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Breeding of the Spot-billed Toucanet (*Selenidera maculirostris*) in the Wild

André de Camargo Guaraldo<sup>1,2</sup> and Vanessa Grazielle Staggemeier<sup>1</sup>

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**ABSTRACT.**—The Spot-billed Toucanet (*Selenidera maculirostris*) is an endemic member of the Ramphastidae occurring in the Atlantic Forest in Brazil. There is anecdotal literature about this species breeding in the wild, but no data are available about parental behavior and nest morphometry. We describe observations of parental behavior of the Spot-billed Toucanet including measurements of one nest in Ilha do Cardoso State Park, São Paulo, Brazil. The nest was inside a hollow of a *Lauraceae* tree with the entrance hidden by leaves of *Aechmea* sp. (Bromeliaceae). The Spot-billed Toucanet, based on our observations and review of the literature, nests in tree cavities between 2 and 7 m above ground and both parents provision the nestlings. Received 13 July 2008. Accepted 7 June 2009.

of *S. maculirostris* nests were found in the literature, except for captive breeding. Both males and females in captivity are known to excavate nests in rotten wood previously excavated for them; clutch size may vary from two to three white eggs, which are incubated for ~15 days (Short and Horne 2002). Descriptions of parental behavior are also lacking, and the only described observations are of captive birds (Short and Horne 2002; Z. S. Cubas, unpubl. data; M. Cziulik, unpubl. data). We present the first morphometric description of a Spot-billed Toucanet nest in the wild including observations of parental behavior.

### OBSERVATIONS

Spot-billed Toucanets (*Selenidera maculirostris*: Ramphastidae) primarily inhabit middle and low strata of the Atlantic Forest in Brazil, but also occur in gallery forests, secondary forests, and large forest fragments (Sick 1997, Guix et al. 2001, Alvarenga 2004, Sigrist 2005). It feeds mainly on fruits and makes regional migrations following the fruiting season of species such as Palm-heart (*Euterpe edulis*) (Galetti et al. 2000, Alvarenga 2004, Sigrist 2005). In addition, it may feed on nestlings of birds (e.g., the Red-necked Tanager [*Tangara cyanocephala*]), insects, and also forages on flowers and leaves (Galetti et al. 1999).

Toucans usually nest inside pre-existing cavities, such as old woodpecker nests (de la Peña 1988, Sigrist 2005), but *Selenidera* also may excavate their own nest in soft or well-rotted wood (Short and Horne 2002). No further details

We found a Spot-billed Toucanet nest on 18 October 2006 in a lowland Atlantic Forest area in Ilha do Cardoso State Park (25° 05' S, 47° 53' W), a continental island with 22,500 ha of well-preserved vegetation (Barros et al. 1991) in Cananéia County, southeast Brazil. This area has been described by Staggemeier et al. (2007) and Cazetta et al. (2009).

Bromeliad (*Aechmea* sp.) leaves partially concealed the entrance of the nest and shook as the toucanets entered and left the nest. The movement of the birds, plus the noise made by the leaves as toucanets arrived and departed, revealed the location of the nest. The nest was of the 'cavity with a vertical tunnel' type (following the nest classification proposed by Simon and Pacheco 2005), and was inside a hollow of a 17-m tall live *Lauraceae* tree fully covered with epiphytes (diameter at breast height = 790 mm). The entrance to the vertical access tunnel was 54.65 × 78.9 mm and 7 m above ground where the trunk was 610 mm in diameter. The entrance had an internal diameter of 117 mm and the nest was ~1 m in depth inside the tree. It was not possible to

<sup>1</sup>UNESP–São Paulo State University, Department of Botany, Rio Claro, Brazil.

<sup>2</sup>Corresponding author; e-mail: andre.guaraldo@yahoo.com.br

measure the nest chamber at the bottom of the tunnel because of the small cavity opening. Judging by the noise, we assume there were at least two nestlings inside the nest. V. B. Ziparro (pers. comm.) reported a nest of Spot-billed Toucanets in Intervales State Park to us with three nestlings. This nest was ~2 m above ground in a hollow of a dead tree. Thus, based on this and our observations, Spot-billed Toucanets may build nests in hollows between 2 and 7 m above the ground.

Numerous Palm-heart seedlings were growing in the sheaths of the bromeliad leaves directly below the nest entrance. This seedling clump suggests frequent consumption of Palm-heart fruits by the parents and nestlings inside the nest followed by seed regurgitation and/or their removal from the nest chamber by the parents.

The behavior of the adult Spot-billed Toucanets around the nest was observed using 8 × 40 binoculars on 18 October 2006 from 0700 to 1100 hrs, during which adults came to the nest 15 times. The adults frequently perched on a branch of a *Marlierea obscura* (Myrtaceae) in front of the nest tree before entering the nest. This behavior allowed identification of the gender of the adult as well as food items brought to the nestlings.

Adult Spot-billed Toucanets spent an average of  $83.6 \pm 50.2$  sec with the nestlings inside the nest during each visit. The male toucanet made eight visits to the nest, the female four, and it was not possible to identify the gender on three visits. Adults entered the nest carrying Palm-heart fruits in their bill six times, two times they brought unidentified fruits, and in the remaining six events it was not possible to identify the food item they carried; it is possible they may have brought a small lizard to the nest in one visit.

#### DISCUSSION

The Spot-billed Toucanet pair appeared to have a territory as no other individual was seen or heard in the vicinity of the nest. The nest was not visible as it was hidden behind *Aechmea* leaves. The discrete parental behavior used when approaching the nest potentially reduced attraction of nearby predators. No aggressive actions were made toward us when we accessed the nest to take measurements.

The provisioning rate recorded (~4 events/hr) suggests the nest contained well-developed nestlings. Females are known to be most responsible for provisioning young, although the opposite may occur for some species such as the Channel-

billed Toucan (*Ramphastos vitellinus*) (Short and Horne 2002). This may be also true for the Spot-billed Toucanet. Species of Ramphastidae can store food in their esophagus and later regurgitate it to another adult or to the nestlings (Sick 1997). Thus, even when parents were seen entering the nest without visible food items in their bill, they may have brought food to the nestlings. Fruits of at least five species (based on seeds found inside and in the vicinity) were included in the diet of the toucanet nestlings: *Euterpe edulis* and *Geonoma elegans* (Arecaceae), *Cecropia glaziovii* (Cecropiaceae), *Guapira opposita* (Nyctaginaceae), and an unidentified species of Lauraceae. Use of *E. edulis* highlights an important role for this palm in conservation programs in the Atlantic rainforest.

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