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Authors: Biancalana, Renata N., Zampaulo, Robson A., and Costa, Júlio C. R.

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## First record of the Tepui Swift (*Streptoprocne phelpsi*) breeding on Mount Roraima, Venezuela

Renata N. Biancalana,<sup>1,2\*</sup> Robson A. Zampaulo,<sup>3</sup> and Júlio C. R. Costa<sup>4</sup>

**ABSTRACT**—We report the first photographic record of the nest and nestling of the Tepui Swift (*Streptoprocne phelpsi*) on the top of Mount Roraima, in Venezuela. Two adults and one nestling were observed on a nest in September 2017, at an elevation of 2,630 m, at the entrance of the Cueva del Hotel Guácharos (Ojos de Cristal Cave System), making this the highest record in altitude for the species in the Pantepui region. *Received 28 April 2021. Accepted 1 October 2021.*

**Key words:** Apodidae, breeding, cave, nestling, Pantepui.

### Primeiro registro de *Streptoprocne phelpsi* nidificando no Monte Roraima, Venezuela

**RESUMO** (Portuguese)—Apresentamos o primeiro registro fotográfico do ninho e do ninhego do taperuçu-dos-tepui (*Streptoprocne phelpsi*) no topo do Monte Roraima, na Venezuela. Dois adultos e 1 ninhego foram observados em um ninho em setembro de 2017, a 2630 m a.n.m., na entrada da caverna Cueva del Hotel Guácharos (Sistema de Cavernas Ojos de Cristal), fazendo com que este seja o maior registro de altitude para a espécie na região do Pantepui.

**Palavras-chave:** Apodidae, caverna, ninhego, Pantepui, reprodução.

<sup>1</sup> Programa de Pós-Graduação em Zoologia, Universidade Federal do Pará & Museu Paraense Emílio Goeldi, Belém, PA, Brazil

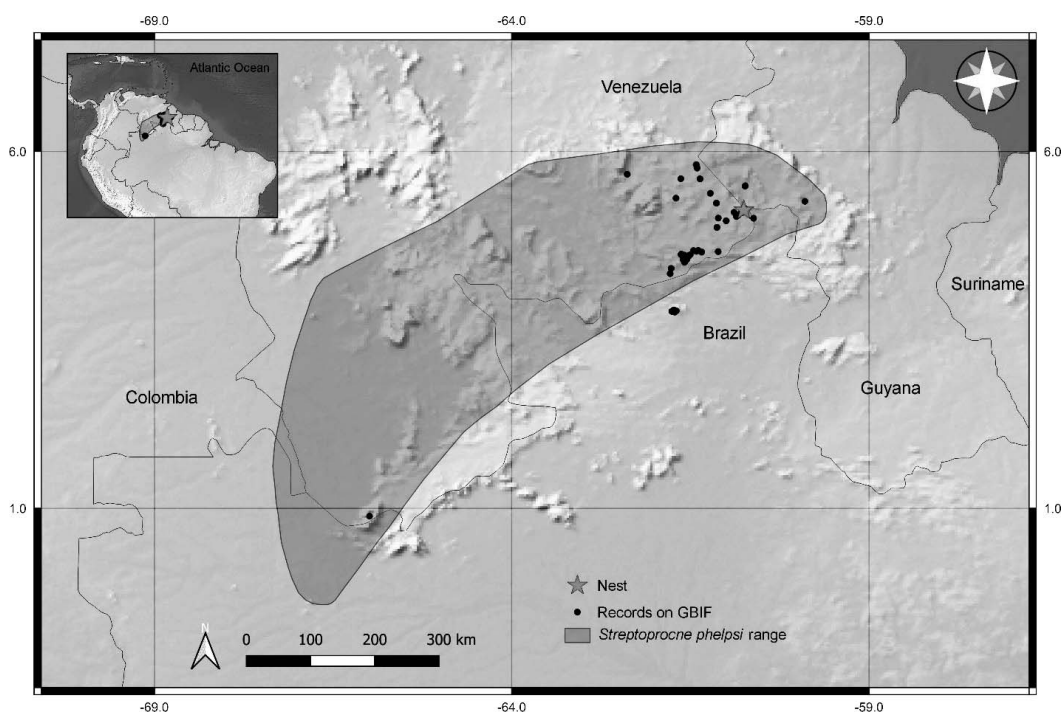
<sup>2</sup> Ornithology Department, Academy of Natural Sciences of Drexel University, Philadelphia, PA, USA

<sup>3</sup> Speleology, Vale S.A., Nova Lima, MG, Brazil

<sup>4</sup> Centro Nacional de Pesquisa e Conservação de Cavernas (CECAV), Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio), Nova Lima, MG, Brazil

\* Corresponding author: renata.biancalana@gmail.com

The biodiversity of the tepuis, a series of mesa-like formations in northern South America between Venezuela, Guyana, and Brazil, is still greatly unknown given the difficulty in accessing most of its mountaintops (Aubrecht et al. 2012). Mount Roraima, one of the inspirations for books, novels such as *The Lost World* by Sir Arthur



**Figure 1.** Distribution of the Tepui Swift (*Streptoprocne phelpsii*), with records available at GBIF (gbif.org, occurrence download <http://doi.org/10.15468/dl.s6h92v>) represented by black circles, and the location of the nest found in the present study (indicated by a star; map created using the software QGIS 3.20.2).

Conan Doyle in 1912, and several TV shows and documentaries, is one of the largest and most emblematic of the tepuis along the border between the states of Roraima in Brazil, Bolívar in Venezuela, and region Cuyuni-Mazaruni in Guyana. It has an extensive complex of caves near the top at 2,630 m elevation (the mountaintop is at 2,810 m), reachable only after days of hiking or by helicopter. Its altitude, mild temperature, and constant humidity, brought by the clouds over the Gran Sabana, make the flora and fauna unique and geographically distinct from other isolated summits (Galán et al. 2004).

The cave complex Cueva Ojos de Cristal is located on the Venezuelan side of the mountain in quartzite rocks. It is an intricate 17 km long system with 5 sectors composed of caves, tunnels, domes, and internal waterfalls (Šmída et al. 2005, Aubrecht et al. 2012; Fig. 1). One of the entrances to this cave system is used as a base camp for overnight expeditions and is also known as Cueva del Hotel Guácharos, a reference to the presence of Oilbirds (*Steatornis caripensis*) that nest and roost

there. Here we report the first photographic record of the nest and nestling of the Tepui Swift (*Streptoprocne phelpsii*) on Mount Roraima, in Venezuela.

During one of these expeditions on 7 September 2017 around 0900 h (AMT), one of us (RAZ) noticed and photographed 3 birds in a largely concealed nest located ~3 m high on a rock shelf in a dimly lighted area at the left from the entrance to the cave Cueva del Hotel Guácharos. The birds were later identified as 2 adults and a nestling Tepui Swift by JCRC and RNB based on plumage and distribution. The nest was in a drier area, with no waterfalls or other water sources in the vicinity (draining and water sources are found ~150 m deep in the cave).

The nest was positioned on a flat shelf-like crevice. It was cup-shaped at its base, with plant material hanging from the front. It was made with a combination of rootlets and fresh green and dry brown moss; the structure appeared to be dry (Fig. 2). Two adults were seen and photographed on the nest. One was positioned sitting in the back and



**Figure 2.** Tepui Swifts (*Streptoprocne phelpsii*) nesting atop Mount Roraima, Venezuela. (a) One adult positioned sitting in the back with a darker collar than the one in the front; (b) fully feathered nestling with dark, blackish-brown plumage; (c) primaries still on the shafts on both wings (indicated with white arrows), with primaries, their coverts, and secondaries with whitish edges; (d) nestling with its beak open, reaching for the front adult as if begging for food. Photos by R.A. Zampaulo.

had a darker orange collar than the one that was in the front (Fig. 2a). The one in the front was initially clinging to the rim of the nest, apparently protecting the nestling. The adult plumage was typical (as described by Collins 1972), with the wing feathers browner than the mantle and rump, which were dark, almost blackish. The orange collar was full in both individuals, covering the upper breast, throat, chin, ear-coverts, and hind-neck, with frayed feathers up to the upper part of the mantle.

The nestling was fully feathered and its plumage was dark, almost blackish brown (Fig. 2b). Its primaries were still partially sheathed on both wings. The primaries, their coverts, and the secondaries had whitish edges (Fig. 2c). The upper breast, the throat up to the side of the eyes, the supercilium, and the crown had feathers with dark orange tips, while those on the forecrown and lores had a whitish streak. Dark-orange tipped feathers

concentrated on the nape appeared to be darker than those of the adults. While the birds were being recorded the nestling seemed to be begging for food, as it had its beak open and was searching for the adult that was on the front of the nest (Fig. 2d).

The Tepui Swift is considered endemic to the region from which it gets its name, with records in Venezuela, Brazil, and Guyana (Collins 1972, Dickerman and Phelps 1982, Barnett et al. 2002, Braun et al. 2003, Crease 2009; Fig. 1). Although this species can be seen flying above the savannah plains in large flocks, like other swift species it is considered a cliff specialist and therefore the rock walls, caves, and waterfalls in the Pantepui region are essential for its breeding and roosting (Mayr and Phelps 1967, Braun et al. 2003).

This is the first photographic record of the nest and nestling of the Tepui Swift. It is also the highest altitude at which the species has been

recorded. The previous altitude record was obtained at the type locality for the species at the summit of Auyán-tepui (Barrowclough et al. 1997) at 2,200 m, 212 km northwest from Mt. Roraima. The species' only known nest to date was collected more than 1,500 km away at the Cerro de la Neblina, also in Venezuela (Willard et al. 1991), but in the western part of the Pantepui range, although, in this case, the nest apparently was closer to water, as it was positioned above a small stream, and it was also considered inactive, with no eggs or nestlings found (Whitacre 1989).

Although females are thought to have a paler collar than males (Chantler and Driessens 2000), we do not think that it is possible to determine the sex of the adult individuals recorded here because of the influence of the camera flash in the pictures, although the adult clinging to the front rim of the nest did appear to have a duller collar.

While it is not possible to estimate the length of the breeding season for the species, the photographs were taken in September, which is considered the end of the rainy season in the region, and the nestling appeared to be near to fledging given the length of its wings. Tepui Swifts in breeding conditions were collected on Mount Roraima on the Guyana side in April 2001 (Braun et al. 2003), which supports the hypothesis that the species may start its breeding in the beginning of the rainy season (Collins 1972) in early May (Barni et al. 2020).

Mount Roraima is considered the best ornithologically explored tepui (Mayr and Phelps 1967, Braun et al. 2003). Given the cryptic nature of most swift nests it is possible that several new roosting and breeding sites of this and other species of swifts found in the region, such as the White-tipped Swift (*Aeronautes montivagus*) and the Gray-rumped Swift (*Chaetura cinereiventris*; Mayr and Phelps 1967), are still hidden and waiting to be discovered on the summits of these majestic mountains.

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