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## Ferruginous Pygmy-owl (*Glaucidium brasilianum*) predation on a mobbing Fork-tailed Flycatcher (*Tyrannus savana*) in south-east Brazil

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### Abstract

Motta-Junior, J. C. **Ferruginous Pygmy-owl (*Glaucidium brasilianum*) predation on a mobbing Fork-tailed Flycatcher (*Tyrannus savana*) in south-east Brazil** *Biota Neotrop.* May/Aug 2007 vol. 7, no. 2. <http://www.biotaneotropica.org.br/v7n2/pt/abstract?short-communication+bn04407022007>. ISSN 1676-0603.

I observed, and documented in detail, Ferruginous Pygmy Owl (*Glaucidium brasilianum*) predation on a mobbing Fork-tailed Flycatcher (*Tyrannus savana*) in south-east Brazil. Events described in this account are supported with original photos. In addition to the predation event, I list 12 mobbing bird species that were alarmed by the presence of this raptor in the study area, including Trochilidae (*Eupetomena macroura*), Formicariidae (*Formicivora rufa*), Tyrannidae (*Camptostoma obsoletum*, *Elaenia cristata*, *E. flavogaster*, *E. chiriquensis*, *T. savana*, *Myiarchus tyrannulus*), Turdidae (*Turdus leucomelas*, *T. amaurochalinus*, *T. rufiventris*) and Emberizidae (*Coryphospingus cucullatus*). The Fork-tailed Flycatcher may represent 35-76.8% of the pygmy-owl body mass (41-80 g), which supports early reports about the predation on relatively large prey by this owl species. Although most authors have suggested that mobbing birds are subject to a low predation risk, this report and others confirmed that these events are not negligible and can be deadly dangerous to the mobbers, and conversely profitable to the raptor.

**Keywords:** Owls, tyrant-flycatchers, mobbing behaviour, predation, eyespots, Brazil.

### Resumo

Motta-Junior, J. C. **Predação de *Tyrannus savana*, que exhibia comportamento de tumulto, por *Glaucidium brasilianum*, no sudeste do Brasil.** *Biota Neotrop.* May/Aug 2007 vol. 7, no. 2. <http://www.biotaneotropica.org.br/v7n2/pt/abstract?short-communication+bn04407022007>. ISSN 1676-0603.

Um evento de predação da tesoura *Tyrannus savana* (Aves: Tyrannidae) que apresentava comportamento de tumulto frente ao Caburé *Glaucidium brasilianum* (Aves: Strigidae) no sudeste brasileiro é descrito em detalhe. São incluídas fotografias do evento e uma lista de 12 espécies de aves que exibiram este comportamento frente ao caburé, abrangendo Trochilidae (*Eupetomena macroura*), Formicariidae (*Formicivora rufa*), Tyrannidae (*Camptostoma obsoletum*, *Elaenia cristata*, *E. flavogaster*, *E. chiriquensis*, *T. savana*, *Myiarchus tyrannulus*), Turdidae (*Turdus leucomelas*, *T. amaurochalinus*, *T. rufiventris*) and Emberizidae (*Coryphospingus cucullatus*). A ave predada pode representar uma grande parte (35-76,8%) da massa corporal desse caburé (41-80 g), confirmando outros relatos na literatura sobre o consumo de presas de tamanho considerável relativamente a essa espécie de Strigiformes. Embora a maioria dos autores em geral subestime o risco de predação das aves participantes de tumultos, este e outros relatos espalhados pela literatura demonstram que tais eventos não são tão insignificantes e podem ser fatais para as aves, além de proveitosos para o predador.

**Palavras-chave:** Caburé, tesoura, comportamento de tumulto, predação, face occipital, Brasil.

## Introduction

Mobbing behaviour is widespread among vertebrates and invertebrates, but is best studied in birds and mammals (Curio et al. 1978, Harvey & Greenwood 1978, McLean & Rhodes 1991). Mobbing birds commonly attempt to distract, confound, or physically attack an enemy or predator, through both loud vocalizations and conspicuous visual displays (Altmann 1956, Deppe et al. 2003). Because mobbing is considered a learned anti-predator adaptation, cultural transmission, one function of mobbing, is believed to be beneficial to the observer (Curio et al. 1978). However, the cost/benefit for the mobbers is under debate. Most authors suggest the risk of predation for mobbers is negligible (see Gochfeld 1984, Hennessy 1986), but Curio and Regelmann (1986) and Sordahl (1990) disagree. Here, I provide a detailed report of owl predation on a mobbing passerine in south-east Brazil, and include a list of other mobbing bird species alarmed by this raptor. This observation will contribute to the understanding of passerine mobbing behaviour against raptors, particularly in Brazil, where this behaviour has been poorly studied (Sick 1993, 1997).

## Material and Methods

The observation occurred on 15 October, 1995 during a field trip to photograph birds in cerrado (savannah-like) vegetation on the reserve of the Universidade Federal de São Carlos, São Carlos municipality, in the state of São Paulo, south-east Brazil (21° 58' 31" S and 47° 52' 08" W). The reserve comprised about 200 ha, including cerrado (grassland and woody savannahs) and gallery forest. A more detailed description of the study site can be found in Motta-Junior (2006). I was within 10-20 m of the mobbing event and observed and photographed the birds using a Nikon F3 camera with a 400 mm/5.6 Sigma lens mounted on a tripod. I wore camouflaged cloths that matched the local vegetation and I avoided noise and abrupt movements during observations. Scientific nomenclature follows König et al. (1999) for owls and Sick (1997) for other birds.

## Results

From 8:40-8:55 hours I observed a mixed flock of passerine birds mobbing a Ferruginous Pygmy-owl (*Glaucidium brasilianum*). Before the owl arrived, several species of birds had been feeding on a fruiting tree (*Ocotea* sp., Lauraceae). The owl perched on a tree next to the fruiting *Ocotea* (< 5 m) on an exposed branch at midlevel height (6-7 m, Figure 1) and it started to call long sequences of the typical "poip-poop-poop-poop-poop..." (König et al. 1999). Passerine birds emitted alarm calls and direct flights toward the owl. Mobbing species included the Tyrannidae *Elaenia cristata*, *E. flavogaster*, *Tyrannus savana* (Figure 2) and *Myiarchus tyrannulus*, all of whom had been eating *Ocotea* fruits. Other non fruit-eating birds, e.g., *Eupetomena macroura* (Trochilidae) and *Formicivora rufa* (Formicariidae), soon joined in the mobbing, the latter species only vocalizing alarm calls at distances > 20 m from the owl. The tyrant-flycatchers were the most aggressive, displaying "close passing" (sensu Deppe et al. 2003) flights < 2 m of the owl, but without any physical contact with the owl. The owl continued to call, remaining on its perch in spite of the mobbing. Suddenly, at the same time that I was checking my photographic equipment, I heard louder alarm calls from most of the birds and noisy sounds from the foliage of the *Ocotea* tree. The owl was holding a female Fork-tailed Flycatcher (gender determined by short tail, see Sick 1993, Fitzpatrick et al. 2004) firmly in its talons (Figure 3). The owl remained some moments in this position, looking in all directions at the mobbing birds, and with its occipital face (false eyespots) easily visible (Figure 3). The relatively large prey (28.0-31.5 g for females, Marini et al. 1997, Fitzpatrick et al.



**Figure 1.** The Ferruginous Pygmy-owl (*Glaucidium brasilianum*) perched on a tree next to the fruiting *Ocotea* sp., where other birds were feeding on fruits.

**Figura 1.** O caburé (*Glaucidium brasilianum*) pousado numa árvore próxima da *Ocotea* sp. em frutificação, onde outras aves estavam consumindo frutos.



**Figure 2.** A mobbing Fork-tailed Flycatcher (*Tyrannus savana*) alarmed by the Pygmy-owl.

**Figura 2.** Uma tesoura (*Tyrannus savana*) alarmada pelo caburé.



**Figure 3.** Moments later, the Pygmy-owl captured a mobbing Fork-tailed Flycatcher by pecking its neck; note the eyespots on the nape of this raptor.

**Figura 3.** Momentos depois, o caburé capturou pelo pescoço uma tesoura que exibiu comportamento de tumulto; note a face occipital na nuca dessa ave de rapina.



**Figure 4.** After the fall of both predator and prey to the ground, the owl managed to fly to another branch with its prey almost dead; note the feathers of prey on the bill of the owl. All photos by J. C. Motta-Junior.

**Figura 4.** Depois da queda tanto do predador como da presa no solo, a coruja voou para outro galho com sua presa quase morta; note as penas da presa no bico do caburé. Todas fotografias de J. C. Motta-Junior.

2004) weighed from 35.0 to 76.8% of the pygmy-owl's body mass (41-80 g, unpublished data). The Fork-tailed Flycatcher flapped its wings, and forced the owl to fall to the ground. Apparently no injury was caused to the predator by the flycatcher. Despite the fall, the owl firmly grasped its prey in its talons. Shortly, the owl resumed flight and perched about 1 m above the ground on a tree branch. The flycatcher was almost dead, the owl had pecked the prey through the abdomen and the prey was no longer moving (Figure 4). Then, the owl flew 30-40 m to a gallery forest, out of my sight.

On two other occasions in the same general area, I observed one Ferruginous Pygmy-owl being mobbed by birds, but without any predation event: on 04 September 1992 at 17:30 h the mobbing birds were *Turdus leucomelas*, *T. amaurochalinus* and *T. rufiventris* (Turdidae); on 08 September 1992 at 10:30-11:40 hours the mobbing species were *Elaenia chiriquensis*, *E. flavogaster*, *E. cristata*, *Camptostoma obsoletum* (Tyrannidae) and *Coryphospingus cucullatus* (Emberizidae).

## Discussion

In all three observations, Ferruginous Pygmy-owls were relatively undisturbed by mobbing and on one occasion even profited from it. As observed by Sick (1993, 1997), this species seems to impassively defy mobbing birds, and in the first reported observation, the individual seemed to approach the fruiting tree searching for potential prey. The eyespots on the nape of the Ferruginous Pygmy-owl are assumed to confuse, scare, and sometimes redirect prey or predator to the real face of the owl (Sick 1993, 1997). Evidence from research on the related Northern Pygmy-owl (*G. gnoma*) supports this last supposition (Deppe et al. 2003).

Birds seem to be an important part in the diet of Ferruginous Pygmy-owls (Johnsgard 1988, Proudfoot & Beasom 1997), and large prey species for *Glaucidium* spp., up to twice its own size, are not uncommon (e.g. Johnsgard 1988; Sick 1993, 1997; Holt et al. 1999). However, although birds are reported for the Brazilian populations (Sick 1993, 1997), no quantitative study has been published.

Although most authors suggest that mobbing birds are subject to a low predation risk (Wilson 1975, Gochfeld 1984, Hennessy 1986), this report and others (see a review by Sordahl 1990) confirmed that these events are not negligible and can be deadly dangerous to the mobbers (Curio & Regelman 1986), and conversely profitable to the predator. Further studies should investigate whether *Glaucidium* spp. with deceptive occipital face have a higher predation on mobbing birds than *Glaucidium* spp. without the eyespots on the nape.

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