

Avian species inventory and conservation potential of Reserva Las Tangaras, Ecuador

Henry C. Stevens, Bridget Re and C. Dustin Becker

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Los inventarios sirven como herramientas importantes para la conservación debido a que permiten determinar cambios en la distribución de ciertas especies y la composición de comunidades ecológicas. Aquí presentamos la primera compilación de la lista aves de la Reserva Las Tangaras, Mindo, prov. Pichincha, Ecuador, combinando datos de transectos y anillamiento recolectados durante los últimos 15 años. Reportamos 356 especies de aves en la reserva, incluyendo 32 especies amenazadas de extinción en Ecuador y 19 endémicas del región del Chocó. La Reserva Las Tangaras ofrece hábitat inalterado crucial para especies residentes y migratorias, y sirve como parte integral del red de reservas ecológicas enfocadas en la conservación de aves en el región Mindo-Tandayapa.

Species inventories, defined here as a comprehensive list of species detected in a specific geographic area, serve a critical role in conservation planning worldwide⁴. By providing periodic, detailed snapshots of local community composition for a selected group of taxa, inventories have the potential to highlight local trends in population, and range changes for certain species at multiple scales⁸. These data, in turn, inform conservation efforts ranging from individual species management to regional habitat protection. Species inventories are especially important tools for forecasting range shifts, particularly in habitats undergoing rapid alteration and modifications in response to climate change, like Andean cloud forests¹⁸.

Here, we present an avian species inventory for Reserva Las Tangaras, a subtropical, mid-elevation cloud forest reserve on the west slope of the Ecuadorian Andes. The reserve is within the Mindo y Estribaciones Occidentales del Volcán Pichincha Important Bird Area (IBA), the first IBA in South America identified by BirdLife International in 1997^{3,7}. More recently, the UN designated the Chocó Andino of Pichincha province as a Biosphere Reserve in 2018²⁷, an area of 286,805 ha of global importance for its high diversity and endemism, and which encompasses Las Tangaras. Our aim in compiling this inventory is that it may be utilised in conjunction with compilations from other local reserves to inform regional conservation efforts across the Ecuadorian Andes and the megadiverse Chocó region.

Study site

Reserva Las Tangaras lies south of Mindo, in Pichincha province, north-western Ecuador (00°04'36.235"S 78°47'23.82"W). The 51-ha reserve is in the Chocó biogeographic region, recognised globally for its high biodiversity and endemism^{3,15}, and abuts the 19,200-ha Bosque Protector Mindo-Nambillo. Primary subtropical forest covers most of

the reserve, at elevations of 1,250–1,610 m. There is great variation in precipitation between the wet (January–May) and dry seasons (June–December), with mean monthly rainfall in these two periods of 515.8 mm and 146.6 mm, respectively (CDB unpubl. data). Temperature remains constant year-round, with a mean monthly minimum of 15.7°C and max. 24.8°C (CDB unpubl. data).

For this study, we also included data from the environs of the reserve, namely the entrance trail, a dirt road that borders Las Tangaras, and a patch of land downriver of the reserve. These areas total an additional c.50 ha. Nearly all of the habitat within these is second growth, so their inclusion did not significantly increase the number of species listed for the reserve; however, it may have altered the relative abundance rankings for common species (e.g., Flame-rumped Tanager *Ramphocelus flammigerus*; see below).

Methods

Fieldwork.—A mixed-method survey approach was used as it maximises the number of species detected within an area¹. To obtain an exhaustive inventory of the Las Tangaras avifauna, we combined ringing data with visual detection information from transects. Life Net Nature has conducted annual ringing sessions since 2005, for two weeks each June. Starting in 2013, Life Net Nature began a second ringing session in December as well. Researchers set up 15 mist-nets, each 10 m long, on transects covering c.10 ha per habitat type (e.g., primary ridge forest, secondary forest). Mist-nets were opened during 06h00–11h00, and checked every 20–30 minutes. At the ringing station, each bird was weighed, identified, sexed and aged, and standard biometrics and data collated (wing, tarsus and culmen lengths, body fat, reproductive status, and wing and body moult²¹). These data are available upon request to CDB.