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## Blue-crowned Motmot (*Momotus momota*) Predation on a Long-tongued Bat (Glossophaginae)

Eduardo Chacón-Madrigal<sup>1</sup> and Gilbert Barrantes<sup>1,2</sup>

**ABSTRACT.**—We report the first record of a Blue-crowned Motmot (*Momotus momota*) feeding on a long-tongued bat (Glossophaginae) in a secondary forest in southwestern Costa Rica. The motmot incapacitated the bat, then swallowed it alive, head first. Motmots and bats are found in close proximity along river banks where the former nests and the latter roosts *Received 16 October 2003, accepted 26 March 2004.*

Bats are regular food items in the diet of some Neotropical birds (Rodríguez-Duran and Lewis 1985, Lee and Kuo 2001). For example, in the Neotropics some raptors (e.g., Bat Falcon; *Falco rufifigularis*) and owls (e.g., Barn Owl; *Tyto alba*) often prey on bats (Table 1), and the Great Potoo (*Nyctibius grandis*) regularly preys on bats on the wing (Boinski and Timm 1985, Fleming 1988, Stiles and Skutch 1989, Braker and Greene 1994). Nevertheless, bat predation is relatively uncommon in the Neotropics. Here, we report the first account of a Blue-crowned Motmot (*Momotus momota*) consuming a long-tongued bat (Glossophaginae).

Blue-crowned Motmots consume a large variety of items, including invertebrates (e.g., earthworms, large spiders, mollusks, and insects), fruits, and small vertebrates (e.g., fish, frogs, lizards, snakes, small mammals, small

birds, and nestlings) (Orejuela 1980, Stiles and Skutch 1989, Remsen et al. 1993, Master 1999, Snow 2001). Bats, however, have not been reported as a part of their diet.

At 15:30 hr CST on 12 April 2003, in old secondary forest at Dos Brazos de Río Tigre (08° 31' N, 83° 24' W), Península de Osa (elevation 100 m), Costa Rica, we observed (from a distance of 6 m, using binoculars) a Blue-crowned Motmot feeding on a long-tongued bat. The bat was identified on the basis of its noseleaf, body size, and the long tongue that hung from its partially open mouth. The bat could have been a species of *Glossophaga*, or *Hylonycteris underwoodi*, the two Glossophaginae species with characteristics that match those of the individual observed. The former—represented by two species in the Península de Osa—is more common.

When first observed, the motmot was perched on a horizontal branch 1.5 m above the ground, holding the neck of the live bat in its bill. During the next 2–3 min the bird shook the bat up and down violently while grasping it tightly in its bill. It did not strike the bat against the perch as motmots usually do with large larvae and other insects. The motmot then swallowed the bat whole, head first. This behavior suggests that the violent shaking was probably used to immobilize the prey before swallowing it. The motmot remained on the same perch for approximately

<sup>1</sup> Escuela de Biología, Univ. de Costa Rica, San José, Costa Rica.

<sup>2</sup> Corresponding author; e-mail: gabarrantes@biologia.ucr.ac.cr

TABLE 1. Costa Rican bird species reported to feed on bats (Boinski and Timm 1985, Fleming 1988, Stiles and Skutch 1989, Braker and Greene 1994, Michalak 1997, Lee and Kuo 2001). Measurements (mean  $\pm$  SD) were taken from specimens deposited in the Museo Nacional de Costa Rica and Museo de Zoología, Universidad de Costa Rica.

Common name	Species	Gape (mm)	Weight (g)	n
Double-toothed Kite	<i>Harpagus bidentatus</i>	21.3 $\pm$ 2.0	175.2 $\pm$ 8.5	4
Crane Hawk	<i>Geranospiza caerulescens</i>	22.6	345	1
Sharp-shinned Hawk	<i>Accipiter striatus</i>	17.2 $\pm$ 1.6	na <sup>a</sup>	3
Red-tailed Hawk	<i>Buteo jamaicensis</i>	33.5	800.5	1
Collared Forest-Falcon	<i>Micrastur semitorquatus</i>	24.9 $\pm$ 2.1	772.0 $\pm$ 69.3	2
Bat Falcon	<i>Falco ruficularis</i>	20.9 $\pm$ 1.3	214.6	2
Peregrine Falcon	<i>Falco peregrinus</i>	29.8 $\pm$ 4.7	na <sup>a</sup>	2
Barn Owl	<i>Tyto alba</i>	24.4 $\pm$ 2.1	449.0 $\pm$ 49.9	3
Tropical Screech-Owl	<i>Megascops choliba</i>	18.4 $\pm$ 0.2	163.5 $\pm$ 25.6	3
Spectacled Owl	<i>Pulsatrix perspicillata</i>	38.9 $\pm$ 1.3	765.7 $\pm$ 84.6	3
Mottled Owl	<i>Ciccaba virgata</i>	27.7 $\pm$ 0.1	250.8 $\pm$ 13.2	2
Black-and-white Owl	<i>Ciccaba nigrolineata</i>	30.7 $\pm$ 0.6	336.0 $\pm$ 55.2	2
Great Potoo	<i>Nyctibius grandis</i>	59.6	500.0	1
Blue-crowned Motmot	<i>Momotus momota</i>	21.1 $\pm$ 2.3	114.8 $\pm$ 16.1	6

<sup>a</sup> na: data not available from specimens.

30 min after swallowing the bat and then flew away.

In Dos Brazos de Río Tigre, long-tongued bats roost in tree cavities and banks along rivers (LaVal and Rodríguez-H 2002). Because motmots also construct their nests in banks and frequently perch along rivers and streams, it is possible that the motmot captured the bat from a bank roost. The ability to swallow such a large prey item is surprising, considering that the gape width of a Blue-crowned Motmot is relatively small (21.1 mm), compared to the gape of several raptors that prey on bats (Table 1). The Great Potoo, which also feeds on bats, has a much wider gape (59.6 mm). Ingesting the bat by swallowing it whole was quite different from the way small raptors tear pieces from prey items (Thiollay 1994). It is likely that bats make up part of the diet of other bird species; however, predation on bats is probably infrequent, making it difficult to document.

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