

*RHOPTROMYRMEX RAWLINSONI* SP. NOV., A NEW APPARENTLY WORKERLESS  
PARASITIC ANT FROM ANAK KRAKATAU, INDONESIA (HYMENOPTERA:  
FORMICIDAE: MYRMICINAE)

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**Abstract**

Taylor, R.W., 1992. *Rhoptromyrmex rawlinsoni* sp. nov., a new apparently workerless parasitic ant from Anak Krakatau, Indonesia (Hymenoptera: Formicidae: Myrmicinae). *Memoirs of the Museum of Victoria* 53: 125–128.

The alate-queen based *Rhoptromyrmex rawlinsoni* sp. nov. (Anak Krakatau I., Indonesia) is described and illustrated. It is presumed on morphological grounds to be a workerless parasite in the nests of another, unknown, ant species.

**Introduction**

*Rhoptromyrmex* is a tetramoriine ant genus comprising nine named species (Brown, 1964; Bolton, 1986). Three occur in the Indo-Australian area: *R. mayri* (Forel) is known only from India (Bolton, 1986), *R. melleus* (Emery) from Sulawesi east to New Britain and northern Cape York Peninsula, and *R. wroughtonii* Forel from southern India eastwards to the Philippines, New Guinea and Cape York Peninsula (Taylor, 1991).

All known *Rhoptromyrmex* queens possess characteristics associated with social parasitism. Their combinations establish the stages of an "anatomical parasitic syndrome" (see Wilson, 1984 and Bolton, 1986, extending the hypotheses of Brown, 1964). *R. mayri* and *R. schmitzi* (which is known only from Israel) are almost certainly workerless parasites of other ants (*Pheidole latinoda* Roger and *Tapinoma erraticum* (Latreille) respectively). *R. wroughtonii* apparently disseminates by autoparasitism followed by polygyny and colony fission. Other species, including *R. melleus*, have morphological characteristics implying colony foundation by temporary social parasitism.

Queens are not always morphologically characterised in keeping with their presumptive reproductive/parasitic roles, and the workerless parasites are no more particularly distinctive than some putatively autoparasitic or free-living forms. Reproductive females which are not associated with conspecific workers, or those of an obvious host, thus often cannot be placed confidently in the reproductive/parasitic spectrum.

On the basis of similarities to *R. schmitzi* and *R. mayri* the alate queen described here is presumed to be a further workerless inquiline found normally in the nests of some other ant species.

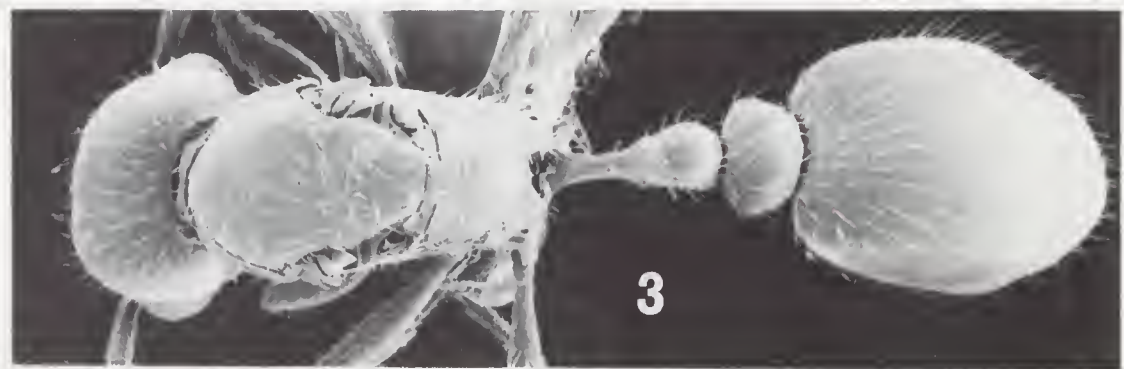
Given the circumstances of collection (from a flight-intercepting water trap) *R. rawlinsoni* is not certainly resident on Anak Krakatau. Its established presence somewhere in the Krakatau island group is reasonably assumed, despite the proximity of Sumatra and Java, from which the type could have originated. Residence will be confirmed only by collection of a further specimen from a host colony.

***Rhoptromyrmex rawlinsoni* sp. nov.**

**Figures 1–4**

*Type material.* Unique holotype, collected on the southwest shore of Anak Krakatau (06°66'S; 105°26'E), Indonesia from a water trap set by members of the 1985 Krakatau Zoological Expedition, co-ordinated by Prof I.W.B. Thornton, La Trobe University, Melbourne. The label bears the numbers 211 LW, and 31 (the latter in a small circle), and is dated 14–24/8/85. Deposited in Research and Development Centre for Biology, Bogor, Indonesia. The specimen has been gold coated for scanning electron microscopy. The detached wings are preserved in glycerin in an attached microvial.

*Description of reproductive female.* General features as illustrated. Dimensions (mm) as follows: aggregate total length c. 2.7; head width (across eyes) 0.56; head length (maximum, including clypeal projection) 0.59; scape length (maximum measurable chord length) 0.38; mesosoma length (lateral view, direct measurement from





base of pronotal collar to posterolateral extremity of mesosoma) 0.72; pronotum width 0.42; petiolar node width 0.15; postpetiole width 0.26.

Mandibles subfalcate, masticatory margins strongly oblique, each armed only with strong apical tooth and small, reclinate, subapical denticle; apical tooth aligned with main axis of mandibular shaft, not down-turned. Antennae 12-segmented; scapes very slightly exceeding occipital corners when appropriately positioned. Anteromedian border of clypeus greatly extended to form broad, anterodorsally inclined, translucent tongue-like process (Figs 1, 2, 4). Palpal formula unknown (labio-maxillary complex of holotype retracted). General cranial proportions in full face view much as in *R. mayri*, the eyes proportionately a little larger. Occipital border shallowly concave at centre, occipital corners broadly rounded. Ventral outline of head concave in side view. Postgenae each shallowly longitudinally concave; 2 resulting depressed troughs separated by broad, low, raised longitudinal tumosity centred at midline on genal suture (near-side concavity and raised midline profile visible in Fig. 4). Mesosoma elongate and narrow, lacking notaulices; parapsidal lines vestigial. Posterodorsal propodeal outline in profile a continuous, slightly convex curve. Propodeum unarmed, but with fine carina on each side running upwards from metapleural lobe to about level of spiracle. Metapleural lobes barely raised, inconspicuous. Petiole in dorsal view narrow; nodal section only slightly broader than peduncle. Postpetiole quite strongly transverse. Petiolar node in profile as in fig. 4, not flattened above; subpetiolar keel relatively large. Subpostpetiolar process transverse, moderately large and acutely triangular in lateral view; its anterior face approximately triangular, slightly concave, submarginate on each side.

Forewing veins extremely faint, especially posteriorly. Venation reduced compared to *R. wroughtonii* (as illustrated by Bolton, 1986); discoidal cell open apically (no cross-vein m-cu); radial cell closed; vein r-m + Mf lacking.

Eyes bearing a few scattered, erect, fine hairs with average length about twice diameter of single facet. Dorsal surfaces of head, mesosoma (including sides of pronotum, and entire propodeum), nodes and gaster with abundant, long, erect to suberect hairs; longest on nodes, gaster and frons. Postpetiole and gaster ventrally with similar but shorter and less-dense hairs. Mandibles, clypeus, frons anterior to eyes, postgenae, sides of pronotum and mesothorax, and ventral

half or so of petiole, essentially hairless. Antennae densely pilose, hairs shorter and finer than elsewhere; legs similarly but less densely hirsute. Pubescence virtually absent.

Sculpturing little-developed except for few broken, concentric, semicircular striae behind the antennal insertions (Fig. 2), and scattered pilosity-bearing punctures, which are relatively large on the frons, and finest on gaster and nodes; spaces between punctures almost everywhere strongly shining. Non-pilose areas specified above smooth and highly reflective, lacking sculpturing. Propodeum less shining than elsewhere, lightly and somewhat irregularly rugose.

General colour dull, medium golden-brown, gaster a shade darker. Mandibles, legs and clypeal process concolorous, lighter golden-brown. Hairs yellowish.

*Etymology.* Named to honour the noted biologist Peter Rawlinson who tragically died on Anak during the latest Australian Krakatau Expedition, April 1991.

*Notes.* Apart from its distinctive clypeal process, and the transverse postpetiole, *R. rawlinsoni* largely resembles *R. schmitzi*. It differs in similar fashion from *R. mayri*, but that species has triangular mandibles. No modifications to the latest generic diagnosis (Bolton, 1986) are required, apart from mention of the clypeal process described here.

Workers identified as *Rhoptromyrmex wroughtonii* have been taken (by the 1985 expedition) on Anak Krakatau, making this species a possible host to *R. rawlinsoni*.

Several *Rhoptromyrmex* species, including *R. melleus* and the African species *R. opacus* Emery and *R. transversinodis* Mayr, were considered by Brown (1964) to exhibit polymorphism in the reproductive female. Each case depends on a presumption of conspecificity based on similarities among workers associated with the several relevant female 'morphs'. It is equally plausible to assume non-conspecificity based on female differences. This would imply the existence of *Rhoptromyrmex* species among which reproductive females are more easily distinguished than workers, and could challenge some current synonymies among worker-based taxa. Also, some species might serve as hosts to alien congeneric parasitic females similar to their own, which could be confused as conspecific with the host workers in parasitized colonies (and which might not be plausibly recognized as alien unless queens of two or more kinds were taken together

in colonies). I suggest that current species-level synonymy in *Rhoptromyrmex* could be excessive, obscuring a greater underlying species richness, and that workerless parasitic species might be more numerous than currently assumed.

### References

- Bolton, B., 1986. A taxonomic and biological review of the tetramoriine ant genus *Rhoptromyrmex* (Hymenoptera: Formicidae). *Systematic Entomology* 11: 1-17.
- Brown, W.L. Jr., 1964. Genus *Rhoptromyrmex*, revision of, and key to species (Insecta: Hymenoptera: Formicidae). *Pilot Register of Zoology*, Cards 11 to 19.
- Taylor, R.W., 1991. Nomenclature and distribution of some Australasian ants of the subfamily Myrmicinae (Hymenoptera: Formicidae). *Memoirs of the Queensland Museum* 30 (3): 599-614.
- Wilson, E.O., 1984. Tropical social parasites in the ant genus *Pheidole*, with an analysis of the anatomical parasitic syndrome (Hymenoptera: Formicidae). *Insectes Sociaux* 31: 316-334.