

# THE BIRDS OF THE TRES MARIETAS ISLANDS, NAYARIT, MEXICO

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THE Tres Marietas have been known probably for at least four hundred years. Certainly both the Spanish navigators and the pirates who preyed upon them were aware of them at the end of the seventeenth century (Dampier, *A new voyage around the world*, seventh edit., 1927). Despite the long time that the islands have been known, no biologist has reported visiting them, although a specimen of the Mockingbird (*Mimus polyglottos*) taken by P. I. Osburn in 1909 and now in the American Museum of Natural History, indicates that they have not been completely neglected.

I paid four visits to these islands recently, on 27–28 May 1961, 30 May and 23 August 1962, and 17 April 1963.

## ACKNOWLEDGMENTS

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## DESCRIPTION OF THE ISLANDS

The Marietas (see Figure 1) lie between 105°30' and 106°00'N and 20°30' and 21°00'W. They are separated from Punta Mita to the northeast by a channel four miles wide and less than 25 fathoms deep (Zweifel, *Bull. Amer. Mus. Nat. Hist.*, 119: 85, 1960). From Puerto Vallarta they are at least 20 miles distant. They consist of two large and one small island, and a few isolated rocks. Their area is unknown but the westernmost of the two large islands, where my work was done, I estimate to be 1,000 meters long and 600 meters wide, and about 40 hectares in area; the other large island has a slightly smaller area. They are composed of a quartzite, capped in places by a conglomerate, and are probably no older than Punta Mita, which is formed from intrusive Mesozoic rocks. The cliffs of the islands rise from 3 to 25 meters to a plateau top. In places the sea has deeply eroded the base of the cliffs. A series of rocky stacks, in which caves have been formed by erosion, on the plateau reaches a height of 7 to 10 meters.

On the west island, plants are restricted to the plateau and cavernous stacks. There are no trees. On the plateau a grass (*Pennisetum setosum*) and a sedge (*Cyperus ligularis*) grow extremely thickly and are accom-

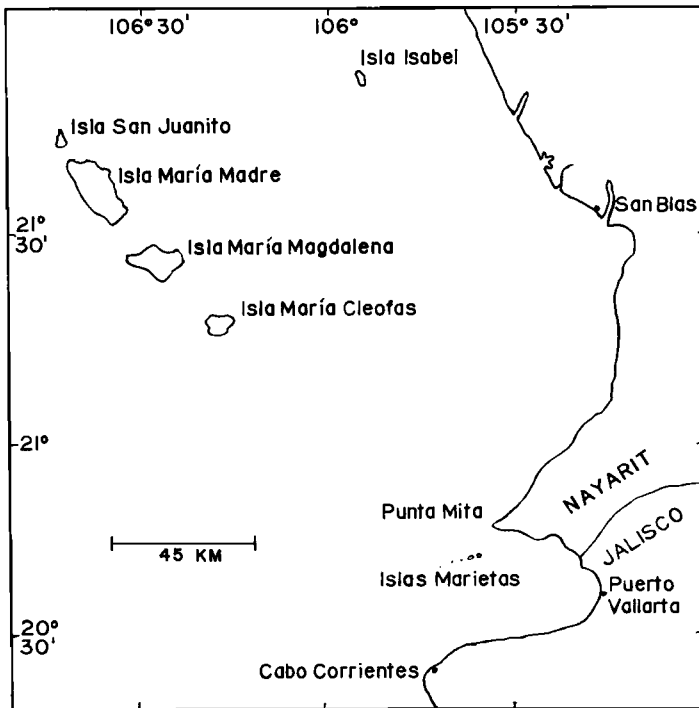


Figure 1. Coastal Nayarit and Jalisco.

panied in places by *Eleocharis cancellata*. At the eastern end there is a small patch of cactus (*Opuntia*). Over the rocks which have fallen from the stacks and now lie fringing them, *Jouvea pilosa* and a species of *Lygodium* are found; at the immediate entrance to each cave there is an almost impenetrable barrier of a bromeliad, a plant common also on the coastal mainland. Inside the caves a green alga covers a large part of the rock surface, where ferns also occur. Thus the vegetational aspect of the island is simple.

The only mammals recorded from the island have been bats. Deposits of guano in the caves indicate that they were once common but in all the visits made I saw only one large, unidentified bat, at dusk on 27 May 1961. I expected to find *Balantiopteryx plicata*, since it occurred on the rocky islets just off the Punta Mita in the same month. Two species of lizards (*Ctenosaura pectinata* and *Cnemidophorus communis*) and one snake (*Masticophis lineatus*) were found but not collected. No amphibians were found, which is not surprising in view of the absence of accumulated fresh water. Flying insects were abundant on the plateau on all visits, although

the species were different in May and August of 1962. In May one type of Orthopteran predominated, whereas in August another was present, as well as five or six species of Lepidoptera.

#### LAND BIRDS

I made the first visit to determine which species were breeding. Seven species were present in fair numbers (see Table 1) and I thought they might be breeding. Adequate insect food and rocky ledges in the caves for nest support seemed to be available, although free fresh water was absent. Most of the birds were found in the caves, where they were not feeding but apparently resting. When the birds collected were later prepared as museum specimens, the gizzard of almost every individual was found to be empty, the gonads relatively undeveloped, and the fat deposits greater than in resident birds on the mainland at Puerto Vallarta. These findings suggested that most of the species seen were not breeding but were on migration, with the possible exception of *Progne chalybea* (not collected) and *Columbigallina passerina*. A year later, the latter two species only were again present in numbers sufficient to suggest that they were breeding. The other birds, a partly different selection of species, again had not been feeding and were fat. Finally, in August, 1962, I confirmed the breeding of *Progne chalybea* when I saw numerous recently fledged young birds. There was no sign of *Columbigallina passerina*, which almost certainly had not bred. At this time the only migrant seen was a female *Icterus spurius*.

The presence of *Columbigallina passerina*, *Platypsaris aglaiae*, *Cyanocompsa parellina*, and *Volatinia jacarina* is surprising, since Friedmann *et al.* (Distributional check-list of the birds of Mexico, pts. 1 and 2. *Pacific Coast Avif.*, 29 and 33, 1950, 1957) do not refer to them as migrants. Perhaps these four are in fact partial or local migrants: the most northern members of the population of *Platypsaris aglaiae albiventris*, in Sonora and Arizona, are thought to move at least short distances southward in winter (Friedmann *et al.*, *op. cit.*, pt. 2, p. 62, 1957).

#### SEA BIRDS

The breeding of *Larus heermanni* and *Anous stolidus* on these islands has been recorded by Blake (*Birds of Mexico*, Chicago, Univ. Chicago Press, 1953). For the first species this was confirmed in May, 1961, at which time the breeding of *Sula nebouxii* and of *Sula leucogaster* was also established. In May, 1962, I observed a pair of *Fregata magnificens* attending to an unfledged young bird on the northern side of the west island. Fledglings of *Pelecanus occidentalis* were present in May, 1961. This species was certainly breeding at the rocks known as Los Arcos, a few

TABLE 1  
BIRDS SEEN ON THE TRES MARIETAS ISLANDS<sup>1</sup>

	Date of observation			
	27-28 May 1961	30 May 1962	23 August 1962	17 April 1963
* <i>Pelecanus occidentalis</i> (Brown Pelican) ....	+			
* <i>Sula neboxii</i> (Blue-footed Booby) .....	ca. 1,500	ca. 1,100	+	ca. 750
* <i>Sula leucogaster</i> (Brown Booby) .....	ca. 3,000	ca. 800	+	ca. 500
* <i>Fregata magnificens</i> (Magnificent Frigate- bird) .....		+	+	
<i>Ardea herodias</i> (Great Blue Heron) .....	1			
<i>Nyctanassa violacea</i> (Yellow-crowned Night Heron) .....	1	1	1	
<i>Dendrocygna autumnalis</i> (Black-bellied Tree Duck) .....	2			
<i>Cathartes aura</i> (Turkey Vulture) .....			1	4
<i>Coragyps atratus</i> (Black Vulture) .....		1		
<i>Buteogallus anthracinus</i> (Black Hawk) ..	1			
<i>Caracara cherway</i> (Caracara) .....		3		1
<i>Falco peregrinus</i> (Peregrine Falcon) .....				1
<i>Haematopus ostralegus</i> (European Oyster- catcher) .....	2	3		
<i>Bartramia longicauda</i> (Upland Plover) ....			1	
<i>Actitis macularia</i> (Spotted Sandpiper) ....			2	
<i>Larus occidentalis</i> (Western Gull) .....				2
<i>Larus delawarensis</i> (Ring-billed Gull) ....	1			
<i>Larus atricilla</i> (Laughing Gull) .....		1		
* <i>Larus heermanni</i> (Heermann's Gull) .....	ca. 400	ca. 1,100		ca. 200
<i>Zenaidra asiatica</i> (White-winged Dove) ...	1			
<i>Columbigallina passerina</i> (Ground Dove) ..	12(1)	9(1 ♀)		2
<i>Platysaris aglaiae</i> (Rose-throated Becard)	1 ♂			
<i>Tyrannus melancholicus</i> (Tropical King- bird) .....	4	1		
<i>Myiodynastes luteiventris</i> (Sulphur- bellied Flycatcher) .....	ca. 15(2 ♂ ♂)			
<i>Myiarchus tyrannulus</i> (Wied's Crested Flycatcher) .....	6(1)			
<i>Myiarchus tuberculifer</i> (Olivaceous Fly- catcher) .....	6(2 ♂ ♂)			
<i>Myiarchus nuttingi</i> (Nutting's Flycatcher)	1(1 ♂)			
<i>Empidonax traillii</i> (Traill's Flycatcher) ..	1(1 ♀)			
* <i>Progne chalybea</i> (Gray-breasted Martin) ..	ca. 30	ca. 25(2 ♂ ♂)		ca. 30
<i>Mimus polyglottos</i> (Mockingbird) .....	(1 collected 13 April 1909 by P. I. Osburn)			
<i>Turdus rufo-palliatu</i> s (Rufous-backed Robin) .....	ca. 15(2 ♂ ♂)	2(2 ♂ ♂)		
<i>Mniotilta varia</i> (Black-and-white Warbler)	1			
<i>Icteria virens</i> (Yellow-breasted Chat) .....		1		
<i>Icterus spurius</i> (Orchard Oriole) .....			1	
<i>Cyanocompsa parellina</i> (Blue Bunting) ....	1 ♀			
<i>Volatinia jacarina</i> (Blue-black Grassquit)		2 ♂ ♂ (1)		
<i>Passerculus sandwichensis</i> (Savannah Sparrow) .....				3(1 ♂)

<sup>1</sup> \* indicates a breeding species; + indicates that the species was present but not counted; numbers in parentheses refer to specimens collected. Most of the specimens collected in 1961 were lost; the remainder, and those collected in 1962 and 1963, are in the Museum of Vertebrate Zoology at the University of British Columbia. This list does not include Black Terns (*Chlidonias niger*), Common Terns (*Sterna hirundo*), Sooty Terns (*Sterna fuscata*), and Noddy Terns (*Anous stolidus*), which were seen flying over the surrounding waters but never on the islands.

miles south of Puerto Vallarta, in the first half of June, and probably also at the islets off Punta Mita, Nayarit. I think that it probably breeds on the rock stacks surrounding the islands but not on the two larger islands of the Marietas.

Thus the islands have at least seven breeding species, only one being a passerine, and at least twice as many migrant terrestrial birds.

The numbers of the two species of *Sula* and of *Larus heermanni* were estimated after the first visit was made, on the basis of impression only. The estimates of the following year were based on counts. In May, 1962, my wife and I made a two-hour count by walking the length of the island. We each made observations on half of the island and spent much more time along the cliff edge, where most of the birds were found, than in the center of the island. All adult birds on the ground were counted, leaving uncounted all the juveniles, and the adults in the air. The tameness of the birds made counting relatively easy, although some adults were probably counted twice and others not at all. The count indicated that at least 550 pairs of *Larus heermanni*, 550 pairs of *Sula nebouxii*, and 400 pairs of *Sula leucogaster* were nesting on this island. In August, 1962, the numbers of birds present were smaller, judging from a crude estimation.

Ecologically the two species of boobies are separated by their nest-site differences, and to a certain extent by the time of breeding. *Sula nebouxii* nests in small groups on the plateau among the grass and sedge, while the other species nests on the cliffs and the rocky stacks on the plateau (these generalizations apply to 90 to 95 per cent of each species). Most of the Heermann's Gulls nest on the tops of the cliffs. In May, 1961 and 1962, the three species were at all stages of reproduction. However, on 17 April 1963 *Sula leucogaster* was not breeding on the west island, whereas at least 250 pairs of *Sula nebouxii* had nests (90 per cent with young birds) and 100 pairs of *Larus heermanni* had nests with eggs. In August, 1962, only 5 occupied nests of *Sula nebouxii* and 10 of *Sula leucogaster* were found, with or without young, but none contained eggs. Small groups of recently fledged juvenile birds of both species were present also, but apparently they were neither attached to nests nor attended by parents. It seems that there is a large, but not complete, overlap of the breeding season of these two booby species.

The Brown Booby, *Sula leucogaster*, was probably of the subspecies *S. l. nesiotus*, recorded breeding as near as the Tres Mariás islands (Friedmann *et al.*, *op. cit.*, pt. 1, p. 23), if that race is indeed distinct from *S. l. brewsteri* (see Wetmore, *Smiths. Misc. Coll.*, 98: 1-6, 1939; Friedmann *et al.*, *loc. cit. supra*).

## COMMENTS

The Tres Marietas are easily accessible and are convenient for further studies. Any aspect of the breeding biology of the two species of boobies, the Heermann's Gull and the Gray-breasted Martin could be undertaken with ease, because of the numbers and tameness of the birds. It should be determined if the boobies differ in food preferences. Here also is an excellent situation for the study of the migration of land birds, a subject which has received little attention in western Mexico. The timing, volume, and predictability of migration are unknown in this region, and the influence of weather has been given little, if any, study. Cabo Corrientes, which lies almost due south, and Puerto Vallarta, which is to the east, have lighthouses that tend to attract birds. Since they are both on the mainland they are likely to have little or no cloud cover at night, at least during the spring and early summer migration. Thus observers at either or both of these points, at least one on the islands and possibly another at Punta Mita to the north, should be able to obtain comprehensive data. Another problem is to determine where on the mainland the Tres Marietas summer visitors depart on their northward migration. Perhaps the Marietas are used regularly as stepping-stones for these birds, although so far there is no evidence for this.

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