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Australian species of the ant genus *Dolichoderus* (Hymenoptera: Formicidae)

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Abstract

The Australian species of the ant genus *Dolichoderus* are revised. The fauna contains 27 species belonging to four species groups, the *australis* group (5 species, 2 newly described), the *doriae* group (6 species, 2 newly described), the *scabridus* group (6 species, 1 newly described) and the *scrobiculatus* group (10 species, 4 newly described). The former subspecies *niger* Crawley and *rufotibialis* Clark are raised to species-level. The following nine new species are described: *albamaculus* **sp. n.**, *canopus* **sp. n.**, *etus* **sp. n.**, *gordoni* **sp. n.**, *inferus* **sp. n.**, *kathae* **sp. n.**, *omicron* **sp. n.**, *rutilus* **sp. n.** and *semiorbis* **sp. n.** Four new synonyms are proposed: *armstrongi* McAreavey with *reflexus* Clark, *glauerti* Wheeler with *parvus*

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Clark, *occidentalis* Clark with *formosus* Clark and *ruficornis* Santschi with *scabridus* Roger. A neotype is designated for *D. clusor* Forel. The majority of species are found in southern forested areas with only a few species known from arid and tropical regions.

Key words: Formicidae, *Dolichoderus*, Australia, new species, key

Introduction

Dolichoderus is a large, diverse genus which occurs throughout the world with the exception of Saharan and sub-Saharan Africa. Within Australia species are found primarily in southern and eastern forested areas, from mallee and savannah woodlands to wet sclerophyll forests, with the genus absent from the north-west and with only a handful of species occurring in the arid habitats of central Australia and in rainforests along the east coast. The Australian species were last reviewed by Clark (1930) but this work is out of date with considerable additional material now available.

In general, workers are diurnal and are general scavengers as well as tending aphids and other Hemiptera for honeydew. They often forage in columns on the ground or on low vegetation and trees. Nests are in soil generally under rocks or in rotten wood. During warm weather, some species of the *doriae* group will move their larvae to the surface of the ground for warmth, forming distinctive "balls" of workers and larvae. While most species have normal, fully winged queens only worker-like ergatoid queens are known for species in the *doriae* and *scabridus* groups.

All of the 27 described species of Australian *Dolichoderus* are endemic to Australia. The species can be divided into four species groups, with two of the four groups (the *doriae* and *scabridus* groups) endemic, one (the *australis* group) also occurring in New Caledonia (represented by the species *D. tricolor*) while the final group, the *scrobiculatus* group, is part of the subgenus *Hypoclinea* which occurs throughout North and South America and Europe eastward into Southeast Asia. Within Australia 12 species are found in the south-east corner while 8 species are occur broadly across southern Australia. Four species are restricted to south-west Western Australia while another four are found only in Queensland. South Australia has three species which occur only there while a single species is widespread along the eastern Australian coast. The genus is unknown from northern Australia outside of Queensland. It is also worth noting that numerous species (for example *D. clarki*, *D. etus* and *D. rufotibialis*) have restricted ranges, and even widespread species such as *D. clusor* and *D. formosus* consist of several narrowly distributed disjunct populations. In contrast, other species are quite broadly distributed, occurring across much of southern Australia (*D. omicron*, *D. parvus* and *D. reflexus*) or along the east coast (*D. scrobiculatus*).

A curious distribution pattern emerged while examining material from this group. While it is fairly common to find "outlier" specimens in most groups, specimens which occur significantly outside the main range of a species, these were unusually common in *Dolichoderus*. Normally outliers can be explained as specimen labelling errors or similar processing mistakes, but their presence across several species would seem to indicate that this may not be the case here. For example, outliers have been found in *D. doriae*, *D. extensispinus*, *D. inferus*, *D. parvus*, *D. reflexus*, *D. scobiculatus* and *D. turneri*. Unfortunately all of these have been "one-off" collections and none confirmed with multiple collections. Given that most of these are from relatively well collected areas it remains to be seen if these outliers are the result of labelling errors, short-lived dispersal events or low density established populations. In any event it is interesting that this phenomenon appears to be common in this group.

From an evolutionary perspective, it seems likely that the *doriae* and *scabridus* groups are derived from the "spiny" *Dolichoderus* of South America, specifically from an ancestor of modern-day species placed previously in the subgenus *Monacis* (currently considered to be a synonym of *Dolichoderus*). This dispersal pattern, from South America into Australia, is the same as observed for *Iridomyrmex* and close relatives (Ward *et al*., 2009). It would then appear that member(s) of the *scabridus* group dispersed north from Australia into New Guinea and Indonesia, giving rise to species of *Monoceratoclinea* and *Dolichoderus indrapurensis* (previously placed together with species of the *scabridus* group) which share the development of a decorated propodeum and lack pronotal spines (thus making the *doriae* group a less likely ancestor). The subgenus *Karawajewella*, with its single species *Dolichoderus cuspidatus*, would appear to have an independent evolutionary origin, possibly from a *Dolichoderus erectilobus*-like ancestor.

The origins of the *australis* and *scrobiculatus* groups are less clear. Both are part of the subgenus *Hypoclinea*