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SHORT COMMUNICATION

***Falco sparverius* (Aves: Falconiformes) preying upon
Nyctinomops laticaudatus (Chiroptera: Molossidae)**

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ABSTRACT. In Brazil, there are two published references on the diet of American kestrel falcons, *Falco sparverius* Linnaeus, 1758, and one is for the Cerrado biome. The only mammal prey so far found in the diet of *F. sparverius* was the rodent *Calomys tener* (Winge, 1887). Herein we report on daily hunting activities by American kestrel falcons at a factory in the city of Uberlândia, state of Minas Gerais, southeastern Brazil, during an attempt to remove a bat colony. Two American kestrel falcons were observed on 14 occasions during two consecutive days: in two of these occasions, they were hunting in pairs, from 12:00 p.m. to 3:00 p.m. on 06/X/2003, and from 07:00 a.m. to 11:00 a.m. on 07/X/2003. During this period, American kestrel falcons made 27 hunting attempts and captured four bats of the same species, *Nyctinomops laticaudatus* (E. Geoffroy St.-Hilaire, 1805) (14.81% success). This report corroborates observations made in the Northern hemisphere, where bats are a dietary item of this falcon. Our findings are noteworthy because they reveal that the known natural predators of bats are few not only in Brazil but also worldwide.

KEY WORDS. Bats; Brazil; Cerrado; predator; predation.

Some ecological services such as predation of agricultural plagues are extremely valuable to rural settings. Raptors such as falcons may prey on animals that visit or use agricultural fields, or may transmit infectious diseases, thus providing environmental services to humans when present in agro-ecosystems (FIGUEROA ROJAS & CORALES STAPPUNG 2004).

Food supply may be the main factor limiting the reproductive success of birds (MARTIN 1995). Kestrels do not pursue their prey. They hover over it before dropping from above, immobilizing the victim to the ground. Observations of bat hunting by the American kestrel, *Falco sparverius* Linnaeus, 1758, have demonstrated that this predatory bird sits at a cave entrance and waits for the bats to emerge in large flocks immediately before or during the sunset. This strategy results in great capture success (BIRD & PALMER 1988, BOHALL-WOOD *et al.* 1996). There are only a few studies dealing with raptorial birds, and information on their space utilization and feeding habits are scarce (WAKELEY 1978, STINSON 1980, SARASOLA *et al.* 2003). There are two published accounts on the diet of *F. sparverius* in Brazil (ZILIO 2006, CASTRO-CABRAL *et al.* 2006), and the later study was carried out in the Cerrado biome. Herein we report on *F. sparverius* hunting on a bat colony during colony removal.

On October 2003 we attempted to remove a colony of Molossidae bats from a bird supplies factory (Sadia Ltda). The colony was mainly composed by *Nyctinomops laticaudatus* (E.

Geoffroy St.-Hilaire, 1805), and was located in the suburb of the city of Uberlândia, state of Minas Gerais (18°91'S, 41°30'W). This location is within the Cerrado biome of southeastern Brazil. The colony thrived in a space between metal plates fixed on the external surface of the wall, and the wall itself. The building's plates were fixed at 23 to 33 m.

The American kestrel, *Falco sparverius* Linnaeus, 1758, is one of the smallest species of birds of prey in the world and has a wide distribution in America. It is found from northern Alaska to Tierra del Fuego, but not in the Arctic, the Amazon and in part of the coastal region of northeastern Brazil (WHITE *et al.* 1994, SICK 1997, FERGUSON-LEES & CHRISTIE 2001). American kestrels inhabit mainly open areas such as grasslands and deserts, or areas altered by agricultural activities (WHITE *et al.* 1994, SICK 1997).

The bats and the metal plates were removed simultaneously. We captured 650 individuals of *N. laticaudatus* and one individual of the following species: *Eumops glaucinus* (Wagner, 1843), *Myotis* sp. Kaup, 1829, and *Nyctinomops aurispinosus* (Peale, 1848). We marked 317 individuals of *N. laticaudatus* with plastic collars and colored rings (ESBÉRARD & DAEMON 1999). During colony removal, two adult kestrels occasionally perched near one another and used one metal tower near the building as a hunting platform. The birds stood at the same height as the metal plates. They fed on bats that flew

from the roost as a result of the displacement of the metal plates. On 14 occasions, they sat by the building's surroundings: only on two occasions we saw falcons hunting at the same time, in pairs, from 12:00 p.m. to 3:00 p.m. on 06/X/2003 and 07:00 a.m. to 11:00 a.m. on 07/X/2003.

During two days of observations, the birds made 27 droppings on prey from above. They captured four bats, reaching a 14.81% success rate. After succeeding in capturing a bat, the predator was no longer seen. Hunters probably took their prey to their roost or to a nest. When the metal plates were totally removed we found a nest that had a vertical entrance housed between the metal plate and the wall. We found no vegetable material on the nest site. The nest was laying on bat guano, bones and skulls, confirming that prey had been taken there. The nest substratum had more than 30 bat bones, and most skulls were intact. Carcasses were over a thick layer of guano. There were two *F. sparverius* chicks, one of which died during nest removal.

Nyctinomops laticaudatus is an exclusively insectivore bat, weighting 11 g on average. It is widely distributed in the tropical and subtropical America. Broad-tailed bats occur from Mexico to Central America and South America. In the West Indies, *N. laticaudatus* occurs in Cuba and Trinidad. To the east of the Andes, in South America, the bat species occurs in Colombia, Venezuela, Guianas, Surinam, Brazil, Peru, Bolivia, Paraguay, and Argentina. To the west of the Andes, *N. laticaudatus* occurs in Venezuela, Colombia and Peru (see AVILA-FLORES *et al.* 2002). It forms large colonies during the breeding season (NOWAK 1994). Activity in this species and other Molossidae are likely to be triggered by the sunset (ERKERT 1978), happening from 20 minutes after that. Young or sick bats must also engage in trips outside the roost. We did not observe any flying bats from the roost through the entrance of the Falcon's nest, but a layer of feces indicates that the site has been used for several years. Since the visual abilities of falcons are strongly dependent on luminance, there is a distinctive predation risk determined by the brightest and the darkest parts of the day (SPEAKMAN *et al.* 2000). The continuous predation of bats by *F. sparverius* on could be controlling the bat population locally.

Studies performed in both hemispheres indicate that the American kestrel is a generalist predator (HEINTZELMAN 1964, GREER & BULLOCK 1966, JENKINS 1970, BALGOOYEN 1976, YAÑEZ *et al.* 1980, SIMONETTI *et al.* 1982, COLLOPY & KOPLIN 1983, BELTZER 1990, SARASOLA *et al.* 2003). SARASOLA *et al.* (2003) found that the annual diet of *F. sparverius* in a semiarid forest region of central Argentina fluctuated seasonally, and vertebrates accounted for the largest portion of their diet during the winter and the spring. In Brazil, there is only one publication on the diet of *F. sparverius* in the Cerrado biome, and only the rodent *Calomys tener* represented mammals in the prey pool. This report shows that bats are items of this small falcon's diet, similarly to what is known in North America. This information is noteworthy because the known natural predators of bats are sparse.

ACKNOWLEDGEMENTS

We thank J.A. Scarpellini and R.M. Silva for permission to work in the Sadia's area and IBAMA-MG for the permissions and licenses.

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Submitted: 19.VII.2011; Accepted: 02.IV.2012

Editorial responsibility: Fernando de C. Passos