NOTES

ADDITIONAL RECORDS OF BREEDING BIRDS FROM MONTAGUE ISLAND, NORTHERN GULF OF CALIFORNIA

EDUARDO PALACIOS and ERIC MELLINK, Centro de Investigación Científica y Educación Superior de Ensenada, B. C., Apartado Postal 2732, Ensenada, Baja California, México (U.S. mailing address: P.O. Box 434844, San Diego, CA 92143)

Compared with the rest of Mexico's, the avifauna of Baja California has been studied extensively (e.g., Grinnell 1928, Wilbur 1987). Nevertheless, within Baja California certain areas such as the Río Colorado delta have not been explored in detail. Knowledge of the bird life in this area is particularly important because of the striking changes in bird habitat along the Río Colorado and in its delta area (see Leopold 1970).

Recently, in a preliminary reconnaissance of the birds of Montague Island (in the Río Colorado delta), we found six species of waterbirds breeding or probably breeding on the island (Palacios and Mellink 1992). In this note we report additional breeders or probable breeding species discovered during a short trip to the island on 1 May 1992 (10:30–13:00 hours). We visited Estero del Chayo (from 31°39'39" N and 114°41'49" W to 31°43'24" N and 114°43'02" W) and the area around the lighthouse (about 3 km west of the mouth of Estero del Chayo).

In addition to the species we discuss below, we observed the Laughing Gull (*Larus atricilla*) and Snowy Egret (*Ardea thula*) colonies already reported by Palacios and Mellink (1992), but we did not attempt to estimate their size since our visit was too early in the breeding season.

Black-crowned Night-Heron (*Nycticorax nycticorax*). We saw two pairs in breeding plumage on the east bank of Estero del Chayo. We continue to suspect that this species breeds on the island but could not confirm it. These herons likely nest on the ground somewhere on the island, as they do on some islets of Laguna Ojo de Liebre, Baja California Sur (Bancroft 1927, E. Palacios and L. Alfaro pers. obs.).

Great Blue Heron (*Ardea herodias*). We found two nests, with three eggs each, on the ground on the western bank of Estero del Chayo, confirming their suspected breeding on Montague Island (Palacios and Mellink 1992).

Gull-billed Tern (*Sterna nilotica*). Friedmann et al. (1950) considered this species "probably breeding" on Montague Island. We found five subcolonies, each containing about 30–40 pairs, in the half of Estero del Chayo nearest its mouth. We examined more closely 21 nests in patches of open saltgrass (*Distichlis palmeri*). The nests were in groups of 4 to 7, and were placed on bare ground surrounded with dry saltgrass. Minimum distance between nests was 1.2 m. Five nests had one egg, 12 had two, and 4 had three.

Least Tern (*Sterna antillarum*). As we suspected in 1991, Least Terns breed on Montague Island. We found 20 pairs on two islets (4 and 16 pairs, respectively), about 130 m north of the lighthouse. We confirmed breeding by finding one nest with two eggs. To reduce disturbance, we did not search for more nests. W. R. Eddleman and B. A. Groshek (in U.S. Bureau of Reclamation and U.S. Fish and

Wildife Service 1989) observed, on 20 April 1987, "four to six Least Terns at Santa Clara Slough," about 40 km northeast of Montague Island, but considered them to be migrants because they did not see any on the next day. They suspected the species to breed in the delta, since Snowy Plovers (*Charadrius alexandrinus*), which have similar nesting habits, nest on nearby salt flats. Least Terns nest on similar salt flats in La Salina Oasis, northwestern Sonora (Mellink and Palacios 1993) and together with Snowy Plovers at Laguna Figueroa, Baja California (Palacios and Alfaro 1991).

Elegant Tern (*Sterna elegans*) and Royal Tern (*Sterna maxima*). We found a mixed colony of about 550 pairs of Elegant and Royal Terns, distributed in two subcolonies separated by about 200 m. The Elegant:Royal Tern ratio was approximately 1:1 (275 pairs of each species). The substrate in both subcolonies consisted of shell fragments. The first subcolony was on an islet surrounded by low marsh vegetation, about 300 m southeast of the lighthouse. There were approximately 350 nests within 20 m^2. All but three nests had one egg; three had two. The other colony was on an islet about 100 m north of the lighthouse. It had approximately 200 nests occupying 10 m^2 but was being inundated by the high tide, and some eggs were already in the water. Since the tide had not yet reached its maximum, most nests of this colony were doomed to failure. Measurements of five Elegant Tern eggs were length, 49.1-55.5 mm, width, 33.3-38.6 mm. The weights of the eggs ranged from 31 to 42 g. Measurements of seven Royal Tern eggs were length, 63.9-69.6 mm, width, 43.6-46.1 mm. The weight of four of these eggs ranged from 70 to 74 g.

Collins et al. (1991) discussed the current status and distribution of the Elegant Tern. Only three breeding colonies of this species have been known in recent years. The largest is of about 23,000 pairs on Isla Rasa, Gulf of California (Tobón-García 1992). Since 1959, a colony of 600-860 pairs has nested in southern San Diego Bay, California (Unitt 1984, Schaffner 1986). In 1987 a colony of 25 pairs established itself at Bolsa Chica Ecological Reserve, Orange County, California, growing to more than 450 pairs in 1988 and 1200 in 1989 (Collins et al. 1991, C. Collins pers. comm.). In the Gulf of California, Elegant Terns formerly nested on Isla Cerralvo (Banks 1963) and San Jorge Island (Mailliard 1923, Mellink and Palacios 1993). On the Pacific coast they have nested at Laguna Ojo de Liebre and at Isla San Roque (Bancroft 1927). Laguna Ojo de Liebre has not had colonies in recent years (E. Palacios pers. obs.). Elegant and Royal Terns may still breed at Isla San Roque, since E. Palacios and L. Alfaro observed a flock of 150 Elegant and 20 Royal Terns roosting at Punta Asunción (7 km east of Isla San Roque) on 26 May 1992. The Elegant Tern colony of Isla Montague represents the only currently known active breeding colony in Mexico in addition to Isla Rasa.

Although the Royal Tern is fairly common along both coasts of Baja California (Wilbur 1987, Everett 1989, Everett and Anderson 1991), it has been recorded breeding at only five locations: Laguna Ojo de Liebre (Bancroft 1927, Kenyon 1947, Palacios and Alfaro pers. obs.), Isla San Roque (Bancroft 1927), Islas San Jorge (Mailliard 1923), Isla Rasa (Boswall and Barrett 1978), and Isla Ballena, Laguna San Ignacio (E. Palacios and L. Alfaro unpubl. data). The breeding colony at Laguna San Ignacio, Baja California Sur, reported by Everett (1989) on the basis of personal communication from R. Carmona, was a misidentification of a colony of Caspian Terns (see Danemann 1991, Danemann and Guzmán 1992).

Black Skimmer (*Rynchops niger*). We saw a flock of 430 individuals roosting at the mouth of Estero del Chayo and several groups of three or more individuals flew out to meet us or circled around in flocks, emitting their characteristic notes of protest. Other groups of three individuals flew in zigzags in close pursuit of each other. We believe this behavior precedes mating. Skimmers arrive on the breeding grounds in late April or early May, and courtship and pair formation begin immediately on the Atlantic coast (Bent 1921) though later in southern California (Schew and Collins 1991). Skimmers commonly form mixed-species colonies, with Gull-billed Terns in

North Carolina (Soots and Parnell 1975) and Caspian and Elegant Terns at Bolsa Chica (Schew and Collins 1991). Considering the behavior, habitat, time of the year, and the association with other nesting birds, we suspect that Black Skimmers breed on Montague Island. They have bred at the Salton Sea, about 180 km north of Montague Island, since 1972 (McCaskie et al. 1974). The Black Skimmer is locally common year round in northwestern Baja California and is increasing in numbers on the peninsula (Palacios and Alfaro 1992), but there are still no confirmed nesting records in this area.

With these findings, seven waterbirds are confirmed to use the Isla Montague for breeding, and Black-crowned Night-Herons and Black Skimmers probably also nest there. Additionally, Morrison et al. (1992) found the Río Colorado delta to be the third most important wetland in northwest Mexico for wintering shorebirds. The area also is the main site for the endemic saltgrass *Distichlis palmeri*. It sustains the main populations of the endangered game fish the Totoaba (*Totoaba macdonaldi*) and of the Vaquita or Gulf of California Harbor Porpoise (*Phocoena sinus*). The delta is an important shrimp hatching area and includes the Ciénega de Santa Clara, site of the largest population of the endangered Yuma Clapper Rail (*Rallus longirostris yumanensis*). These features make the area a worthwhile target for extended conservation efforts. Indeed, despite the severe changes in the last 60 years and being one of the most endangered bioregions in the Sea of Cortés (D. Anderson pers. comm.), the area retains a lot of its original uniqueness. The dynamic nature of the delta and Río Hardy and the potential threats from agriculture in this area emphasize the importance of documenting the wildlife using it and ensuring its long-term protection.

We thank the kind assistance of Arturo Dena ("Chaca") and Martín Córdoba ("Cava"), who transported us to the island. S. Landham provided readings of the Global Positioning System for Estero del Chayo. D. W. Anderson, C. T. Collins, W. T. Everett, S. N. G. Howell, C. Jiménez, and P. Unitt kindly commented on this article.

LITERATURE CITED

Bancroft, G. 1927. Breeding birds of Scammon's Lagoon, Lower California. Condor 29:29–57.

Banks, R. C. 1963. Birds of Cerralvo Island, Baja California. Condor 65:300–312.

Bent, A. C. 1921. Life histories of North American gulls and terns. U.S. Natl. Mus. Bull. 113.

Boswall, J., and Barrett, M. 1978. Notes on the breeding birds of Isla Raza, Baja California. W. Birds 9:93–108.

Collins, C. T., Schew, W., and Burkett, E. 1991. Elegant Terns breeding in Orange County, California. Am. Birds 45:353–355.

Danemann, G. D. 1991. Amplitud y sobreposición de nichos ecológicos de aves ictiófagas anidantes en Isla Ballena, Laguna San Ignacio, Baja California Sur. Bachelor's Thesis, Universidad Autónoma de Baja California Sur, La Paz.

Danemann, G. D., and Guzmán, J. R. 1992. Notes on the birds of San Ignacio Lagoon, Baja California Sur, Mexico. W. Birds 23:11–19.

Everett, W. T. 1989. Historic and present distribution of breeding marine birds of Baja California Pacific coast. Simposio Int. Biol. Mar. 7:97–106.

Everett, W. T., and Anderson, D. W. 1991. Status and conservation of the breeding seabirds on offshore islands of Baja California and the Gulf of California, in Seabird Status and Conservation: A Supplement. (J. Croxall ed.), pp. 115–139. ICBP Tech. Publ. 11.

Friedmann, H., Griscom, L., and Moore, R. T. 1950. Distributional check-list of the birds of Mexico, part I. Pac. Coast Avifauna 29:1–202.

Grinnell, J. 1928. A distributional summation of the ornithology of Lower California. Univ. Calif. Publ. Zool. 32:1–300.

Kenyon, K. W. 1947. Notes on the ocurrence of birds in Lower California. Condor 49:210–211.

Leopold, A. 1970. A Sand County Almanac. Ballantine, New York.

Mailliard, J. 1923. Expedition of the California Academy of Sciences to the Gulf of California in 1921: The birds. Proc. Calif. Acad. Sci. 12:443–456.

McCaskie, G., Liston, S., and Rapley, W. A. 1974. First nesting of the Black Skimmer in California. Condor 3:337–338.

Mellink, E., and Palacios, E. 1993. Notes on breeding coastal waterbirds in northwestern Sonora. W. Birds 24:29–37.

Morrison, R. I. G., Ross, R. K. and Torres M., S. 1992. Aerial surveys of neartic shorebirds wintering in Mexico: Some preliminary results. Can. Wildlife Serv., Progress Note 201.

Palacios, E., and Alfaro, L. 1991. Breeding birds of Laguna Figueroa and La Pinta Pond, Baja California, Mexico. W. Birds 22:27–32.

Palacios, E., and Alfaro, L. 1992. Occurrence of Black Skimmers in Baja California. W. Birds 23:173–176.

Palacios, E., and Mellink, E. 1992. Breeding bird records from Montague Island, northern Gulf of California. W. Birds 23:41–44.

Schaffner, F.C. 1986. Trends in Elegant Tern and Northern Anchovy populations in California. Condor 88:347–354.

Schew, W. A., and Collins, C. T. 1991. Annual and within-year variability in growth patterns of Black Skimmer (*Rynchops niger*) chicks. Proc. Int. Symp. Mar. Biol. 8:87–94.

Soots, R., and Parnell, J. 1975. Ecological succession of breeding birds in relation to plant succession on dredge islands in North Carolina. North Carolina Sea Grant Publ. UNC-56-75–27.

Tobón-García, E. D. 1992. Biología reproductiva de la Golondrina Marina Elegante (*Sterna elegans*) con énfasis en la conducta dentro de las guarderías en la colonia de Isla Rasa, Golfo de California, México. Bachelor's thesis, Universidad Nacional Autónoma de Mexico, Mexico, D.F.

U.S. Bureau of Reclamation and U.S. Fish and Wildlife Service. 1989. Yuma Clapper Rail survey; northern Sonora and Baja California. Biology of the Yuma Clapper Rail in the southwestern U.S. and northwestern Mexico; final report, Appendix I, pp.119–127. Yuma, Arizona.

Unitt, P. 1984. The birds of San Diego County. San Diego Soc. Nat. Hist. Mem. 13.

Wilbur, S. R. 1987. Birds of Baja California. Univ. Calif. Press, Berkeley.

Accepted 29 May 1993