

## First record of predation by the White-necked Puffbird (*Notharchus hyperrhynchus*) on the Central American Mabuya (*Marisora unimarginata*)

## Primer registro de depredación del buco de collar (*Notharchus hyperrhynchus*) sobre la mabuya centroamericana (*Marisora unimarginata*)

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### Abstract

The White-necked Puffbird (*Notharchus hyperrhynchus*) consumes mainly large insects, and may take small vertebrates, but this has rarely been documented. We document predation by a Puffbird on a lizard in the tropical humid rainforest of Corcovado National Park, Costa Rica. On 5 December 2022, at 17:25 h we observed a White-necked Puffbird perched at 7 m height that flew to a branch at 6 m high in an adjacent tree and captured a Central American Mabuya (*Marisora unimarginata*). The Puffbird returned to its perch, where we observed for 4 mins as the Puffbird hit the skink against the surface, until it was dead and swallowed it whole. Our observation provides the first documented evidence of predation on a lizard by the White-necked Puffbird in tropical forest. This is important given that populations of the White-necked Puffbird are declining, and the Central America Mabuya has a restricted distribution. Hence, our observation provides species-level information on predator-prey interactions that may fill knowledge gaps for management decisions.

**Keyword:** arboreal habits, Corcovado National Park, conservation concern, Costa Rica, skink.

### Resumen

El buco de collar (*Notharchus hyperrhynchus*) se alimenta principalmente de insectos grandes, y puede consumir pequeños vertebrados, pero esto ha sido escasamente documentado. Aquí documentamos la depredación por un buco sobre una lagartija en la selva tropical húmeda del Parque Nacional Corcovado, Costa Rica. El 05 de diciembre de 2022 a las 17:25 h, observamos un buco de collar perchado a 7 m altura, que voló a una rama a 6 m de altura en un árbol adyacente y capturó a una mabuya centroamericana (*Marisora unimarginata*). El buco regresó a su percha y lo observamos durante 4 mins mientras golpeaba la lagartija contra la superficie, hasta matarla y consumirla entera. Nuestra observación proporciona la primera evidencia documentada de depredación de una lagartija por el buco de collar en la selva tropical. Esto es importante dado que las

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poblaciones del buco de collar están disminuyendo, y la mabuya centroamericana tiene una distribución restringida. Por lo tanto, nuestra observación proporciona información a nivel de especies sobre las interacciones depredador-presa que pueden llenar vacíos de conocimiento para decisiones de gestión.

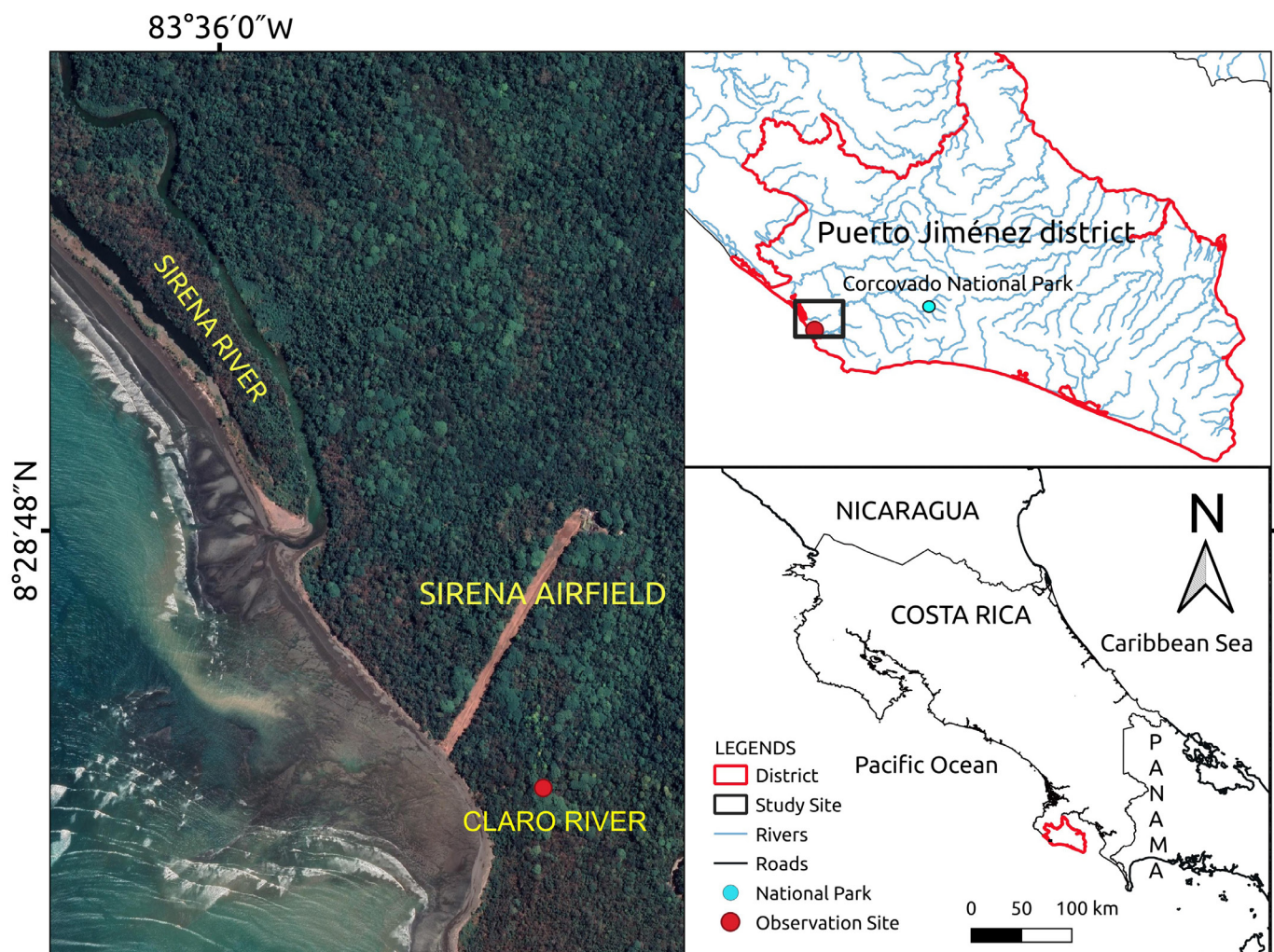
**Keywords:** Costa Rica, conservación, hábitos arbóreos, lagartija, Parque Nacional Corcovado.

## Introduction

The White-necked Puffbird *Notharchus hyperrhynchus* (Bucconidae: Galbuliformes) is widely distributed from southern Mexico to western Colombia and Ecuador, the Amazon, and north-east Argentina (Stiles & Skutch 1989; Valley & Dyer 2018), where it is a generally uncommon resident of lowland humid forests along the Caribbean and Pacific slopes (Stiles & Skutch, 1989). The species is a relatively large bird, measuring ~240 mm, with a large, black bill, slightly hooked at the end,

which it uses to capture and beat prey against a branch (Stiles & Skutch 1989). Although a widespread species, little information exists on the diet of the White-necked Puffbird, which is mainly considered to be based on insects, and includes some vertebrate items.

The White-necked Puffbird is observed mainly in the canopy, from where it descends to the middle and lower levels of the forest (Stiles & Skutch 1989). While foraging, the species perches for long periods on open high branches or snags, making sudden, long, direct sallies to adjacent foliage to seize prey, mainly large insects (Stiles & Skutch 1989). The species is reported to occasionally take small vertebrates, including a Rufous-tailed Hummingbird (*Amazilia zacatl*) predated in Panama (Howell & Webb, 1995; Robinson 2003). The White-necked Puffbird may also follow army ant swarms to take advantage of escaping prey (Germer 2012). Although supposedly the White-necked Puffbird also feeds on lizards (Stiles & Skutch 1989), we found



**Figura 1.** Site (red dot) where a White-necked Puffbird (*Notharchus hyperrhynchus*) was observed predated a Central American Mabuya (*Marisora unimarginata*) on Los Naranjos trail, Sirena sector, in Corcovado National Park, Costa Rica. Map by G. Chaves.

no documented evidence of this prey type taken by this bird. We document for the first time, field observations of predation by a White-necked Puffbird on a relatively large and common lizard in the lowland tropical rainforest of Costa Rica.

## Methods

We conducted our observations in Corcovado National Park in the Puerto Jiménez district on the southwestern coast of the Osa Peninsula, Costa Rica (Fig. 1). The park was created in 1975 to protect the largest remaining tract of lowland tropical rain forest in the Pacific versant of Central America and supports a high biodiversity (Foerster & Vaughan 2002). The mean annual temperature ranges between 23 and 26.6°C, depending on elevation (Foerster & Vaughan 2002). The rainy season extends from May to November, with 475 mm precipitation month<sup>-1</sup>, and the dry season from December to April, with 130 mm mo<sup>-1</sup> (Vaughan 1981). We hiked trails at Corcovado National Park with tourist groups, carrying binoculars and a small telescope to observe birds and other fauna.

## Results

On 5 December 2022, at 17:25 h we observed a White-necked Puffbird perched at about 7 m height on the Los Naranjos trail (8.4725 N, -83.5905 W; 33 m asl; Fig. 1). The Puffbird flew out to a branch on a side tree at about 6 m height, captured a Central American Mabuya (*Marisora unimarginata*), and flew back to its perch (Fig. 2). We observed the Puffbird for about 4 mins as it beat the skink several times against the branch. The Puffbird then swallowed whole the apparently dead skink.

The Central American Mabuya is a medium-sized skink with a standard length of 91 mm, and a total length 255 mm (Leenders 2019). It occurs on the Pacific slope of Costa Rica and Panama, and the Big Corn Island of Nicaragua (Uetz et al. 2023), from near sea level to 1500 m, although most localities are below 600 m (McCranie et al. 2020). The Central American Mabuya is strictly diurnal, and is a secretive, wary species that retreats into crevices in trees, logs, and fence posts when it feels threatened (Savage 2002; Leenders 2019)

## Discussion

Our observation provides the first documented evidence of predation on a lizard by the White-necked Puffbird in the Neotropical forest. This is import-



**Figura 2.** A White-necked Puffbird (*Notharchus hyperrhynchus*) holding a Central American Mabuya (*Marisora unimarginata*) that it had captured and beaten on a branch of a tree at Los Naranjos trail, Sirena sector, Corcovado National Park, Costa Rica.

ant given the status of decreasing populations of the White-necked Puffbird (BirdLife International 2020), and the small distribution range of the Central America Mabuya along the Pacific slope of Costa Rica and Panama (Uetz et al. 2023). Our observation of predation on a relatively common lizard by the White-necked Puffbird is indicative of a lack of available natural history information for this and many other Neotropical bird species (Acosta & Morún 2014; Sandoval et al. 2015). Identifying which species prey on lizards, as well as predator-prey interactions among vertebrates provides baseline information for our understanding of ecological interactions within ecosystems (Sandoval et al. 2008).

The Central American Mabuya captured by the White-necked Puffbird is primarily a terrestrial species, but it was taken from a tree branch at a height of 6 m. It has been suggested that this skink climbs vegetation, mainly in open terrain (Leenders 2019). However, it has not been reported to be found as high as 6 m on a tree in the middle of a forest. Our observation highlights the Puffbird's keen ability to detect prey, similar to other Bucconidae species, which are considered excellent hunters capable of

distinguishing prey from distances exceeding 50 m away (Soto 2013).

Our observation occurred in well-preserved mature forest, and both the White-necked Puffbird and Central American Mabuya may be considered of conservation concern. Although, the White-necked Puffbird is classified as a species of Least Concern (LC) in the IUCN red list, its populations are decreasing (BirdLife International 2020). The Central American Mabuya has a restricted distribution in Costa Rica and Panama (Lee et al. 2014; Uetz et al. 2023), and may also be decreasing in numbers. As such, any data obtained about their ecology is helpful in filling knowledge gaps for management decisions.

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