

Fungus-growing ants (Hymenoptera: Formicidae) on Santa Catarina Island, Brazil: patterns of occurrence

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Abstract: A taxonomic survey on fungus-growing ants (Attini) was made at 14 beaches on Santa Catarina Island (SC), Brazil. The samplings were manual, in soil or litterfall, in the following habitats: sandy beach, herbaceous vegetation and shrubby vegetation. From 12 species of Attini (ten of *Acromyrmex* Mayr and two of *Cyphomyrmex* Mayr), the most frequent were *Cyphomyrmex morschi* Emery and *Acromyrmex crassispinus* Forel, collected, respectively, on eight and ten of the monitored beaches. Altogether, Sorensen's similarity coefficients were high (range: 0.59-0.80), in spite of the lower numbers of ant species on sandy beaches.

Key words: Fungus-growing ants, beaches, Santa Catarina Island, Brazil, Attini.

The tribe Attini, that comprises the fungus-growing ants –and the more specialized leaf-cutters– are restricted to the New World, the majority of species recorded from the Nearctic region (Weber 1982, Fowler 1983, Mayhé-Nunes 1995).

Ferreira-Lima (1945) lists six species of *Acromyrmex* and one of *Atta* Fabricius for Santa Catarina State. Among these, only *Acromyrmex disciger* Mayr and *Acromyrmex laticeps* Emery are mentioned as occurring on Santa Catarina Island. Recently, Bonnet and Lopes (1993) recorded four species of Attini (*Acromyrmex niger* (Fr. Smith), *Acromyrmex striatus* (Roger), *Cyphomyrmex morschi* and *Trachymyrmex iheringi* (Emery)) at Joaquina Beach on Santa Catarina Island.

This paper measures species coexistence for attine ants in Santa Catarina Island. We carried out the following: a) a taxonomic inventory of species of Attini at some beaches on

Santa Catarina Island (27° 10' and 27° 50' S; 48° 25' and 48° 35' W) and b) an association of species with habitats at the beaches (on the sand, and in both herbaceous and shrubby vegetation).

The samplings were all manual, in soil or litterfall, because the attine ants were not attracted by the usual baits (honey, sardine or tuna paste) (Silva and Lopes 1997). These samplings were done from 03.14.1996 to 06.07.1996 at 14 beaches on Santa Catarina Island. The beaches "profiles" varied from zero to five meters above the sea level. The main vegetation species are: *Blutaparon portulacoides* (St.-Hil.) Mears (Amaranthaceae), *Oxypetalum* cf. *banksii* R. & S. (Asclepiadaceae), *Conyza* cf. *canadensis* (L.) Cronq., *Porophyllum ruderale* (Jacq.) Cass. (both Compositae), *Ipomoea imperati* (Vahl) Grisebach, *Ipomoea pes-caprae* (L.) R. Brown (both Convolvulaceae), *Remiria maritima* Aubl. (Cyperaceae), *Panicum racemosum* Spr., *Pas-*

TABLE 1

Species of Attini recorded at the 14 beaches sampled on Santa Catarina Island, Brazil.

Ant taxon	Sandy beach	Herbaceous vegetation	Shrubby vegetation
<i>Acromyrmex crassispinus</i> (Forel)	D, T	M, JI, F, G, CBS, A, C	BL, D, M, JI, G, T
<i>A. disciger</i> (Mayr)	-	BN	-
<i>A. fracticornis</i> (Forel)	-	JI, A	BL, G
<i>A. hispidus fallax</i> Santschi	D, JI	BL, D, PS	BL
<i>A. laticeps</i> (Emery)	-	J	BL
<i>A. niger</i> (Fr. Smith)	-	C	-
<i>A. rugosus</i> (Fr. Smith)	D	D, PS	D, PS
<i>A. striatus</i> (Roger)	BL	G, A	BL, G, A
<i>A. subterraneus</i> (Forel)	-	BL, PS	M, PS
<i>Acromyrmex</i> sp.	-	PS	-
<i>Cyphomyrmex morschei</i> Emery	D, JI	BL, D, M, JI, G, CBS, SAL, PS	BL, D, M, JI, G
<i>Cyphomyrmex</i> sp.	-	SAL, C, J, PS	-

Codes: A = Armação, BL = Barra da Lagoa, BN = Beiramar Norte, C = Cacupé, CBS = Caieira da Barra do Sul, D = Daniela, F = Forte, G = Galheta, J = Joaquina, JI = Jurerê Internacional, M = Moçambique, PS = Pântano do Sul, SAL = Santo Antônio de Lisboa e T = Toló.

(both Gramineae), *Canavalia rosea* (Sw.) DC., *Dalbergia ecastophyllum* (L.) Taub. (both Leguminosae), *Dodonaea viscosa* (L.) Jacq. (Sapindaceae) and *Hydrocotyle bonariensis* Lam. (Umbelliferae) (Bresolin 1979, Castellani *et al.* 1999). Each beach was examined for at least three hours in the above-mentioned habitats. The voucher specimens were deposited in the reference collection of the Departamento de Ecologia e Zoologia, CCB/UFSC. The taxonomic identification follows Gonçalves (1961), Kempf (1964), Fowler (1988) and Bolton (1994).

For the faunistic comparison in the three beach habitats, Sorensen's similarity coefficient was used (Krebs 1989).

We recorded 12 species of Attini, of which ten were *Acromyrmex* and two *Cyphomyrmex* (Table 1).

Only five species were actually present on the sand itself. This is a restricted location for foraging because of vegetation escarcity. In contrast, the beaches with herbaceous vegetation had all 12 species. This is particularly consistent with *Acromyrmex* preference for open habitats

(Fowler 1983, Farji-Brener and Ruggiero 1994).

The values for Sorensen's similarity coefficients were 0.59 (sand and herbaceous vegetation), 0.77 (sand and shrubby vegetation) and 0.80 (herbaceous vegetation and shrubby vegetation). These high coefficients reflect the fact that all the species that occur on sand, also nest in sections with herbaceous and shrubby vegetation (Table 1).

The number of *Acromyrmex* species (ten) is high in comparison with other studies in coastal Brazil: three species were recorded by Gonçalves and Nunes (1984), two by Bonnet and Lopes (1993) and two by Fowler and Pesquero (1996). *Acromyrmex fracticornis* (Forel) and *Acromyrmex rugosus* (Fr. Smith) are new records for Santa Catarina State, according to the reference list of Della Lucia *et al.* (1993). *Acromyrmex crassispinus* was the most frequent species, being collected on ten of the 14 beaches, even at the tideline, while foraging among organic material. This species is referred to by Gonçalves (1961) as the "commonest leaf-cutting ant in southern Brazil".

Most *Cyphomyrmex* were *C. morschi*. This species commonly appears in other coastal regions inventories (Kempf 1964, Bonnet and Lopes 1993).

In regard to future work, we suggest an increase in collections at other beaches on Santa Catarina Island as well as collections during other periods of the year.

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