

Bird watching to promote ecotourism in the Ricuricocha lagoon in Peru

Observación de aves para fomentar el ecoturismo en la laguna de Ricuricocha en Perú

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ABSTRACT

Bird watching is a booming type of tourism that attracts a market segment with high purchasing power. The objective was to identify bird species to promote ecotourism in the Ricuricocha lagoon, Peru. The investigation was basic of exploratory level. Birds were inventoried through point counts, direct counts, intensive searches, and linear and strip transects. The results were the identification of 167 species of birds belonging to 48 families and 22 orders, 17 are of interest for bird watching, 10 migratory species, the most representative being the Tyrannidae family. It is concluded that the Ricuricocha lagoon has great potential to promote the ecotourism thanks to the variety and quantity of bird species it houses.

Keywords: inventory, specialized tourism, environment, sustainable development.

RESUMEN

La observación de aves es una modalidad de turismo en auge que atrae un segmento de mercado con alta capacidad adquisitiva. El objetivo fue identificar especies de aves para fomentar el ecoturismo en la laguna de Ricuricocha, Perú. La investigación fue básica de nivel exploratorio. Se inventario aves mediante puntos de conteo, conteo directo, búsqueda intensiva y de transectos lineales y de franja. Los resultados fueron la identificación de 167 especies de aves pertenecientes a 48 familias y 22 órdenes, 17 son de interés para el aviturismo, 10 especies migratorias, siendo las más representativas la familia Tyrannidae. Se concluye que laguna Ricuricocha tiene gran potencial para fomentar el ecoturismo gracias a la variedad y cantidad de especies de aves que alberga.

Palabras clave: inventario, turismo especializado, medio ambiente, desarrollo sostenible.

INTRODUCTION

Ecotourism is an activity that takes place in all natural spaces with tourism potential based on biodiversity, especially endemic flora and fauna, aimed at a specialized market segment, both due to the high level of thematic domain and the high capacity purchasing power of the participants (González Kuk & Muñoz-Marquez Trujillo, 2021). In this context, a new paradigm called bird tourism has emerged, which constitutes a strategy to promote the sustainability, appreciation and conservation of birds, make tourism management viable, and improve society-nature interaction (Cajas Bravo et al., 2021; Calderón Leytón et al., 2021; Cuevas et al., 2018).

Costa Rica and Ecuador, countries with low bird wealth, have discovered purchasing power in bird tourism that attracts thousands of tourists with purchasing power. In Colombia, on the contrary, despite having great biodiversity and a variety of bird species, bird tourism is wasted due to the lack of planning instruments that make it impossible to identify tourism potential (Mora Forero & Ramírez García, 2019).

In Peru, there are few census and bird registration works specifically in wetlands, however, 151 species between residents and migratory species were recorded (Pulido Capurro et al., 2021); As is the case of Lake Titicaca, which has a Ramsar category of global importance, 135 species included in 17 orders, 33 families and 83 genera were found there, which demonstrates its relevance by evidencing resident, migratory, Nearctic, southern and native species. Peruvian Andes towards its coasts (Pulido Capurro, 2018).

The Ricuricocha lagoon, located in the city of Tarapoto, San Martín region, Peru, is a potential ecotourism attraction where the presence of birds that live, nest and reproduce around the wetlands has been discovered. Although inventories have been carried out at the learning level and contests such as the Global Big Day that takes place twice a year in the world, there is a need to identify accurate information on the species that inhabit this space for a long period of time.

The only documented formal record of the avifauna in the San Martín region is the case of Altamirano-Guerrero et al. (2010), who found 311 bird species, of which four were

endemic to Peru and one to the Alto Río Mayo, 15 were of restricted distribution, and a considerable number of rare species; declining to this relevant area to develop ecotourism activities in addition to its easy accessibility.

The insufficient registration of birds at the national level and the little information on the places restricts the tourist offer and the specialization of bird tourism that, according to Carrillo García & Enríquez Rocha (2017), would generate socioeconomic, environmental and even political benefits because they encourage the creation of conservation areas that contribute to their protection and the development of sustainable tourism. It is important to emphasize that the lagoons, as is the case of the Ricuricocha lagoon, are potential nesting points for other species or, in any case, resting places for seasonally migratory species (Tobar et al., 2021).

On the other hand, bird species have characteristics of endemism, migration and nesting, which provides ecosystem importance for species threatened or in danger of extinction due to the loss of their habitats and forests due to human interventions due to population growth (Azurduy & Maillard, 2022).

The importance of wetlands and the species that inhabit them generate scientific, educational and economic benefits that sustain the ecosystemic advantages of the population, directly and indirectly (Estévez, 2020). Thus, the objective of the study was to identify bird species in order to promote ecotourism in the Ricuricocha lagoon, which in turn has information for their awareness, education and ecotourism promotion, and finally contribute to the Peruvian North Amazon circuit.

MATERIALS AND METHODS

Basic research was chosen because it had the purpose of filling a gap in the knowledge about birds with tourism potential in the study area. Likewise, it corresponded to the exploratory level since a subject little treated was investigated.

The population was made up of all the avifauna species of the Ricuricocha lagoon and its surroundings. The sample consists of the avifauna species of the Ricuricocha lagoon with sufficient tourist potential for their use and inclusion in the tourist offer of the San Martín region.

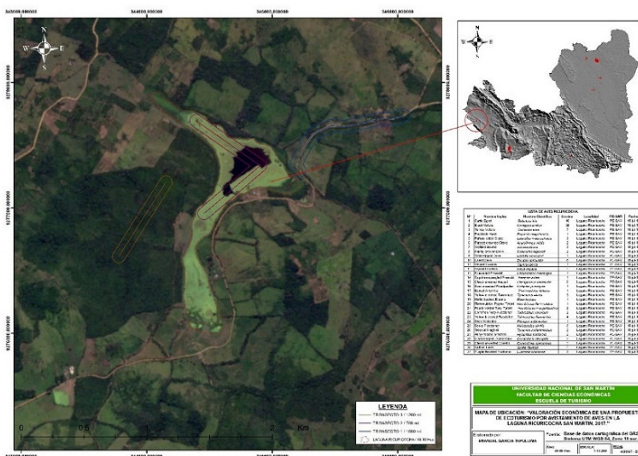
The tools used were the telescope, binoculars, camera, recorder and accessories, GPS. Recordings of bird sounds from the xenocanto digital library were also used, through the moderate use of playback, Peru bird guide, notebook and data collection form as a format to record birds, either by sighting or hearing.

It was necessary to request access to the adjoining land around the lagoon to facilitate the study. The Ricuricocha lagoon was recognized to carry out the inventory, verifying in situ the favorable environment for the investigative purpose.

The bird inventory was carried out through field work where the tours were carried out during the months of June to November 2017 in the vicinity of the Ricuricocha lagoon, with two field trips per month. For the elaboration of the inventory, the technique of counting points, direct counts, intensive search, lists of species, linear transects, strip transects and playback were used.

For the identification of species of tourist and scientific interest, the methodology of the taxonomic key run was applied, through the collation, review and comparison of the characteristics of the species of the study area, for which the Birds of Peru Guide (Schulenberg et al., 2010). Regarding the proposal for new bird watching points in the Ricuricocha lagoon, the georeferencing of the bird watching places was carried out using GPS and then the circuit sketch was prepared for the identification of the species (Figure 1).

Figure 1. Location sketch of the Ricuricocha lagoon



RESULTS

It was possible to register 167 species of birds, of which 17 were of interest for bird watching because they are endemic, and scientific because they are species related to the most threatened forest habitats in the San Martín region. Table 1 presents the description of the 17 species based on the criteria noted in the Birds of Peru Guide by Schulenberg et al. (2010).

Table 1. Species of avituristic and scientific interest

N°	Scientific name	Name in english	Name in Spanish	P.
1	<i>Crypturellus tataupa</i>	Tataupa Tinamou	Perdiz Tataupá	38
2	<i>Laterallus melanophaius</i>	Rufous-sided Crake	Gallineta de Flanco Rufo	128
3	<i>Pardirallus nigricans</i>	Blackish Rail	Rascón Negruzco	124
4	<i>Anurolimnas viridis</i>	Russet-crowned Crake	Gallineta de Corona Rufa	128
5	<i>Sarkidiornis melanotos</i>	Comb Duck	Pato Crestudo	44
6	<i>Columbina minuta</i>	Plain-breasted Ground Dove	Tortolita Menuda	164
7	<i>Galbula cyanescens</i>	Bluish-fronted Jacamar	Jacamar de Frente Azulada	264
8	<i>Phaethornis pretrei</i>	Planalto Hermit	Ermitaño del Planalto	216
9	<i>Thamnophilus punctatus</i>	Northern Slaty-Antshrike	Batará-Pizarroso Norteño	354
10	<i>Myrmotherula longicauda</i>	Stripe-chested Antwren	Hormiguerito de Pecho Listado	360
11	<i>Formicivora rufa</i>	Rusty-backed Antwren	Hormiguerito de Dorso Rojizo	364
12	<i>Hylophilus thoracicus</i>	Ashy headed greenlet	Verdillo de cabeza ceniza	434
13	<i>Casiornis rufus</i>	Rufous Casiornis	Casiornis Rufo	482
14	<i>Neopelma sulphureiventer</i>	Sulphur-bellied Tyrant-Manakin	Saltarín-Tirano de Vientre Azufrado	502
15	<i>Pheugopedius coraya</i>	Coraya Wren	Cucarachero Coraya	528
16	<i>Cantorchilus leucotis</i>	Buff-breasted Wren	Cucarachero de Pecho Anteadado	528
17	<i>Schistochlamys melanopis</i>	Black-faced Tanager	Tangara de Cara Negra	546

Likewise, 10 migratory species were registered according to the classification of the book of Birds of Peru, among them the most representative were of the Tyrannidae family with 3 species. Southern migratory species (Rufous Casiornis) were also appreciated, which has a high value to promote bird watching due to its restricted and boreal range. Table 2 describes each species following the criteria noted by Schulenberg et al. (2010).

Table 2. List of migratory bird species in the study area

N°	Scientific name	Name in english	Name in Spanish	P.
1	<i>Coccyzus melacoryphus</i>	Dark-billed Cuckoo	Cucillo de Pico Oscuro	186
2	<i>Chordeiles minor</i>	Common Nighthawk	Chotacabras Migratorio	204
3	<i>Actitis macularius</i>	Spotted Sandpiper	Playero Coleador	142
4	<i>Pandion haliaetus</i>	Osprey	Aguila Pescadora	114
5	<i>Tringa melanoleuca</i>	Greater yellowlegs	Chorlo Mayor	142
6	<i>Empidonax alnorum</i>	Alder Flycatcher	Mosquerito de Alisos	450
7	<i>Tringa Flavites</i>	Lesser yellowlegs	Playero Pata Amarilla	142
8	<i>Casiornis rufus</i>	Rufous Casiornis	Casiornis Rufo	482
9	<i>Contopus vivens</i>	Eastern Wood - Pewee	Pibí Oriental	452
10	<i>Catharus ustulatus</i>	Swainson's Thrush	Zorzal de Swainson	538

Proposal of tourist circuits

Route zero: This route is designed for the generic bird watcher, with no major demands, who only need a pair of binoculars to better appreciate the birds and a camera to take the images observed. The displacements are minimal, because the distance to travel is approximately 200 m on level ground. This observer could settle for seeing only the species found on the banks of the lagoon in the vicinity of the main house. This route is suitable for local visitors, schoolchildren or national tourists, without major requirements or demands to know some birds. In general, it is oriented to groups of up to 20 passengers or visitors. Route P1-P2: This route includes a trip to the north-east end, skirting the lagoon, following a 500 m stretch along the trail and then a detour to the left to walk 200 m to start the sighting of the species (P1). Depending on the time available and the expectations of the bird watcher, you can continue to the observation point P2, which involves going up the hill to have a panoramic view of the lagoon and observe the birds more closely. This route is suitable

for visitors with a certain level of mastery of the species, since it is aimed at those who have a specific purpose of seeing or hearing certain species of birds.

Route P3-P4: To locate this route, it is necessary to return to the fork in the road and follow the path to the left, towards the north-west, advance four kilometers and then turn to the right, that is, enter the edge of the lagoon at the end west (this stretch can be done by motorized vehicle). When deviating from the road, you walk closer to the lagoon until you reach observation point P3 and if you have higher expectations, continue walking up the hill, to have a better view of the panorama from observation point P4.

In both cases and according to the requirements of the bird watcher, the environmental conditions and the time available, the time and direction to follow in search of the birds will be chosen as the sighting objective. The referred observation points are oriented for a small number of specialized bird watchers (up to five), who are looking for defined species and have no economic limitations, or available time, or instruments, that is why, with the purpose of seeing or listen to the song of the bird of their choice, they could make long waits at dawn or during sunset, even take long walks.

Figure 2. Birds present in the proposed tourist circuit



DISCUSSION

The results are similar to what was reported by Madrid Ibarra & Elías Cruzado (2018) on the campus of the Ricardo Palma University, Lima. The richness of bird species was 22, belonging to 15 families and 8 orders. Most belonging

to the order Passeriformes. Due to the same number of species, this university campus is considered an interesting point for bird watching within an urban ecosystem. The Ricuricocha lagoon, for its part, identifies 167 species of birds, 17 of which have scientific importance for this market segment.

Loera-Casillas et al. (2022) recorded 129 species in Mexico; 19 were endemic, 13 in some risk category and 21 considered indicators. They point out that the elevation will decrease the distribution and abundance of the species, and the lowest altitudinal strips will have the highest values of richness and abundance. Similarly, Gómez-Cardona et al. (2019) determined the bird watching potential in the Boca de Guacamaya Park from the ecosystem services approach; substantiated the possible potentiality of bird tourism in the Ricuricocha lagoon given the record of 167 species.

Quiñonez & Hernandez (2017) observed 68 species in the El Paraíso wetland; being the abundant families the Anatidae, Laridae, Phalacrocoracidae and Rallidae with 19.2%, 18.0%, 16.8% and 16.1%, respectively. In relation to the most abundant species, they recorded Phalacrocorax brasilianus and Fulica ardesiaca with 16.7% and 13.0%. The frequent activity for the sighting was resting (73.9%), feeding (23.4%) and reproduction (2.73%). It is inferred that wetlands are favorable spaces for bird watching given their vegetation and determinants of wild habitat.

On the other hand, Cabanillas-Trujillo et al. (2021) state that bird inventories make it possible to quickly and accurately identify the ecological characteristics and the conservation status of species, which coincides in our case with the number of species recorded in the Ricuricocha lagoon where the family predominates. of species of Tyrannidae that are of restricted range as well as southern and boreal species that are very difficult to observe in other places but that in this area of the San Martín region are unique as dry forest species that could very well serve to promote and motivate tourists as bird-watching spots.

In this line, De Oliveira Silva & Marques Leite Dos Santos (2022) found in Vitória da Conquista – the third largest city in Bahia – a large floating audience of tourists, among those activities are trade and sustainable tourism as part of the use of its green areas, having ecotourism as an activity through bird watching along ecological trails, which is compatible with the proposal in Ricuricocha that propo-

ses three circuits or tourist trails with great potential for special birds and that can be the perfect complement to enjoyment of the lagoon without altering their habitat.

In Ecuador, Pozo-Zamora et al. (2022) recorded 501 species of birds, in a range between 500 - 2300 m altitude, 13 species with new extensions of altitudinal and/or latitudinal distribution, 26 in some category of threat to their conservation. The authors point out that this remote area protects an important diversity, as well as threatened bird populations, water resources, as well as the territory and culture of the communities that inhabit it. However, the entire mountain range is under concession for exploration of mining projects. Therefore, the attention of regional and national authorities is required to join efforts to ensure its conservation and biological exploration. Fact that is related to the Ricuricocha lagoon, that although it is true that most of the properties around it are private property, it continues to belong to the state, but it is not demarcated by the authorities.

Limitations

The study had a limitation in relation to the short time of recording birds, since it only covered six months of field work, having to be inventoried throughout the year to know the birds in the Ricuricocha lagoon according to the seasons; thus promoting an alternative to bird watching based on seasons.

CONCLUSIONS

This research made it possible to inventory the main birds in the Ricuricocha lagoon, registering 17 species of birds with tourist potential and scientific interest, most of them endemic and related to habitats of the most threatened forests in the San Martín region. It was also possible to propose an ecotourism proposal for bird watching with four main points that can be graduated for observers based on their subject matter, time availability and purchasing power.

The study in the wetland frames the availability of information on birds of the Peruvian Amazon for their use for ecotourism, educational and scientific purposes, opening the possibility of future research regarding the environmental economic valuation of bird tourism and proposals for strategies that increase this kind of service.

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