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**Predation of geckos by Collared Puffbird *Bucco capensis* in Brazilian Amazonia**

Predation of vertebrates by small birds (<100 g) is uncommon but known for many Neotropical species<sup>8,10,15</sup>. Lizards are a common prey of medium to large-sized birds (e.g., falcons and hawks<sup>2,5</sup>), but there are fewer reports of such predation by smaller forest birds, including canopy and understorey members of the Dendrocolaptidae, Thamnophilidae, Conopophagidae, Tyrannidae and others<sup>6,8,9,13,15</sup>.

Spotted Gecko *Gonatodes humeralis* is a small diurnal forest lizard (42 mm, snout-vent length), common throughout most



Figure 1. Collared Puffbird *Bucco capensis* captured in a mist-net, Reserva Extrativista do Rio Cajari, Amapá, Brazil, 8 July 2010 (Fabio Schunck)



Figure 2. Spotted Gecko *Gonatodes humeralis* collected together with Collared Puffbird *Bucco capensis*, Reserva Extrativista do Rio Cajari, Amapá, Brazil, 8 July 2010; (a) dorsal and (b) ventral views; note the wounds inflicted by the bird (Fabio Schunck)

of Amazonia, from mature forests to anthropogenic environments such as urban parks, and usually found low above ground<sup>1,14</sup>. It has already been reported as the prey of understory Dendrocolaptidae<sup>6</sup>.

Puffbirds (Bucconidae) are opportunistic predators that take a wide range of animals, from small insects to small vertebrates including reptiles<sup>3,7,13</sup>. Collared Puffbird *Bucco capensis* is principally an understory species that occurs throughout much of Amazonia<sup>11</sup>. It feeds mostly on arthropods, including beetles, cicadas and true bugs but is also known to take small frogs, snakes and lizards<sup>4,11</sup>. However, reports of vertebrates in the diet are scarce. Here, we present a record of predation on *G. humeralis* by Collared Puffbird.

Field observations were made during an ornithological inventory in the Reserva Extrativista do Rio Cajari, near Vila do Marinho (00°34'56.6"S 52°16'14.8"W; 140 m elevation), in southern Amapá state, northern Brazil. Field work was undertaken in an area of *terra firme* Amazon forest with a canopy reaching c.40 m and an understory with many herbaceous plants and fallen trunks (see<sup>12</sup> for details). In addition, we searched photos available at Wikiaves (WA; <https://www.wikiaves.com.br/>) and the Macaulay Library (ML; <http://www.macaulaylibrary.org/>) for additional predation records by *B. capensis*. A total of 379 photos was checked (203 in WA and 176 photos in ML), up to 13 April 2021.

At c.10h30 on 8 July 2010, an adult *B. capensis* was captured in a mist-net (Fig. 1). On extracting the bird from the net (c.1.5 m above ground), a dead and partially lacerated male *G. humeralis* was observed next to it. The lizard had lesions on different parts of the body (Fig. 2). The *B. capensis* was collected and has been deposited in the ornithological collection of the Museu de Zoologia da Universidade de São Paulo (MZUSP 91949).

Our review of photos available online located a single record of *B. capensis* feeding on small vertebrates: another gecko (cf.

*Gonatodes*), in Suriname (ML 285679901). A second image, from the state of Roraima, northern Brazil, shows an individual holding what appears to be a small fish (WA 866551), but the identification could not be confirmed, and it would represent an unprecedented group of vertebrates in the diet of Bucconidae. Only four additional photos showed food items: three orthopterans (ML 226014631, 315376391; WA 3659190) and one unidentified invertebrate (perhaps a Lycaenidae larvae; WA 1723273).

The presence of *G. humeralis* in the diet of *B. capensis* provides a novel species record, and further indicates this puffbird's ability to capture small understory vertebrates. The very small number of predation / feeding records in a sample of 380 photos of *B. capensis* exemplifies the difficulty in documenting the foraging behaviour of low-density and easily overlooked species such as those in the family Bucconidae. It also reinforces the value of uniting opportunistic observations, citizen science data, and stomach content analysis of museum specimens to further our knowledge of the natural history of many species.

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### The most austral record of Swallow-tailed Kite *Elanoides forficatus*

Swallow-tailed Kite *Elanoides forficatus* is distributed across a variety of habitats from the eastern USA to northern Argentina<sup>3,4,10,18</sup>. While two subspecies are recognised (*E. f. forficatus* and *E. f. yetapa*) they are morphologically similar and lack sexual dimorphism<sup>10,13</sup>. *E. f. forficatus* breeds in the south-eastern USA and winters in South America, whereas *E. f. yetapa* breeds in Central America and parts of South America, and at least its northern populations are apparently migratory<sup>9–11</sup>.

We observed and photographed a Swallow-tailed Kite being chased and attacked by a Chimango Caracara *Milvago chimango* over grassland and provincial Route 113 near Pehuen C6 town, Buenos Aires province (38°59'00.4"S 61°33'06.4"W) on 23 December 2020 at 15h10 (Fig. 1). The landscape was characterised by dry grassland on dunes with isolated trees. This observation of Swallow-tailed Kite is the southernmost record ever of this migrant species<sup>3,4,8,9,11</sup>. It is 130 km south-southwest of Necochea, the site of the previous southernmost record<sup>11</sup>. The agonistic interaction observed with Chimango Caracara augments our knowledge about interactions with other species<sup>9,11</sup>.

Various agonistic encounters between Swallow-tailed Kite and other birds have been described<sup>9,11</sup>, including interactions between individuals of the same species or different species, in flight near nests or while competing for food<sup>6,10,16</sup>. In some cases, encounters occurred when kites flew close to the nests of small birds, which usually chase the raptor away<sup>17</sup>.

Most records of Swallow-tailed Kite in Argentina are from the northern Yungas and Atlantic Forest biomes<sup>1–4,11,12,15</sup>. However, occasional records and interactions with other species have been

described in central and eastern Argentina, including Buenos Aires, Formosa, Santiago del Estero, Entre Ríos, Santa Fe and Córdoba provinces<sup>3–5,7,11,14,16</sup>.

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