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Heron expansion in the Atacama Desert

Expansión (extensión) de la garza en el Desierto de Atacama

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Heron expansion in the Atacama Desert.—The Atacama Desert of Peru and Chile extends for 2400 miles from 5° S to 24° S and that portion in rainless northern Chile is the driest coastal desert in the world (Meigs 1966). More than 40 rivers traverse the desert in Peru and these, with their associated irrigated floodlands, provide the only lowland habitat for herons and egrets. The Andes become increasingly arid to the south, and only seven rivers reach the sea in the southern half of the desert. A number of birds reach their southern distributional limits in southwestern Peru or northern Chile while others are absent from the most arid areas but reappear in central Chile (Johnson 1972).

The White-necked Heron (*Ardea cocoi*) and the Least Bittern (*Ixobrychus exilis*) occur south to central Peru in the coastal lowlands (Koepcke 1970). The Great Egret (*Casmerodius albus*), Snowy Egret (*Egretta thula*), Striated Heron (*Butorides striatus*), and Black-crowned Night-Heron (*Nycticorax nycticorax*) are all common in southwestern Peru (Hughes 1970). The Great Egret and Snowy Egret are also common in central Chile but most likely reached there from Argentina. Both species have been reported at a number of localities in northern Chile but neither appears to have become established. A single Striated Heron collected at the mouth of the Lluta River near the Peru-Chile border on 24 August 1971 was only the second observation of the species in Chile (Drouilly 1971). The Black-crowned Night-Heron is the only heron whose breeding range is uninterrupted for the entire length of the Andes. The Little Blue Heron (*Florida caerulea*) is less common in southwestern Peru and may be a relatively recent resident.

The dispersal of the Cattle Egret (*Bulbulcus ibis*) in the western hemisphere has captured the attention of many students and been broadly documented. Cattle Egrets were first reported in Peru at Iquitos (4° S) by Stott (1957) and their subsequent spread throughout much of the country was summarized by Frazier

(1964). They occur in both eastern and western Peru and have been seen above 3500 m elevation at several localities in the Andes. They are known along the entire coastal zone, although they are more plentiful in the north. They reached Mollendo (17° S) in 1968, adults with buff plumage were present in 1969 (Hughes 1970), and the population has continued to increase although nesting has not been established (Johnson 1972). Their presence at high elevations appears to be more sporadic. Post (1970) reported that E. Eisenmann found them numerous at Puno on Lake Titicaca in March 1969, but they were not seen there by Post in September 1968, by Hughes who searched specifically for them in May 1969, nor by myself in August 1972. Inasmuch as the species has been able to extend its Peruvian range southward more than 900 miles in 12 years, one might expect that this expansion would continue into Chile. Thus far the only report from Chile is of a single bird Post (1970) saw in December 1968 on coastal rocks at Antofagasta.

During 15 months (April 1972 to July 1973) of field studies I determined the current status of herons in northern Tarapacá. The only heron with a wide distribution and known to nest here is the Black-crowned Night-Heron, which is found at sea level along the coast and lower Lluta River and among the cushion bogs and freshwater lakes of the altiplano above 4200 m. The small breeding colony of 26 nests Philippi et al. (1944) found at Lake Cotacotani is the sole record of nesting for this uncommon species. It appears to exploit fish and marine invertebrates in the tidal pools and fish, amphibians, and invertebrates on the altiplano, but the intermediate zone of the rivers lack fish, amphibians are rare and local, and the invertebrate fauna is unknown but believed to be poor.

The commonest species is the Snowy Egret, which appears on the coast from April to October. It is restricted to localities where it can find small marine fishes, i.e. the mouth and lower 100–200 m of the small Lluta River and the tidal pools of the rocky coast south of Arica. As many as 21 birds have been seen at the river but no more than four on any occasion at the tidal pools. Adults occur but immatures predominate, and I saw only one adult with aigrettes of the breeding plumage (14 October). The species was absent 14 October 1972 to 15 May 1973 and I found no evidence of nesting. The Great Egret was seen only four times, during May and June 1972: one fishing at the mouth of the river, one resting on the beach near the river, a pair flying upstream, and one fishing from a rock jetty south of the city of Arica. The Little Blue Heron was first reported from Chile by Lavercombe and Hill (1972) who saw a single adult on two occasions, 30–31 October and 5–6 November 1971, on the rocky coast at Arica. I saw an immature bird molting into blue plumage in May and August, an adult in October 1972, and two adults in June 1973. The absence of the species from October–November to May–June indicates the same seasonal appearance as the Snowy Egret and this species is also restricted to fishing the tidal pools.

I saw no Cattle Egrets in spite of continual searching, careful examination of every egret encountered, and the presence of apparently suitable habitat. Cattle grazing in the valley pastures are often accompanied by the Groove-billed Ani (*Crotophaga sulcirostris*), a frequent associate of the Cattle Egret elsewhere.

Both the Little Blue Heron and Cattle Egret are presently in a favorable position to expand into Chile but neither has succeeded thus far. The Little Blue Heron has recently appeared during the nonbreeding season but suitable habitat is very limited and successful establishment seems unlikely. The Cattle Egret, with its principally

insectivorous diet and preference for pastures and agricultural habitat, appears to have a greater chance of success, but its southward progress has been slowed, if not halted, in southern Peru. It will be of great zoogeographic interest to learn if this species succeeds in spanning the Atacama Desert or is more successful in occupying Argentina and crossing the Andes to central Chile.

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