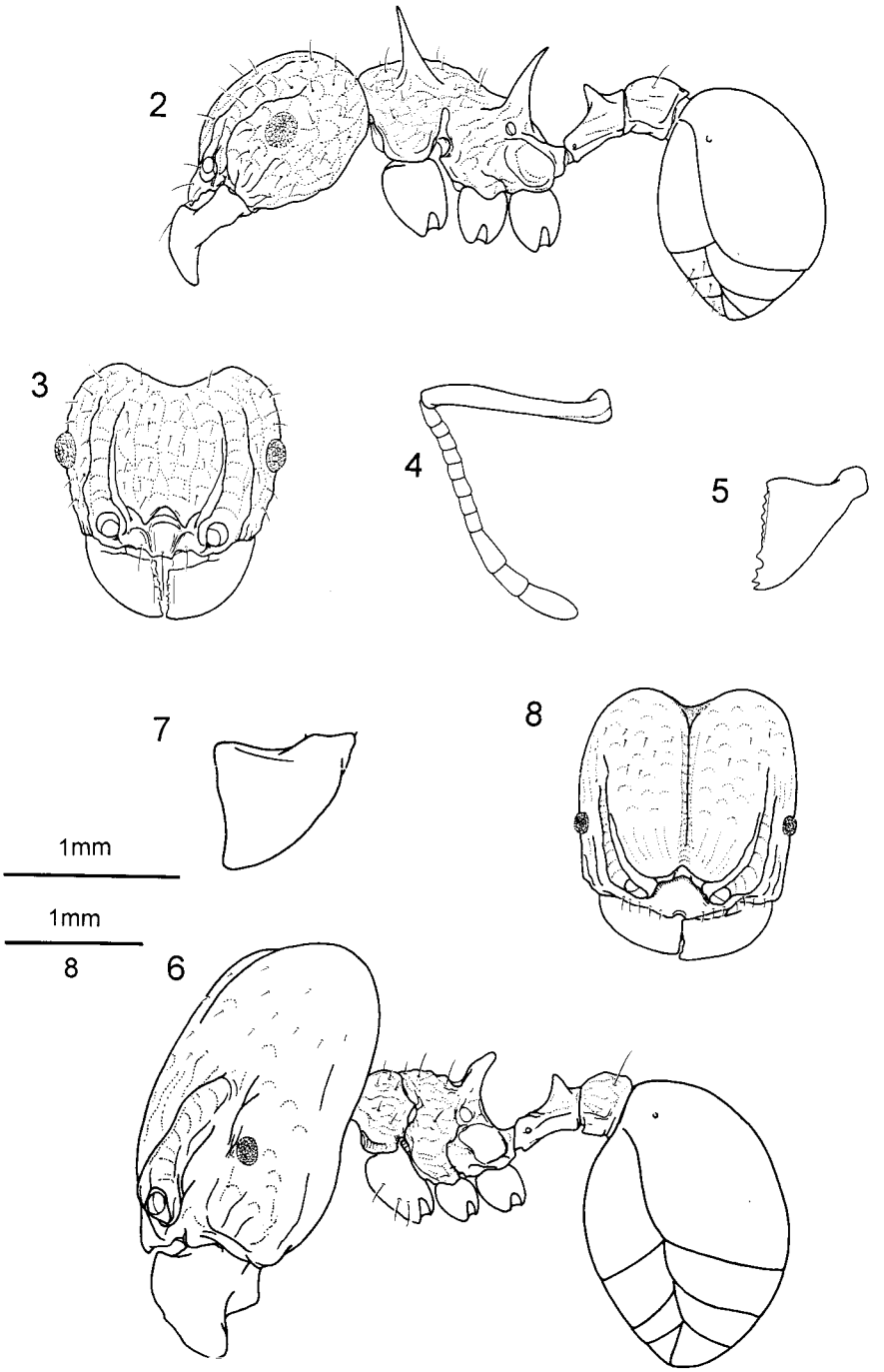
Head, trunk, and gaster yellowish orange; legs yellow.

Major worker: HL 2.70-2.78 mm; HW 2.23-2.27 mm; MFC 0.70-0.74 mm; ML 0.65-0.69 mm; MSL 1.20-1.24 mm; PW 1.00-1.04 mm; TL 5.20-5.35 mm; CI 90-94; FCI 27-30; MI 23-26; MSI 80-87.

Head oblong, enormous; in full-face view, posterior margin of head deeply concave; occiput carina present. Shallow oval favose sculpture scattered over head surface, dorsal part with few, scattered erect hairs. Frontal-clypeal suture well developed. Anterior clypeal margin deeply concave medially, lacking a pair of medial projections, although 2 low, rounded lobes present. Antennal scape with lateral flange near base. Propodeal spines fingerlike moderately long and curved caudad, but slightly more blunt apically than in minor worker. Waist and gaster similar those of to minor worker in profile.

Head, trunk, and gaster yellowish orange; legs yellow.

Material examined: PINTUNG HSIEN: Orchid Island, 11 minor workers, 1 major worker, 4 males, 18.VI.1994, C. C. Lin; 24 minor workers, 1 queen, 2 major workers, 10 males, 19.V.1997, C. C. Lin; 1 minor worker, 19.V.1997, C. C. Lin; 4 minor workers, 1 male, 19.V.1997, C. C. Lin; 5 minor workers, 2 major workers, 10 males, 19.V.1997, C. C. Lin; 2 minor workers, 3 males, 19.V.1997, C. C. Lin; 45 minor workers; 3 major workers, 19.V.1997, C. C. Lin. TAITUNG HSIEN: 11 minor workers, 1 major worker, 4



Figs. 2–8. *Acanthomyrmex crassispina* Wheeler; 2, profile, minor worker; 3, head, full-face view, minor worker; 4, outline of antennae, minor worker; 5, outline of mandible, minor worker; 6, profile, major worker; 7, outline of mandible, major worker; 8, head, full face view, major worker.

males, 28.VI.1995, C. C. Lin; 24 minor workers, 1 queen, 2 major workers, 4 males, 28.VI.1995, C. C. Lin; 1 minor worker, 12.IX.1996, C. C. Lin; 1 minor worker, 12.IX.1996, C. C. Lin; 52 minor workers, 1 queen, 2 major workers, 12.IX. 1996, C. C. Lin.

Distribution: Taiwan (Taitung Hsien, Orchid Island [蘭嶼]).

Remarks: This species belongs to the *luciolae* species group of Moffett (1986), which is characterized by the posterior margin of head deeply concave in major workers. Within the genus, *A. crassispina* is the most northern species in geographic distribution.

Genus *Myrmecina* Curtis

Myrmecina Curtis, 1829, Brit. Entomol. 6: 265. Type species: *Myrmecina latreillii* Curtis, 1829, (=*Myrmecina graminicola* (Latreille)), by original designation.

Archaeomyrmex Mann, 1921, Bull. Mus. Comp. Zool. Harv. 64: 448. Type species: *Archaeomyrmex cacabau* Mann, 1921, by original designation. (Synonymy by Brown, 1971, Breviora 365: 1.)

Diagnosis: Monomorphism in worker caste.

Worker:

1. Head rectangular to subrectangular.
2. In full-face view, posterior margin of head slightly concave; occipital carina well developed and extending to ventral surface forming parallel logitudinal rugae.
3. Frontal carinae short; antennal scorbes vestigial.
4. Frontal lobe broad, covering part of antennal insertions; frontal-clypeal suture present.
5. A pair of clypeal carina vestigial; anterior margin of clypeus with pairs of projecting clypeal teeth, and with pairs of clypeal setae and lateral clypeal setae.
6. Antenna 12-segmented, with a conspicuous apical club of 3 segments; scape usually reaching occipital border.
7. Eyes small to medium sized, situated anterior to the midlength of sides of head in full-face view.
8. Mandible stout, subtriangular with robust basal arm; masticatory margin with 1 apical and 1 preapical tooth, followed by a series of small denticles; basal margin with an angular part.
9. Palp formula 4, 3.
10. Trunk robust and very short.
11. Pronotum with distinct humeral angle; posterolateral portion of pronotum projecting and partly covering fore-coxa; promesonotal suture vestigial; pronotum spines or teeth absent.
12. Mesopleural groove absent; mesepisternal process well developed, projecting over base of fore-coxa.
13. Metanotal groove vestigial.
14. Propodeal spines present; dorsal portion of propodeum on both sides of petiolar insertion forming ridge or teeth.
15. Middle and hind tibial spur absent.
16. Petiole cylindrical, truncate, without distinct anterior peduncle; distinct cross ridge on dorsal portion of node.
17. Subpetiolar process dentiform or triangular.
18. Postpetiole cylindrical, longer than broad.
19. Gaster oval.

Notes on taxonomy and distribution

Twenty-six species of the genus *Myrmecina* are known from all zoogeographical regions excepting the Afrotropical and Malagasy. About 15 species of this genus are found in the Indo-Australian region.

In Taiwan, the genus has 2 species described before. However, we add 1 new

species to the genus in this paper.

Key to the Taiwanese Species of *Myrmecina* (Worker)

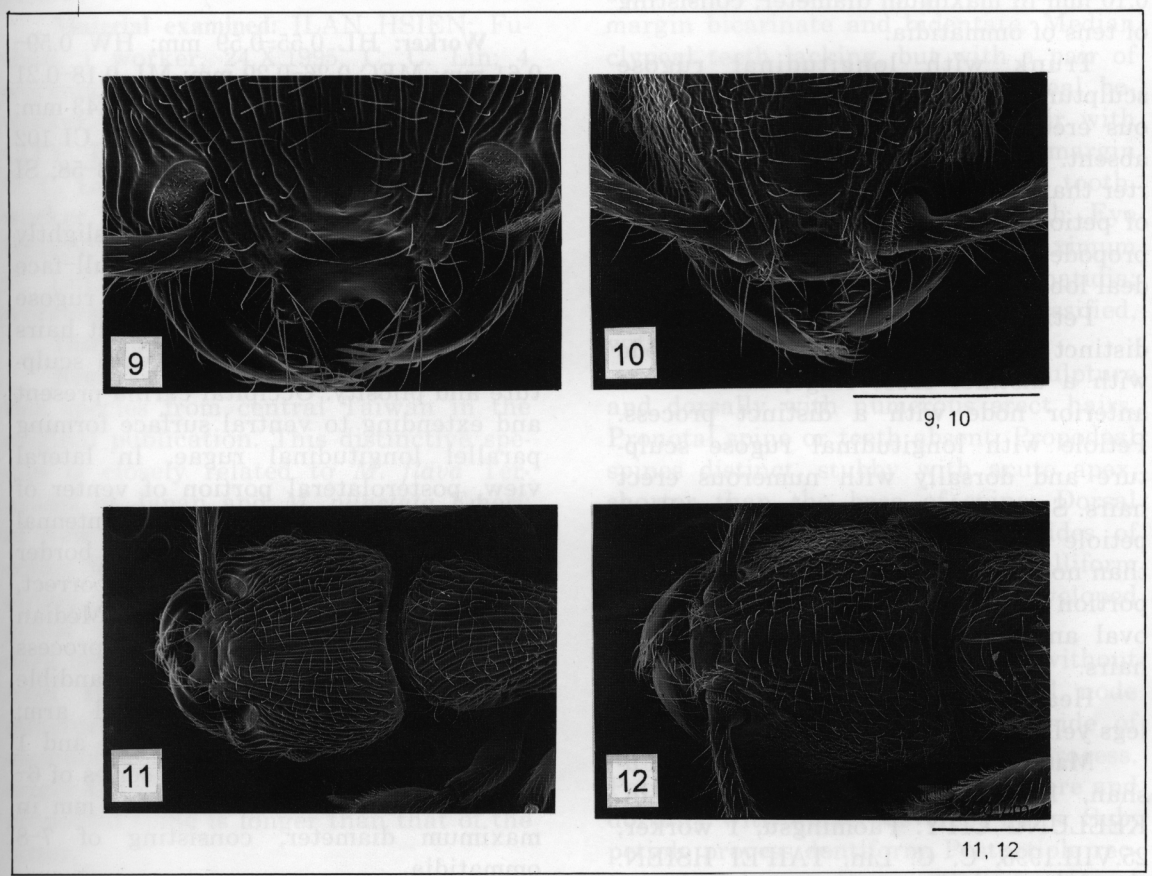
1. Clypeus distinctly porrect, anterior margin bicarinate and bidentate (Fig. 9); head and trunk with striatus rugose sculpture (Fig. 11); larger species, TL> 3.5 mm·····*Myrmecina strigis* sp. nov.
   Clypeus not porrect, anterior margin rather straight and lacking clypeal denticle (Fig. 10); head and trunk with longitudinal rugose sculpture (Fig. 12); smaller species, TL<2.8 mm·····2
2. Eyes relatively small, consisting of less than 10 ommatidia; body yellowish orange or yellow ·····
   ·····*Myrmecina taiwana* Terayama
   – Eyes relatively large, consisting of tens of ommatidia; body dark brown and legs yellowish orange ·····
   ·····*Myrmecina sauteri* Forel

***Myrmecina sauteri* Forel** (Figs. 10, 13–16)

Myrmecina sauteri Forel, 1912, Entomol. Mitt. 1: 52

Worker: HL 0.62–0.65 mm; HW 0.59–0.61 mm; MFC 0.26–0.29 mm; ML 0.23–0.25 mm; MSL 0.66–0.69 mm; PW 0.47–0.49 mm; SL 0.48–0.51 mm; TL 2.66–2.71 mm; CI 92–95; FCI 43–46; MI 37–40; MSI 70–73; SI 80–85.

Head rectangular, with slightly concave posterior margin. In full-face view,



Figs. 9–12. 9–10, Clypeus in dorsal view; 9, *Myrmecina strigis* sp. nov.; 10, *Myrmecina sauteri* Forel. 11–12, trunk in dorsal view; 11, *Myrmecina strigis* sp. nov., 12, *Myrmecina taiwana* Terayama.

head with longitudinal rugose sculpture and dorsal portion with numerous erect hairs; frons smooth, shiny, without sculpture and pilosity. Occipital carina well developed and extending to ventral surface forming parallel longitudinal rugae. In lateral view, posterolateral portion of ventral head surface smooth, without sculpture and pilosity. Antennal scape reaching occipital border and discuss at base. Clypeus not porrect, anterior margin rather straight. Median clypeal teeth lacking, but with a pair of dentical processes at side of clypeal border. Mandible stout, subtriangular with robust basal arms; masticatory margin with 1 apical and 1 preapical tooth, followed by a slight disastema and a series of about 8 small denticles. Eye moderately large, 0.10 mm in maximum diameter, consisting of tens of ommatidia.

Trunk with longitudinal rugose sculpture and dorsal portion with numerous erect hairs. Pronotal spine or teeth absent. Propodeal spines stubby and shorter than wide at base of spine. Both sides of petiolar insertion of dorsal portion of propodeum with lamelliform teeth. Propodeal lobes well developed and teethlike.

Petiole cylindrical, truncate, without distinct anterior peduncle; dorsal node with a distinct cross ridge, and side of anterior node with a distinct process. Petiole with longitudinal rugose sculpture and dorsally with numerous erect hairs. Subpetiole process triangular. Postpetiole rectangular, width almost larger than node of petiole in dorsal view, dorsal portion with numerous erect hairs. Gaster oval and virtually with numerous erect hairs.

Head, trunk, and gaster dark brown; legs yellowish orange.

Material examined: ILAN HSIEN: Fushan, 1 worker, 24.X.1995, C. C. Lin. KEELUNG CITY: Paomingsu, 1 worker, 25.VIII.1996, C. C. Lin. TAIPEI HSIEN: Shintien, 3 workers, 9.VI.1992, C. C. Lin; 1 worker, 15.VII.1994, C. C. Lin. TAITUNG HSIEN: Orchid Island, 1 worker, 19.V.1997, C. C. Lin; 1 worker, 19.V.1997, C. C. Lin.

Distribution: Taiwan (including Orchid Island).

Remarks: In 1912, Forel described this species from eastern Taiwan. It is the first record of the genus *Myrmecina* from Taiwan. The closest known relative of *M. sauteri* is *M. nipponica* from Japan, but the latter is slightly larger (TL>3 mm) than *M. sauteri* (TL<2.8 mm) in size. This species has so far only been found from Taiwan including Orchid Island.

***Myrmecina taiwana* Terayama** (Figs. 12, 17–20)

Myrmecina taiwana Terayama, 1985, Edaphologia 32: 38.

Worker: HL 0.55–0.59 mm; HW 0.59–0.61 mm; MFC 0.26–0.29 mm; ML 0.18–0.21 mm; MSL 0.71–0.73 mm; PW 0.40–0.43 mm; SL 0.53–0.55 mm; TL 2.62–2.73 mm; CI 102–106; FCI 45–49; MI 32–39; MSI 53–58; SI 86–90.

Head subrectangular, with slightly concave posterior margin. In full-face view, head with longitudinal rugose sculpture and with numerous erect hairs dorsally; the surface of frons with sculpture and pilosity. Occipital carina present and extending to ventral surface forming parallel longitudinal rugae. In lateral view, posterolateral portion of venter of head with sculpture and pilosity. Antennal scape extending beyond occipital border and discuss of base. Clypeus not porrect, anterior margin rather straight. Median clypeal teeth lacking, dentiform process at side of clypeal border absent. Mandible subtriangular with robust basal arm; masticatory margin with 1 apical and 1 preapical tooth, followed by a series of 6–7 small denticles. Eye small, 0.05 mm in maximum diameter, consisting of 7–8 ommatidia.

Trunk with longitudinal rugose sculpture and dorsal portion with numer-

ous erect hairs. Pronotal spine or teeth absent. Propodeal spines longer than the base of spine, turning upward apically. Dorsal portion of propodeum on both sides of petiolar insertion with lamelliform teeth. Propodeal lobes well developed and teethlike.

Petiole cylindrical, truncate, without distinct anterior peduncle; dorsal node with a distinct cross ridge and side of anterior node with a distinct processes. Petiole with longitudinal rugose sculpture and dorsal portion with numerous erect hairs. Subpetiolar process triangular. Postpetiole rectangular, as wide as node of petiole in dorsal view, and with numerous erect hairs on dorsum. Gaster oval and with numerous erect hairs.

Head, trunk, and gaster yellow; legs yellow.

Material examined: ILAN HSIEN: Fushan, 1 worker, 24.X.1995, C. C. Lin; 4 workers, 23.IX.1997, C. C. Lin; Chiaochi, 1 worker, 29.V.1995, C. C. Lin. KEELUNG CITY: Paomingsu, 1 queen, 25.VIII.1996, C. C. Lin. PINTUNG HSIEN: Kenting, 1 worker, 28.VI.1995, C. C. Lin. TAIPEI HSIEN: Wulai, 2 workers, 25.III.1996, C. C. Lin. TAITUNG HSIEN: Shinko, 8 workers, 27.VIII.1995, C. C. Lin.

Distribution: Taiwan.

Remarks: Terayama (1985) described this species from central Taiwan in the original publication. This distinctive species is closely related to *M. flava* Terayama of Japan and *M. punctata* Emery of New Guinea, with the same yellowish coloration of body. It is in relatively strong contrast to other forms of this genus which have uniformly black to dark brown color. *M. punctata* is different from the 2 Oriental species by the punctured sculpture on head and promesonotum. In addition, *M. taiwana* is larger than *M. flava* in body size, and its propodeal spine is longer than that of the latter.

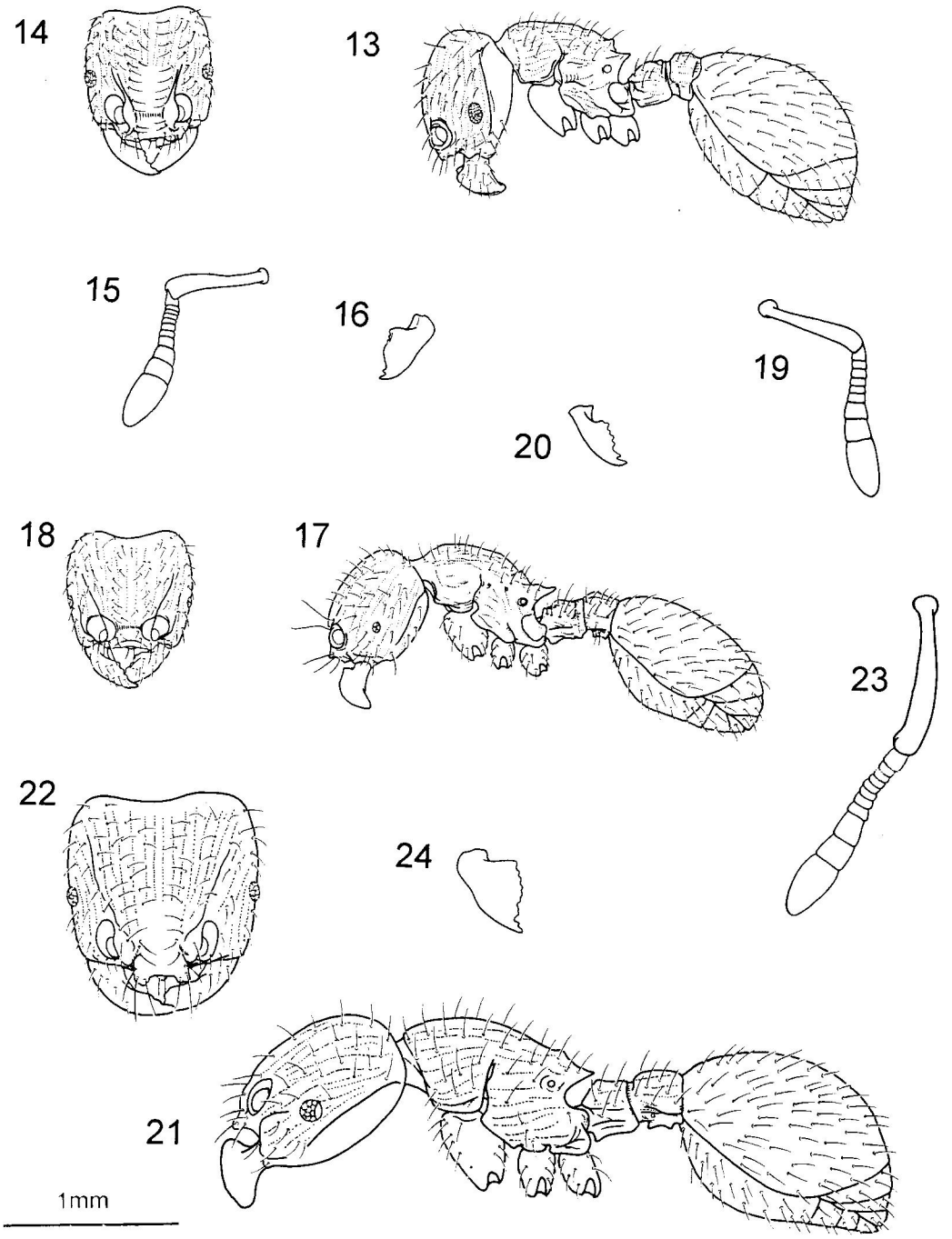
***Myrmecina strigis* sp. nov.** (Figs. 9, 11, 21–24)

Holotype worker: HL 0.93 mm; HW 0.93 mm; MFC 0.43 mm; ML 0.26 mm; MSL 0.98 mm; PW 0.63 mm; SL 0.78 mm; TL 3.60 mm; CI 100; FCI 46; MI 28; MSI 64; SI 84.

Head rectangular, with slightly concave posterior margin. In full-face view, head with striatus rugose sculpture and with numerous erect hairs dorsally, excepting the surface of frons smooth, shiny, and without sculpture and pilosity. Occipital carina well developed and extending to ventral surface forming parallel longitudinal rugae. In lateral view, ventral portion of head smooth without sculpture and pilosity. Antennal scape reaching occipital border and discuss of base. Clypeus distinctly porrect, anterior margin bicarinate and bidentate. Median clypeal teeth lacking, but with a pair of distinct processes at side of clypeal border. Mandible stout, subtriangular with robust basal arm; masticatory margin with 1 apical and 1 preapical tooth, followed by a series of small teeth. Eye moderately large, 0.11mm in maximum diameter, consisting of tens of ommatidia; posterolateral portion of eye ossified, without ommatidia.

Trunk with striatus rugose sculpture and dorsally with numerous erect hairs. Pronotal spine or teeth absent. Propodeal spines distinct, stubby with acute apex, shorter than the base of spine. Dorsal portion of propodeum on both sides of petiolar insertion with slight lamelliform ridges. Propodeal lobes well developed and teethlike.

Petiole cylindrical, truncate, without distinct anterior peduncle; dorsal node with a distinct cross ridge and side of anterior node with a distinct process. Petiole with striatus rugose sculpture and dorsally with numerous erect hairs. Subpetiole process dentiform. Postpetiole rectangular, longer than petiole in lateral view and the width almost larger than



Figs. 13–24. 13–16, *Myrmecina sauteri* Forel; 13, profile, worker; 14, head, full-face view, worker; 15, outline of antennae, worker; 16, outline of mandible, worker. 17–20, *Myrmecina taiwana* Terayama; 17, profile, worker; 18, head, full-face view, worker; 19, outline of antennae, worker; 20, outline of mandible, worker. 21–24, *Myrmecina strigis* sp. nov.; 21, profile, worker; 22, head, full-face view, worker; 23, outline of antennae, worker; 24, outline of mandible, worker.

node of petiole in dorsal view; with distinct process under the postpetiole. Postpetiole striatus rugose sculpture and dorsally with numerous erect hairs. Gaster oval and virtually with numerous erect hairs.

Head, trunk and gaster black, tinged with a deep reddish orange; legs deep reddish orange.

Paratype worker: Six paratype workers with the following measurements and indices. CL 0.15–0.18 mm; CW 0.27–0.29 mm; HL 0.92–0.94 mm; HW 0.92–0.95 mm; MFC 0.41–0.43 mm; ML 0.25–0.28 mm; MSL 0.97–1.00 mm; PW 0.61–0.65 mm; SL 0.76–0.79 mm; TL 3.58–3.63 mm; CI 99–103; CLI 170–185; FCI 44–47; MI 27–30; MSI 63–66; SI 82–86.

Holotype Worker: TAITUNG HSIEN: Shinko, 27.VIII.1995, C. C. Lin.

Paratypes: ILAN HSIEN: Chiaochi, 14 workers, 9.V.1995, C. C. Lin. TAITUNG HSIEN: Shinko, 8 workers, 27.VIII.1995, C. C. Lin (from the same nest as holotype).

Types depository: The holotype is preserved in NTU (National Taiwan University), and paratypes in NTU, TARI (Taiwan Agricultural Research Institute), and NMNS (National Museum of Natural Science, Taiwan).

Etymology: The species is named from the Latin "strigis", which means furrow or groove. The name of the new species refers to the striatus rugose sculpture on the head and trunk.

Distribution: Taiwan.

Remarks: This new species is easily distinguished from other Taiwanese congeners by the following combination of characters: clypeus distinctly porrect and anterior margin bicarnate and bidentate; head and trunk with striatus rugose sculpture; larger size (TL>3.5 mm).

Genus *Pristomyrmex* Mayr

Pristomyrmex Mayr, 1866, Verh. Zool.-Bot. Ges. Wien 16: 903. Type species: *Pristomyrmex pungens* Mayr, 1866, by monotypy.

Odontomyrmex Andre, 1905, Rev. Entomol. 24: 207 (as subgenus of *Pristomyrmex*). Type species: *Pristomyrmex* (*Odontomyrmex*) *quadridentata* Andre, 1905, by monotypy.

Hylidris Weber, 1941, Ann. Entomol. Soc. Am. 34: 190. Type species: *Hylidris myersi* Weber, 1941, loc. cit. by original designation.

Dodous Donisthorpe, 1946, Proc. Royal Entomol. Soc. Lond. ser. B 15: 145. Type species: *Dodous trispinosus* Donisthorpe, 1946, by original designation.

Diagnosis: Monomorphism in worker caste.

Worker:

1. Head orbicular to rectangular.
2. In full-face view, posterior margin of head slightly concave; occipital carina present.
3. Frontal carinae and antennal scorbes present; frontal carinae extend back to dorsalmost borders of scabe, and feeble scorbe usually present to eyes.
4. Frontal lobe small; frontal-clypeal suture present.
5. Clypeus with well-developed median carina; anterior margin of clypeus with various teeth or denticles, and with pairs of lateral clypeal setae.
6. Antennal socket distinctly exposed, surrounded by deep concavity.
7. Antenna 11-segmented, with a conspicuous apical club of 3 segments.
8. Eye large, located at mid-lateral portion of head in full-face view.
9. Mandible narrow, subtriangular; masticatory margin with an apical and a preapical tooth, followed by a distinct disastema and 2–3 small basal teeth.
10. Palp formula 5, 3.
11. Trunk very short and robust.
12. Pronotum generally armed with distinct dorsolateral spines or there are absent; promesonotal suture vestigial.

13. Mesopleural groove absent; mesepisternal process well developed, projecting over base of fore-coxa.
14. Metanotal groove vestigial.
15. Propodeal spines well developed and long; propodeal lobe distinct.
16. Middle and hind legs each with a simple and single basal spur.
17. Petiole with a distinct, fairly long peduncle; node broadly rounded in profile.
18. Subpetiolar process absent.
19. Postpetiole reduced, rounded and lower than node of petiole in profile.
20. Gaster oval.

Notes on taxonomy and distribution

The Old World myrmecine ant genus contains 38 named forms, mostly from tropical and subtropical forests of the Indo-Australian, Afrotropical or Australian regions. The genus *Pristomyrmex* has been divided into 2 subgenera *Pristomyrmex* and *Odontomyrmex*, by the presence or absence of pronotal spine.

In Taiwan, the genus has been represented by 2 described forms. In this study, we add 1 newly recorded species, *P. brevispinosus* Emery, to the Taiwanese ant fauna. Otherwise, we raise the Taiwanese form of *Pristomyrmex* to the new status of *P. formoase.*

Key to the Taiwanese Species of *Pristomyrmex* (Worker)

1. Pronotal spine absent; propodeal spine long, 2 to 3 times longer than its base ··· ····· *Pristomyrmex* (*Pristomyrmex*) *pungens* Mayr
- Pronotal spine present; propodeal spine shorter than its base ····· 2
2. Larger species (TL>4.2 mm); pronotal spine longer than propodeal spine ····· ····· *Pristomyrmex* (*Odontomyrmex*) *brevispinosus* Emery
- Smaller species (TL<4.0 mm); pronotal spine shorter than propodeal spine ····· ····· *Pristomyrmex* (*Odontomyrmex*) *formosae* Forel stat. nov.

***Pristomyrmex pungens* Mayr** (Figs. 25-28)

Pristomyrmex pungens Mayr, 1866. Verh. Zool.-Bot. Ges. Wien 16: 904.
Pristomyrmex japonicus Forel, 1900. Mitt. Schweiz. Entomol. Ges. 10: 268. (Synonymy by Viehmeyer, 1922)

Worker: CL 0.19-0.21 mm; CW 0.44-0.47 mm; HL 0.74-0.77 mm; HW 0.87-0.92 mm; MFC 0.33-0.36 mm; ML 0.18-0.21 mm; MSL 0.72-0.75 mm; PW 0.60-0.63 mm; SL 0.83-0.86 mm; TL 3.10-3.25 mm; CI 114-120; CLI 224-230; FCI 39-43; MI 22-25; MSI 80-85; SI 94-97.

Head orbicular, with slightly concave posterior margin. Head with reticulate sculpture and with numerous erect hairs dorsally. Median clypeal carina well developed; anterior margin of clypeus with a series of about 10 or more projecting clypeal denticles, and with pairs of lateral clypeal setae. Mandible narrow, subtriangular; masticatory margin with 1 apical and 1 preapical tooth, followed by a distinct disastema and 2 small basal teeth. Eye moderately large, 0.17 mm in maximum diameter.

Trunk with reticulate sculpture, and with numerous erect hairs dorsally. Pronotum marginate anteriorly without paired projections on humeral area. Propodeal spines straight in profile, each about 2 time longer than its base. Pronotal angle forming feeble tooth. Propodeal declivity bordered on each side by a single rugum extending from the base of each propodeal spine. Propodeal lobes well developed and teethlike.

Petiolar peduncle relatively long; crest of node tapering, with round corners. Postpetiole rounded and lower than node of petiole in profile with few erect hairs. Gaster oval and virtually without pilosity.

Head, trunk, and gaster dark brown to dark grayish brown; legs dark yellowish orange.

Material examined: ILAN HSIEN: Fushan, 96 workers, 27.II.1994, C. C. Lin; 19 workers, 22.IV.1995, C. C. Lin; 5 workers, 21.VIII.1996, C. C. Lin. KEELUNG CITY: Hungtanshan, 24 workers, 4.VII.1995, C. C. Lin. NANTOU HSIEN: Huisunlinchang, 2 workers, 7.VIII.1989, C. C. Lin; 9 workers, 8.VII.1995, C. C. Lin; 15 workers, 7.VIII.1997, C. C. Lin. Nanshanchi, 23 workers, 2.VI.1997, C. C. Lin. PINTUNG HSIEN: Kenting, 11 workers, 10.IX.1997, C. C. Lin. TAIPEI HSIEN: Chuchih, 1 worker, 20.III.1988, C. C. Lin. TAITUNG HSIEN: Chihpen, 12 workers, 7.IX.1988. C. C. Lin. Lutao Island, 13 workers, 8.VII. 1996, C. C. Lin.

Distribution: East India to Malacca, mainland China, Korea, Japan, and Taiwan.

Remarks: This species was first recorded as *P. japonica* by Forel (1912) from Taiwan, but *japonica* was later synonymized with *pungens* by Viehmeyer (1922). It is a pleistoendemic species of the genus in Taiwan, and is widely distributed in the low-median elevation zone of the island. *Pristomyrmex pungens* belongs to the subgenus *Pristomyrmex*, and is easily distinguished from the other Taiwanese congeners by the following characters: pronotal spine absent; anterior margin of clypeus with a series of 10 or more projecting clypeal denticles.

***Pristomyrmex brevispinosus* Emery** (Figs. 29–32)

Pristomyrmex brevispinosus Emery, 1887. Ann. Mus. Civ. Stor. Nat. 5: 451.

Worker: CL 0.30–0.33 mm; CW 0.49–0.51 mm; HL 1.04–1.06 mm; HW 1.10–1.13 mm; MFC 0.25–0.27 mm; ML 0.30–0.33 mm; MSL 1.00–1.03 mm; PW 0.74–0.78 mm; SL 1.09–1.13 mm; TL 4.40–4.51 mm; CI 103–108; CLI 154–163; FCI 20–26; MI 28–33; MSI 73–78; SI 99–103.

Head orbicular to rectangular, with slightly concave posterior margin. Head with round favosa sculpture and dorsally with numerous erect hairs. Median clypeal carina well developed; anterior margin of clypeus with 5 distinct clypeal teeth, the median and outer lateral ones larger. Anterior borders of clypeus with pairs of lateral clypeal setae. Mandible narrow, subtriangular; masticatory margin with 1 apical and 1 preapical tooth, followed by a distinct disastema, 2 small basal teeth and 1 small denticle. Eyes moderately large, 0.17 mm in maximum diameter.

Promesonotum with round favosa sculpture, and with numerous erect hairs dorsally. Mesopleuron and metapleuron almost lacking sculpturation, largely smooth and shiny. Pronotum marginate anteriorly with paired distinct spines on humeral area, these spines longer than propodeal spines. Propodeal spines distinct, stubby with acute apex, as long as the base of spine. Pronotal angle forming feeble tooth. Propodeal declivity bordered on each side by a single rugum extending from the base of each propodeal spine. Propodeal lobes well developed and teeth like.

Petiolar peduncle relatively long; node round. Postpetiole rounded and lower than node of petiole in profile with few erect hairs. Gaster oval and virtually without pilosity.

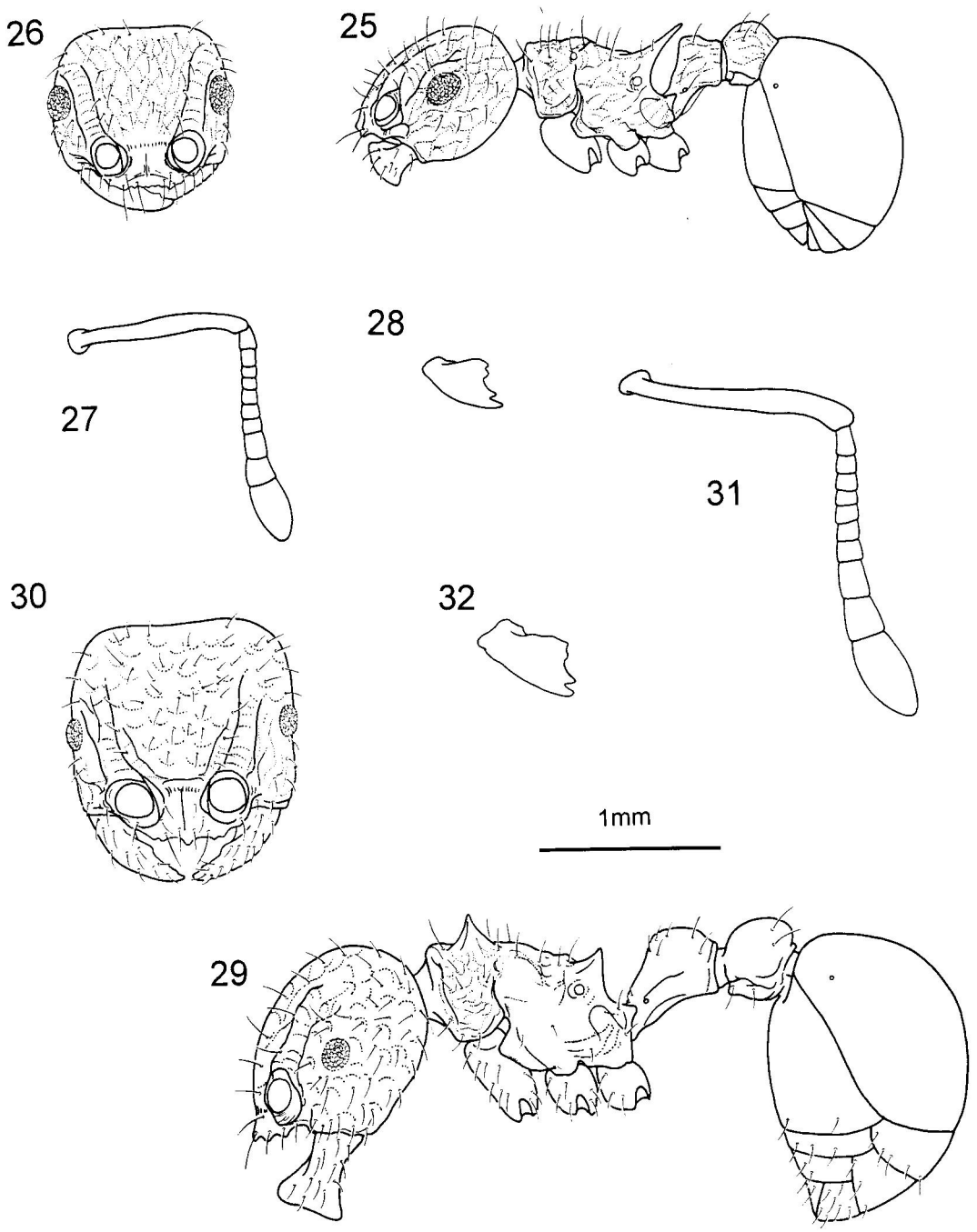
Head, trunk, and gaster vivid reddish orange to deep reddish orange; legs vivd reddish orange.

Material examined: PINTUNG HSIEN: Kenting, 12 workers, 29.VI.1995, C. C. Lin.

Distribution: Sumatra to Myanmar, southern mainland China, and Taiwan (new record).

Remarks: This species was described by Emery (1887) from Sumatra. It is widely distributed in the Indo-Chinese subregion of the Oriental region, being recorded from Myanmar and southern mainland China. This study adds Taiwan as a new locality for its distribution.

***Pristomyrmex formosae* Forel stat. nov.**



Figs. 25–32. 25–28, *Pristomyrmex pungens* Mayr; 25, profile, worker; 26, head, full-face view, worker; 27, outline of antennae, worker; 28, outline of mandible, worker. 29–32, *Pristomyrmex brevispinosus* Emery; 29, profile, worker; 30, head, full-face view, worker; 31, outline of antennae, worker; 32, outline of mandible, worker.

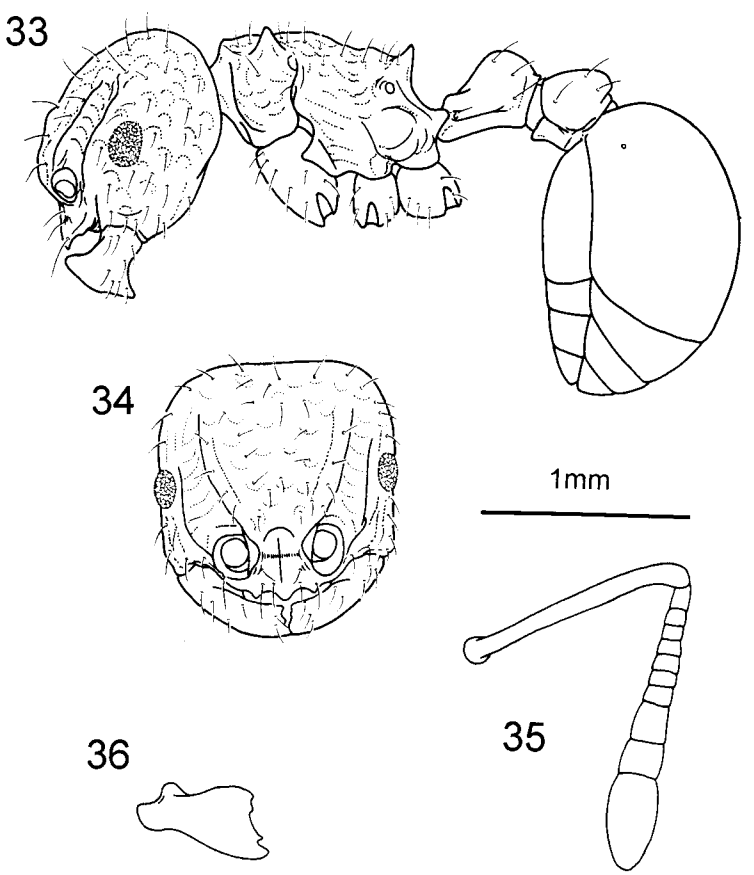
(Figs. 33–36)

Pristomyrmex brevispinosus sulcatus var. *formosae* Forel, 1912. Entomol. Mitt. 1: 54. [unavailable name]

Worker: CL 0.29–0.31 mm; CW 0.52–0.55 mm; HL 0.95–0.98 mm; HW 0.98–1.02 mm; MFC 0.29–0.32 mm; ML 0.29–0.31 mm; MSL 0.94–0.97 mm; PW 0.69–0.71 mm; SL 0.95–0.97 mm; TL 3.80–3.95 mm; CI 100–105; CLI 170–180; FCI 29–34; MI 29–34; MSI 72–76; SI 93–98.

Head orbicular to rectangular, with slightly concave posterior margin; surface with round favosa sculpture and dorsally with numerous erect hairs. Anterior margin of clypeus with 3 distinct clypeal teeth, and with pairs of lateral clypeal setae; median clypeal carina well developed. Mandible narrow, subtriangular; masticatory margin with 1 apical and 1 preapical tooth, followed by a distinct disastema and 2 small basal teeth. Eyes moderately large, 0.19 mm in maximum diameter.

Promesonotum with round favosa sculpture; dorsal surface with numerous erect hairs. Mesopleuron and metapleuron almost lacking sculpturation, largely smooth and shiny. Pronotum marginate anteriorly, with paired short spines on humeral area; these spines shorter than propodeal ones. Propodeal spines



Figs. 33–36. *Pristomyrmex formosae* stat. nov.; 33, profile, worker; 34, head, full-face view, worker; 35, outline of antennae, worker; 36, outline of mandible, worker.

distinct, stubby with acute apex, each spine shorter than its base. Pronotal angle forming feeble tooth. Propodeal declivity bordered on each side by a single rugum extending from the base of each propodeal spine. Propodeal lobes well developed and teethlike.

Petiolar peduncle relatively long; node round. Postpetiole rounded and lower than node of petiole in profile, with a few erect hairs. Gaster oval and virtually without pilosity.

Head, trunk, and gaster light reddish brown; legs light reddish brown.

Material examined: ILAN HSIEN: Fushan, 11 workers, 1 queen, 9.X.1992, C. C. Lin; 5 workers, 20.VI.1995, C. C. Lin; 1 worker, 24.V.1997, C. C. Lin. NANTOU HSIEN: Lienhuachih, 38 workers, 1 queen, 1 male, 28.IX.1992, C. C. Lin. Nanshanchi, 29 workers, 12.XI.1993, C. C. Lin; 1 worker, 1 queen, 12.XI.1993, C. C. Lin. PINTUNG HSIEN: Kenting, 1 worker, 29.VI.1995, C. C. Lin. TAITUNG HSIEN: Orchid Island, 1 worker, 17.V.1997. C. C. Lin.

Distribution: Taiwan (including Orchid Island).

Remarks: Chou and Terayama (1991) applied *P. brevispinosus sulcatus* var. *formosae* for this species in the name list of ants from Taiwan. This name was originally proposed by Forel (1912) for Taiwanese material. In 1976, Onoyama recorded this form from Iriomote Island of Japan. Ogata (1991) provisionally treated the unavailable species name of *P. brevispinosus sulcatus* var. *formosae* as *P. brevispinosus sulcatus* by Article 45 of ICZN. However, recent ecological information strongly suggests that the Taiwanese and Iriomote populations are independent species from each other, since the Iriomote population produces an ergatoid queen only as a reproductive female caste and is polygynous (2–3 ergatoid queens per nest), and the Taiwanese population produces a normal queen only and is monogynous (personal communication from M. Terayama). This Taiwanese form and the typical species of Myanmar are more different than both species compared with *P. brevispinosus*. Considering the diagnostic characters that consistently separate *P. brevispinosus sulcatus* from the Taiwanese form and the typical species of Myanmar, we are sure that they are not the same species or subspecies. In addition, we found that the Taiwanese form and *P. brevispinosus* are sympatric in Kenting, southern Taiwan. Therefore, we raise the Taiwanese form of *formosae* to the species rank. *P. formosae* is most closely related to *P. brevispinosus* or its subspecies *sulcatus*, and workers of the 3 species are compared in Table 1.

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We wish to thank Dr. M. Terayama,

Table 1. Comparison among workers of *Pristomyrmex brevispinosus, P. brevispinosus sulcatus,* and *P. formosae.*

	P. brevispinosus	*P. brevispinosus sulcatus*	*P. formosae*
Total length(TL)	4.0−4.6 mm	>4.8 mm	3.0−4.0 mm
Pronotal spine	long	long	short
Relative length of pronotal spine (I) to propodeal spine (II)	I>II	I>II	I<II
Number of clypeal teeth	5	5	3
Distribution	Sumatra to Myanmar, southern mainland China, Taiwan	Southeastern Myanmar	Taiwan(including Orchid Island)

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台灣產黑豔家蟻族(膜翅目：蟻科)

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摘　要

黑豔家蟻族隸膜翅目、蟻科、家蟻亞科，全世界已知4屬77種。本文修訂台灣產種類共計7種，其中包括1新種和1新記錄種：*Acanthomyrmex crassispina* Wheeler, *Myrmecina sauteri* Forel, *M. taiwana* Terayama, *Myrmecina strigis* sp. nov., *Pristomyrmex brevispinosus* Emery (新記錄), *P. pungens* Mayr及*P. formosae* stat. nov.。文中並附職蟻分屬和分種檢索表。

關鍵詞：膜翅目、蟻科、黑豔家蟻族、台灣、新種。

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