




Taxonomic notes on rattan-inhabiting ants of the genus *Camponotus* (Hymenoptera: Formicidae)

Таксономические заметки об обитающих на ротанге муравьях рода *Camponotus* (Hymenoptera: Formicidae)

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Abstract. *Camponotus megalonyx* Wheeler, 1919 is an ant species nesting in rattan and represents the single member of the subgenus *Myrmopalpella* Stärccke, 1934. *Camponotus (Tanaemyrmex) dracocephalus* Stitz, 1938, **syn. nov.**, described from a queen with a strangely shaped head is synonymised with *C. megalonyx*, based on the comparison of a queen from Sabah (Borneo), associated with a worker of *C. megalonyx*, with the images of the holotype of *C. dracocephalus*. Comparison of the type of *C. dracocephalus* with queens of other species from the subgenus *Tanaemyrmex* Ashmead, 1905 clearly confirms that this species should be excluded from the subgenus. Relationship of the species of the subgenus *Myrmoplatys* Forel, 1916, also inhabitants of rattans, with *C. (Myrmopalpella) megalonyx* is briefly discussed. Based on a number of characters of the worker and queen, *C. (Myrmoplatys) korthalsiae concilians* Forel, 1915 is upgraded to specific rank. An illustrated redescription of *C. concilians* **stat. promotus** is given.

Резюме. *Camponotus megalonyx* Wheeler, 1919 – вид муравьев, гнездящихся в ротанге, представитель монотипического подрода *Myrmopalpella* Stärccke, 1934. *Camponotus (Tanaemyrmex) dracocephalus* Stitz, 1938, **syn. nov.**, описанный по одной царице с необычной формой головы, синонимизирован с *C. megalonyx* на основании сравнения царицы из Сабаха (Борнео), ассоциированной с рабочим *C. megalonyx*, с изображениями голотипа *C. dracocephalus*. Сравнение типа *C. dracocephalus* с царицами других видов из подрода *Tanaemyrmex* Ashmead, 1905 определенно подтверждает, что этот вид должен быть исключен из данного подрода. Кратко обсуждено родство видов подрода *Myrmoplatys* Forel, 1916, также обитателей ротанга, с *C. (Myrmopalpella) megalonyx*. На основании ряда признаков рабочих и самок ранг *C. (Myrmoplatys) korthalsiae concilians* Forel, 1915 поднят до видового. Приведено иллюстрированное переописание *C. concilians* **stat. promotus**.

Key words: Rattan, redescription, Borneo, Sumatra, Formicidae, *Camponotus*, *Tanaemyrmex*, *Myrmopalpella*, *Myrmoplatys*, new synonym

Ключевые слова: Ротанг, переописание, Борнео, Суматра, Formicidae, *Camponotus*, *Tanaemyrmex*, *Myrmopalpella*, *Myrmoplatys*, новый синоним

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Introduction

An aberrant carpenter ant queen from Borneo was described by Stitz (1938) as a new species, *Camponotus dracocephalus*. Although he assigned this species to the subgenus *Tanaemyrmex* Ashmead, 1905, he did not give any reason for this placement. However, this view persisted in taxonomy for a long time (Bolton, 1995; AntWeb, 2021). Four years before Stitz's paper Stärcke (1934) erected a new subgenus *Myrmopalpella* for *Camponotus* (*Myrmosphincta*) *megalonyx* Wheeler, 1919 originally described from Borneo based on the major and minor workers. Stärcke (1934) described the polymorphic caste of workers, the queen and the male from two colonies collected on rattan (genus *Korthalsia* in the family Arecaceae) in the Aceh Province of Indonesia, Sumatra. His description of the queen (Stärcke 1934: figs. 6, 7) closely matches the holotype of *C. dracocephalus* in the characters of structure and colour pattern, but until now myrmecologists have not noticed this.

In this article, we clarify the status of *Camponotus dracocephalus* and its conspecificity with *C. megalonyx*, as well as the status of *C. (Myrmoplatys) korthalsiae concilians* Forel, 1915 also associated with rattan and having the queen with the head of a peculiar shape somewhat similar to that of *C. megalonyx*.

Material and methods

The queen of *C. megalonyx* from Borneo was compared with images of the holotype (queen) of *C. dracocephalus*, published by AntWeb (2021), specimen FOCOL2399.

From the subgenus *Tanaemyrmex*, the queens of 18 Asian species were examined to find differences from the queen of *C. (Myrmopalpella) megalonyx*, and the males of 16 Asian species were compared with the description of *C. megalonyx* male by Stärcke (1934). The following species of the subgenus *Tanaemyrmex* have been examined: *C. arrogans* F. Smith, 1858, queen, male; *C. (sp.) cf. carin* Emery, 1889, queen, male; *C. carinifer* Viehmeyer, 1916, queen, male; *C. compressus* (Fabricius, 1787), queen; *C. devestitus* Wheeler, 1928, queen, male; *C. festinus* F. Smith, 1857, queen, male; *C. kaguya* Terayama, 1999, queen, male; *C. monju* Terayama, 1999, queen, male; *C. nicobarensis* Mayr, 1865,

queen, male; *C. (sp.) cf. simoni* Emery, 1893, male; other species have not been identified.

Measurements principally follow Bolton (2000) and Boudinot (2015). The following abbreviations are used: TBL – total body length roughly measured from the anterior margin of head to the tip of gaster; HL – maximum head length (in full-face view in a straight line from the middle of anterior margin of clypeus to the middle of a transverse line spanning the apices of the projecting posterior parts of head); HW – maximum head width excluding eyes; EL – maximum eye length (major diameter); EW – maximum eye width (in the specimens examined, it is almost equal to the minimum eye diameter); DPO (queen) – distance between posterior ocelli; OOD (queen) – distance between eye and posterior ocellus; SL – length of the antennal scape; PW – width of the pronotum; MSL (queen) – length of the mesoscutum; MSW (queen) – width of the mesoscutum; HTL – length of the hind tibia; FWL (queen) – length of the forewing; HWL (queen) – length of the hindwing; CI – cephalic index (HW divided by HL \times 100); SI – scape index (SL divided by HW \times 100).

Material examined is deposited in the following collections: Institute for Tropical Biology and Conservation, “Borneensis”, Universiti Malaysia Sabah, Kota Kinabalu, Malaysia (BOR); Entomological Laboratory, Kyushu University, Fukuoka, Japan (KUEC); Museum Zoologicum Bogoriense, Cibinong, Indonesia (MZB); Seiki Yamane collection, Kagoshima, Japan (SKYC).

Taxonomic part

Order **Hymenoptera**

Family **Formicidae**

Subfamily **Formicinae**

Tribe **Camponotini**

Genus ***Camponotus*** Mayr, 1861

Camponotus (Myrmopalpella) megalonyx Wheeler, 1919 (Fig. 1)

Camponotus (Myrmosphincta) megalonyx Wheeler, 1919: 114–115 (2 majors, 2 minors).

Camponotus (Myrmopalpella) megalonyx: Stärcke, 1934: 20–30 (worker, queen, male); Bolton, 1995: 110–111.

Camponotus (Tanaemyrmex) dracocephalus Stitz, 1938: 112–113 (queen), **syn. nov.**; Bolton, 1995: 97; Pfeiffer et al., 2011: 37.

Material examined. **Malaysia, Borneo, Sabah**, Ranau Distr., near Kampung [Vill.] Yoshina, 30.VI.1998, T. Kikuta leg., 1 worker, 1 winged queen (sample code: #18) (BOR).

Diagnosis. Worker caste highly polymorphic (total body length: 4–8.5 mm). Worker with a more or less saddle-shaped propodeum and deep metanotal groove; antennal scape and tibiae of all legs with erect hairs; in larger workers, particularly entire body densely minutely punctate or coriaceous.

For the queen and male, see the comparison between this species and *Camponotus (Tanaemyrmex)* species below.

Distribution. Borneo and Sumatra.

Bionomics. This species nests in the thickened part of rattan leaves (*Korthalsia* spp.)

Remarks. Excellent descriptions of the worker (Wheeler, 1919; Stärcke, 1934), the queen (Stärcke, 1934; Stitz, 1938) and the male (Stärcke, 1934) are available. The synonymy of *Camponotus (Tanaemyrmex) dracocephalus* with *C. (Myrmopalpella) megalonyx* is established by comparing the images of *C. dracocephalus* holotype (queen) available on AntWeb (2021) with our queen specimen associated with a worker of *C. megalonyx*. These queens are very similar to each other in a number of important characters, for example, in the general appearance, large body size, unique colour pattern, peculiar shape of head, short antennal scape, and erect hairs on antennal scape and all tibiae. Stärcke's description of *C. megalonyx* queens derived from two colonies strongly supports our conclusion. Stärcke's and our observations clearly indicate that all they belong to the same species, *C. megalonyx*, and therefore *C. dracocephalus* should be synonymised with the latter name.

Even without any information on the worker caste, the images of the *C. dracocephalus* holotype on AntWeb (2021) clearly shows the presence of numerous long erect hairs on the tibiae of all legs, which definitely excludes this species from the subgenus *Tanaemyrmex* never having such hairs on the tibiae. Important characters that separate the queen of the subgenus *Myrmopalpella* from those of the Asian *Camponotus (Tanaemyrmex)*

species are: (1) erect hairs on head ventrally absent or short and sparse in *Tanaemyrmex*, but such hairs numerous and some of them longer than eye diameter in *Myrmopalpella*; (2) occipital lobe absent or, if present, not distinctly produced in the former, but strongly developed in the latter; (3) in full-face view of head, eye not protruding beyond lateral margin of head with a few exceptions in the former, but always protruding beyond lateral margin of head in the latter; (4) antennal scape always distinctly surpassing posterior margin of head in the former, but barely reaching posterior margin of head in the latter; (5) tibiae and tarsi without long erect hairs in the former, but with numerous long erect hairs (some of them longer than eye diameter) in the latter; (6) propodeal spiracle slit-like in the former, but more rounded or oval in the latter.

In the male described by Stärcke (1934) as *C. (Myrmopalpella) megalonyx*, there are a number of characters that separate this species from the males of Southeast Asian species of the subgenus *Tanaemyrmex*. Some of the characters are in accordance with those in the queen: (i) erect hairs on head ventrally absent or short (always shorter than eye length) in *Tanaemyrmex*, but such hairs long (some of them as long as eye) in *Myrmopalpella*; (ii) ocelli generally small and round, distance between anterior and posterior ocelli more than three times ocellar diameter in the former, but ocelli very large, irregularly shaped, distance between anterior and posterior ocelli less than maximum diameter of ocellus in the latter; (iii) maxillary and labial palpi rather long, they when laid back, almost reaching or surpassing median part of posterior margin of head ventrally, with palpal formula 6, 5 in the former, in contrast both palpi much shorter, not reaching half distance to median part of posterior margin of head ventrally, with palpal formula 5, 4 in the latter; (iv) antennal scape long, much longer than distance between outer margins of eyes in the former, but shorter than distance between outer margins of eyes in the latter; (v) middle and hind tibiae generally without erect or suberect hairs in the former (only in one species examined [this is highly probably an undescribed species], those with suberect or almost appressed hairs, that being shorter than diameters of tibiae), but these tibiae with many

erect or suberect hairs, some of which as long as diameter of tibiae in the latter.

The subgenus *Myrmopalpella* is monotypic, with the single member *C. megalonyx* associated with rattan plants. Among rattan symbionts, the subgenus *Myrmoplatys* Forel, 1916 is the most speciose, with four described species and several undescribed ones (Yamane, unpubl.). *Myrmoplatys* species differ from *Myrmopalpella* in having the tibiae of all legs in workers and queens without erect or suberect hairs. Furthermore, they are much less pubescent compared with *Myrmopalpella* species, which have dense, long hairs on the dorsum of the mesosoma, petiole and gastral tergites. In most of the *Myrmoplatys* workers, the clypeus is distinctly flat without median carina, while it is more convex with a weak median carina in *Myrmopalpella*. Only one undescribed species of *Myrmoplatys* has an intermediate condition of this character.

However, in the worker caste, *Myrmopalpella* and *Myrmoplatys* share a more or less saddle-like propodeum, which is very distinctive (often with a deep metanotal groove) in *Myrmopalpella* and a few *Myrmoplatys* species, but not clearly recognised in others, with a series of intermediate states. In at least one species, *C. (Myrmoplatys) contractus* Mayr, 1872, the worker caste is highly polymorphic as in *C. megalonyx*; in other *Myrmoplatys* species it is monomorphic or weakly polymorphic. Furthermore, the males of *C. megalonyx* and four *Myrmoplatys* species examined by us have relatively short antennal scapes (shorter or only slightly longer than the distance between outer margins of the eyes). In the worker and queen of *C. megalonyx*, the maxillary and labial palpi are short, generally retracted in the oral cavity; the number of segments of the maxillary palp is reduced to five (see Stärcke, 1934), while in most of other *Camponotus* subgenera, the maxillary palp has six segments (Emery, 1925; Bolton, 2003). A reduced number of these segments is also characteristic of *Myrmoplatys* females examined by us (in one *Myrmoplatys* species [this is highly probably an undescribed species], the palpal formula is further reduced to 4, 3). In males, the maxillary palp is long and six-segmented, and when laid back, it extends beyond the middle of the ventral surface of the head in most Asian *Camponotus*

subgenera, while it is five-segmented and does not reach the middle of the head ventrally in *Myrmopalpella* and *Myrmoplatys*. Anyway, the reduced number (five) of segments in the maxillary palp is exceptional in *Camponotus*. Another interesting character indicating an “affinity” of these two subgenera is found in the queen caste. In one *Myrmoplatys* species (*Camponotus* sp. 21 of SKYC), the queen has almost the same colour pattern as that of *C. megalonyx*, and some other species have the head with developed occipital lobes as in *C. megalonyx*. One of the taxa with developed occipital lobes is *C. korthalsiae concilians* that will be redescribed and raised to species rank below.

All the species of these two subgenera are known to be symbionts of *Korthalsia* climbing palms. Although the data mentioned above suggest that *Myrmopalpella* may be a synonym of *Myrmoplatys*, here we tentatively retain the traditional view that they are separate subgenera.

***Camponotus (Myrmoplatys) concilians* Forel, 1915, status promotus**
(Fig. 2)

Camponotus (Myrmomalis) korthalsiae concilians Forel, 1915: 37–39.

Camponotus (Myrmoplatys) korthalsiae concilians: Emery, 1925: 136; Bolton, 1995: 93.

Camponotus (Myrmomalis) jacobsoni Forel, 1915: 39.

Camponotus (Myrmoplatys) jacobsoni: Emery, 1925: 136.

Material examined. Indonesia, Simeulue I., Aceh Prov., Alafan Distr., near Hulu Lewak, 23.IX.2012, from rattan, Sk. Yamane & S. Syaukani leg., 12 workers, 1 winged queen (SU12-SKY-046, 064) (KUEC, MZB, SKYC).

Redescription of the worker. Measurements (in mm) and indices (n=6) with the mean in brackets: TBL 4–4.5 (4.25); HL 1.38–1.60 (1.50); HW 1.20–1.45 (1.34); EL 0.22–0.24 (0.23); EW 0.16–0.18 (0.17); SL 1.03–1.10 (1.07); PW 0.75–0.88 (0.82); HTL 1.23–1.33 (1.28); CI 87–91 (90); SI 74–86 (80).

Monomorphic. Head in full-face view longer than broad, with shallowly and broadly emarginate posterior margin and weakly convex lateral margins, broader posteriorly than anteriorly, broadest at level of eye. Frontal carinae distinct but low and short, barely reaching middle of eye,

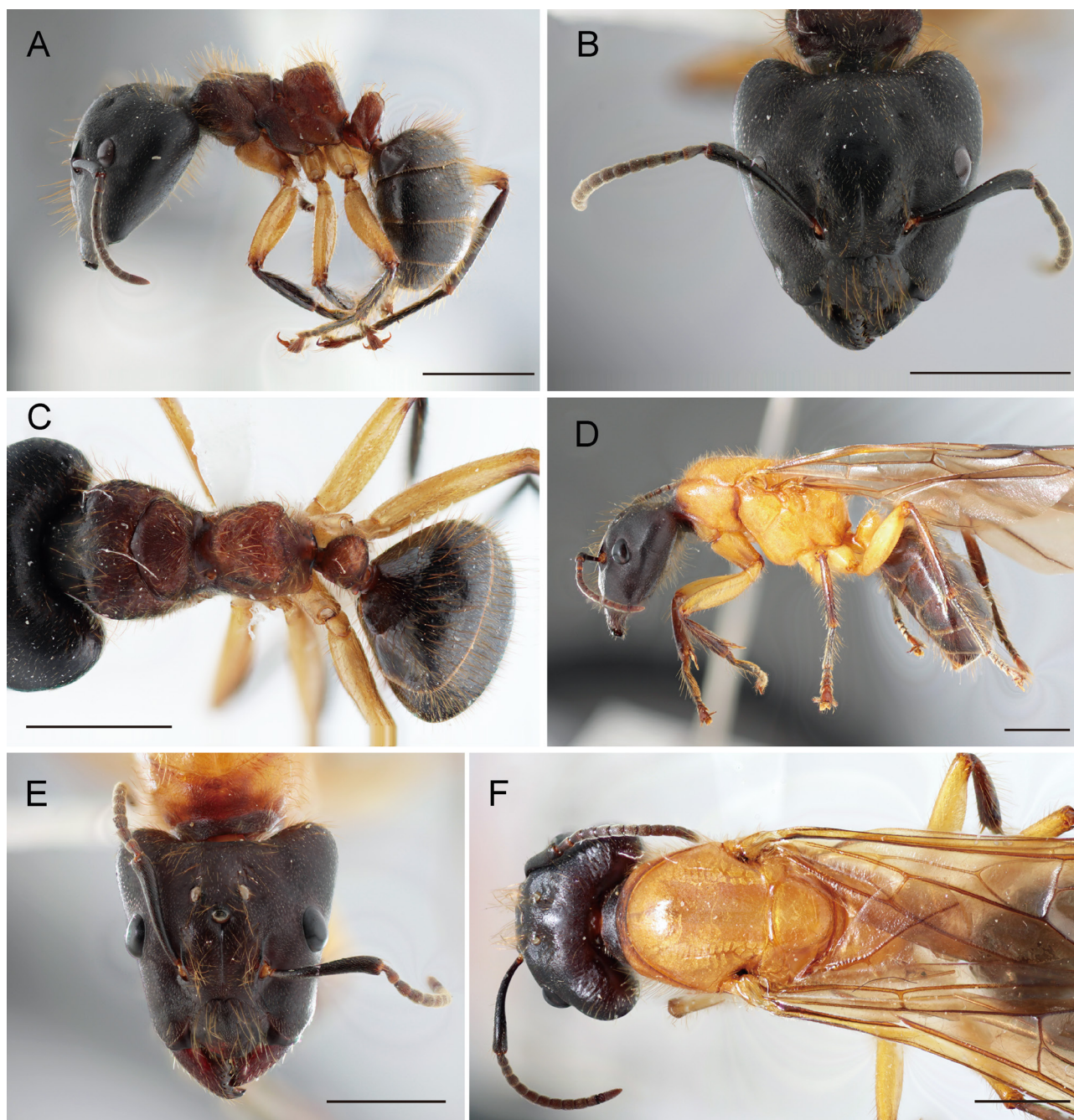


Fig. 1. *Camponotus (Myrmopalpella) megalonyx* Wheeler, 1919, major worker (A–C) and queen (D–F). A, D, habitus in lateral view; B, E, head in full-face view; C, F, body in dorsal view. Scale bars: 2 mm.

slightly diverging posteriad. Clypeus excluding anterolateral lobes longer than broad, with straight anterior margin and medially emarginate posterior margin; area around anterior tentorial pit deeply sunken. Eye oval and large (0.22–0.24 mm long), in full-face view of head, slightly protruding beyond outer margin of head; in lateral view, eye located high (posteriorly) on head; dis-

tance between posterior margin of eye and posterior margin of head nearly as long as maximum eye length. Mandible stout; its outer margin roundly curved, and masticatory margin straight with five teeth, of which apical tooth largest and basal two smallest. Maxillary and labial palps short, completely retracted in oral cavity, and number of segments not counted. Antennal scape extending

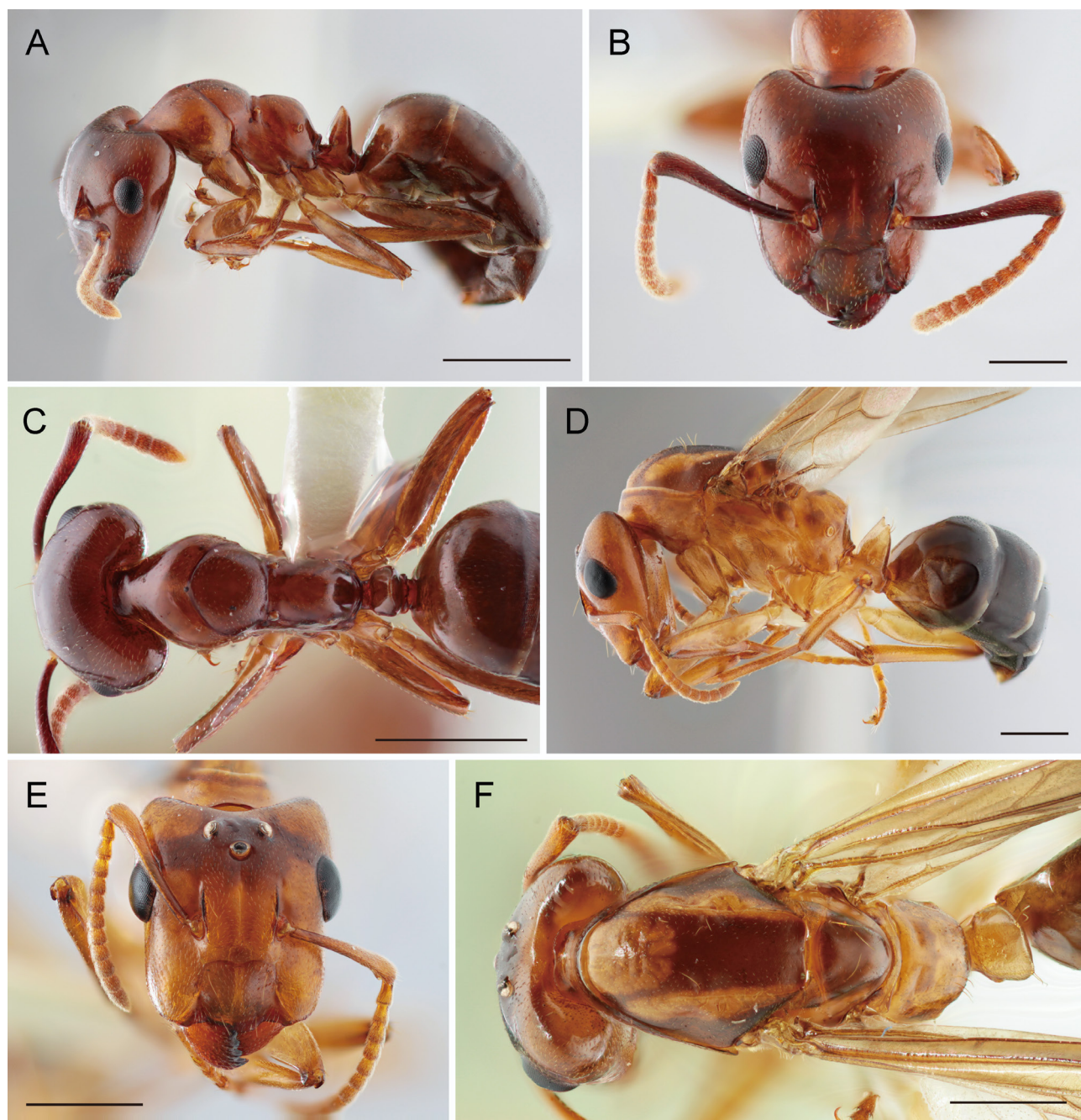


Fig. 2. *Camponotus (Myrmoplatys) concilians* Forel, 1915, **stat. promotus**, worker (A–C) and queen (D–F). A, D, habitus in lateral view; B, E, head in full-face view; C, F, body in dorsal view. Scale bars: 1 mm.

beyond posterolateral angle of head, widened in apical half; pedicel longer than each of flagellar segments 1–9 but shorter than terminal segment. Mesosoma in dorsal view longer than broad; pronotum much broader than mesonotum, narrowed anteriorly, with roundly convex lateral margin; mesonotum broader than propodeum having nearly parallel lateral margins; metanotal groove dis-

tinct, with spiracles located near lateral margin of groove. In lateral view of mesosoma, dorsal outline of promesonotum shallowly convex; propodeum lower than promesonotum; pronotum clearly demarcated from mesopleuron, that being separated from metapleuron with faint suture; metapleuron almost completely fused with propodeum; propodeum with posterodorsal corner rounded;

propodeal declivity rather steep. Petiole in dorsal view distinctly broader than long, in lateral view, much higher than long, distinctly tapered apically; anterior slope bent at one quarter of length from base; posterior slope shallowly convex; in posterior view, broadest at level of spiracle, gradually narrowed apicad; tergite and sternite completely fused; venter of sternite shallowly convex. In dorsal view of gaster, tergite 1 slightly shorter than each of tergites 2 and 3, anteriorly shallowly convex. Hind and middle tibiae with long spur and several strong bristles apically.

Head including mandible, mesosoma and petiole smooth to very superficially sculptured, weakly to moderately shiny. Gastral tergites and sternites entirely microsculptured and weakly mat. Antenna densely microsculptured and mat. Coxae of all legs almost smooth and shiny; femora and tibiae microcoriaceous and weakly shiny. Pilosity poor; dorsum of head with a pair of erect hairs at each of anterolateral and posterolateral parts of clypeus, upper frons close to frontal carina and vertex; sparse pubescence present over surface of head, mesosoma and petiole, the latter two without erect hairs; gaster with denser pubescence. Antennal scape with pubescence of moderate density; pedicel and flagellum with dense, almost appressed short hairs. Legs with sparse appressed pubescence excluding tarsi bearing dense, almost appressed short hairs mixed with sparse longer erect hairs. Body entirely yellowish brown to brown; antennal scape dark brown.

Redescription of the queen. Measurements (in mm) and indices (n=1): TBL 7.5; HL 2.28; HW 1.98; EL 0.60; EW 0.48; DPO 0.32; OOD 0.17; PW 1.63; MSL 1.90; MSW 1.45; HTL 2.18; FWL 8.10; HWL 5.45; CI 0.87; SI 0.71.

Head distinctly flattened dorsoventrally, in full-face view longer than broad, with lateral margins parallel anterior to eyes and weakly divergent posteriorly, and posterior margin broadly emarginate; occipital lobe (posterolateral corner of head) distinctly produced; occipital carina evanescent. Frontal carinae not elevated, weakly convergent anteriorly; area between carinae large, with its width almost as long as distance between frontal carina and lateral margin of head; median frontal line weak but recognisable. Clypeus weakly convex, without median carina, with lateral mar-

gins subparallel, anteriorly distinctly protruded; anterior margin of protruded area straight. Area around anterior tentorial pit deeply depressed. Eye large, distinctly longer than broad, in full-face view protruding beyond lateral margin of head; ocelli arranged in low triangle; distance between posterior ocelli as long as two ocellar diameters. Mandible triangular; its masticatory margin with six teeth. Antennal scape short, when laid back barely reaching tip of occipital lobe. Maxillary and labial palpi short, completely hidden within oral cavity and impossible to observe. Mesosoma elongate; in dorsal view of mesosoma, pronotum almost invisible; mesonotum much longer than broad; mesoscutellum as long as broad; metanotum very short; in lateral view of mesosoma, dorsal outline of pronotum and anterior half of mesoscutum roundly convex; posterior half of mesoscutum flat; propodeum lower than mesonotum; posterodorsal corner of propodeum weakly angulate; propodeal declivity steep; separation of mesopleuron from metapleuron indistinct; metapleuron not demarcated from lateral face of propodeum; propodeal spiracle oval. Petiole in lateral view sharply tapered apically; its anterior slope convex in lower half of petiolar node and posterior slope very slightly convex in its apical half; ventral margin of petiole straight; petiolar node in posterior view broadest at middle, apically with semicircular emargination.

Head, mesosoma and petiole superficially sculptured to smooth and rather shiny; mandible strongly and densely punctate and mat; gaster very finely and densely sculptured and rather dull; antennae very minutely and densely sculptured and dull; legs superficially sculptured and weakly shiny except for tarsi. Erect hairs sparse: one pair near anterior margin and one pair near posterior margin of clypeus, one pair on frons close to frontal carinae, several hairs on mesonotum, a few (longer) hairs on mesoscutellum, two pairs at posterodorsal corner of propodeum, two pairs on dorsolateral margins of petiole, one to three hairs at posterior margins of gastral tergites 2–4, more than ten hairs around tip of gaster. Head mesosoma and petiole extensively yellowish orange; dorsum of head with brownish broad band across lower vertex including ocellar region; mesoscutum with large brown markings; mesoscutellum

entirely dark brown; gaster black with anterior portion of first segment tinged with yellow.

Distribution. Simeulue Island (130 km off the west coast of Sumatra).

Remarks. This form has been treated as a subspecies of *Camponotus korthalsiae* Emery, 1887 (Bolton, 1995). However, in the worker caste, it differs from *C. korthalsiae* in the absence of erect hairs on the mesosoma, petiole and gastral dorsum (only rarely one or two erect hairs are seen on the dorsum of mesosoma). It has a pale coloured head and mesosoma (extensively light brown) compared with *C. korthalsiae*, which has a dark brown entire body. In the young workers of *C. concilians*, even the gaster is light brown, although it is darker in fully matured workers. In the queen, *C. concilians* has an essentially smooth and shiny body, while in *C. korthalsiae*, the entire body is microsculptured and mat. The antennal scape reaches the posterolateral corner of the head in *C. concilians*, but does not reach that in *C. korthalsiae*. The head and mesoscutum are principally yellowish orange with brown maculae in *C. concilians*, but entirely brown in *C. korthalsiae*.

Forel (1915) was not sure if the queen specimen he examined belonged to *C. korthalsiae concilians* and proposed another name, *C. jacobsoni*, assuming that in the future this specimen might prove to represent a different species. Emery (1925) tentatively synonymised *C. jacobsoni* with *C. korthalsiae* with a question mark; Bolton (1995) removed the question mark without stating any reason. Our queen specimen well agrees with Forel's description of the queen so that the name *C. jacobsoni* is a junior subjective synonym of *C. concilians*.

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