

THE FORMICIDAE OF THE RAIN FOREST IN PANGUANA, PERU : THE MOST DIVERSE LOCAL ANT FAUNA EVER RECORDED

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The ant fauna of the biological station "Panguana" in Peru was studied. Panguana (9°37'S, 74°56'W) is situated about 220 m a.s.l. at the Rio Yuyapichis, an affluent of the Rio Pachitea. The region belongs to the preandine hylaea, and is covered naturally by an evergreen seasonal rain forest as defined by Ellenberg [1]. Inundation vegetation is found in few parts. Besides natural ecosystems, there are also different anthropogenic habitats, such as pastures, plantations, and secondary forests. Mean annual temperature at the station is about 24-25°C. The rainy season lasts from the end of October to April, and supplies 80% of the whole annual precipitation of about 2400 mm.

Field work was carried out between May 1983 and Juli 1985. Ants were caught by forceps or aspirator when running around, by breaking up their nests, by pitfall and light traps, in tree eclectors, by means of berlese funnels from litter and epiphyte humus, and by baiting them with tuna. Arboreal species were also collected from cut trees, and by climbing up a big tree. The total area sampled, including forest and other habitats, was about 10 km².

So far, more than 500 ant species belonging to 6 subfamilies and 78 genera were recognized from the vicinity of Panguana. This is the most diverse local ant fauna ever recorded. The number is equal with about 25% of the total number of species known from the neotropical region [2] and greater than the number of ant species known from the whole of Europe (ca. 370 species from 52 genera [3,4]).

About 10% of the species collected are likely to be new to science.

Some notable examples of species diversity in Panguana are:

1. 114 species (41 genera) from 13 pitfall traps in a forest area of 10 x 10 m within 14 weeks;
2. 44 species (21 genera) from tree eclectors at one big tree within 8 weeks;
3. 38 species (18 genera) from one big tree hand-sampled in 20 m height. The two last figures mean

that ant species richness on a single big tree in Panguana might be as high as in the entire native ant fauna of the British Isles which consists of 46 species from 16 genera [5]. Interestingly, Wilson [6] found similar data on a single big tree after insectizidal fogging in the Tambopata Reserved Zone, Peru.

The genera richest in species numbers are Pheidole (Myrmicinae = M) and Camponotus (Formicinae) with more than 50, each. Together with the species of Pseudomyrmex (Pseudomyrmicinae), Gnamptogenys (Ponerinae = P), Solenopsis (M), Crematogaster (M), Pachycondyla (P), Azteca (Dolichoderinae), Strumigenys (M) and Zacryptocerus (M) they make up more than 50 % of all species collected.

Frequent, with more than 30 species, are also the Attines (leaf cutter ants), and, with at least 25 species, the army ants of the subfamily Ecitoninae. Both groups play important ecological roles, the first by using fungi as food which are cultivated on fresh plant material or on animal or plant detritus, thus being indirectly part of the decomposing system, the second by hunting to a high proportion other ant species, thereby maintaining high fluctuation of ant colonies. About a dozen ant species in Panguana are obligatory living on ant-plants.

Most species in Panguana seem to be typical forest species which are only or predominantly found in forest habitats. So far known, about 50% of the species are at least partly arboreal with regard to their nest or activity habits. Geographical distribution of a number of species is widespread within the Amazonian rain forest, e.g. from Peru to the Guyanas.

The most important parameter for the ant community structure seem to be nest habits, but, activity time and space, food spectrum and recruitment modes, colony size and social organization, aggressive as defensive behaviour play important roles, too.

References

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