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## Barred Forest Falcon (*Micrastur ruficollis*) Predation on Relatively Large Prey

Fábio Röhe<sup>1,3,4</sup> and André Pinassi Antunes<sup>2</sup>

**ABSTRACT.**—We describe three successful predation events by the Barred Forest Falcon (*Micrastur ruficollis*) in the Atlantic Forest of coastal southeast Brazil. The prey items were a Plumbeous Pigeon (*Pta-gioenas plumbea*), a Brown Tinamou (*Crypturellus obsoletus*), and a large toad (*Chaunus ictericus*). This is the first report of successful attacks on prey heavier than the forest falcon, of which none was successfully carried away. These large prey items represent a trade-off between high nutrient value and safety of carrying prey to a secure perch. *Received 16 November 2005. Accepted 23 July 2006.*

The Barred Forest Falcon (*Micrastur ruficollis*) is a small neotropical falconid weighing an average of 168 g for males and 233 g for females (Thorstrom 2000). It lives in dense primary or secondary forest where it is known to feed on a variety of small vertebrates and large invertebrates (Sick 1993). Studies of its diet are few (del Hoyo et al. 1994), the most detailed of which (405 prey identified) found reptiles to be the most important group, in terms of frequency, followed by birds. However, both were equal in bio-

mass captured and delivered to nests during the breeding season (Thorstrom 2000). There is one example of predation on a hummingbird (Nunnery et al. 2002) and fruit consumption has been reported (Thorstrom 1996). Hilty and Brown (1986) reported the forest falcon is believed to specialize mostly on small birds, but are not specialists on them (Thorstrom 2000).

Forest falcons are regularly captured in Amazonian forest mist nets attacking small birds already caught in the nets (Mario Cohn-Haft, pers. comm.). They also follow swarms of army ants at times, presumably hunting either fleeing insects or other birds that follow the ants (Willis et al. 1983). The largest prey described weighed 160 g, roughly the minimum weight of the predator (Thorstrom 2000). We describe three cases in the Brazilian Atlantic rainforest of *M. ruficollis* successfully taking prey larger than itself, and briefly discuss the implications for the foraging and breeding ecology of the species. The bird prey weights were obtained from Sick (1993, 1997).

### OBSERVATIONS

All of our observations were by chance, during the day, in the course of other research in the Brazilian State of São Paulo. The three sightings possibly involve three different individuals, based on the distances between sites of at least 3 km. The three observations were on dirt roads among patches of eucalyptus (*Eucalyptus saligna*) plantations and Atlantic forest on private farms (23° 55' S, 47° 41' W)

<sup>1</sup> Coordenação de Pesquisas em Ecologia (CPEC), INPA—Instituto Nacional de Pesquisas da Amazônia.

<sup>2</sup> Laboratório de Herpetologia, Departamento de Zoologia, Universidade Estadual Paulista—UNESP, Rio Claro, São Paulo, Brazil.

<sup>3</sup> Current address: WCS—Wildlife Conservation Society, Av. General Rodrigo Octávio Jordão Ramos, 3000, Japiim, Instituto de Ciências Biológicas, Departamento de Biologia, Bloco Projecto Sauim-de-Coleira/WCS.

<sup>4</sup> Corresponding author; e-mail: fabiorohe@gmail.com

at an altitude of 650–980 m in the Serra do Mar coastal mountain range.

We observed a forest falcon in May 2001 on the ground eating a Plumbeous Pigeon (*Patagioenas plumbea*), the breast of which was already mostly consumed. The falcon flushed on our approach trying unsuccessfully to carry the prey, which it dropped after dragging it for 1 m. This pigeon has an average weight of 231 g. We observed another forest falcon in January 2002 on the ground eating a large toad (*Chaunus ictericus*). Adult males of this toad species, approximately the size we observed, weigh 200–250 g (A. P. Antunes, pers. obs.). The raptor was eating from the throat region, possibly avoiding the area of the paratoid glands.

In August 2003 we encountered a falcon on the ground stripping the neck feathers from a live Brown Tinamou (*Crypturellus obsoletus*; weight 480 g). The forest falcon was grasping the tinamou's dorsum and flapping the wings slightly. The prey showed no external evidence of injury but, after the forest falcon released it, the tinamou remained on its back, apparently unable to move. The raptor flushed upon our arrival trying to carry the prey, which it was unable to move.

One additional observation occurred at approximately sea level at Itamambuca Beach, Ubatuba Municipality, in October 2003. A Barred Forest Falcon landed on a perch 1 m above the ground and 1.5 m from a large terrestrial Black-white Tegu (*Tupinambis merrianae*), which we had been observing. This lizard was ~1 m in length (including tail) and weighed ~1.0–1.5 kg (A. P. Antunes, pers. obs.). The hawk watched the lizard closely and flushed after noticing our presence.

#### DISCUSSION

The possibility of vehicle strikes was discarded in the predation events because: (1) the Plumbeous Pigeon predation site can not be accessed by car, (2) only our vehicle was allowed on the farm in the case of the tinamou, and (3) no signs of flattening of the toad were observed.

Other reports of toad predation by hawks have included a White-tailed Hawk (*Buteo albicaudatus*) eating just the legs of *Chaunus marinus* (Sick 1997) and a Red-tailed Hawk

(*B. jamaicensis*) preying on *Anaxyrus boreas* (Jones and Stiles 2000).

Our observations describe predation by Barred Forest Falcons on two different animal classes (birds and amphibians), reinforcing the importance of these groups in its diet. This is the first report of successful attacks by *M. ruficollis* on prey heavier than 160 g. Thorstrom (2000) documented maximum weight of prey based on estimated weight of items taken and delivered to nests by breeding forest falcons. Prey items must be sufficiently light for the adult to carry in flight. We documented captured prey as much as twice the weight of a Barred Forest Falcon. None of these larger prey items could be carried by the forest falcon suggesting the threshold weight for carrying is roughly that of the falcon. Thorstrom (2000) reported the Collared Forest Falcon (*Micrastur semitorquatus*) (average body mass for females = 869 g) captured an Ocellated Turkey (*Meleagris ocellata*) weighing 3 kg which represented ~3.5 times the body mass of the female forest falcon. This female fed and stayed near this kill for several days, and later carried pieces of the carcass to the nest where she was attending two nearly-fledged nestlings (Russell Thorstrom, pers. comm.).

These observations suggest that predation on considerably larger prey may not be uncommon when forest falcons are not associated with nesting, when pieces of the carcass are carried to the nest. The risk of preying on animals that must be consumed *in situ* may be compensated by the obviously greater nutrient value these prey represent.

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