

The avifauna of the río Fortaleza drainage basin, dptos. Lima and Ancash, Peru

Eustace P. G. Barnes, Morag A. Hunter, Hugo V. Lepage, Hernán E. Verde Luján, Nicodemo C. Jamanca González and Crispin H. W. Barnes

Received 10 November 2020; final revision accepted 14 May 2021
Cotinga 44 (2022): 43–59
published online 1 July 2022

La cuenca del río Fortaleza, en los deptos. de Ancash y Lima, Perú, presenta una transición ecológica que va desde los áridos desiertos costeros hasta los bosques relictuales y la alta puna en la cordillera Negra. Presentamos el primer estudio ornitológico de una cuenca en esta cordillera, con una lista de aves de 242 especies, incluyendo 18 especies de rango restringido, 14 de ellas endémicas de Perú. Estos datos muestran nuevos sitios para ocho especies de rango restringido y nueva información sobre la extensión y calidad de los bosques subtropicales y templados áridos y semiáridos en la cuenca del Fortaleza. Describimos tasas espacialmente variables de cambio ambiental resultante de la despoblación rural y la industrialización agrícola, que plantean desafíos complejos para la conservación de la avifauna endémica y especies de rango restringido en la cordillera Negra.

Globally, Peru has one of the richest avifaunas with 1,753 species²⁴. In recent decades, interest in Peru's avifauna has increased with the discovery of new species in the remote and biologically diverse Amazonian foothills and lowlands²⁸. On the less diverse Pacific slope, data deficiency on species ranges and populations, and habitat quality in the highly threatened, endemic-rich arid woodland ecosystems hamper conservation efforts⁵.

The Pacific slope in Peru extends from the coastal deserts to the relictual temperate woodlands and arid *puna* of the high Andes, and supports notable levels of biological endemism^{4,8,30}. The río Fortaleza basin lies at the southern end of the Cordillera Negra, on the Pacific slope of central Peru. Its avifauna combines elements found in the Tumbesian and Peruvian High Andes Endemic Bird Areas (EBA) as defined by BirdLife International^{5,6}. The Tumbesian EBA extends from south-west Ecuador to 11°S in central Peru, with many distinct habitats, including open desert, arid and semi-arid woodlands, which support high levels of endemism and, globally, is one of the most severely threatened regions^{8,30}. The Peruvian High Andes EBA extends from the Ecuadorian border south through the Andes, to the borders of Bolivia and Chile, and also harbours many biologically distinct sub-regions, including the Cordillera Negra. At subtropical and temperate elevations, natural vegetation in this cordillera primarily comprises arid and semi-arid relictual or insular woodland and scrub, which are also threatened^{5,10}.

Ornithological knowledge of the Cordillera Negra largely comes from a few isolated sites in the Casma and Huarmey Valleys, where habitats and their avifauna are negatively impacted by agricultural expansion and overgrazing^{5,10,12}. However, environmental change in the Andes is

a more complex set of processes that also includes human migration, resource exploitation and climate change^{1,22}.

We conducted the first comprehensive ornithological survey and assessment of key habitats for range-restricted species in the río Fortaleza basin in the Cordillera Negra, on the Pacific slope of the Peruvian Andes. A network of study sites was developed to survey all principal habitats, but particularly subtropical thorn woodland and temperate relictual woodland (Fig. 1). We present new data on the distribution and abundance of five range-restricted species, all endemic to Peru: Russet-bellied Spinetail *Synallaxis zimmeri*, Piura Chat-Tyrant *Ochthoeca piurae*, Rufous Flycatcher *Myiarchus semirufus*, Peruvian Plantcutter *Phytotoma raimondii* and Rufous-breasted Warbling Finch *Poospiza rubecula*, along with noteworthy observations of several other species and the distribution of key habitats. Our research had three objectives: (1) to comprehensively survey the avifauna of the río Fortaleza drainage; (2) to assess the extent and quality of habitats critical for the conservation of endemic and range-restricted species; and (3) to raise the profile of this little-studied region, which has a diverse avifauna in an easily accessible region.

Study area and Methods

The río Fortaleza basin lies in dptos. Lima and Ancash, and covers approximately 2,415 km², with vegetation zones grading from subtropical desert and arid woodland in the lowlands, to temperate scrub and relictual woodland, and finally the high *puna* at nearly 4,800 m in the high Andes. In the subtropical desert, irrigated agriculture dominates the floodplains, but scattered relictual patches of thorn woodland remain. Desert and desert

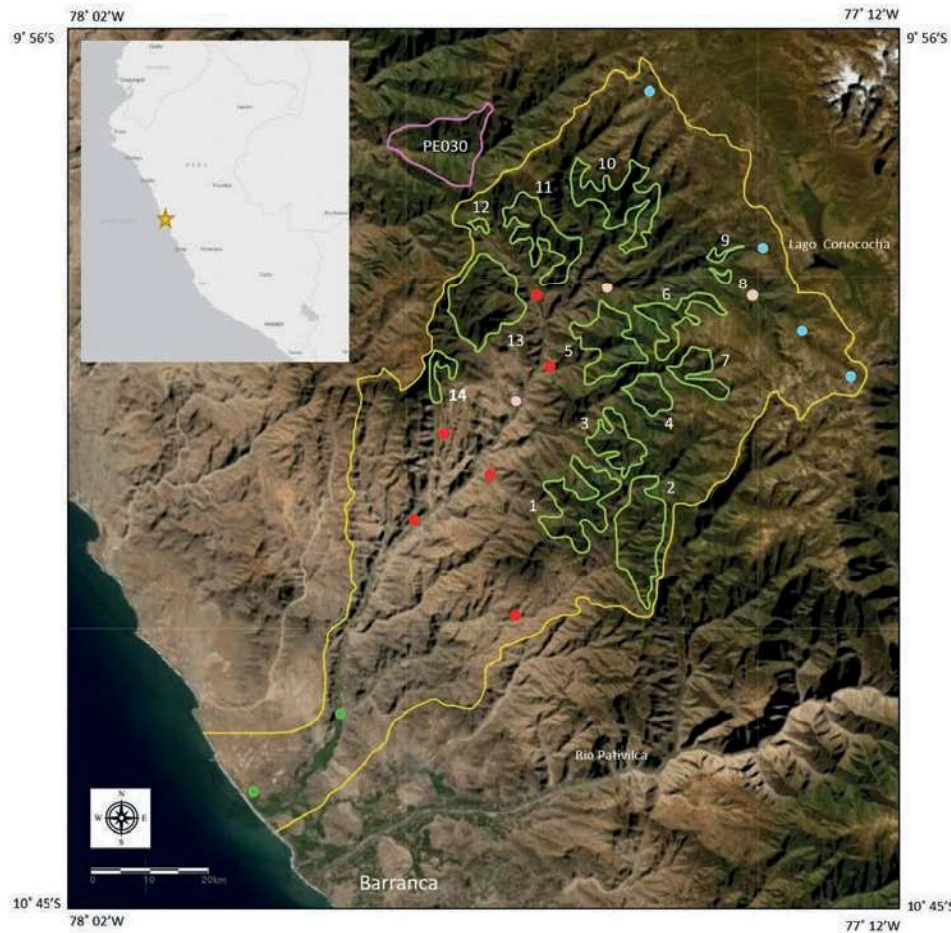


Figure 1. Río Fortaleza basin showing the location of study sites and key habitats. Inset map of Peru indicates location of río Fortaleza with a yellow star. The catchment watershed is indicated by a yellow line, and encompasses 2,415 km². Patches of Pacific relictual woodland are mapped as green polygons and numbered 1–14 (RW in Table I). Coastal plain study sites are indicated by green dots and numbered 1–2 (Cp in Table I). Arid scrub and woodland sites are indicated by red dots and numbered 1–6 (AW in Table I). Mid-elevation study sites are coloured pink and numbered 1–3 (Me in Table I). Watershed *puna* study sites are indicated by blue dots and numbered 1–4 (Pu in Table I). The Important Bird Area El Bosque de Noqno (IBA PE030) is indicated by the violet polygon. Additional site details and sampling methods at each are given in Table I.



Figure 2. *Vachellia* woodland at 720 m elevation, río Tunan sub-catchment, Peru (Eustace P. G. Barnes)



Figure 3. Tall Pacific relictual woodland at c.2,560–3,770 m in the río Huayllapampa sub-catchment; the largest area of mesic woodland in the río Fortaleza drainage basin, Peru (Eustace P. G. Barnes)