

A NEW SPECIES OF THE ANT GENUS *CREMATOGASTER* LUND, 1831 (HYMENOPTERA: FORMICIDAE) FROM THE RYUKYU ISLANDS, JAPAN

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Summary. *Crematogaster ramicola* sp. n. is described from the Ryukyu Islands, Japan based on the worker, queen and male. The new species is similar to *C. vagula* Wheeler, but can be distinguished by the weakly striated promesonotum and paler body color.

Key words: Myrmicinae, twig-nesting ants, taxonomy, new species, Amami Islands, Iriomote-jima, Okinawa-jima.

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Резюме. С островов Рюкю (Япония) по рабочим, самцам и бескрылым самкам описан новый вид *Crematogaster ramicola* sp. n. Новый вид сходен с *C. vagula* Wheeler, но отличается слабо исчерченным промезонотумом и более светлой окраской тела.

INTRODUCTION

The ant genus *Crematogaster* Lund, 1831 is a hyperdiverse group containing more than 500 species and distributed worldwide (Bolton, 2025). The genus *Crematogaster* has been classified into two subgenera, *Crematogaster* and *Orthocrema* (Blaimer, 2012). The subgenus *Crematogaster* is a large group and contains more than 350 species. In Asia, the taxonomy of the genus has been improved in recent years (Southeast Asia by Hosoishi & Ogata, 2012; Hosoishi *et al.*, 2023; South Asia by Akbar *et al.*, 2023; Dhadwal & Bharti, 2024; West Asia by Sharaf *et al.*, 2019, 2025; Mohseni & Mikheyev, 2023). According to Terayama *et al.* (2014), eight species have been recognized from Japan, of which, five are assigned to the subgenus *Crematogaster* and three species to the subgenus *Orthocrema* Santschi, 1918. Although the ant fauna of Japan is relatively well studied compared to other parts of Asia, several new species have been reported in recent years (e.g., *Aphaenogaster* by Naka & Maruyama, 2018; *Myrmica* by Terayama *et al.*, 2024; *Monomorium* by Idogawa *et al.*, 2025; *Carebara* by Yamane *et al.*, 2025). Since the publication by Terayama (2013), no new species of the subgenus *Crematogaster* have been described from Japan.

During our surveys on the Japanese *Crematogaster* we found one new species from the Ryukyu Islands, located at southern part of Japan. The new species belongs to the subgenus *Crematogaster* and similar to *C. vagula* Wheeler, 1928. In this paper we describe it based on the worker, queen and male.

MATERIAL AND METHODS

Specimens examined including holotype and paratypes of a new species are deposited in the Institute of Tropical Agriculture, Kyushu University, Fukuoka, Japan (KUEC) and in Seiki Yamane collection, Kitakyushu Museum of Natural History and Human History, Kitakyushu, Japan (SKYC). Codes for public institutions mainly follow those in Brandão (2000). Nest series samples, most of which were recently collected, are listed with colony codes, e.g., "JP18-SKY-170".

Most observations were made on a Leica M205C stereomicroscope. Images were taken using a Canon EOS 50D with a Canon MP-E 65 mm 1-5 x Macro lens, then processed using Combine ZM (Hadley, 2010).

Measurements were made under stereomicroscope mentioned above using micrometers. All measurements are expressed in millimeters, recorded to the second decimal place. The measurements and indices generally follow Longino (2003) and Hosoishi (2015): TL – Total body length roughly measured from tip of head to tip of gaster; HW – Maximum width of head in full-face view, excluding the eyes, in the worker and queen castes; HL – Perpendicular distance from vertex margin to line tangent anteriormost projections of clypeus in full-face view; CI – HW/HL x 100; SL – Length of the first antennal segment, excluding the neck and basal condyle; SI – SL/HW x 100; EL – Maximum length of the compound eye; PW – Maximum width of the pronotum in dorsal view in the worker caste; WL – Diagonal length, measured in lateral view from the anterior margin of the pronotum (excluding the collar) to the posterior extremity of the propodeal lobe; PSL – Measured from tip of propodeal spine to closest point on outer rim of propodeal spiracle; PtL – Length of the petiole in lateral view; PtW – Maximum width of petiole in dorsal view; PtH – Height of the petiole in lateral view; PpL – Length of the postpetiole in lateral view; PpW – Maximum width of postpetiole in dorsal view, excluding the helcium; PtHI – PtH/PtL x 100; PtWI – PtW/PtL x 100; PpWI – PpW/PpL x 100; WI – PpW/PtW x 100.

TAXONOMY

Crematogaster ramicola Hosoishi et Yamane, sp. n.

<https://zoobank.org/NomenclaturalActs/2D467912-42D8-4AFC-A26E-96A95EEB1FEC>

Figs 1–3

TYPE MATERIAL. Holotype: worker, **Japan**: near Ohara, Ohtomi-yūhodō, Iriomote-jima, Southern Ryukyus, Okinawa-ken, 12.XI 2018, dead twig on tree, Sk. Yamane leg. (JP18-SKY-170) (KUEC). Paratypes: 13 workers and 3 males, same data as holotype (KUEC, SKYC).

NON-TYPE MATERIAL. **Japan**: *Kagoshima-ken*. 1 dealate queen, Kawazoe, Kikai-jima, Amami Islands, Central Ryukyus, 22.VIII 2017, Sk. Yamane leg. (SKYC); 1 worker, Yui-dake, 400 m alt., Amami-ōshima, 8.VIII–6.IX 2000, Malaise trap, T. Muroi & Y. Maeda leg. (SKYC); 6 workers, Mikyo, Tokuno-shima, (forest floor), 1.III 2009, Sk. Yamane leg. (fallen twig) (FT11) (KUEC, SKYC). *Okinawa-ken*. 1 dealate queen and 2 workers, Yonaha

(50 m-A), Okinawa-jima, Central Ryukyus, 7.VII-5.VIII 2001, Malaise trap, T. Muroi & C. Nakamura leg.; 27 workers, Benoki, Kunigami-son, Okinawa-jima, 30.IV 2021, dead bamboo, Sk. Yamane leg. (JP21-SKY-50 & 51) (KUEC, SKYC). 5 workers, Sueyoshi Park, Naha-shi, Okinawa-jima, 9.III 2020, cherry dead twig, F. Ito & Sk. Yamane leg. (JP20-SKY-15) (SKYC); 9 workers, Maedake-rindô, Tokashiki-jima, Kerama Is., Central Ryukyus, 26.V 2022, dead twig on tree, Sk. Yamane leg. (JP22-SKY-063) (SKYC); 15 workers, near Ôhara, Ôtomi-yûhodô, Iriomote-jima, Southern Ryukyus, 12.XI 2018, dead twig on tree, Sk. Yamane leg. (JP18-SKY-167) (KUEC, SKYC); 10 workers, near Omoto-dake, Ishigaki-jima, Southern Ryukyus, 13.XI 2018, Sk. Yamane leg. (JP18-SKY-175).

DIAGNOSIS. WORKER. Head in full-face view as broad as long, with posterior margin almost straight. Anterior margin of median disc of clypeus broadly and shallowly produced and slightly impressed medially. Pronotum and mesonotum with lateral ridges; lateral face of pronotum extensively smooth, but often with striate area in larger specimens. Dorsal outline of promesonotum slightly convex in profile view. Propodeal spines developed. Petiole broader anteriorly in dorsal view; subpetiolar process developed as blunt denticle, sculptured. Post-petiole in dorsal view weakly bilobed, with longitudinal median sulcus. Fourth abdominal (first gastral) tergite with sparse suberect to decumbent setae. Head, mesosoma, legs, waist yellowish to reddish brown, gaster darker.

DESCRIPTION. WORKER. Measurements and indices of worker. TL 2.9; HW 0.81; HL 0.82; CI 99; SL 0.56; SI 69; EL 0.18; PW 0.47; WL 0.90; PSL 0.09; PtL 0.27; PtW 0.34; PtH 0.19; PpL 0.16; PpW 0.27; PtHI 68; PtWI 125; PpWI 173; WI 79 (holotype worker measured). TL 2.00–3.65; HW 0.57–0.90; HL 0.58–0.91; CI 97–102; SL 0.44–0.59; SI 65–77; EL 0.13–0.21; PW 0.34–0.54; WL 0.66–0.99; PSL 0.03–0.11; PtL 0.17–0.28; PtW 0.21–0.36; PtH 0.12–0.20; PpL 0.13–0.18; PpW 0.18–0.31; PtHI 65–80; PtWI 112–137; PpWI 134–170; WI 75–86 (n=17, paratypes and non-types).

Workers vary greatly in size and sculpture, and the material contains one 'major' worker.

Head in full-face view as broad as long (CI 97–102), with posterior margin almost straight, lateral margin convex and posterolateral corner rounded (Figs 1B, 2B, E). Frontal carina short and not reaching level of anterior margin of eye in smaller specimens, but reaching there in larger specimens. Occipital carina nearly complete, but thin, medially obsolete in smaller specimens. Mandible with four teeth, apical and subapical teeth large; basal tooth bifurcate in larger specimens. Clypeus roughly divided into median disc and transverse lateral arms; median disc roundly convex dorsally; anterior margin of median disc broadly but shallowly produced anteriorly and slightly impressed medially; anterior margin of lateral arm straight; posterior margin of clypeus rounded between frontal lobes. Compound eyes (simply 'eye' hereafter) slightly projecting beyond lateral margin of head in full-face view. Antenna with 11-merous; antennal club 3-merous. Scape barely reaching posterolateral corner of head in smaller specimens, but not reaching there in larger specimens.

With mesosoma in dorsal view, pronotum with fine but sharp lateral ridges; mesonotum with stronger lateral ridges; metanotal groove deep, slightly convex posteriorly. Propodeum laterally margined, distinctly widened posteriad. With mesosoma in profile view, promesonotum with gentle anterior slope and shallowly convex dorsal outline; mesopleuron not divided into upper and lower sections; metapleural gland orifice slit-like. Propodeum with dorsal outline moderately convex anteriorly, not higher than promesonotum; propodeal spiracle dorso-ventrally oval, located on posterolateral corner of propodeum, slightly apart from metapleural gland bulla; its horizontal diameter two times as large as vertical diameter; propodeal spine developed, but its length variable and in the largest specimen very short (PSL 0.03–0.11; Fig. 3D vs A), directed upward and straight in profile view and posteriad in dorsal view.

Petiole in dorsal view broader anteriorly, as broad as distance between propodeal spines, broader than postpetiole (WI 75–86) (Fig.3F); postpetiole weakly bilobed, with longitudinal median sulcus. With waist in profile view, petiolar spiracle situated anteriorly on lateral face at lower portion between dorsal and ventral margin of petiole, directed lateroventrally; subpetiolar process developed as distinct blunt denticle.

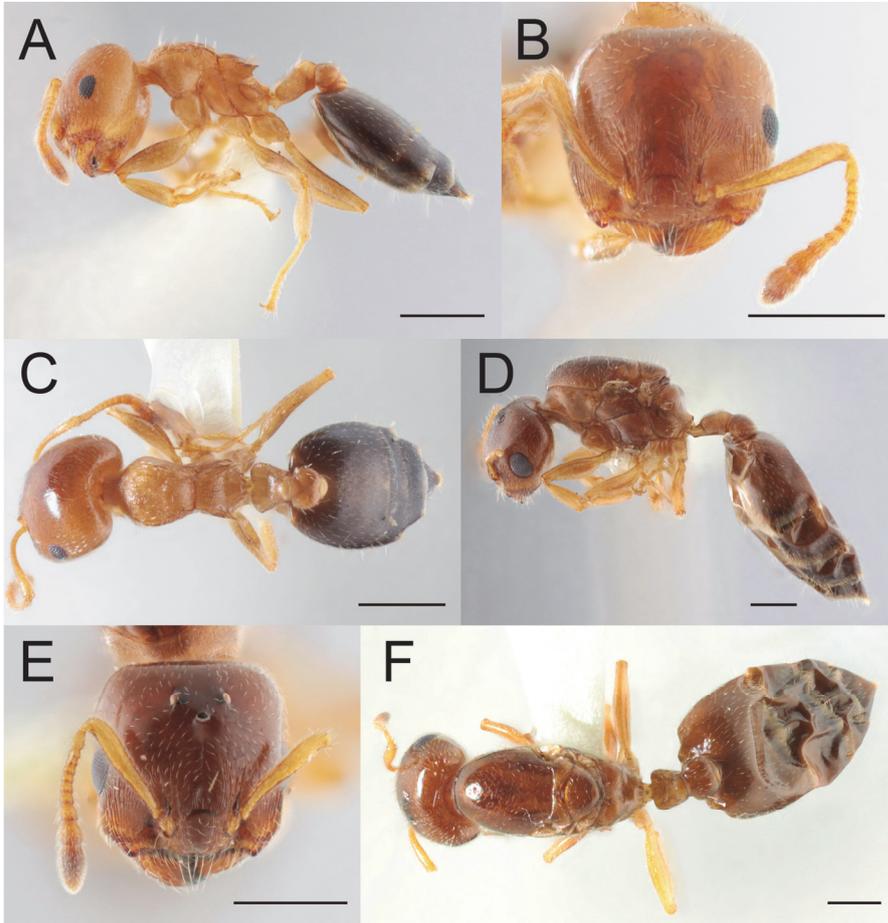


Fig. 1. *Crematogaster ramicola* sp. n. A–C, holotype worker (HW 0.81, WL 0.90); D–F, dealate queen. A, D – body in profile view; B, E – full-face view of head; C, F – body in dorsal view. Scale bars = 0.5 mm.

Dorsal face of head generally smooth and shiny, but with longitudinal rugulae surrounding antennal sockets and on gena; rugulose area much more extensive in larger specimens. Clypeus smooth to finely microsculptured and shiny, but with longitudinal rugulae laterally. Pronotal collar areolate anteriorly. Promesonotum variously sculptured; pronotum without distinct rugulae in smallest individuals, with short rugulae laterally and feeble indistinct rugulae medially in

medium-sized individuals, but with distinct longitudinal rugulae in larger specimens; mesonotum with weaker sculpture than pronotum, entirely microsculptured or at most with a few longitudinal rugulae laterally. Lateral face of pronotum smooth and shiny but with feeble rugulae posteriorly, but in larger specimens sculptured area more extensive. Mesopleuron generally smooth, but peripherally with feeble rugulae. Propodeal dorsum with rugulae anteriorly; declivity and lateral face smooth and shiny. Petiole dorsally smooth but posteriorly minutely punctate, laterally and ventrally largely punctate and matte; subpetiolar process sculptured. Postpetiole extensively smooth and shiny. Fourth abdominal tergite shagreened.

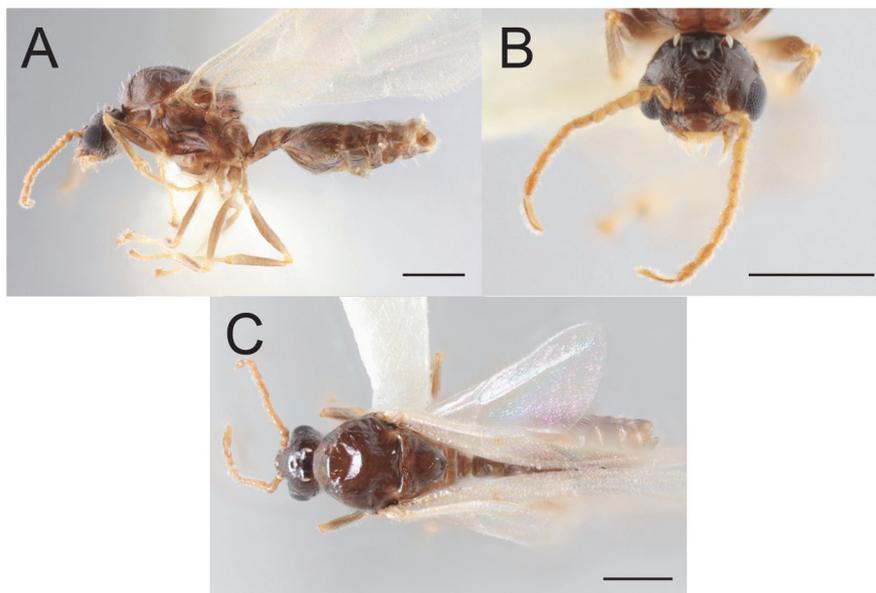


Fig. 2. *Crematogaster ramicola* sp. n. paratype male. A – body in profile view; B – full-face view of head; C – body in dorsal view. Scale bars = 0.5 mm.

Standing pilosity sparse. Scape with abundant suberect to decumbent hairs. Dorsal face of head with decumbent hairs sparsely. Clypeus with decumbent and suberect hairs; anteriormost portion with pair of longer suberect hairs directed medially; anterior margin with one or two pairs of longer hairs, laterally with some shorter hairs. Mesosoma with sparse decumbent to appressed hairs; long erect hairs present on anterior pronotal ridge, mesonotal ridge. Petiole and postpetiole with long suberect hairs sparsely, Fourth abdominal (first gastral) tergite with sparse suberect to decumbent hairs.

Head, mesosoma, legs, waist yellowish to reddish brown, gaster darker.

QUEEN. Measurements and indices (n=1). TL 4.6; HW 0.98; HL 1.00; CI 98.0; SL 0.60; SI 61.2; EL 0.30; PW 0.80; WL 1.65; PtL 0.26; PtW 0.38; PtH 0.24; PpL 0.26; PpW 0.38.

Head in full-face view almost square, posteriorly weakly narrowed, with posterior margin almost straight and posterolateral corner rounded (Fig. 1E); lateral margin between eye and mandibular base distinctly bended at mid-length. Frontal carinae barely raised, weakly divergent posteriad, reaching level of mid-length of eye. Occipital carina low but distinct on posteriormost part of head, but absent on lateral head. Ocelli arranged in low triangle; distance

between posterior ocelli clearly longer than that between posterior ocellus and posterior margin of head. Mandible with 5 teeth; third tooth smallest. Clypeus posteriorly well defined; posterior margin convex with posteriormost point surpassing posterior margin of antennal base; median disc differentiated from anterior transverse zone and laterally sloping; anterior transverse zone invisible in full-face view, but visible when viewed from slightly ventral direction, with its anterior margin broadly and shallowly convex, and distinct lateral emarginations. With head in profile view, eye positioned anterior to mid-length of cranium, 1.5 times as long as broad, with inner margin slightly more convex than outer margin; in full-face view outer margin of eye only slightly breaking lateral margin of head. Antenna 11-merous; scape short with its apex far away from posterolateral corner of head; pedicel slightly longer than broad, longer than each of flagellomeres 1-6, almost as long as flagellomere 7; antennal club 3-merous, with apical flagellomere longer than preceding two combined.

Mesosoma in dorsal view much longer than broad, distinctly narrower than head; only part of pronotum visible (Fig. 1F). Mesoscutum longer than broad, very large, larger than rest of mesosoma, broadly convex anteriorly, gradually widened posteriad until wing base; scuto-scutellar sulcus well developed, transverse, demarcated from mesoscutum with straight suture; mesoscutellum narrower than mesoscutum, anteriorly convex, distinctly narrowed posteriad. Metanotum ill developed, very short ('narrow'), sloping laterad. Propodeum transverse, convex anteriorly, narrowed posteriad, with posterior margin straight. Mesosoma in profile view, pronotum with anterior slope almost vertical; lateral face large, clearly demarcated from mesonotum and mesopleuron (Fig. 1D). Mesonotum with dorsal outline flat but anteriorly roundly sloping; dorsa of mesoscutum, scuto-scutellar sulcus and mesoscutellum at same level. Mesopleuron divided into upper and lower sections with straight suture; lower section rectangular, much larger than upper one. Metanotum small, overhung with mesoscutellum; metapleuron well defined anteriorly but posteriorly fused with lateral propodeum, distinctly widened ventrad. Propodeum with shallowly convex dorsal outline, rounded posterodorsal corner (spine absent) and steep declivity; spiracle oblong, large, nearly as long as width of apical flagellomere.

Petiole in dorsal view broader than long, distinctly widened anteriorly, with small and short dorsum and much larger and gently sloping anterior face; in profile view petiole low, only slightly higher posteriorly than anteriorly, with short but distinct anterior peduncle; subpetiolar process very tiny. Postpetiole in dorsal view as broad as petiole, broader than long, with very shallowly convex lateral margins that are almost parallel; longitudinal median 'furrow' present on dorsum; in posterior view, postpetiole almost subequal to petiole in size, dorsal outline shallowly convex. Gaster elongate, gradually tapered posteriad; first segment largest, in dorsal view 1.5 times as long as second.

Body extensively smooth and shiny. Head dorsum essentially smooth in posterior half, longitudinally densely striate in anterior half except in median zone between anterior ocellus and posterior clypeal margin; along inner margin of eye striae not reaching level of mid-length of eye; gena extensively smooth but striate near mandibular base; clypeus with median disc sculptured (but sculpture weak except in lateral portion) and anterior transverse zone densely sculptured; mandible extensively coarsely striate but rather shiny; antenna minutely sculptured and weakly shiny, but apical flagellomere matte. Mesosoma smooth or superficially sculptured with following portion sculptured: dorsum of pronotum finely punctostriate, lower section of mesopleuron, metapleuron and propodeal side finely puncto-striate, dorsum of propodeum transversely striate and declivity striate in upper half. Petiole rather smooth on anterior slope, but densely sculptured on dorsum and lateral face; postpetiole smooth and shiny on dorsum and matte in other portions. Gaster covered with dense micropunctuation and weakly shiny. Legs smooth to very superficially sculptured and shiny.

Entire body with short appressed/decumbent pubescence in moderate density. Head and mesosoma with sparse erect/suberect hairs on dorsum; anterior portion of clypeus with several much longer hairs. Leading edge of antennal scape with many suberect hairs; pedicel and flagellum with shorter suberect/decumbent hairs; apical flagellomere densely with still shorter hairs. Petiole densely with near-appressed hairs on dorsum and lateral face; post-petiole with sparse suberect/decumbent hairs. Gastral tergites and sternites with very sparse erect/suberect hairs. Hairs on outer face of tibiae of all legs short and decumbent/appressed.

Entire body reddish to light brown; antenna and legs paler (Figs 1D–F).

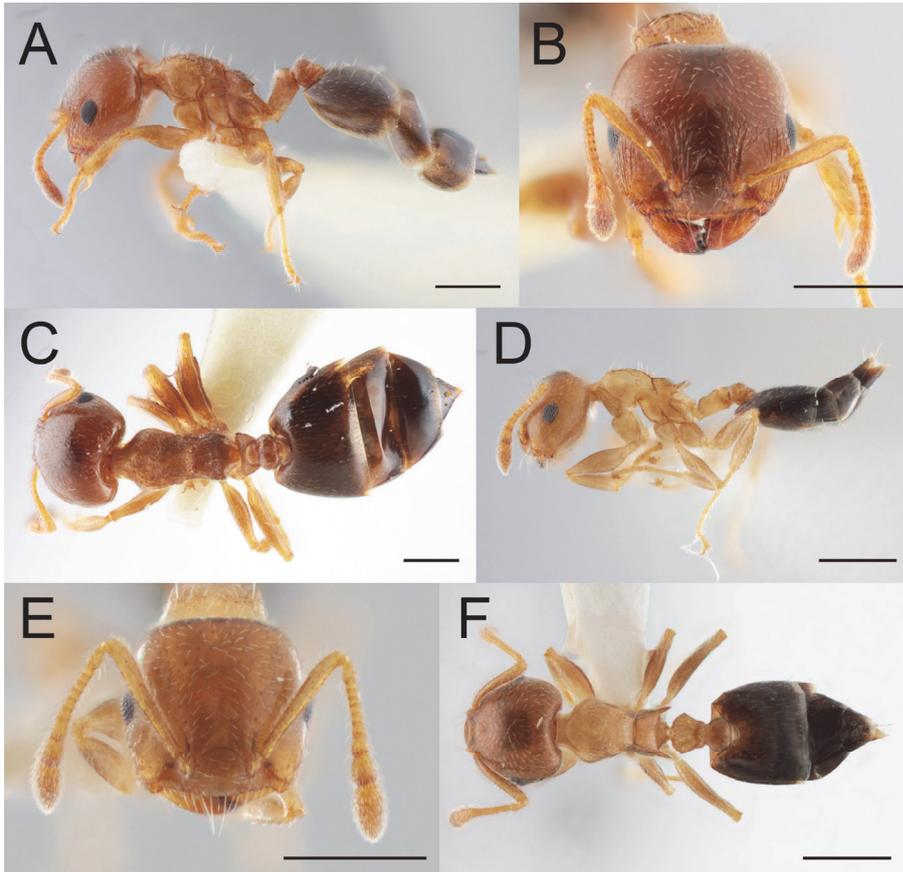


Fig. 3. Worker specimens of *Crematogaster ramicola* sp. n. A–C – largest worker (HW 0.90, WL 0.99); D–F – smaller worker (HW 0.62, WL 0.70). A, D – body in profile view; B, E – full-face view of head; C, F – body in dorsal view. Scale bars = 0.5 mm.

MALE. Measurements and indices (n=3). TL 2.1–2.7; HW 0.46–0.47; HL 0.42; CI 109.5–111.9; SL 0.08–0.09; SI 17.4–19.6; EL 0.19–0.20; PW 0.64–0.67; WL 0.99–1.03; PtH 0.16–0.17.

In full-face view, head excluding eyes broader than long, gradually narrowed posteriad; lateral margin weakly convex, smoothly continuing to posterior margin, together forming

single arch; outlines of genae convergent anteriorly (Fig. 2B). Frontal carinae weak, divergent posteriorly, not attaining level of posterior margin of eye. Occipital carina distinct on posterior head but absent on lateral head. Ocelli relatively small, arranged in flat triangle; distance between anterior and posterior ocelli longer than maximum diameter of anterior ocellus; with head in full-face view posterior ocelli located near posterior margin of head. Mandible small, elongate-triangular with pointed apex. Clypeus posteriorly well defined, with posterior margin roundly convex; median disc distinctly elevated, with anterior margin straight; lateral slope steep; anterior transverse zone absent. Eye large; its outer margin distinctly breaking lateral margin of head; with head in profile view anterior margin of eye situated close to anterior cranial margin; malar space short, only as long as length of antennal pedicel. Antenna 12-merous; scape square, short, longer than broad, slightly longer than pedicel; pedicel globular, as long as broad, thicker than scape and first flagellomere; flagellomeres 1 and 2 as long as broad; other flagellomeres longer than broad; apical flagellomere longest, as long as preceding two combined.

Mesosoma in dorsal view much broader than head, broadest just anterior to wing bases; pronotum almost invisible (Fig. 2C). Mesoscutum by far largest among mesosomal dorsal sclerites, with lateral margin roundly convex, clearly demarcated from scuto-scutellar sulcus with straight deep suture; scuto-scutellar sulcus strongly transverse and medially constricted. Metanotum ill developed, just linear zone between scuto-scutellar sulcus and propodeum. Propodeum narrower than mesonotum, distinctly narrowed posteriorly with posterior margin roundly produced. With mesosoma in profile view, pronotum much smaller than lateral face of mesoscutum, narrowed posteriorly, with anterior slope very short. Mesoscutum with anterior slope roundly convex, dorsal outline very shallowly convex; mesopleuron well demarcated from pronotum and mesonotum, divided into smaller upper section and larger lower section by straight suture. Metapleuron demarcated from mesopleuron with fine line, divided into three vaguely recognized portions, the lowest being largest. Propodeum not clearly separated from metapleuron, with short dorsum and much longer posterior slope, which is roundly produced posteriorly in upper half.

Waist hidden by wings so that dorsum could not be observed. Petiole in profile view as long as high; anterior peduncle short; anterior slope of node long and gentle; dorsum very short not clearly separable from anterior slope; posterior margin straight and vertical; ventral margin straight, anteriorly without subpetiolar process (Fig. 2A). Postpetiole higher than long, with dorsal outline straight and at same level as that of petiole; ventral margin straight, shorter than dorsal margin. Gaster dorsoventrally flattened; first segment largest.

Wings hyaline with weak metallic luster; forewing with five closed cells; pterostigma elongate, more than 3 times as long as broad; hindwing without anal lobe.

Body extensively smooth to superficially sculptured and shiny. Head extensively sculptured on dorsum, smooth and shiny on lateral area including gena; malar space sculptured and matte; clypeus with median disc smooth and shiny and lateral slope sculptured; mandible weakly sculptured and matte. Antenna minutely sculptured and faintly shiny, but pedicel smooth and shiny. Lateral face of pronotum essentially smooth and shiny; mesoscutum smooth in anterolateral and posterolateral areas, other areas striate; scuto-scutellar sulcus and anterior zone of mesoscutellum sculptured; remaining portion of mesoscutellum smooth and shiny; mesopleuron extensively smooth, but upper portion of lower section striate; metanotum and metapleuron finely sculptured and matte; propodeum smooth to superficially sculptured. Petiole and lateral face of postpetiole largely sculptured; dorsum of postpetiole smooth and shiny. Gaster smooth and shiny. Legs smooth to superficially sculptured and shiny.

Head and mesosomal dorsum with sparse, relatively short erect hairs. Clypeus with long median hair and pair of shorter hairs at anterior margin; outer margin of mandible with several

relatively long suberect hairs; venter of head sparsely with near-appressed/decumbent hairs. Dorsum of waist covered with short decumbent hairs mixed with longer erect hairs. Gastral tergites with sparse appressed to suberect hairs. Hairs on legs generally short, appressed to suberect.

Body brown to dark brown; head and gaster darker than mesosoma (Fig. 2).

BIOLOGY. This species nests in dead twigs on trees and dead bamboo tubes.

DISTRIBUTION. This species is known from the Central and Southern Ryukyu Islands of Japan: Kikai-jima, Amami-ôshima, Tokuno-shima, Okinawa-jima, Tokashiki-jima, Ishigaki-jima and Iriomote-jima.

ETYMOLOGY. The species is named after the nesting site of the new species.

REMARKS. In the worker this species is very similar to *C. vagula*, but can be distinguished from the latter by the promesonotum with weaker striation on its dorsal area (abundant longitudinal rugulae present in *C. vagula*), slightly convex promesonotum in profile view (dorsal outline flat throughout in *C. vagula*), lateral face of pronotum often with striated area especially in larger specimens, and brown-colored body. Very short propodeal spine (Fig. 3A, PSL 0.03) is observed only in the ‘major’ worker, whereas the other specimens examined have longer propodeal spines (PSL 0.07–0.11). Due to the limited number of specimens examined, it is not possible to conclude whether propodeal spine length tends to decrease with increasing body size. Although only one ‘major’ worker has been collected, the observation on this specimen suggests that this species may exhibit polymorphism in size.

The queen of the new species is very similar to that of *C. vagula* in habitus and detailed structural characters. However, the striation on the head dorsum extends backward along the inner margin of the eye to the level of the posterior margin of the eye in *C. vagula*, while it is much less developed, even does not approach there in the new species. The new species is in the male very similar to *C. vagula* in general form, detailed structural characters and color.

In the Central Ryukyus, on Okinawa-jima in the Okinawa Islands both the new species and *C. vagula* are commonly found in the same type of habitat (forest edge and sparse forest). On the other hand, on Tokuno-shima, Amami-ôshima and Kikai-jima in the Amami Islands the new species is very rare.

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