

NOTES ON THE BREEDING COASTAL AND INSULAR BIRDS OF CENTRAL LOWER CALIFORNIA

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THE PURPOSE of this paper is to draw from my own experience bits of information which either appear to be new or which seem to be of sufficient importance to deserve repetition. Though no attempt will be made to cover all the field, I will list the breeding birds I know to occur on the small islands of Baja California del Norte on the Gulf side. Isla del Angel Guardia I have not yet had an opportunity to visit.

AUKLETS

Auklets are so far known only from the Pacific side of the peninsula. I have found the Cassin Auklet (*Ptychoramphus aleuticus*) breeding freely as far south as San Geronimo Island. I have both eggs and skins of this species taken for me by Mr. Ed. Seechrist of San Diego, who collected them about April 10, 1927, on San Roque and Asuncion islands. The breeding dates in Mexican waters are very confusing. Early April on the Coronado Islands near San Diego is the time to look for fresh eggs; yet there are young in the burrows of San Roque at that time, while fresh eggs are to be found on San Geronimo as late as the middle of May. Although the birds lay but one egg I took what appears to be a genuine set of two on San Geronimo, May 21, 1926. As far as the eye can tell they were laid by the same bird. Their incubation was identical, barely started.

MURRELETS

It is established that in the more northerly islands of the Mexican Pacific the Xantus Murrelet (*Endomychura hypoleuca*) has its metropolis. What is not so generally known is that the Craveri Murrelet (*E. craveri*) spreads over the entire Gulf, with a center of abundance north of the 28th parallel. On the western side of the peninsula murrelets breed on San Roque Island, but I am unable to state definitely to which species these belong.

Consag Rock, in the Gulf, is probably the most northerly breeding ground of the Craveri. Their eggs have not yet been found there and probably never will be; I merely include it by inference from knowledge of the birds and the country. They breed freely on George Island and on many if not all of the San Luis group. We found them on nearly every island and islet along the western side of the Gulf. Opposite San Esteban the birds were most plentiful. In the spring they are normally to be found in groups of four, two parents and two young. The chicks in early April range from a few days old to almost grown, showing a very irregular breeding season. When the surface of the Gulf is glassy smooth, as it is about half the time in spring, it is seldom that one or more of these little families is not in sight. Apparently they are strictly pelagic from the time the babies are two days old.

In its nesting habits the Craveri seems to make more of an effort to conceal itself than does the Xantus. Many times I have been able to see the latter on its nest and not infrequently have found its eggs under an ice-plant. The Craveri, without exception as far as my experience goes, chooses only such spots as are entirely dark, whether they be in natural cavities or, more often, under boulders or stones. Neither race makes any nest, though the birds often hollow out the sand a bit and sometimes work it into a little mound which helps conceal them.

GULLS

The range of the Southern Western Gull (*Larus occidentalis wymani*), which is not yet fully defined, adjoins that of a race from Scammons Lagoon whose status also is still undetermined. The birds resident on Natividad, San Roque, and Asuncion are similar to those of Scammons. This race may or may not be an intergrade between *wymani* and *livens*; the birds of Cedros, San Benito, and Guadalupe islands and those south of Asuncion have had no critical examination since *wymani* was distinguished. The nesting habits of *wymani* and *livens* have already been compared, in my article in the CONDOR (XXIX, 1927, p. 32). The nests, at least as far south as Asuncion, are consistently those of *wymani*.

On the other hand the Yellow-legged Gull (*L. o. livens*) builds its nests as uniformly bulky in the southern waters of the Gulf of California as it does on the San Luis Islands. There is clearly a homogeneous race there. Its breeding range extends to George Island and even possibly to Consag Rock. It is very plentiful in the San Luis Archipelago. Then there comes a broad gap in which it does not breed, although it becomes very common again farther south.

Egg types show that Western Gulls are strongly inclined to remain to breed in the colonies in which they were hatched. This is a condition which would be apt to make them plastic. So it will not be until they have been collected in numbers from Guadalupe Island to Magdalena Bay and beyond, that their various relationships can be established. All of which opens a fascinating field for banding.

The Heermann Gull (*Larus heermanni*) breeds in the Pacific from San Roque Island south. In the Gulf of California it has a number of established breeding colonies. In Lower California the most northerly is on Isla Raza, though there is one in Sonora on George Island. On Raza is one of the great gull colonies of the world. The island has a maximum elevation of a hundred feet and an area of perhaps four hundred acres. It is marked with gentle ridges separating relatively large flats. On the whole it is covered with soft earth which supports some "sage", though there are many places where the rocks come through.

The nests are placed with apparent indifference to the terrain. Spaced a few yards apart, they literally cover the island. We endeavored to make some estimate of the number but could not agree beyond the figure of a hundred thousand. There might easily be two or three times that many. The birds first excavate a narrow saucer, wherever the soil permits, and build it up with a scanty assortment of small twigs. Their first two eggs are nearly always much darker than the last one. They usually commence to lay early in April.

TERNs

It was my good fortune to sleep three nights within a few yards of a colony of Elegant and Royal terns (*Thalasseus elegans* and *T. maximus*). As long as I remained in my blankets the birds were unaware of my presence and so they revealed to me the most intimate details of their lives and problems. A mixed colony of these terns as a "going concern" is something fascinating to watch. Imagine the birds, thousands of them, sitting as close to each other as is comfortable and all facing the same direction—into the wind. At intervals which, night or day, seldom exceeded fifteen minutes there would be a rising from the nests. They certainly are "nervous". To the accompaniment of incessant shrieking they reach a height of ten or twelve feet and mingle with mates who are drawn in by the excitement. Sometimes it is the whole colony that takes to the air, but more often it is the outer fringe only, to the depth of five feet or so. Then comes the return, which must be rapidly made if the eggs are to be saved from those persistent hunters, the Heermann Gulls. In spite of the confusion every bird, with machine-like precision, drops behind his own egg. I was able

to work out the truth of this with regard to certain individuals. Furthermore, three thousand birds selecting as many eggs could not settle themselves in the time these do unless each one knew definitely where he belonged. While recognizing that pigmentation is a very complicated affair, the value to these birds of the striking variations in the markings of their eggs leaves reason to suppose that nature has supplied them with this as a necessity. If the eggs were less conspicuous or less individualistic it would hardly be possible for the parents to identify them with the speed and the certainty they now show.

While the terns are at rest the gulls maintain a ceaseless patrol. At intervals of perhaps a yard they dot the entire circumference of the colony. Their object is to steal eggs, and they have very little difficulty in so doing. The least carelessness in covering, any exposure to sight on the part of the terns which are on the outer fringe, means the loss of an egg. I watched one gull deliberately poke his bill in from behind and draw out an egg from between the legs of a tern, which seemed to pay no attention to him. Then the robber tilted back his head and drank the contents. Apparently the only compensating device a given tern has is to keep on laying until another bird replaces him on the outside fringe of the colony.

In Lower California waters the Royal Tern lays but one egg. *Elegans* not infrequently lays two. Since Mr. Mailliard published his opinion that the latter species lays but one egg and that when two eggs are found under one bird they have been laid by different females, I took the greatest pains to check my statement and prove it true. I found many pairs of eggs that showed enough variation to argue against their being the product of one bird. But I also found many in which, in the opinion of all the experts to whom I have shown them, the common parentage could not be questioned.

I can make an addition to my remarks on terns in the January, 1927, issue of the CONDOR by reporting the finding in San Ignacio Lagoon on April 13, 1927, of Caspian Tern (*Sterna caspia imperator*) and of Brown Least Tern (*Sterna antillarum browni*). Although the central Gulf region seems to be surrounded by breeding colonies of various species of terns, the Royal and the Elegant are the only ones which ever come into these waters.

SHEARWATERS

On Isla Raza in April, 1925, Mr. A. J. van Rossem and I found old shearwater burrows. This is rather interesting in view of the fact that the fishermen, describing accurately the nesting of the birds, insisted that they bred in the Gulf. However, no species of shearwater has been reported definitely from the northern or central portions of the Gulf, and we ourselves have never seen them though we have always particularly watched for them.

The Black-vented Shearwaters (*Puffinus opisthomelas*) confine their breeding range closely to the borders of Vizcaino Bay. I have a series of eggs taken from Natividad Island March 28, 1924, a normal laying date. These birds are noticeably decreasing in numbers because of the fish camps established on their breeding islands. Dogs, cats, and rats play havoc with them. There are so many empty burrows that fruitless digging becomes discouraging. If a cord be tied to a shearwater and he be allowed to enter a hole he can be pulled from the burrow if it is empty. The presence of a prior occupant will be betrayed by a vigorous and noisy fight.

PETRELS

Seven races of petrels have been found breeding on the islands off the Pacific coast of Lower California. Only two of these, as far as is known, have ever found their way into the central portions of the Gulf. Perhaps it would be more accurate to designate the Black Petrel (*Oceanodroma melania*) and the Least Petrel (*Halocypena*

microsoma) as birds of the Gulf. Then one wonders why it is that these also range up and down the Pacific, frequenting both waters, while the other species will, conversely, neither cross nor go around the peninsula.

The northernmost breeding record of the Least Petrel is Consag Rock, on which is also the most northerly nesting site in the Gulf of California of the Black. We have found both species on a number of other islands, the San Luis Archipelago and San Esteban, for instance. I have no doubt that in time many more stations will be discovered. The birds are so numerous and so widely scattered all through this inland sea that one would expect to find their colonies on almost every island that offers favorable conditions. The two Gulf forms are always in each other's company on the breeding grounds. The birds are solitary while hunting, but they intermingle on land to such an extent that the natives believe the smaller to be the young of the larger.

The Black Petrel digs no burrow and builds no nest. On the Coronado Islands near San Diego I have often taken it from holes dug by the Socorro Petrel (*Oceanodroma socorroensis*). However, there is no reason to believe other than that the larger bird has appropriated a satisfactory nesting site. The breeding habits of the Least Petrel are the same as those of the Black except that its laying dates are a few weeks later. All three of these races, at least, hole up in pairs for perhaps a month before they lay. After the egg comes, one bird at a time only is found with it. The choice of both Gulf species is a deep crevice or an opening under the weathered rocks. The sites may be either just above high water line or, as on Consag Rock, at an elevation of six hundred feet.

TROPIC BIRDS

The northern record of the breeding of *Phaëthon aethereus* is Consag Rock, in the Gulf. This is also the only breeding ground of these birds in Baja California del Norte, though they nest quite commonly on both George and San Pedro Martir islands in Sonora. It is true that no eggs or chicks have been taken from Consag. Ordinarily, in the absence of specimens actually secured, scientific accuracy would require that the birds be listed as possible or at the most as probable breeders there. But Consag presents such peculiar conditions that circumstantial evidence may safely be accepted. After all, if that be strong enough it is proof. On the other hand, it would be a serious ornithological error to refuse recognition to this breeding colony simply because it happens to be located on a site which cannot be explored.

Consag Rock, rising to a height of 600 feet above the Gulf, is less than a quarter of a mile in diameter. There is an insignificant area where the summit is flattened. The rest of the top is a series of ledges. The sides fall away sharply and without a break clear to the base. A spit of boulders, many of which are ten feet or more across, runs westerly for several hundred yards from the foot. Being subject to tidal overflow it is nothing more than the home of a large herd of sea-lions. Consag itself is apparently of sandstone, weathered and broken almost beyond belief. I saw a stone the size of a man's head rolled from the top. In descending, it gathered behind it an avalanche of loose rocks running into the hundreds of tons. So great was the slide that it buried the lower third of the island in a cloud of dust. No ingenuity or courage would enable a man to work such a surface.

As one approaches Consag, even when distant several miles, curiosity impels many birds to approach the boat. Conspicuous among them are the Tropic Birds. Young and adults, they come in a direct line from the rock, fly around and over the vessel, and then apparently return to their homes. It must be remembered that Red-billed Tropic Birds are either on the wing or else are hidden away in their holes under the rocks. They are never to be found sunning themselves, standing idly, or resting upon the water, as is the custom of many other sea birds. Their weak and poorly developed

legs and feet are not at all suited for any of these purposes. If we combine the two facts, that these birds come from the rock and would do so only in case they had been in holes or other suitable places of concealment, then the conclusion that must follow is that they have found in the loose formation of Consag both shelter and seclusion. We can add to this the presence of juveniles and the exact parallel between the actions of the birds on Consag and of those about other and proven breeding grounds and also the further knowledge that only where the birds are breeding are the conditions on Consag duplicated. To question Consag as the site of a breeding colony would be the veriest quibble.

The breeding season of the tropic birds in the Gulf is very long. Early in March of 1926 we found occupied nests showing every stage of development from fresh eggs to young so large that, while on the nest, we distinguished them from adults only by their lemon colored bills. We found conditions apparently just the same in the latter part of April, 1925. About the same proportion of eggs were fresh on both dates. The nesting sites are under or between rocks or in natural holes and crevices. Height above the water or inaccessibility seems to be of no importance. All that is required is complete concealment. The weathering of stones in this arid country leaves sufficient soft material on which to deposit the egg. Never, in my experience, have I noticed the slightest effort to build a nest. So far from bringing in foreign material, all the sites which have come under my observation have been kept scrupulously clean. (But see Dawson's *Birds of California*, page 1933.)

It does seem as though science should have progressed beyond the point of retaining *Phaëthon* among the Steganopodes. The circumstance that four toes are webbed marks the beginning and the end of resemblances. The inherited psychology of the tropic birds is too consistently and too widely at variance with that of the other families of this order to admit of close allied ancestry. Consider the nesting instincts and the habits to which reference has already been made. The tropic bird will not flush. When disturbed it rattles its mandibles and screams, making a noise that for ferocity and awe-inspiring volume is unequalled among birds.

The tropic bird has a powerful bill closely resembling that of the tern in shape as well as color. I placed an adult tropic bird on a level spot cut off from the sea by a rock about two feet high. The bird could not rise from a standing position nor could it run on its weak legs. So it walked to the interfering stone with its slow and awkward gait. It placed its bill against a rough spot and then, using its feet only to steady itself, bent its neck and hoisted itself bodily with the tip of the beak. It repeated this process until it reached the top of the stone and then launched itself into the air. On another occasion I pulled a bird from its nest and tossed it into the air. It did not recover quickly enough and so fell into the water which chanced to be quite rough. It was thrown against a rock several times and I was afraid it would be killed. But it finally landed and reached a place from which it could fly by using the same tactics as those of the other bird.

Far more important in distinguishing *Phaëthon* from the other Steganopodes are the eggs. Those of the pelican group tend to elongation if not complete ovate shape. They are covered with a thick chalky deposit which becomes badly stained as incubation progresses. They are either white or blue, and always unmarked. The egg of the tropic bird, in so far as it resembles anything but itself, is more like that of a falcon, tending to a spheroid shape, generously pigmented with fine specks varying from brick red to lilac, smooth in texture and definitely with no coating.

BOOBIES

The only booby which nests in Baja California del Norte is *Sula brewsteri*. In 1925 and again in 1926 we found a well established colony on top of Consag Rock.

This is the most northerly breeding point for the bird. On one of the San Luis Islands we found quite a large colony in 1926 which had not been there the year before. These boobies lay two eggs and their laying season begins in the first week of March.

It is interesting to compare the nesting habits of these birds with those of their relatives and neighbors, the Blue-footed Boobies (*Sula nebouxi*) of San Pedro Martir Island in Sonora. The latter build no nest, though they do work earth into the shape and size of a large plate. The desired soft dirt is more often than not in caves or in sheltered places among the rocks. So this booby is usually found nesting under cover, although eggs laid in the open are not rare. Its complement of eggs is also two, but, unlike *brewsteri*, a single egg is often the complete clutch.

The Brewster Booby chooses any bare spot on the rocks which is large enough and smooth enough to hold a nest. The leveled trails once used by the guano collectors suit it admirably. It gathers twigs and large feathers and arranges them so as to form a thin circular nest. There is no attempt to weave any of this material; as a result everything is carried away by the wind long before the young are past the downy age. So a Brewster Booby colony presents the rather anomalous condition of eggs in nests and of young standing on bare rocks.

CORMORANTS

Farallon Cormorants (*Phalacrocorax auritus albociliatus*) are the only birds of this genus which nest in the central Gulf. They are not at all abundant there, San Luis Island being the only place where I have found them. The Brandt and the Baird cormorants (*P. penicillatus* and *P. pelagicus resplendens*) range with the Farallon down the waters of the Pacific. Both Farallon and Brandt are to be found in large numbers though in distinct colonies on both Los Coronados and the Todos Santos islands. The Brandt breeds freely on San Geronimo and only the Farallon in Scammons. The Baird is reported from Chester Rock, not far from the mouth of that lagoon.

PELICANS

An immense colony of California Brown Pelicans (*Pelecanus occidentalis californicus*) exists on the western side of San Luis Island, the only place in central Gulf waters where I have found them. This colony is about a mile long and must contain upwards of five thousand breeding pairs.

MAN-O'-WAR-BIRDS

The Pacific Man-o'-war-bird (*Fregata minor palmerstoni*) seems to be established on one of the islands of the San Luis Archipelago. We found it there in April, 1925, and in March, 1926. Although on both occasions there were a hundred or so in the same locality, we did not find any nests; and I do not believe we would have missed them had they been there. I cannot even suggest an answer to this riddle.

HERODIONES

The breeding of Herodiones in Scammons I discussed in the CONDOR (XXIX, 1927, pp. 40-47). My references there to the San Luis Islands include all the records I have for birds of this order anywhere in the northern half of the Gulf of California, except the breeding of a few Great Blue Herons of an undetermined subspecies at San Felipe. On the Pacific side all of the birds I listed breed in the lagoons below Cape San Eugenio. The shores of these more southerly bays, where not of bare sand, are covered in some places with marsh grass and, except in Pond Lagoon, also with mangroves. The entire surface of the islands in the lagoons supports these small trees. The birds which in Scammons were content with marsh grass as nesting sites show an exclusive preference for mangroves where these are to be found.

The American Egret (*Casmerodius egretta*) breeds at least in San Ignacio Lagoon. It is very rare in these waters; an occasional isolated pair, extremely shy and wary, is all that one sees. In common with the resident Great Blue Heron, this egret will not betray its home. When a man is seen, these large birds fly away, often not to return at all. So it is very probable that their nests are more widely distributed than is generally supposed. Neither the White Ibis (*Guara alba*) nor the Frazar Green Heron (*Butorides virescens frazari*) have been reported north of Cape San Eugenio. Both are abundant resident breeders, at least in San Ignacio Lagoon. The former is quite a bit the more common and the more gregarious of the two, having its breeding colony on one of the large central islands in the bay. I submitted the skin of a juvenile taken in the Lagoon in February, 1927, to Mr. J. L. Peters of the Harvard Museum of Comparative Zoology. He compared it with a series of eastern skins of *Guara alba*. Though he had but one specimen which could match the western bird in size, he reported nothing to warrant recognizing a Pacific race.

RAILS

I have found the Light-footed Rail (*Rallus levipes*) a common resident breeder in the marshes of the San Quintin region. The Sora (*Porzana carolina*) I have found with eggs at San Antonio del Mar. All the lagoons of the San Ignacio Faunal Area have as residents the Clapper Rail that breeds in Scammons (Condor, XXIX, 1927, p. 47). On the other hand, from the delta of the Colorado River to the vicinity of Santa Rosalia there lies a great coastal stretch from which no rails have been reported. I have hunted over a number of marshes, specifically one opposite the San Luis Islands, which seem to be admirably adapted to rails. We neither saw signs of them nor heard from the natives any rumors of their presence here.

SHORE BIRDS

Of the Limicolae only the Belding Plover (*Pagolla wilsonia beldingi*), the Snowy Plover (*Charadrius nivosus*), and the Frazar Oyster-catcher (*Haematopus palliatus frazari*) are to be found breeding in central Lower California waters. The known breeding range of the Belding Plover extending northward includes San Ignacio Lagoon and Scammons. That of the Snowy Plover reaches southward at least to San Ignacio Lagoon on the Pacific slope and to the 29th parallel on the Gulf side. The Frazar Oyster-catcher spreads to both shores of the peninsula and includes in its range the entire Gulf of California, the Mexican coastal islands of the Pacific, and all the sloughs to the northern limit of the San Ignacio Faunal Area. In my opinion, the Black Oyster-catcher (*Haematopus bachmani*) does not breed south of the San Diegan District.

RAPTORES

The Prairie Falcon (*Falco mexicanus*) is so nearly unknown in central Lower California that I have seen but one breeding pair. Mr. N. K. Carpenter took a set of fresh eggs from San Luis Island when there with me in March, 1926. On the other hand, Duck Hawks (*Falco peregrinus anatum*) are abundant on the islands of both waters as well as along the western ocean cliffs as far south as those extend. We have found Duck Hawks breeding, for instance, on Consag Rock, on three of the San Luis Islands, and on San Esteban, San Miguel, Natividad, and San Roque islands as well as at San Antonio del Mar, Cape Colnett, Santa Catarina Landing and Santa Rosalia Bay. They are probably the most evenly distributed bird in this region. Their eggs, three more often than four, are laid late in March or early in April.

The metropolis of the Osprey (*Pandion haliaëtus carolinensis*) is the San Luis Archipelago. From sixty to seventy-five pairs of birds nest there, half of which are on San Luis itself. We did not find them in the Gulf north of this archipelago,

though on the Pacific shore they are abundant from Ensenada Bay to and including Scammons and San Ignacio lagoons and the coastal islands. This is one of the few birds which, inhabiting the coasts and islands on both sides of the peninsula, do so without seemingly being affected in their nesting dates and habits by the intervening land. They lay very early in the year in this region and have feathered young by the middle of March.

RAVENS

The habitat of the Western Raven (*Corvus corax sinuatus*), which is coincident with its breeding range, includes the entire peninsula, coasts and mainland as well. The birds are far more numerous in the western edge of their range than in the Gulf, where I have always considered them exceedingly rare. They build indifferently on cliffs or, in this treeless country, in the giant cactuses. When on cliffs they always seek an overhang, or use a pot hole, in order to escape possible falling pebbles and earth. Their nests are bulky and are lined more delicately than those of any other large North American bird. This lining is most frequently taken from a carcass. I have known the birds to use the hair of a dead cow, horse, coyote and even skunk. They take their entire supply from one source. A lining partly of one material and partly of another is not normal. Both birds carry the nesting material. When hair is not available I have found them substituting decayed sacking and even bright bandanas from a Cocopah Indian's clothes line. They lay their two to seven eggs any time from early in March to late in April. The eggs, which are extremely thin shelled, are laid one a day and require two weeks to incubate.

MARSH SPARROWS

The Marsh Sparrow of Scammons (Condor, XXIX, 1927, pp. 56, 57) (*Passerculus beldingi halophilus*) ranges at least from and including San Ignacio Lagoon to the northerly limit of the San Ignacio Faunal District. In the San Ignacio Lagoon there is also breeding a Large-billed Sparrow (*Passerculus rostratus* subsp.?). I have a nest and set of eggs taken there in April, 1927. The latter bird is as rare as the former is abundant, but in spite of being uncommon it is well established and not of accidental occurrence.

WARBLERS

The Mangrove Warbler (*Dendroica bryanti castaneiceps*), hitherto not reported north of Magdalena Bay, is abundant in San Ignacio Lagoon at least in the spring, and it undoubtedly breeds there, although I have not been fortunate enough to obtain its eggs.

ROCK WRENS

Mr. A. J. van Rossem and I found the Rock Wren (*Salpinctes obsoletus*) in April, 1925, on one of the smaller islands of the San Luis group. In March, 1926, it was abundant on San Luis Island. Mr. van Rossem pronounced the bird true *S. o. obsoletus*. At first thought it might seem strange to encounter this race in such an out of the way spot. But the Rock Wren is one of the few birds that has carried its range without a break to these distant islands. It breeds very early there. I have a record of March 9, 1926, of a nest containing half grown young.

In concluding, I must acknowledge the help afforded me by Mr. Clyde Field and Mr. Griffing Bancroft, Jr., of San Diego, and the uniform courtesies and aid extended by both the Mexican and United States authorities.

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