NOTES

NORTHERLY EXTENSION OF THE BREEDING RANGE OF THE ROSEATE SPOONBILL IN SONORA, MÉXICO

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The Roseate Spoonbill (*Platalea ajaja*) lives in coastal wetlands from the southern United States south through Middle and South America. On the Pacific coast of the United States and northwestern Mexico, it is a local summer visitor and post-breeding wanderer, rare in Sonora (Russell and Monson 1998), very rare on the Baja California peninsula (Howell and Webb 1995, Amador and Ramirez 1996), and casual and irregular (primarily immature birds in the post-breeding period) in southern Arizona (Monson and Phillips 1981) and California (California Bird Records Committee 2007). The Roseate Spoonbill is currently a regular summer resident in Sonoran estuaries at least as far north as Estero Santa Cruz in Bahía Kino.

The only published record of the Roseate Spoonbill breeding in Sonora is from Estero Tobari in the southern part of the state, where Palacios and Mellink (1995) documented 15 nests on 14 May 1994. In May 2010, this colony had approximately 21 nests (Germán N. Leyva García pers. comm.). Currently, the spoonbill breeds as far north in the Gulf of California as Bahía Guásimas, 100 km north of Estero Tobari, where in 2010 approximately 20 pairs nested in a mixed-species colony of wading birds (Jaqueline García Hernández pers. comm.). Here we report the northward extension of the breeding range in the Gulf of California to Estero Santa Cruz, 167 km north of the Bahia Guásimas colony (Figure 1).

Estero Santa Cruz is a 3622-ha negative estuary dominated by thickets of Black Mangrove (*Avicennia germinans*), extensive tidal flats, and permanent channels (Brusca 1980). Formerly the terminus of the Rio Sonora, since the damming of the river in 1947 Estero Santa Cruz no longer receives significant freshwater input, so the aquatic environment is hypersaline (Quevedo Estrada 2007). It is located at 28°48′ N, 111° 54′ W on the eastern shore of the midriff island region of the Gulf of California, immediately south of the fishing village of Bahía Kino, Sonora (Fleischner and Gates 2009). On 23 May 2007, we noted a mixed-species colony of wading birds, predominantly Reddish Egrets (*Egretta rufescens*), Snowy Egrets (*E. thula*), White Ibises (*Eudocimus albus*), and Yellow-crowned Night-Herons (*Nyctanassa violacea*) in a Black Mangrove thicket on the western margin of Estero Santa Cruz (Figure 2). The mangroves average 4 meters high and have a dense canopy of leaves and branches. The substrate consists of thick mud with permanent pools and channels. We recorded the perimeter of the colony with GPS and mapped it with ArcGIS 9.2, calcuating the area of the colony as 0.42 hectares adjacent to the shoreline. This colony was also active in 2008, 2009, and 2010.

Because of the dense canopy, much of the colony could not be scrutinized directly. Therefore in 2009 and 2010 we made flight-line counts (Paul and Paul 2004) to determine the composition and abundance of species within the colony. These counts record the number of adults flying to the colony from foraging grounds and vice versa. Each count began approximately 2 hours after sunrise and lasted 1 hour. At sunrise one of the adults leaves the nest to forage, returning to the nest approximately 2 hours later to switch with the adult that has been guarding the nest. By recording all the birds flying in and out of the colony we obtained a flight rate, which we then multiplied by 1.5 to estimate the number of nests in the colony (Paul and Paul 2004).

This method has the advantage that the observer does not need to enter and disturb the colony at a time when the chicks are most vulnerable. Our counts took place when nests were in the "guard" stage, as stipulated by Paul and Paul (2004). During this stage, it is presumed that one of the adults is constantly at the nest to protect young chicks from predators and heat stress.

We completed six counts, three in 2009 and three in 2010. We surveyed the colony on 3, 6, and 11 June 2009 and on 22 May and 10 and 14 June 2010. In 2009, we were unable to observe nests directly but estimated 6–15 nests by the flight-line method. In 2010, we observed a maximum of five nests and estimated 15–20 spoonbill nests by the flight-line method.

In 2008 and 2010, we made efforts to identify the breeding chronology. We first observed spoonbills in Estero Santa Cruz on 25 March in 2008 and on 18 April in

Figure 1. Roseate Spoonbill near colony at Bahía Kino, Sonora.

Photo by Abram B. Fleishman

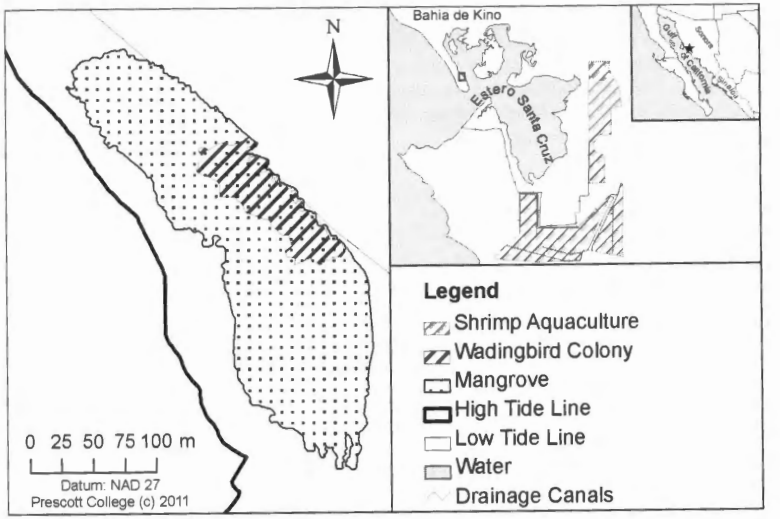

Figure 2. Location of colony of wading birds at Bahía Kino, Sonora.

2010. In 2008, we recorded no further data on their phenology. In 2010, nest-site selection and nest construction occurred between 18 April and 17 May. We observed three recently hatched chicks in one nest on 14 June 2010. On the basis of an incubation period of 22 days (White et al. 1982), the eggs were likely laid between 14 May and 21 May. Roseate Spoonbill chicks fledge when they are approximately 6 weeks old. By this estimate, the chicks in Estero Santa Cruz could have fledged around 22 July 2010.

According to Cosme Damian Becerra, a local resident, this colony has been active since at least 1984, and it used to be larger before an oyster farm was built directly alongside it in the mangroves.

There are many threats to this colony. Subsistence harvesting of mangrove wood occurs within the colony, and an easily accessible network of trails allows feral dogs and cats to roam freely within it (pers. obs.). In addition, the future of Estero Santa Cruz is threatened by large-scale expansion of aquaculture of shrimp on the salt flats adjacent to the estero. In total, over 4000 ha of ponds (107% the size of the estero) are under cultivation (Comité de Sanidad Acuícola del Estado de Sonora, www.cosaes.com/camdic10.htm, accessed 1 July 2011), and the effluent from over half the area under cultivation is discharged into the bay 2.25 km outside the mouth of the estero at an estimated rate of up to 25.7 billion liters per day (unpubl. data). The antibiotics, pathogens, and suspended organic and inorganic matter in the effluent pose a great risk to this valuable ecosystem through sedimentation, eutrophication, and contamination of critical foraging habitat for waterbirds (Páez-Osuna et al. 2003). This colony is also threatened by development of infrastructure for tourism and disturbance by the growing human use of the surrounding region by both Mexicans and foreign visitors. Clearly, the continued existence of this spoonbill colony will require increased conservation efforts focusing on Estero Santa Cruz and should begin with educating the local community about the importance of this colony.

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