



## **Ants of Southern Guyana - A Preliminary Report**

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## Chapter 2

### Ants of Southern Guyana - a preliminary report

*Ted R. Schultz and Jeffrey Sosa-Calvo*

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#### INTRODUCTION

Due to the combined efforts of a global community of ant systematists and ecologists, codified in Agosti et al. (2000), ants that inhabit the leaf litter have been widely used as biological indicators in biodiversity studies conducted at localities across the planet. Leaf-litter ants serve as good biodiversity indicators for conservation planning because they are: (1) ecologically dominant in most terrestrial ecosystems; (2) easily sampled in sufficiently statistical numbers in short periods of time (Agosti et al. 2000); and (3) sensitive to environmental change due to their many interdependencies with other components of the local biota (Kaspari and Majer 2000).

The ant diversity of Guyana is largely unknown. Previous studies suggest a rich ant fauna with more than 350 species (Wheeler 1916, 1918; Weber 1946; Kempf 1972; La Polla et al. 2007), but this figure likely underestimates the true number of species present in the country. It is well known that the New World tropics possess one of the richest ant faunas in the world, with nearly 3100 known species (Kempf 1972, Fernandez and Sendoya 2004).

This preliminary report summarizes ant collecting at two sites in southern Guyana, near the border of Brazil. These data will later be compared with pre-existing data from other sites across the Guayana Shield.

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#### METHODS

##### Study site

The Acarai Mountains are wet, forested, low-altitude (<1500 m) uplands located in the southern part of Guyana. The Acarai Mountain range lies along the border shared between Guyana and Brazil, and is one of four mountain ranges in Guyana. Two important Guyanese rivers, the Essequibo River (the longest river in the country and the third largest river system in South America) and the Courantyne River, originate in the Acarai Mountains. The Acarai Mountains are actually one part of a larger range that extends into the Wassarai Mountains to the north and east.

##### Field methods

Ants were sampled at two main sites; Site 1 in the Acarai Mountains (October 6-19, 2006; Acarai Mountains including a satellite camp, New Romeo's Camp) and Site 2 located along the Kamo River (October 21-26, 2006; Kamo River). Sampling consisted of: (i) intensive hand collecting in leaf litter, rotten logs, fallen trees, and vegetation, and (ii) 60 leaf- and 40 wood-litter samples utilizing maxi-Winkler litter extractors. Each transect consisted of ten separate collections of sifted litter, six liters each, each sample collected separately from the others, and each sample consisting of litter from one or more microhabitats. Leaf-litter samples were taken from leaf litter (including small twigs and branches), whereas wood-litter samples were taken exclusively from rotten and decaying logs. Sampling followed a modification of the well-known and extensively utilized ALL protocol (Agosti et al. 2000). Sifted litter samples were suspended

in mesh bags within the maxi-Winkler extractors for 48 hours. Collected specimens were preserved in 95% ethanol for subsequent sorting and identification in the lab upon return to the United States.

## RESULTS

Because several years' time is necessary for sorting and preparing the estimated 25,000 specimens collected, we are not yet able to provide a detailed report on the results. Preliminary results of the hand collecting are as follows: We collected a total of 34 ant genera representing 9 subfamilies (of 21 subfamilies currently defined for the family Formicidae (see Appendix 1)). Site 1 contained the larger number of genera (33), whereas Site 2 contained 22 genera. Both sites shared 22 genera out of the total of 34 collected. Site 1 contained a higher number of exclusive ant genera (11), i.e., genera not shared with Site 2, whereas Site 2 contained only one of the non-shared genera.

## GENERAL IMPRESSIONS

Based on the ant fauna, both sites are minimally impacted by humans. We found no evidence that human activities such as hunting, fishing, logging, or mining had any noticeable effect on the ant fauna. No invasive ant species were encountered, whereas such species are regularly encountered in human-disturbed habitats. For example, *Akuthupono*, the old Wai-Wai village, contained high concentrations of *Solenopsis* ("fire ant") species commonly encountered in human-disturbed habitats. Large *Atta* nests are frequently encountered in disturbed habitats, whereas in undisturbed forests they are relatively rare. Such rarity was encountered at both RAP sites. Our preliminary impressions include:

- The genera *Pheidole*, *Crematogaster*, *Dolichoderus*, and *Camponotus* appear to be the most conspicuous members of the ant fauna at both sites.
- The genus *Paraponera* and its only species, *P. clavata*, was found at Site 1 but not at Site 2.
- *Atta* sp. were collected at both sites, but were not common.
- *Mycetarotes* cf. *acutus* was collected at Site 1. This represents a surprising and significant range extension for this fungus-growing genus, previously known only from Amazonian Brazil and Argentina.
- Comparisons between sites suggest that Site 1, Acarai Mountains, contains a more diverse ant fauna than Site 2, Kamo River. However, it is important to note that there was a greater sampling effort by the ant team at Site 1 than at Site 2. Once we complete thorough quantitative analyses of the data we will have an improved ability to compare diversity between the sites.

## CONSERVATION RECOMMENDATIONS

No recommendations can be made at this stage. Such recommendations can only be formulated once the litter samples are fully analyzed.

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