

## New species of the *Pristomyrmex profundus* Wang group from the Oriental Region (Hymenoptera: Formicidae: Myrmicinae)

### Новые виды муравьев группы *Pristomyrmex profundus* Wang из Ориентальной области (Hymenoptera: Formicidae: Myrmicinae)

Sk. Yamane\*, R.K. Sriyani Dias\*\*  
Ск. Ямане\*, Р.К. Шрияни Диас\*\*

\* Kagoshima University Museum, Korimoto 1–21–30, Kagoshima-shi 890–0065 Japan. E-mail: mayiopa0@gmail.com.

\* Музей Кагосимского университета, Коримото 1–21–30, Кагосима 890–0065 Япония.

\*\* Department of Zoology and Environmental Management, University of Kelaniya, Dalugama, Kelaniya 11600 Sri Lanka. E-mail: rksdias@kln.ac.lk

\*\* Департамент зоологии и экологического менеджмента, Университет Келанья, Далугама, Келанья 11600 Шри-Ланка.

**Key words:** ants, taxonomy, key, Vietnam, Thailand, Sri Lanka.

**Ключевые слова:** муравьи, таксономия, определительная таблица, Вьетнам, Таиланд, Шри-Ланка.

**Abstract.** Two new species of the ant genus *Pristomyrmex* Mayr belonging to the *P. profundus* Wang group are described from the Oriental Region: *P. lileji* Yamane et Dias, **sp.n.** from Thailand, and *P. sinharaja* Dias et Yamane, **sp.n.** from Sri Lanka. A key to species of the *Pristomyrmex profundus* group is presented.

**Резюме.** Даны описания 2 новых видов муравьев рода *Pristomyrmex* Майр, относящихся к группе *P. profundus* Ванг: *P. lileji* Ямане и Диас, **сп.н.** (Таиланд) и *P. sinharaja* Диас и Ямане, **сп.н.** (Шри-Ланка). Составлены определительные таблицы видов группы *Pristomyrmex profundus*.

### Introduction

The *Pristomyrmex profundus* species-group was established by Wang [2003] to include the single species *P. profundus* Wang, 2003. The species is very peculiar in both worker and queen morphology; worker size is rather variable even in the same sample series [Wang, 2003]. The species group was defined by several derived characteristics, among which remarkable are the mesonotum that is much higher than the propodeum and with an almost vertical posterior slope, well-developed antennal scrobes, and lack of a circling lamella at the base of the scape. Since Wang's excellent review of this genus, several new species were described from Asia by H. Zettel [e.g., Zettel, 2006; Zettel, Laciny, 2015], but no species was added to the *P. profundus* group. Recently, we found two undescribed species of the group from the Oriental Region, which are described as new species in this paper.

### Material examined

The specimens used in this paper are deposited in the Sk. Yamane Collection (SKYC), Japan, in the ant collection at the Department of Zoology and Environmental Management, University of Kelaniya, Sri Lanka, and the Thailand Natural History Museum (THNHM), Thailand. Three specimens of *Pristomyrmex profundus* Wang were examined for comparison: 1 worker, Poring (550 m alt.), Kinabalu Park, Sabah, Borneo, 17.III.1995, Sk. Yamane leg.; 1 worker, Poring (600–700 m alt.), Kinabalu Park, 11.III.2008, Sk. Yamane leg.; 1 worker, Poring Hot Spring area, Kinabalu Park, 1.III.2013, ex leaf litter, Sk. Yamane leg. (all are small workers).

### Terminology and measurements

Morphological terminology follows that of Wang [2003]. Measurements were taken for the following body parts to second decimal using an ocular micrometer except for the total body length in which the body was measured roughly: **BL** — total body length in a straight line from anterior margin of head to tip of gaster with body in profile; **HW** — maximum head width behind eyes in full-face view; **HL** — maximum head length measured from midpoint of anterior clypeal margin to midpoint of posterior margin of head in full-face view; **CI** — cephalic index, HW/HL x 100; **EL** — maximum length of eye with head in profile; **SL** — length of antennal scape, excluding basal condyle; **SI** — scape index, SL/HW x 100; **PW** — maximum pronotal width in dorsal view; **PSL** — propodeal spine length measured from its base to apex.

Values are shown for small workers and large workers separately because two size groups were recognized with naked eye (but see measurements and Remarks).

## Taxonomy

### KEY TO SPECIES OF *PRISTOMYRMEX PROFUNDUS* GROUP (WORKERS)

1. Posterodorsal margin of mesonotum extending posteriad so that this part overhanging mesonotal declivity; propodeal spine short, shorter than antennal pedicel, somewhat upwardly directed; postpetiolar node without a pair of standing hairs on its lateral face at anteroventral corner (Fig. 3) ..... *P. sinharaja* Dias et Yamane, sp.n.
- Posterodorsal margin of mesonotum not protruding posteriad so that with mesosoma in profile, posterodorsal corner of propodeum more or less round; propodeal spine much longer, longer than antennal pedicel; postpetiolar node with a pair of standing hairs on its lateral face at anteroventral corner (Figs. 1, 2) ..... 2
2. Postpetiolar node with two pairs of standing hairs on its dorsal and posterior faces (Fig. 1); standing hairs on gastral tergite 1 relatively long, almost as long as length (thickness) of petiolar node with waist seen in profile; some hairs on outer face of hind tibia as long as maximum width of the tibia ..... *P. profundus* Wang
- Postpetiolar node with only one pair of standing hairs on its dorsal and posterior faces (Fig. 2); standing hairs on gastral tergite 1 shorter than length (thickness) of petiolar node with waist seen in profile; standing hairs on outer face of hind tibia as long as or shorter than half the width of the tibia ..... *P. leleji* Yamane et Dias, sp.n.

### *Pristomyrmex leleji* Yamane et Dias, sp.n.

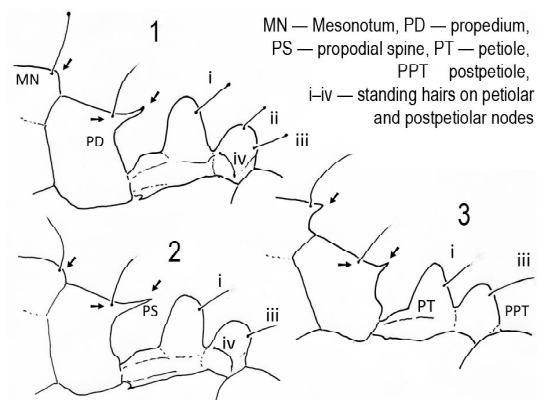
Figs 2, 4–9.

**Type material.** **Holotype:** worker, Khao Yai NP, 600–650 m alt., Nakhonratchasima Prov., Thailand, dry evergreen forest, 1.VI.2000, Sk. Yamane leg. (THNHM). **Paratypes.** 1 worker, Sakaerat ERS, Thailand, 26–30.IX.2014 (ant mimic sample: 20140930–E3) (MNHAH); 2 workers, Cha-Kid Chakud NP, Chanthaburi Prov., Thailand, 19.I.2006, W. Jaitrong, WJT06–E 1007 (THNHM, SKYC).

**Worker diagnosis.** Propodeal spine relatively long, backwardly directed, almost as long as eye; a pair of standing hairs present on dorsum of propodeal spine at its base; dorsal and posterior margins of postpetiolar node with only one pair of standing hairs; standing hairs on gastral tergite 1 absent, or if present then only as long as half the length of eye; standing hairs on outer face of hind tibia shorter than half the maximum width of hind tibia.

**Worker description.** Measurements. Small workers (n = 3; values for holotype in italics): BL *1.8*, 1.5, 1.8; HW *0.62*, 0.54, 0.57; HL *0.58*, 0.52, 0.55; CI *106*, 105, 103; EL *0.13*, 0.11, 0.11; SL *0.53*, 0.43, 0.51; SI *0.85*, 0.80, 0.90; PW *0.46*, 0.39, 0.42; PSL *0.12*, 0.10, 0.10. Large worker (n = 1): BL 2.5; HW 0.73; HL 0.70; CI 104; EL 0.14; SL 0.45; SI 0.64; PW 0.49; PSL 0.03.

**Structure.** Head in full-face view slightly broader than long, anteriorly narrowed, with posterior margin very weakly convex but its median portion straight to shallowly concave; with head in profile posteroventral corner produced (more strongly in small workers than in large workers); occipital carina almost complete, reaching the base of mandible.



Figs 1–3. Propodeum and waist, lateral view: 1 — *Pristomyrmex profundus*; 2 — *P. leleji* sp.n.; 3 — *P. sinharaja* sp.n.

Рис. 1–3. Проподеум и стебелек, вид сбоку: 1 — *Pristomyrmex profundus*; 2 — *P. leleji* sp.n.; 3 — *P. sinharaja* sp.n.

Frontal carina extending posteriad beyond posterior margin of eye; frontal lobe absent so that antennal socket entirely exposed. Antennal scrobe broad and long, dorsally margined with frontal carina, ventrally margined with a slightly weaker carina; the carina partly interrupted by eye. Clypeal disc as broad as long, posteriorly not sharply demarcated from frons, apically weakly convex and margined with a carina; median carina weak compared with lateral marginal carinae; disc generally with only one transverse carina. Eye relatively large, with 9–11 ommatidia along long axis. Mandible seen from above with basal margin distinctly concave; apical 2/3 of basal margin straight, with short tooth at apex close to basal tooth of masticatory margin; masticatory margin with large apical tooth, followed by smaller preapical tooth, small denticle and basal tooth, the last being smaller than preapical tooth. Terminal segment of antenna slightly longer than segments 9 and 10 combined. Promesonotum seen from above broadest anteriorly, broader than long excluding pronotal collar, much narrower than head, with two pairs of small lateral processes (anterior pair minute and rounded); promesonotal suture absent; mesonotum with steep posterior face; with mesosoma in profile dorsal face rounding into posterior face. Propodeum much lower than promesonotum, distinctly broader than long, parallel-sided, with lateral margin carinate; posteromedian part of propodeum extensively concave; propodeal spines shorter than propodeal dorsum, slightly diverging laterad, straight and directed posteriad; their dorsal and ventral margins with uninterrupted carina that extends downward as lateral carina of posterior face of propodeum; propodeal spiracle circular, located at same distance from propodeal dorsum and from posterior margin of propodeum. With waist in profile petiole higher than postpetiole, apically rounded, with distinct anterior pedicel; subpetiolar process low, with acute anterior angle; postpetiole apically more broadly rounded.

**Sculpture.** Almost entire head coarsely reticulate, rather shiny; antennal scrobe superficially and irregularly sculptured. Mandible entirely smooth and shiny. Antennal segments very superficially sculptured and shiny. Promesonotal dorsum with sculpture similar to that of head dorsum; other parts of mesosoma very superficially sculptured and rather shiny. Nodes of petiole and postpetiole entirely smooth

and shiny; other parts of waist weakly sculptured and less shiny. Gaster entirely smooth and shiny. Coxae, femora and tibiae of all legs very superficially sculptured and rather shiny.

**Pilosity and colour.** Head with many long standing hairs that are very weakly clavate; some of the hairs much shorter than eye; hairs at posterolateral corners of head longest; those near occipital carina much shorter than others. Clypeus on its anterior margin with a pair of long hairs medially and an additional pair of slightly shorter hairs laterally. Mandible with very sparse suberect to decumbent hairs over surface and along margins. Antennal scape with sparse suberect to decumbent hairs, and four–five much longer standing hairs on leading edge; other segments with rather dense, short decumbent hairs; in addition to these apical three segments with much sparser standing hairs on their dorsa. Promesonotum without pubescence, with five rows of two to several standing hairs that are weakly clavate; those of anteriormost row shortest and those of posteriormost row longest; propodeal dorsum with only a pair of fine standing hairs at base of propodeal spines; lateral face of mesosoma without hairs and pubescence. Petiole with a pair of standing hairs near its posterodorsal corners; postpetiolar node with a pair of hairs near its posterodorsal corners, and another pair of much shorter hairs on lateral face around anteroventral corners of node; petiole and postpetiole without pilosity on ventral margin. Gastral tergite 1 with no standing hairs or with some hairs in small workers; all large workers with standing hairs; other tergites with sparse standing hairs; all these hairs relatively shorter than length (thickness) of petiolar node with waist seen in profile; gastral sternite 1 generally without standing hairs; other segments with sparse and short standing hairs. Ventral face of coxae and trochanters of all legs with sparse standing hairs; dorsal faces of femora, outer faces of tibiae and tarsi with numerous standing hairs; standing hairs on hind tibia short, shorter than half the width of hind tibia. Entire body yellow to light yellowish brown, with gaster slightly darker; masticatory margin (teeth) of mandible dark reddish brown.

Queen and male. Unknown.

**Distribution.** Thailand (type locality), ? Vietnam.

**Etymology.** The specific epithet is derived from the name of the leading hymenopterist Dr. A.S. Lelej, with whom one of us (SKY) has been working on Asian wasps.

**Remarks.** The larger worker examined has a larger head, broader thorax and smaller scape index than have smaller workers. This species is very closely related to *P. profundus* Wang from Sabah, Borneo. Three small workers from Sabah that were examined by us well agreed with the original description by Wang [2003]. In addition to the characters mentioned in the key, *P. profundus* has more distinctly clavate and longer standing hairs on the dorsum of body and slightly smaller and round eyes than has *P. leleji* sp.n. In the former the clypeus tends to have a distinct median carina that is comparable with the lateral marginal carinae in strength (in *P. leleji* the median carina tends to be indistinct) and the clypeal disc tends to have two transverse carinae (only one in *P. leleji*). Eguchi et al. [2011] recorded «*Pristomyrmex profundus*» from Cuc Phuong, northern Vietnam, but it is most probably *P. leleji* sp.n.

*Pristomyrmex sinharaja* Dias et Yamane, sp.n.

Figs 3, 10–13.

**Type material.** **Holotype:** worker, 21.IV.2005, Sinharaja NP, Sri Lanka, A. Perera leg. (Primary A, No. 14) (Ant

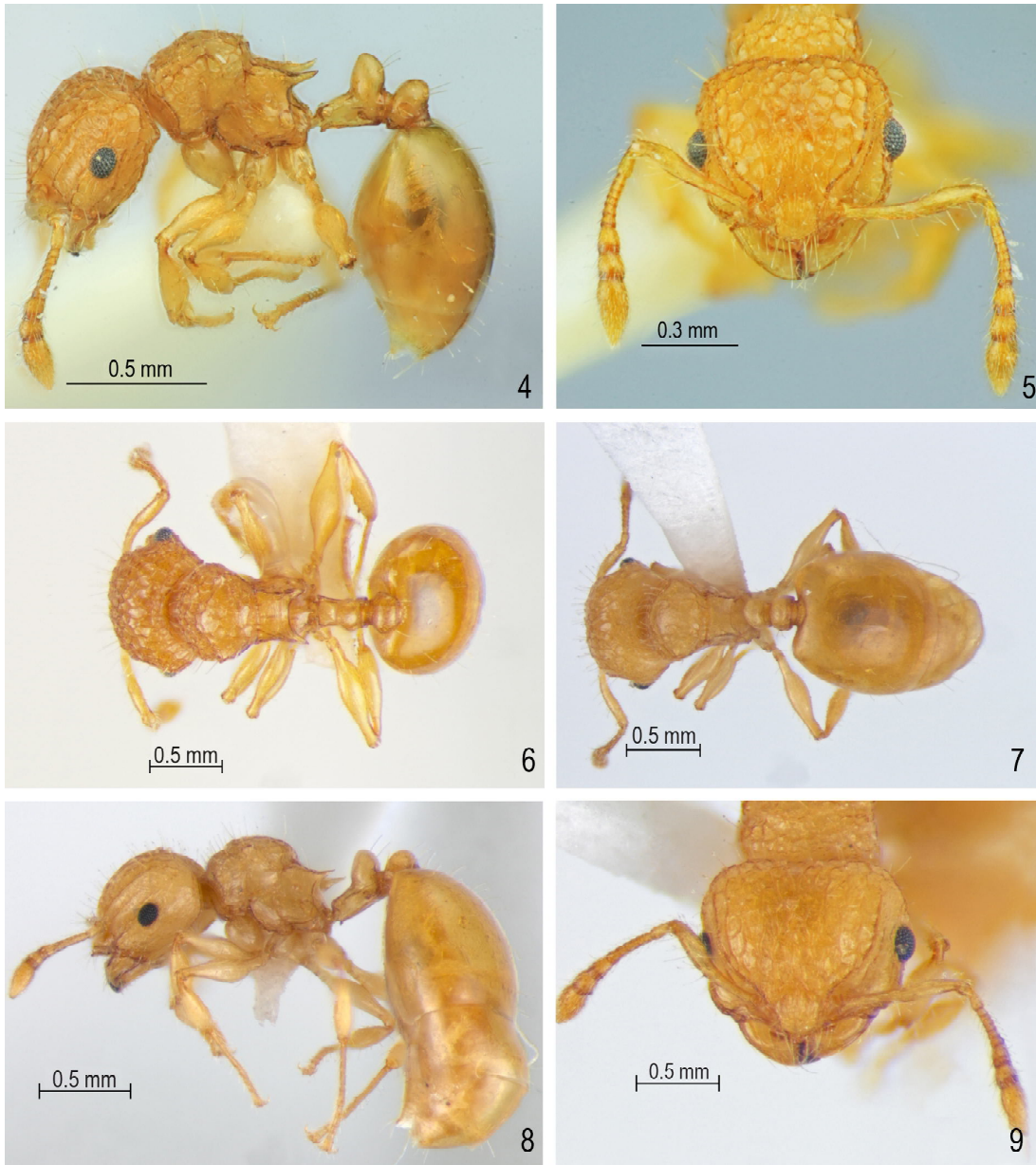
Collection at the Department of Zoology and Environmental Management, University of Kelaniya, Sri Lanka). **Paratypes.** 1 worker, same data as in holotype; 3 workers, 5–8.XII.2005, same locality and collector (Primary A, No. 6; Primary B, No. 7); 1 worker, 5–8.VIII.2005, same locality and collector (Primary B, 2) (Ant Collection at the Department of Zoology and Environmental Management, University of Kelaniya; SKYC).

**Worker diagnosis.** Propodeal spine short and somewhat upwardly directed, much shorter than eye; a pair of standing hairs present on propodeal dorsum rather than on propodeal spines; postpetiolar node with only one pair of standing hairs on its dorsum, without standing hairs on its lateral face at anterolateral corners of node; gastral tergite 1 without standing hairs in small workers, with short simple standing hairs in large workers; longest standing hairs on outer face of hind-tibia as long as maximum width of hind tibia or more.

**Worker description. Measurements.** Small workers (n = 4; values for holotype in parentheses): BL 1.6–1.8 (1.7); HW 0.53–0.58 (0.55); HL 0.52–0.58 (0.58); CI 103–105 (103); EL 0.10–0.12 (0.10); SL 0.39–0.43 (0.42); SI 0.73–0.76 (0.76); PW 0.39–0.43 (0.40); PSL 0.39–0.43 (0.40). Large workers (n = 2): BL 2.0, 2.2; HW 0.70, 0.75; HL 0.68, 0.68; CI 104, 111; SL 0.14, 0.14; SI 0.64, 0.60; PW 0.49, 0.51; PSL 0.03, 0.03.

**Structure.** Head in full-face view slightly broader than long, anteriorly narrowed, with posterior margin weakly convex; with head in profile posteroventral corner produced (more strongly in small workers than in larger workers); occipital carina almost reaching base of mandible, but very weak on posterodorsal margin of head. Frontal carina extending posteriad beyond posterior margin of eye; frontal lobe almost absent so that antennal socket entirely exposed. Antennal scrobe broad and long, dorsally margined with frontal carina, ventrally more weakly margined with a carina; the carina partly interrupted by eye. Clypeal disc posteriorly not sharply demarcated from frons, as broad as long; apical margin almost straight and weakly serrate. Eye relatively large, distinctly breaking lateral margin of head, with 9–11 ommatidia along long axis. Mandible seen from above with basal margin distinctly concave; apical 2/3 of basal margin straight, with short tooth at apex located close to basal tooth of masticatory margin; masticatory margin with large apical tooth, followed by smaller preapical tooth, small denticle and basal tooth, the last being smaller than preapical tooth. Terminal segment of antenna slightly longer than segments 9 and 10 combined. Promesonotum seen from above broader than long excluding pronotal collar, much narrower than head and much broader than propodeum, with two pairs of small lateral processes (anterior pair very small); promesonotal suture absent; with mesosoma in profile dorsal face of mesonotum extending posteriad, overhanging its posterior face; posterior margin of mesonotum strongly serrate or medially concave. Propodeal dorsum strongly sloping posteriad, parallel-sided, with lateral margin carinate; its median part concave; posterior face of propodeum very short; propodeal spines somewhat upwardly directed, very short, a mere triangular process apically pointed; propodeal spiracle circular but indistinct, located more close to propodeal dorsum than to posterior margin of propodeum. With waist in profile petiole higher than postpetiole, apically distinctly narrowed, with distinct anterior pedicel; subpetiolar process low, without acute anterior angle; postpetiole apically rounded.

**Sculpture.** Almost entire head coarsely puncto-reticulate, rather shiny; antennal scrobe superficially and irregularly sculptured (in small workers sometimes transversely striate). Mandible entirely smooth and shiny in small workers,



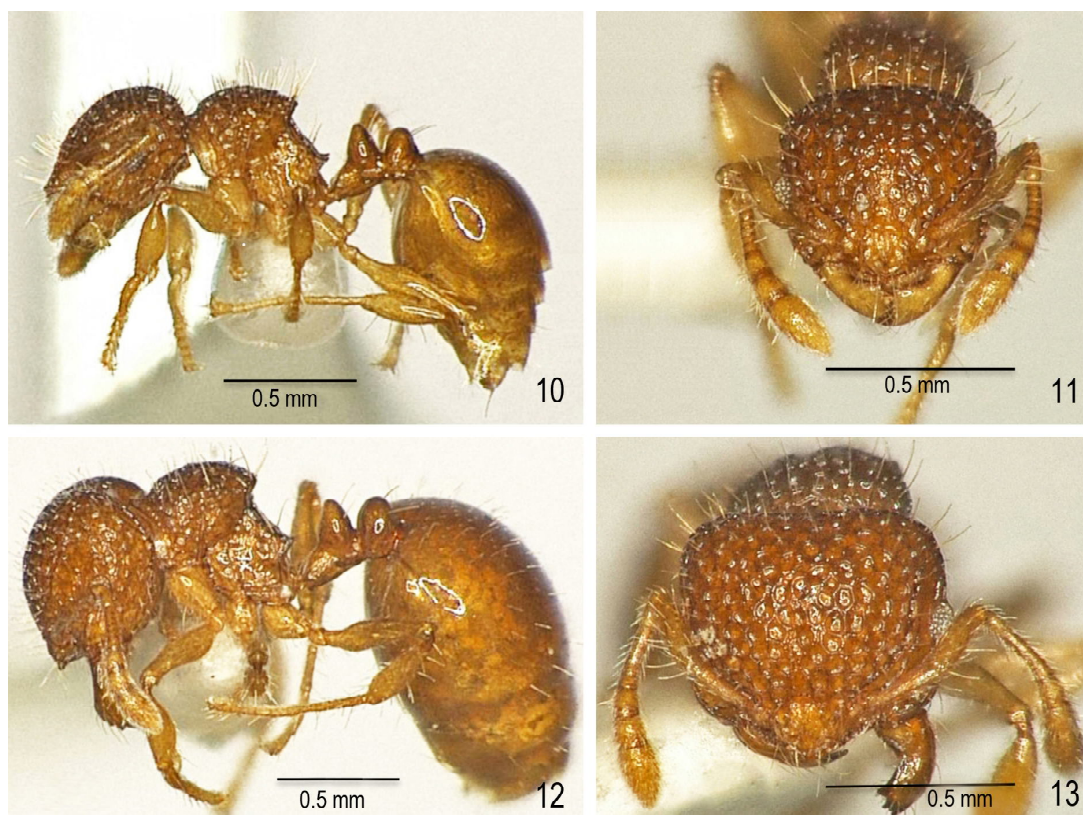
Figs 4–9. *Pristomyrmex leleji* sp.n. (4–6 — small worker, holotype; 7–9 — large worker, paratype): 4, 6–8 — habitus (4, 8 — lateral view; 6, 7 — dorsal view); 5, 9 — head, frontal view.

Рис. 4–9. *Pristomyrmex leleji* sp.n. (4–6 — маленький рабочий, голотип; 7–9 — большой рабочий, паратип): 4, 6–8 — габитус (4, 8 — сбоку; 6, 7 — сверху); 5, 9 — голова спереди.

irregularly rugose and shiny in large workers. Antennal segments very superficially sculptured and shiny. Dorsa of pronotum and mesonotum with sculpture similar to that of head dorsum; other parts of mesosoma very superficially sculptured and more or less shiny; propodeal dorsum weakly and irregularly striate and weakly shiny. Nodes of petiole and postpetiole entirely smooth and shiny; other parts of waist weakly sculptured and less shiny. Gaster entirely

smooth and shiny. Coxae, femora and tibiae of all legs smooth and shiny.

*Pilosity and colour.* Head with many long simple standing hairs; some of the hairs in small workers (most hairs in large workers) much shorter than eye; hairs at posterolateral corners of head longest. Anterior margin of clypeus with a pair of long hairs medially, and additional pair of slightly shorter hairs laterally. Mandible with very sparse suberect to decumbent



Figs 10–13. *Pristomyrmex sinbaraja* sp.n. (10, 11 — small worker, holotype; 12, 13 — large worker, paratype): 10, 12 — habitus, lateral view; 11, 13 — head, frontal view.

Рис. 10–13. *Pristomyrmex sinbaraja* sp.n. (10, 11 — маленький рабочий, голотип; 12, 13 — большой рабочий, паратип): 10, 12 — габитус сбоку; 11, 13 — голова спереди.

hairs over surface and along margins. Antennal scape with sparse suberect to decumbent hairs, and four–five much longer standing hairs on leading edge; other segments rather densely with short suberect to decumbent hairs; in addition to these antennal club with much sparser standing hairs on its dorsum. Promesonotal dorsum without pubescence, with five rows of two to several standing hairs that are simple; those of anterior-most row shortest and those of posteriormost row longest; propodeal dorsum with only a pair of fine standing hairs far from base of propodeal spines; lateral face of mesosoma without hairs and pubescence. Petiolar node with a pair of standing hairs near its posterodorsal corners; postpetiolar node with a pair of hairs near its posterodorsal corners, lacking pair of hairs on its lateral face near anteroventral corner; petiole and post-petiole without pilosity on ventral margin. Gastral tergite 1 with no standing hairs in small workers, but with some hairs in large workers; this tergite with sparse minute pubescence; other tergites with sparse standing hairs; all these hairs slightly shorter than length (thickness) of petiolar node with waist seen in profile; gastral sternites with sparse and shorter standing hairs; sternite 1 generally without standing hairs in small workers but with sparse suberect to standing hairs in large workers. Anterior face of fore coxae and ventral face of trochanters of all legs with sparse standing hairs; dorsal face of femora, outer face of tibiae and tarsi with numerous standing hairs; standing hairs on hind tibia long, as long as width of the

tibia. Body entirely dark yellowish to light reddish brown; antennal club and legs slightly paler.

Queen and male. Unknown.

**Distribution.** Sri Lanka.

**Etymology.** The specific epithet is derived from the type locality Sinharaja Forest Reserve, Sri Lanka. Sinharaja has a Strict Reserve and Forest Reserve area; visitors are allowed in the latter. Strict Reserve consists of primary forests and the specimens were collected from one locality within the primary forest with honey baiting.

**Remarks.** This is a very distinctive species and easily separated from the other species in the characters mentioned in the key and diagnosis. With the naked eye workers seem to have two size classes. Although the measurements show an only weak gap between them, large workers have rather small scape indices compared with small workers. They have larger head and promesonotum, but the propodeal spine is in size almost same as that in small workers.

## Discussion

The *Pristomyrmex profundus* species group is very compact with only three species from tropical Asia, and has a peculiar set of characteristics [cf. Wang, 2003]. The first described species *P. profundus* has been

known only from the type locality in Sabah, Borneo. We examined three worker specimens from the type locality, all well agreeing with the original description. *P. leleji*, described here as new, is very closely related to *P. profundus*, constantly separated by subtle but stable differences in pilosity, however other features mentioned in Remarks for *P. leleji* are also useful to separate these two taxa. We examined one small worker from northern Thailand that well agrees with *P. profundus* in most characters, having an additional pair of standing hairs on postpetiole and longer body hairs as in *P. profundus*. Although this may belong to an isolated population of *P. profundus*, we need more material to settle this problem. We also examined one small worker collected in West Bali, Indonesia that almost completely agrees with *P. leleji*. Again we need more material to decide the status of this specimen. On the other hand the Sri Lankan species, *P. sinharaja*, is easily separated from the other two in the structure of the mesosoma, and the condition of the propodeal spine. Although at present the known localities of all species are very sporadic, more intensive sampling of leaf litter and soil will reveal the distribution pattern of this group.

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