

# Dancing in the rain: swarms of winged termites congregate a varied bird assemblage at an urban backyard in southeastern Brazil

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**RESUMO:** Dançando na chuva: enxamear de cupins alados congrega um conjunto variado de aves num quintal em área urbana no Sudeste do Brasil. Cupins alados (Isoptera) são fonte alimentar rica, porém imprevisível, para diversas aves tropicais. Registro aqui um agrupamento de 16 espécies de aves apesando cupins alados ao enxamear em duas tardes chuvosas num pequeno quintal em área urbana de Campinas, São Paulo, durante o inverno. Sete das espécies parecem ser os primeiros registros de predadores de cupins alados nos Neotrópicos. As aves mais numerosas (10 a 20 indivíduos) foram *Pygochelidon cyanoleuca*, *Thraupis sayaca* e *Coereba flaveola*. Esta última, *Mimus saturninus*, mais *Furnarius rufus*, foram as espécies que apareceram primeiro. Cinco espécies apanharam cupins exclusivamente em vôo, cinco apanharam os insetos exclusivamente no chão e as seis restantes apanharam cupins tanto em vôo como no chão. As aves registradas vivem em áreas abertas, o que explicaria a variedade e a riqueza de espécies que se agruparam em quintal de uma área urbana.

**PALAVRAS-CHAVE:** Aves, Isoptera, recurso alimentar imprevisível, inverno, área urbana, habitantes de áreas abertas.

**KEY-WORDS:** Aves, Isoptera, unpredictable food source, winter, urban area, open area dwellers.

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Winged termites (Isoptera) are a rich but ephemeral and unpredictable food source for several bird species in the tropics (see Olson and Alvarenga 2006, and references therein). Swarming termites attract varied bird species, which congregate readily at the swarming places and take advantage of this short-lasting food resource (*e.g.*, Eisenmann 1961, Sazima 1989, Gussoni and Campos 2003, Olson and Alvarenga 2006). Since these congregations are sporadic and short-lasting, Olson and Alvarenga (2006) recommend that records on such aggregations are to be documented to provide further insights on this phenomenon.

I record here an assemblage of 16 bird species that congregated to prey on swarming termites in two mid-winter rainy afternoons in a backyard in the urban area of Campinas, São Paulo, southeastern Brazil. Besides listing the birds and briefly describing their behaviour, I note the departure from the usual foraging for a few of these birds, and comment on some of the similarities and differences between the three available reports on multi-specific bird assemblages attracted to termite swarms in Brazil, all of them in the Southeast.

The termite swarms and the bird congregation were recorded in two afternoons at a small backyard about 200 m<sup>2</sup> (22°49'59"S, 47°04'41"W) in Barão Geraldo,

Campinas, São Paulo, southeastern Brazil. The backyard harbours a few cultivated trees, several shrubs, and potted ornamental plants. On earlier occasions, scattered visits of several bird species to forage on fruits, nectar, and insects were recorded in the backyard throughout the day.

The birds preying on the winged termites and interacting with conspecifics were observed through binoculars and a 300 mm telephoto lens. The first observational session was on 23 July 2007 (austral midwinter) under a drizzle between 13:00 and 15:00 h, and T<sup>b</sup> 21 to 22°C, and the second one was on the following day under a downpour between 16:00 and 17:30 h, and T<sup>b</sup> 18 to 19°C. "Ad libitum" and "behaviour" sampling rules (Martin and Bateson 1986) were used throughout the sessions of 10 to 30 min (total 190 min). A series of digital photographs was taken as vouchers, a few presented here. Additionally, the photographs were used for further analyses and characterisation of the birds' behaviour.

A total of 16 bird species was recorded in the backyard (Table 1), all of them but one (a woodpecker) recorded in both afternoons. Judging from the bird species listed and commented upon by Eisenmann (1961), Gussoni and Campos (2003), and Olson and Alvarenga (2006), seven species reported here seem to be first records as predators on swarming winged termites in the

Neotropics: Swallow-tailed Hummingbird (*Eupetomena macroura*), Green-barred Woodpecker (*Colaptes melanochloros*), Rufous Hornero (*Furnarius rufus*), Southern House Wren (*Troglodytes musculus*), Pale-breasted Thrush (*Turdus leucomelas*), Chalk-browed Mockingbird (*Mimus saturninus*), and Silver-beaked Tanager (*Ramphocelus carbo*). No doubt the lists presently available will greatly increase with further records of bird assemblages that congregate at termite swarms.

Even if the number of species reported here is slightly higher than a half of those recorded by Olson and Alvarenga (2006) and Gussoni and Campos (2003) – near a montane forest (N = 26) and a riparian forest (N = 26) – the species richness is high for a small urban backyard. One probable explanation for such richness is that most species, if not all, live in open areas, a trait that favours their presence in urban habitats (Sick 1997, Develey and Endrigo 2004). Additionally, the hummingbird, the mockingbird, the tanagers, and the Bananaquit visited the backyard to feed on flower nectar and/or fruits. It would prove fruitful to compare bird assemblages (both in richness and composition) that congregate at swarm-

ing termites in different habitats, e.g., urban areas, forest edges and/or clearings, and savannas.

Blue-and-white Swallow (*Pygochelidon cyanoleuca*), Sayaca Tanager (*Thraupis sayaca*), and Bananaquit (*Coereba flaveola*) were the most numerous birds (10 to 20 individuals) in the assemblage (Table 1), whereas the latter one, Chalk-browed Mockingbird, and Rufous Hornero were the species that arrived first at the swarming. This contrast with the observations reported by Olson and Alvarenga (2006), who recorded wide-ranging aerial foragers (swifts and swallows) as the first arrivals. On the other hand, Blue-and-white Swallows were among the most numerous species in my observations, which agrees with Olson and Alvarenga (2006) but not with Gussoni and Campos (2003), who recorded only one individual despite the habitat type (degraded forest edge) being favourable to occurrence of swallows (IS *pers. obs.*).

Five species foraged exclusively on the wing, five ones foraged exclusively on the ground, and the remainder six species foraged both on the wing and on the ground (Table 1 and Figures 1 to 5). My observations agree with those of Eisenmann (1961) and Olson and

TABLE 1: Bird species recorded to prey on swarming winged termites in a small backyard in the urban area at Campinas, São Paulo, southeastern Brazil, in two consecutive rainy afternoons in July 2007. Sequence of families follows the CBRO (2008); genera and species in alphabetical order. Estimated or counted numbers (N), preying modes, and main food (the latter cf. Argel-de-Oliveira and Figueiredo 1996, Sick 1997, Develey and Endrigo 2004, IS *pers. obs.*).

Species	N	Preying modes	Main food
Trochilidae			
<i>Eupetomena macroura</i>	1	Snatched on the wing	Nectar/arthropods
Picidae			
<i>Colaptes melanochloros</i>	1	Picked on the ground	Arthropods/fruits
Furnariidae			
<i>Furnarius rufus</i>	2	Picked on the ground	Arthropods/seeds
Tyrannidae			
<i>Pitangus sulphuratus</i>	1	Both	Arthropods/fruits/vertebrates
<i>Tyrannus melancholicus</i>	2	Snatched on the wing	Arthropods/fruits
Hirundinidae			
<i>Progne tapera</i>	~5	Snatched on the wing	Arthropods
<i>Pygochelidon cyanoleuca</i>	~20	Snatched on the wing	Arthropods
Troglodytidae			
<i>Troglodytes musculus</i>	2	Picked on the ground	Arthropods
Turdidae			
<i>Turdus leucomelas</i>	1	Picked on the ground	Invertebrates/fruits
Mimidae			
<i>Mimus saturninus</i>	6	Picked on the ground	Invertebrates/fruits/vertebrates
Coerebidae			
<i>Coereba flaveola</i>	~10	Both	Nectar/fruits/arthropods
Thraupidae			
<i>Ramphocelus carbo</i>	4	Both	Fruits/nectar/arthropods
<i>Tangara cayana</i>	1	Both	Fruits/arthropods/leaves
<i>Thraupis sayaca</i>	~10	Snatched on the wing	Fruits/flowers/arthropods/leaves
Emberizidae			
<i>Zonotrichia capensis</i>	1	Both	Seeds/arthropods
Passeridae			
<i>Passer domesticus</i>	2	Both	Seeds/arthropods



Alvarenga (2006) in that several species departed from their particular hunting habits and ecological strata. This may be exemplified by Bananaquits, Silver-beaked and Burnished-buff (*Tangara cayana*) tanagers picking the termites on the ground (Table 1, Figures 3, 5). Additionally, Bananaquits very rarely catch insects on the wing (IS *pers. obs.*) even if they are able to hover for a while (Sick 1997). Thus, the documentation suggested by Olson and Alvar-

enga (2006) proved instrumental to indicate which (and how) birds departed from their habitual foraging mode. Further studies may examine to what extent termite swarms – and other types of massive occurring and unpredictable food sources as well – may drive the habits of birds exploiting this resource type. For instance, traplining and territorial hummingbirds adjusted their foraging behaviour to the massive blooming of a particular plant



FIGURES 1-6: (1) Chalk-browed Mockingbird (*Mimus saturninus*) catches a winged termite at an exit of the colony in a small backyard at Campinas, São Paulo, southeastern Brazil, under a downpour; (2) Rufous Hornero (*Furnarius rufus*) catches a winged termite at another exit of the colony; (3) Southern House Wren (*Troglodytes musculus*) catches a winged termite on the ground; (4) Bananaquit (*Coereba flaveola*) catches a winged termite on the ground to consume it later on a bush; (5) Silver-beaked Tanager (*Ramphocelus carbo*) male on the ground, alert to the emerging winged termites; (6) agonistic interaction between two Chalk-browed Mockingbirds – the bird on the left, with open bill, was the dominant one on the lawn. Note soaked plumage of the birds in figures 1, 2, and 6.

species following a fire at a montane site in southeastern Brazil (Sazima *et al.* 1999).

Agonistic interactions were recorded in the backyard for Chalk-browed Mockingbirds only (Figure 6). These birds lives in groups, probably familiar ones (Sick 1997), and there is a hierarchy among the members of given groups. No aggressive interactions between foraging birds are reported by Gussoni and Campos (2003) or Olson and Alvarenga (2006), probably because the areas of both these studies are much larger than a backyard and, additionally, the numbers of termites would influence the social behaviour of the birds at such congregations.

The bird congregation preying on termite swarms recorded here and the two available reports on the same subject in Brazil differ in the period they occurred. The observations made by Gussoni and Campos (2003) were in early austral summer at about mid-day, those of Olson and Alvarenga (2006) were in early autumn at early afternoon, and my observations were in midwinter at early and late afternoon. Mid-day and early afternoon are not the habitual foraging period for most birds, as Olson and Alvarenga (2006) aptly point out, whereas late afternoon would be the last opportunity to secure some food before nightfall, especially in winter. However, taking protein-rich food is advantageous irrespective of the period, the more so as the birds may begin to accumulate energy for the coming breeding season.

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