THE ANT FAUNA (HYMENOPTERA: FORMICIDAE) OF KIRINDY FOREST (TROPICAL DRY FOREST) IN WESTERN MADAGASCAR

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Les fourmis (Hymenoptera: Formicidae) de la forêt de Kirindy (forêt tropicale sèche) à l'ouest de Madagascar

The Kirindy Forest (also known locally as the Forêt d'Amborompotsy) is located approximately 48 km ENE of Morondava in western Madagascar (20° 04' S, 44° 39' E; 30 m elevation). The forest is classified as western dry deciduous forest (JENKINS, 1987). The following list of ants was derived primarily from specimens collected for an ecological study on January 3-16, 1991 (OLSON and ANDRIAMIADANA, 1996) and from general collections made by P.S. WARD in December, 1990 for work on ant systematics and biogeography. Most of the strictly arboreal species were collected in December, while the ecological study in January focused on species occurring in the leaf litter. Collections were made within an approximately 6 km^2 area of forest. More recent field work by G. ALPERT and colleagues (in December, 1993) added two more species.

Eighty-six species of ants were identified from the collections and an additional five species are known from the vicinity of Morondava (Table 1). Undoubtedly there are additional species in the area, but the plateauing cumulative species per sample curve from the ecological study (OLSON and ANDRIAMIADANA, 1996) suggests that a large proportion of the leaf litter ant species, at least, are represented in the list. There are no published lists of ant species from other dry forests in Madagascar or elsewhere in the Afrotropics which would allow direct comparisons of species richness. ANDERSEN and MAJER (1991) recorded between 19 and 41 ant species in eight isolated patches of seasonally dry rainforest in northwestern Australia; their regional total was 102 species. Similar regional and single-site species richness values were recorded by GREENSLADE (1985) and ANDERSEN (1991) from forest and savannah woodland in northern Australia.

The Malagasy western dry forest appears to be an exceptionally species-rich habitat for the ant subfamily Cerapachyinae, with nine (seven *Cerapachys*, two *Simopone*) species recorded from Kirindy Forest. Although it is difficult to make comparisons with other regions without comprehensive species lists, we are unaware of any other single locality outside of Madagascar with this many sympatric species of Cerapachyinae. The absence of doryline and aenictine army ants in Madagascar may have permitted diversification of the Cerapachyinae. Army ants would likely be strong competitors for the ant brood and larvae on which the Malagasy *Cerapachys* and *Simopone* presumably specialize.

Another prominent feature of the Kirindy ant fauna is the arboreal genus *Tetraponera*, which is represented by ten species. This far exceeds any single-locality totals for *Tetraponera* in other parts of its range, i.e. mainland Africa and Australasia (WARD, unpubl.). Again it is tempting to attribute this to the absence from Madagascar of potentially competitive arboreal taxa such as *Oecophylla longinoda* and *Polyrhachis* spp.

The ant fauna of Kirindy Forest consists almost entirely of endemic Malagasy species (an estimated 79 out of 86 species, with most of the remaining species being indigenous if not endemic). Only one particularly aggressive "tramp" species was recorded (*Paratrechina longi-*

cornis) and this was confined to the vicinity of buildings at the logging camp. This and other non-endemic ant species (e.g. *Pheidole megacephala*, not yet present at the site) may be useful indicators of habitat disturbance.

Species determinations in the accompanying table may be considered most reliable for the genus *Tetraponera*, which one of us (PSW) is currently revising. Code numbers (e.g. sp. PSW-91) have been assigned to undescribed species in this genus. For the remaining genera we have taken identifications as far as possible, using the available taxonomic literature and, in some instances, by making type comparisons. It should be stressed that taxonomic, not to mention biological, knowledge of the Malagasy ant fauna is very fragmentary, and much work remains to be done on most of the larger genera.

Table 1: Ants of Kirindy Forest, near Morondava, Madagascar[a].

Taxon	Nesting Habits[b]
Ponerinae	
Hypoponera sp. 1	G
Hypoponera sp. 2	G
Leptogenys sp. 1	G
Leptogenys sp. 2	G
Mystrium mysticum Roger	G
Mystrium sp. 1	G
Mystrium sp. 2	G
Pachycondyla ambigua Andre	G
Pachycondyla wasmanni (Forel)	G
Platythyrea arthuri Forel	A
Platythyrea bicuspus Emery	A
Platythyrea mocquerysi Emery	A
Cerapachyinae	
Cerapachys sp. 1 (*mayri* complex)	G
Cerapachys sp. 2 (*mayri* complex)	G
Cerapachys sp. 3	G
Cerapachys sp. 4	G
Cerapachys sp. 5	G
Cerapachys sp. 6	G
Cerapachys sp. 7	G
Simopone sp. 1	A?
Simopone sp. 2	A?
Pseudomyrmecinae	
Tetraponera fictrix (Forel)	A
Tetraponera morondaviensis (Forel)	A
Tetraponera perlonga Santschi	A

Taxon	Nesting Habits[b]
Tetraponera rakotonis (Forel)	A
Tetraponera sahlbergi (Forel)	A
Tetraponera sp. nr. *morondaviensis* (Forel)	A
Tetraponera sp. PSW-84	A
Tetraponera sp. PSW-89	A
Tetraponera sp. PSW-91	A/G
Tetraponera sp. PSW-94	A
Myrmicinae	
Aphaenogaster swammerdami Forel	G
Crematogaster adrepens Forel	A
Crematogaster sp. nr. *kelleri* Forel	A
Crematogaster madecassa Emery (?)	A
Crematogaster sewellii Forel	A
Crematogaster grevei Forel	A/G
Crematogaster sp. 2	A?
Crematogaster sp. 3	A?
Eutetramorium monticelli Emery	G
Glamyromyrmex sp.	G
Leptothorax sp.	A
Meranoplus mayri Forel	G
Monomorium robustior Forel	G
Monomorium sp. 1	G
Monomorium sp. 2	G
Monomorium sp. 3	G
Monomorium sp. 4	G
Monomorium sp. 5	G
Monomorium sp. 6	G
Monomorium sp. 7	G
Monomorium sp. 8	G
Monomorium sp. 9	G
Monomorium sp. 10	G
Oligomyrmex sp.	G
Pheidole sp. nr. *megacephala* (Fabricius)	G
Pheidole sp. nr. *oswaldi* Forel	G
Pheidole sp. 1	G
Pheidole sp. 2	G
Pheidole sp. 3	G
Smithistruma sp.	G
Strumigenys sp. 1	G
Strumigenys sp. 2	G

Taxon	Nesting Habits[b]
Teratanер sp. nr. *rufipes* Emery	A
Teratanер sp. nr. *alluaudi* Emery	A
Tetramorium bessoni Forel	G
Tetramorium sp. nr. *bessoni* Forel	G
Tetramorium degener Santschi	G
Tetramorium delagoense Forel	G
Tetramorium sp. nr. *plesiarum* Bolton	G
Tetramorium quadrispinosum Emery	G
Tetramorium sp., *weitzeckeri* group	G
Formicinae	
Camponotus gouldi Forel	G
Camponotus hova Forel	G
Camponotus imitator Forel	G
Camponotus immaculatus Forel	A/G
Camponotus quadrimaculatus Forel	A/G
Camponotus repens (Forel)	A
Camponotus strangulatus Santschi	A?
Camponotus voeltzkowi Forel	A/G
Camponotus (*Tanaemyrmex*) sp.	G
Paratrechina longicornis (Latreille)	G
Paratrechina sp. nr. *ellisi* Forel	G
Plagiolepis alluaudi Emery	A/G
Plagiolepis sp.	G
Dolichoderinae	
Technomyrmex sp.	A

[a] Additional taxa recorded from the vicinity of Morondava (WHEELER, 1922, BOLTON, 1979):

Camponotus radovae Forel
Cataulacus ebrardi Forel
Crematogaster castanea Smith
Tetramorium anodontium Bolton
Tetramorium scytalum Bolton

[b] G: nesting in ground, A: arboreal. Information on nesting habits derived from field observations on the same or related species.