

NEST AND NESTLING OF SPOT-BACKED PUFFBIRD, *Nystalus maculatus striatipectus* Sclater 1854 (BIRDS: BUCCONIDAE) IN A DRY FOREST OF THE CHACO, SOUTHERN BOLIVIA

El nido y pollo del Durmilí, *Nystalus maculatus striatipectus* Sclater 1854
(Aves: Bucconidae) en un bosque seco del Chaco, sur de Bolivia

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The Bucconidae family, it is distributed from Mexico to Argentina, comprises 36 species of birds in 10 genera, whose genus *Nystalus* has five species (Remsen *et al.* 2020), four of them (*chacuru*, *maculatus*, *obamai*, and *striotulatus*) are found in Bolivia (Herzog *et al.* 2016). The Spot-Backed Puffbird (*Nystalus maculatus*) is an uncommon to fairly common species that forages in understory and mid-level of semi-deciduous to dry forest and woodland in southeastern lowlands of Cochabamba, Santa Cruz, Chuquisaca and Tarija departments (Rocha *et al.* 2012, Herzog *et al.* 2016), reaching the Bolivian Subandino in the Serranía del Aguaragüe (Martínez *et al.* 2011). It feeds mainly on insects, arachnids and small vertebrates, which it captures in soil or vegetation (Veneciano & Veneciano 2016). Vertebrates include small snakes and lizards (Reichle *et al.* 2003) and birds (e.g., nestlings of *Empidonomus aurantioatrocristatus*, Salvador 2016).

Nystalus maculatus breeds during the wet-season (from October to February) and nests in tunnels dug (reaching 1 m in depth) in the ground or over ravines, at its deepest end, makes a chamber, in which the female lays 2 to 4 eggs (Reichle *et al.* 2003, Segura *et al.* 2014, Veneciano & Veneciano 2016). The entrance of the tunnel is camouflaged with vegetal material and ground (Veneciano & Veneciano 2016).

We studied the bird communities along the río Pilcomayo and adjacent areas in Villamontes municipality, Tarija department, Bolivia (Figure 1), between 23 July to 2 August 2019 and 12 to 20 February 2020. In this context, *N. maculatus* was recorded four times: the first record in Viscacheral (28 July 2019), the second (29 July 2019) in San Bernardo, the

third (12 February 2020) in Irua and the fourth time (14 February 2020) in Los Suris when we discovered a nest (Figure 1).

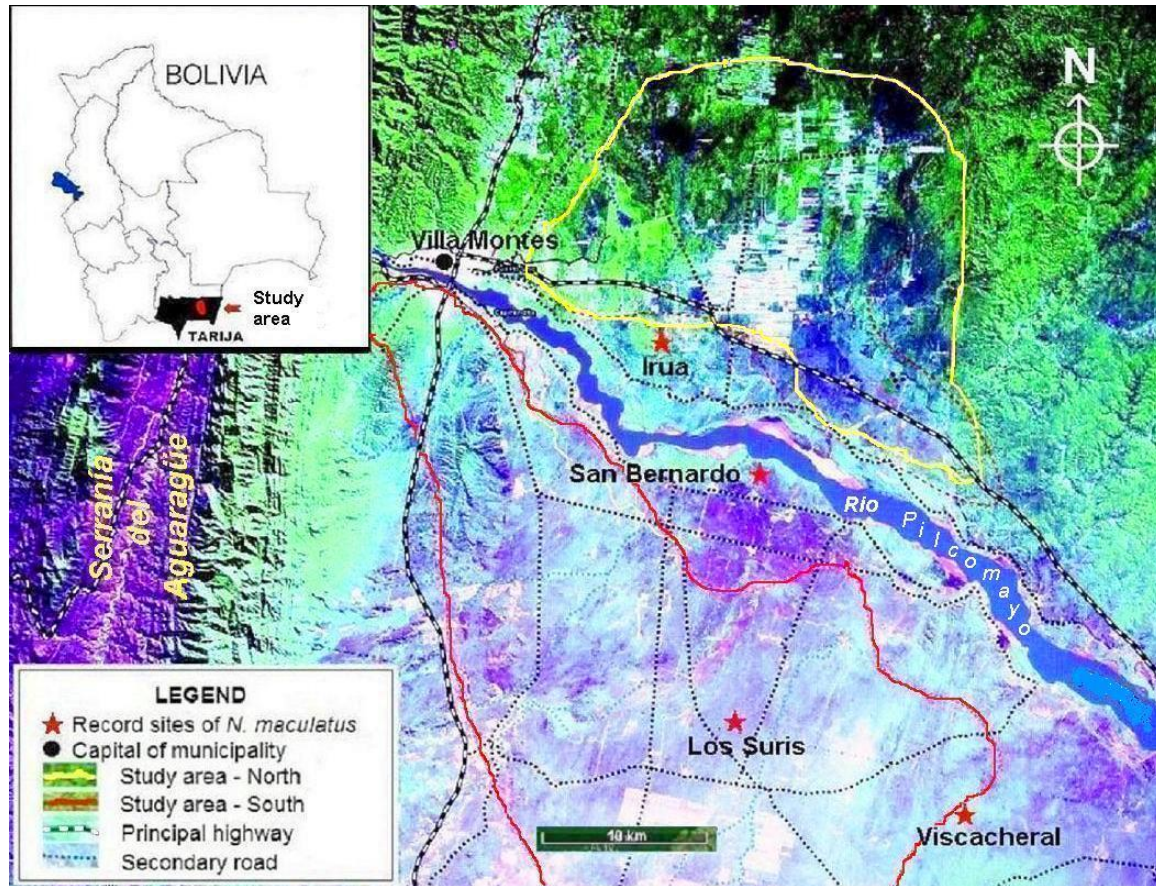


Figure 1. Location of the study area at Villamontes municipality, Tarija department (Bolivia) and record sites of *N. maculatus*.

Habitat and nesting site

Observations of the nest were made near the dry forest of the Chaco at banks of the río Pilcomayo, Los Suris locality (21°29'S, 63°27'W, 374 m), Villamontes municipality, Tarija department, southern Bolivia (Figure 1). A nest and a nestling were discovered (14:45 Hrs), while walking a 2.5 km path, when we conducted an ornithological survey in this locality (Figures 2A, 2B). The nest was a narrow tunnel located at ground level, at the edge of the path. The surrounding vegetation was dominated by thorny scrub of caraguatá (*Bromelia hieronymi*), garabatá (*Bromelia serra*), cactus (*Cereus dayamii*, *Cleistocactus dependens*, *Harrisia guelichii*, *Neoraimondia herzogiana*), and other species (*Ruprechtia triflora*, *Pereskia sacharosa*, *Izozogia nellii*). The forest had a height of about 8–10 m with typical species such as mistol (*Ziziphus mistol*), soto (*Schinopsis quebracho-colorado*), chañar (*Geoffroea decorticans*), tusca (*Acacia aroma*), garrancho negro (*Acacia polyphylla*), sachapera (*Capparis tweediana*), and algarrobo (*Prosopis alba*; Figure 3A).



Figure 2. A nestling of Spot-backed Puffbird (*Nystalus maculatus*) at nest entrance on 14 February 2020 (A). A detail of the vegetation at nest around in a dry forest of the Chaco, southern Bolivia (B). ©Photos: Omar Martínez.

Nest structure

The entrance of the nest was a tunnel 8.0 cm in diameter (Figures 2A, 2B), open perpendicularly to the direction of the path, which was approximately 3.5 m wide and, in some sections, it was partially closed by plants. The tunnel was excavated at a depth of 10-15 cm from the ground, where the entrance was a slight depression of the ground. The depth of the tunnel could not be measured, because a nestling was found during the entire observation period of the nest (30 min), but the sunlight reached up to about 30-50 cm of depth was estimated, especially when taking photos with the flash of the camera, but a total depth of 1 m was estimated. Around the entrance of the nest, small columnar cacti (80-100 cm high) were found that partially protected the nest.

Nestling description

A single nestling was found in the nest, it was little grown and kept its eyes closed, although it already had feathers developed and molted in much of the feathers of the body, except the ventral part of the body that was noticed naked (Figures 2A, 2B). The nestling remained still during the observation period (30 min), barely opening the eyes slightly. At 30 m from the place on the same path, an adult was observed perched in an algarrobo (*Prosopis alba*) at 3.5 m from the ground, it was not active during our observation, that last about 15 min (Figure 3B).



Figure 3. Typical dry forest of Bolivian Chaco as habitat at nest around (A). An adult individual of the Spot-backed Puffbird (*Nystalus maculatus*) in mid-level of edge forest (B). ©Photos: Omar Martínez.

Final considerations

Although the species is uncommon throughout its range, little is known about nesting sites. At the Estación Caroya (31°01'S, 64°06'W), Córdoba province, Argentina, a nest was found (20 November 2003) in a hole dug in a ravine of a road at 1.20 m high, whose depth of the nest was 1.10 m and diameter of the tunnel of 7 cm (De la Peña 2013). This fact is consistent with the nest we found, except for the fact that the nest on our site was built at ground level. This may be predictable, since the local forests are flat in the middle of the Chacoan plain, which confirms their preference for terrestrial nests unlike other genera of the family that have preference for nests in tree termites, which are rare in the area.

In the past, *Nystalus* was merged with *Notharchus* (AOU 1983), but most authors (e.g., Rasmussen & Collar 2002, Herzog *et al.* 2016, Remsen *et al.* 2020) maintain it as distinct. The terrestrial nest observed here is similar to those described for *N. maculatus* and for other congeners such as the White-eared Puffbird (*N. chacuru*), Striotolated Puffbird (*N. striotolatus*; Rasmussen & Collar 2002) and Barred Puffbird (*N. radiates*; Greeney *et al.* 2004). However, it is distinct from the termitaria nests of *Notharchus* (Skutch 1948, Haffer 1975, Willis & Eisenmann 1979, Hilty & Brown 1986, Matthews & Smith 2017), as in the case of *Notharchus tectus*, observed and caught in forest and savannah of the Bolivian Amazon, where there were abundant arboreal termitaria and presumably had a nest (Martínez *et al.* 2010) or other genera specialized in building nests in arboreal termitaria such as *Bucco* (Maillard 2007, Leite *et al.* 2016). Thus, the difference in the nest placement supports the separation into two genera, as was also suggested by Greeney *et al.* (2004).

Finally, it is suggested to consider *N. m. striatipectus* as an independent species following Silva (1991), unlike *N. m. maculatus*, which is widely distributed through the Cerrado and Caatinga in Brazil (Pinho *et al.* 2016). Tubelis & Tomas (2003) also consider

the taxon *striatipectus* as the only one of the complex that occurs in the Brazilian Pantanal, restricted to the southwestern edge of the Pantanal (Silva 1991) and southeastern Bolivia, mainly to the Chiquitano forest and Bolivian Chaco.

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