Importance of mangrove forests in Peru with notes on Bare-throated Tiger-heron *Tigrisoma mexicanum* and Rufous-necked Wood-rail *Aramides axillaris*

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En el Perú se encuentra un área relativamente pequeña de manglar (0.1% del área total en el Neotrópico), que se localiza en el límite sur de este ecosistema en el océano Pacífico. Esto podría implicar que su conservación es sólo de interés nacional. Sin embargo, en un análisis por país del número de aves especialistas de manglar, realizado en la costa del Pacífico Neotropical, notamos una homogeneidad que no guarda proporción con el área de manglar en cada país. Dada la rápida fragmentación a la que está siendo sometido este ecosistema, a nivel local y global, urge intensificar los estudios sobre sus aves y los esfuerzos por conservarlo. Se documenta la presencia de dos especies de aves en los manglares del Perú (principalmente El Algarrobo), con diversas implicancias: *Tigrisoma mexicanum* tiene una población aislada en el manglar peruano a 1.300 km de su distribución conocida, mientras que *Aramides axillaris* habría estado expandiendo su distribución hasta alcanzar el manglar del Perú alrededor de los años 80. Estos registros deben incentivar la planificación de inventarios más detallados en los manglares peruanos y resaltan la importancia de esta pequeña área a nivel global. Finalmente recalcamos la necesidad e importancia de documentar correctamente los registros.

Introduction

Mangroves are susceptible to the same pressures of human encroachment and development that have resulted in significant losses of other wetland habitats. Because mangroves are generally located in coastal estuaries, which are considered valuable real estate and provide prime habitat for shrimp, clams and other seafood products with high market values, they have suffered extreme degradation[3,7]. As a result, many large contiguous mangroves have been either completely destroyed or severely fragmented. Thus minimal patch size has become a major conservation issue in many areas[7].

In Peru, there are two extant patches of mangrove associated with the two major northern rivers that drain into the Pacific: the Tumbes and the Piura. The northern patch, consisting of 4,814 ha, of which 2,972 ha are officially protected, is located on the border with Ecuador between 03°24'S and 03°35'S in dpto. Tumbes. The southern patch consists of a 250 ha islet[19] 350 km further south at 05°30'S in dpto. Piura, and is not officially protected. These two patches of 5,064 ha represent less than 0.1% of the 5–7 million ha of mangrove in the Neotropics[6,20] and mark the southernmost limit of mangrove on the Pacific coast of Central and South America.

In general, relatively little is known about mangrove ecology[3,7] and even less about the use of mangrove habitat by birds and their movements within and between mangroves. More than 120 bird species[2,10,12,14,16] (plus our own data) have been recorded in mangroves in Peru. However, many of these records reflect only occasional, marginal or fringe use of this habitat. Few bird species recorded in Peruvian mangroves are dependent upon them and even fewer are true 'mangrove specialists'.

According to Parker *et al.*[11] 93 Neotropical bird species are thought to habitually use mangroves. Of these, 40 have been recorded in Peru, but only 24 (60%) have been recorded in Peruvian mangroves. The remaining 16 (40%) are known, in Peru, from other habitats, with 12 of them restricted to the eastern Andes where there are no mangroves. Thus, while these 16 may use mangroves elsewhere, they show no dependence on them in Peru. The reverse can also be true: a generalist that uses non-mangrove habitat elsewhere may be restricted to this habitat in Peru. For example, Bare-throated Tiger-heron *Tigrisoma mexicana* is not a true mangrove specialist but, in Peru, this species is apparently entirely dependent upon the existence of mangrove habitat (see below).

Peru's mangrove represents only a tiny fraction of the global area covered by this habitat, and, in consequence, the conservation of Peruvian mangroves may appear of minimal priority. Nonetheless, in a Neotropical context, Table 1 demonstrates the relative uniformity in the number of bird species supported by mangroves regardless of the available area of habitat. For example, Colombia possesses over 87,000 ha of mangrove[15], or more than 15 times as much as Peru, but the number of additional mangrove-associated species in Colombia does not correspond to the sizeable difference in available habitat. Given that the number of mangrove-associated bird species does not appear positively correlated with available habitat size, conservation

Table 1. Use of mangroves by Neotropical birds according to country (totals based on Parker *et al.*[11]).

Number of species that:	Neotropics	Mexico	Costa Rica	Panama	Colombia	Ecuador	Peru
use mangroves	93	37	42	44	55	42	40
primarily use mangroves	16	6	6	6	8	8	6
are restricted to mangroves	4	1	2	1	2	2	1

of Peru's remaining mangroves should be a priority within strategies for mangrove habitat throughout the western Neotropics.

Mangrove Black-Hawk *Buteogallus subtilis* is the only specialist to occur throughout mangroves along the Pacific coast of America. Costa Rica, Colombia and Ecuador (Galápagos) each possess an additional, endemic mangrove specialist (two hummingbirds and a finch).

Species accounts

We provide the first published documentation of two species with rather different histories in Peru. One represents a possible range expansion and the other a small, previously overlooked population. These records also illustrate the paucity of knowledge and limited extent of information available on Peruvian mangroves, despite their restricted size and easy accessibility.

Bare-throated Tiger-heron *Tigrisoma mexicana*

This species' presence in the Peruvian mangroves was distinctly unexpected. Recent literature does not cite any occurrences even close to Peru. Sagot[14] made the first recent record we are aware of in the late 1990s. At the INRENA (Instituto Nacional de Recourses Naturales) park ranger station at El Algarrobo, Bare-throated Tiger-heron is depicted, with its correct scientific name, in a small display at the interpretation centre, and is well known to the park rangers who describe it as 'uncommon'. TV photographed an adult in the mangroves at El Algarrobo on 24 August 1999. It was located along one of the estuary channels during a tour by the local fishermen's association. It was perched on a trunk (see Fig. 1), above a channel, and moved only slightly upon approach. Subsequently BW *et al.* observed an adult on 6 May 2000, in the same area at El Algarrobo. It was standing with outstretched neck on exposed mud below overhanging mangrove vegetation at low tide. During the c.3-minute observation, the distinguishing features including the bright yellow, unmarked, bare throat were clearly seen. On approach it calmly walked into denser vegetation and disappeared.

Figure 1. Bare-throated Tiger-heron *Tigrisoma mexicana*, El Agarrobo, Tumbes, Peru, 24 August 1999 (Thomas Valqui)

Bare-throated Tiger-heron occurs contiguously from Mexico south through Central America and barely reaches north-west Colombia[1,4,5,8,13]. The Peruvian records represent a range extension of c.1,300 km. No records from intervening areas have been published in recent literature. However, 115 years ago, Taczanowski[17] cited *Tigrisoma cabanisi* (=*T. mexicana*) from 'Tumbez', based on a male specimen taken by Antonio Raimondi. While the specimen has apparently been lost, the description includes unequivocal Bare-throated Tiger-heron characters, such as its resemblance to Fasciated Tiger-heron *T. salmoni* (=*T. fasciatum*) with a longer bill, paler overall coloration and the entirely diagnostic bare throat. This record has since been overlooked, apart from being mistakenly mentioned as a Tumbes record of Rufescent Tiger-heron *T. lineatum*[2]. Cook[2] probably assumed that the latter species was more likely in Tumbes, despite its absence from the western Andes south of Colombia.

Do these records, more than 100 years apart, represent vagrants or a small local population? The isolated nature of the records and lack of any pattern of vagrancy in the species[8], suggests the presence of a local population. It is interesting to note that the species has recently only been recorded in the El Algarrobo mangroves and not at Puerto Pizarro, which has been more extensively covered by observers. The rarity of the species, its nocturnal or crepuscular habits[8,13], and lack of intensive ornithological studies in Peruvian mangroves may account for the lack of records.

Rufous-necked Wood-rail *Aramides axillaris*

Parker *et al.*[10] were first to report Rufous-necked Wood-rail in Peru (from February 1986 and July

Figure 2. Rufous-necked Wood-rail *Aramides axillaris*, El Agarroba, Tumbes, Peru, 24 August 1999 (Thomas Valqui)

1988). Subsequently it has been repeatedly reported from mangroves in Peruvian Tumbes, by TV in July 1995 and August 1999, BW in May 1996, June 1999 and April 2000, Cook[2], and many other observations. It was not listed by earlier authors[9,16] and in more recent literature it is listed as 'undocumented' in Peru[18] due to the lack of published evidence, such as a specimen, sound recording or photograph. TV photographed one on 24 August 1999, during a visit to El Algarrobo (Fig. 2) when at least eight individuals were observed. It appears to be locally common around El Algarrobo and Puerto Pizarro, and has also been recorded by M. Kessler within the Tumbes Reserved Zone, away from mangroves in El Caucho in 1986[10]. A singing bird was tape-recorded by BW on 20 January 2001 near Pozo del Pato[21].

The extension of this species' range to the Peruvian mangroves and Tumbes Reserved Zone is unsurprising given that it is known from Mexico and Central America, through Colombia to south-west Ecuador, in mangroves bordering Peru[1,5,18]. It is surprising that evidence of the species' occurrence in the Peruvian mangroves was not gained prior to 1988. Many individuals and scientific parties have visited and collected specimens in the Peruvian mangroves before that[12,16] and the species is now virtually guaranteed during any day trip to the mangroves at low tide. Conceivably the species is expanding southwards and only recently reached what appears to be its current limit in the Peruvian mangroves.

Conclusions

Conservation of Peruvian mangroves is not only of local importance, but also of global interest. As mangroves are by nature narrow, linear and discontinuous strips on coasts, conservation of this habitat requires a very different approach from that demanded for other forested habitats in the Neotropics. Rather than searching for large, undisturbed areas, it may be of greater priority to adequately conserve as many healthy patches within its original distribution as possible, which could also benefit from the inclusion of adjacent non-mangrove woodland. In Peru, we consider it important to intensify surveys of mangroves to obtain complete inventories of the avifauna. These surveys should also include the small patch at San Pedro in Piura, which has received little ornithological attention and no protection.

Finally we stress the importance of documenting new or rare species records: photographs, video recordings and sound-recordings, as opposed to sight records, can be objectively reviewed in the future and can therefore be considered as evidence. Given our still basic knowledge of many South American birds, the contribution that birdwatchers can make towards ornithology will be greatly increased if the means of obtaining such documentation be always

kept at hand, especially when visiting remote or poorly known areas.

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