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Taxonomy and biology of the supposedly lestobiotic ant genus *Paedalgus* (Hym.: Formicidae)

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Abstract. The taxonomy and biology of the supposedly lestobiotic ant genus *Paedalgus* is reviewed. Ten species are recognized, from Sri Lanka and the Afrotropical region, of which six are described here as new: *distinctus*, *octatus*, *pisinnus*, *rarus*, *robertsoni* and *saritus*. The genus is defined and an identification key to species is provided. Evidence for and against a lestobiotic lifeway is discussed and what is known of the biology of the species is reviewed.

Introduction

In myrmecology the term lestobiotic indicates a relationship between a smaller and a larger eusocial species, in which the smaller (lestobiotic) species nests next to or within the walls of the nest of the larger species, and enters that nest to prey upon its inhabitants. The first species described in this genus, *Paedalgus escherichi*, was declared by Forel (1911) to be 'lestobiotic with termites'. He added that it was 'in a mound of *Termes* [now *Odontotermes*] *obscuriceps*'.

There is no direct evidence that *Paedalgus escherichi* is lestobiotic in the sense of the above definition. It may merely have been utilizing the compacted walls of the termitarium as a suitable nesting site, and not necessarily interacting with the termites at all. Nevertheless, the idea of a lestobiotic lifeway for *Paedalgus* species had been established by Forel's statement, and later discoveries tended to reinforce the idea. For instance Wheeler (1922) described *P.termitolestes* from a mound of *Acanthotermes militaris*. Its name implies a lestobiotic association although such was not actually observed or noted. In fact Wheeler (1922) remarks that 'the interesting question as to whether the minute workers of *Paedalgus* feed on the termites, on the fungus mycelium, or on both, can be answered only by future observations on artificial compound nests of the ants and their hosts'. These experiments still remain to be performed.

Since then a number of observations have tended to support the hypothesis of a lestobiotic lifeway. For instance *P.distinctus* has been found nesting adjacent to a nest of a *Nasutitermes* species in Nigeria, and *P.pisinnus* has been collected from the nest of an unidentified termite in Kenya. Hamish Robertson (SAM) informed us that the type-series of *P.robertsoni* was collected from a colony in association with a nest of the large ponerine ant species *Plectroctena mandibularis*. Thus, as five of the nine *Paedalgus* species known from workers have at one time or another been found nesting close to the nests of larger eusocial organisms, a lestobiotic lifeway may well be present, but not restricted to termites alone.

Set against this are the collections of workers of *P.distinctus*, *octatus*, *rarus* and *saritus* recovered from leaf litter samples. The last three are only known from such samples, and this implies that the link with other eusocial taxa may not be as strong as the lestobiotic hypothesis tends to imply. Finally, and most oddly, two worker samples of *P.distinctus* have been collected in Ghana tending coccids on cocoa trees. The gathering of honeydew certainly does not sit well with an hypothesis of lestobiosis.

So what conclusions can be drawn? The answer must be: very few. Obviously, a relationship with other ground-nesting eusocial insects (termites and ants) is apparent, at least for some species some of the time. But this association may be nothing more than the fact that the walls of their nests provide exactly the right substrate for a *Paedalgus* nest to be built in. Lestobiosis may be present, but has not been observed directly in the field, nor demonstrated experimentally. Certainly some species at least forage freely in the leaf litter, but their food there remains unknown. And one species, which has been found nesting in association with termites and freely in the leaf litter, also tends arboreal coccids for their sugary secretions. Preliminary results of leaf litter sampling in eastern Ghana indicates that the two *Paedalgus* species found there, *distinctus* and *saritus*, form a minor component of the ant fauna, constituting only 0.79 of 1% of the ants retrieved from the Winkler bag samples. This may indicate that leaf litter foraging is not the main food-acquiring technique for these species. Without doubt some simple observations on

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