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THE ORNITHOLOGICAL RESULTS OF THE MASON-SPINDEN EXPEDITION TO YUCATAN

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PART II.—CHINCHORRO BANK AND COZUMEL ISLAND

A.—CHINCHORRO BANK

This dangerous bank, which had never previously been visited by an ornithologist, lies about 25 miles off the coast of southern Quintana Roo. It is roughly elliptical in shape and measures 30 miles north and south and about 15 miles east and west. The outer reefs are nearly half a mile wide in places, and the biggest coral heads are four to six feet below the surface. Inside the reef is a lagoon with a white sand bottom, the water gorgeously colored and clear. In the exact center of this lagoon is Great Key, a perfect atoll, with a maximum radius of $2\frac{1}{4}$ miles, consisting of a narrow ring of sand beach, enclosing a central lagoon with one small outlet. The central lagoon is a mangrove swamp with very little open water, full of herons and crocodiles. The leatherwood is the only plant on the island which could be called a fair-sized tree, the flora of the beach otherwise consisting of scrub palms, sea-grape, and a few other shrubs with fleshy leaves of halophytic West Indian types. The destructive hurricane which visited the coast some ten years ago caused the sea to break over the whole island, killing all the taller trees and probably greatly reducing the resident land-bird population. The island has never been inhabited, and is visited occasionally only by turtle fishermen. The forest of dead trees, their gaunt and twisted arms gleaming white and naked in the tropical sunshine, rises above the scrub, and adds a touch of sadness and desolation to a scene, which is, to say the least, lonely and remote. There is an islet at the southern end of the lagoon, and two small islets at the northern end, one with a lighthouse maintained by Mexico. We landed on the uninhabited one, which was another miniature atoll about 200 yards long, with a somewhat higher beach, and no trees.

I am particularly indebted to Mr. Mason for the opportunity of visiting Chinchorro, as it was largely due to my earnest representations of discovering possible interesting birds that we went there. On January 20 we headed northeast from Ambergris Key in a very rough sea, made a thrilling passage across the dangerous reef in the afternoon, and after anchoring on the west side of Great Key had time to land for half an hour, definitely determining that there was abundant vegetation and a land-bird fauna. All hands were ashore in various directions the next morning, collecting birds. I was busy skinning all afternoon, but other specimens were brought in. The next morning before daylight Mason, Whiting and I made fruitless efforts to collect the Clapper Rail. The morning was spent on the east side of the island, hoping to find more specimens of the *Elainea* described beyond. We sailed in the afternoon to North Key and spent two hours on the small islet to the south.

Below is given a list of the birds recorded. The Green Heron, the *Elainea*, and several North American Warblers show a distinct West Indian element, reminiscent of Cozumel Island farther north. Besides crocodiles, a spiny-backed tree rat, an iguana and some small greenish and brown lizards were also observed. Needless to say mosquitoes were abundant, and we forced our way through the bushes, panting with the heat, trying in vain to dodge the hordes of biting ants of various sizes and colors which swarmed in every dead twig and hollow branch.

1. *Rallus* species?—A Clapper Rail was abundant in all the mangrove swamps, its notes in no way differing from those of the North American bird, and the mud-flats were honeycombed with its tracks. In spite of every effort, however, in the limited time at our disposal, not a single bird was secured or seen. Twice I was within ten feet of a bird calling from the roots of a clump of mangroves, but effectually separated by mud into which an eight-foot oar sunk without apparent effort. It was most probably *Rallus pallidus* Nelson, of the adjacent mainland, or a closely related form.
2. *Sterna maxima* Boddaert. Royal Tern.—An occasional bird fishing in the lagoon. A flock of 8 other Terns were probably *S. dougalli*.
3. *Himantopus mexicanus* (Müller). Black-necked Stilt.—Fairly common in the lagoon on Great Key. Several collected.
4. *Actitis macularia* (Linnæus). Spotted Sandpiper.—A few birds along the beaches.
5. *Ardea herodias* subspecies. Great Blue Heron.—Common in the lagoons.
6. *Ardea occidentalis* Audubon. Great White Heron.—One bird with several of the last on Great Key.
7. *Herodias egretta* (Gmelin). American Egret.—Several seen.
8. *Hydranassa tricolor ruficollis* (Gosse). Louisiana Heron.
9. *Florida cærulea* (Linnæus). Little Blue Heron.—The two commonest Herons in the mangroves.

10. *Butorides virescens maculatus* (Boddaert). West Indian Green Heron.—Green Herons were fairly common in the mangrove swamp on Great Key, but the majority were immature. An adult male was collected, and proved to have slightly enlarged testes, showing that the breeding season was approaching. This specimen is as pale below as any from the Eastern United States, has a slightly paler neck and the wing measures only 161.5 mm., below the minimum of any specimens from the West Indies examined. Smaller size is the chief claim that *maculatus* has to recognition, and the Chinchorro bird must be referred here without doubt.

11. *Nyctanassa violacea* (Linnæus). Yellow-crowned Night Heron.—Two adults seen on Great Key with other Herons.

12. *Pelecanus occidentalis* Linnæus. Brown Pelican.

13. *Fregata magnificens* subspecies. Man-o'-war Bird.—Both these birds were common throughout the bank.

14. *Falco peregrinus anatum* Bonaparte. Duck Hawk.—One on each of the islands visited. Apparently not previously recorded from Yucatan.

15. *Pandion haliaëtus carolinensis* (Gmelin). Fish Hawk. One seen on Great Key with lots of brown on the head and heavily marked chest.

16. *Ceryle alcyon* (Linnæus). Belted Kingfisher.—Seen on both the Keys visited.

17. *Anthracothorax prevosti* subspecies. Prevost's Mango Hummingbird.—A single adult male was observed in full song on the tiny north key. The rarity of this and other resident land-birds was noteworthy. This familiar Hummingbird occurs on all the outlying islands of the Yucatan coast without exhibiting any subspecific variation.

18. *Elainea chinchorrensis*, new species

SPECIFIC CHARACTERS.—Nearest to *Elainea martinica martinica* (Linnæus), but differing in having much less green in the upperparts, practically no tinge of yellow below, a clearly defined brownish breast-band, and the soles of the toes blackish instead of yellow.

DESCRIPTION OF TYPE.—Upperparts very dark brownish olive, the occiput almost blackish, the area of concealed white very extensive; edgings to primaries and secondaries and wing-bands brownish ash; underparts ashy white with a faint tinge of yellow on the flanks and under tail-coverts; a narrow orbital ring whitish; sides of chest extensively brownish olive, meeting across the breast, in sharp contrast to the whitish abdomen; legs and feet, including soles of toes blackish.

TYPE.—No. 254,615, Amer. Mus. Nat. Hist.; ♂ ad; Great Key, Chinchorro Bank, Quintana Roo, Mexico; Jan. 21, 1926; Ludlow Griscom.

Wing, 75 mm.; culmen, 11 mm.; breadth of bill at nostrils, 4.1 mm.; tarsus, 22 mm.

SPECIMENS EXAMINED

Large series of *Elainea flavogaster* and subspecies from South and Central America, and good series of *Elainea martinica* and subspecies from the Antilles and Cozumel Island.

The genus *Elainea* is notable for the difficulty experienced by the student in determining lines of specific demarcation. Here, as in other groups of Flycatchers, field experience adds important criteria to the relatively slight differences observable in skins. Field experience with

both *Elainea flavogaster subpagana* and *Elainea martinica*, convinces me that Berlepsch was entirely correct in regarding them as distinct species, as the slight color differences are correlated with striking differences in habits, notes, and habitat. Moreover, both are found together on certain of the Lesser Antilles. The bird here described as *Elainea chinchorrensis* belongs to the *E. martinica* stock, which has crossed the Caribbean Sea and occurs with very slight subspecific variations on Old Providence Island, Cozumel Island, and the coast of Yucatan. The extreme isolation of the new form in its narrow environment perhaps accounts for its marked color differences, far greater than those separating the species *flavogaster* and *martinica*, and on this account I am inclined to give it specific rank, rather than to make it a race of the latter.

The only individual observed was encountered early in the morning perched quietly in the heart of a dense mangrove thicket. My attention was drawn by its call, quite different from that of *E. flavogaster*, and the bird was immediately recognized as new. The balance of the morning was spent in looking for more, without success. The specimen was shown to the other members of the party, who were going ashore to collect in the afternoon, and our departure was postponed to give me the chance of securing others the next day on the east side of the island. Not one could be found, and this bird must be on the verge of extinction. The hurricane already referred to may have decimated its numbers.

19. *Tyrannus melancholicus chloronotus* Berlepsch. Only one individual observed.

20. *Iridoprocne albilinea* (Lawrence). Central American Tree Swallow.—About three pairs lived in the lagoon on Great Key, roosting for the night in a hollow tree. One was shot.

21. *Dumetella carolinensis* (Linnæus). Catbird.—Fairly common. Several shot by the crew.

22. *Bombycilla cedrorum* Vieillot. Cedar Waxwing.—Several flocks on Great Key, and the crew shot several. Curiously enough there is no record for the Yucatan Peninsula.

23. *Mniotilta varia* (Linnæus). Black and White Warbler.—One recorded.

24. *Compsothlypis americana* subspecies. Parula Warbler.—Two seen on Great Key.

25. *Dendroica bryanti bryanti* Ridgway. Mangrove Warbler.—This handsome Warbler was the abundant and characteristic land-bird of the island. The series collected shows no differences from mainland specimens. The breeding season was approaching, and the adult males were in fine plumage and full song. The song is like a Yellow Warbler's, but distinctly richer and finer.

26. *Dendroica æstiva rubiginosa* (Pallas). Alaska Yellow Warbler.—The puzzling variations in female Mangrove Warblers made the separation of the two species in life almost impossible. The only individual seen which was obviously

not a Mangrove Warbler was collected and proved to be a typical specimen of this race, which has not been recorded from the Yucatan Peninsula.

27. *Dendroica coronata* (Linnæus). Myrtle Warbler.—Very few noted and one shot.

28. *Dendroica palmarum palmarum* (Gmelin). Palm Warbler.

29. *Dendroica discolor* (Vieillot). Prairie Warbler.—It was very interesting to find these two Warblers, with a characteristically West Indian winter range on the tiny islet of Great Key the other side of the Caribbean Sea. The Palm Warbler was easily the commonest of the winter visitant land birds.

30. *Seiurus noveboracensis noveboracensis* (Gmelin). Water-Thrush.

31. *Seiurus noveboracensis notabilis* Ridgway. Grinnell's Water-Thrush.—Water-Thrushes were fairly common. One of each subspecies was collected.

32. *Geothlypis trichas* subspecies. Northern Yellow-throat.—Fairly common.

33. *Setophaga ruticilla* (Linnæus). Redstart.—Quite common.

34. *Megaquiscalus major macrourus* (Swainson). Great-tailed Grackle.—A few pairs around the mangrove swamps. A female collected did not differ in any respect from mainland examples.

B.—COZUMEL ISLAND.

The chief objects of my being attached to the Mason-Spinden Expedition were to collect adequate series of the species peculiar to Cozumel Island and to determine definitely their presence or absence on the adjacent mainland. Mr. Mason afforded me every possible opportunity to realize both aims. The island was circumnavigated, collections were made in the vicinity of San Miguel, in the forests around the north lagoon, along the east coast, and at the southern end. We landed on the adjacent mainland about every three miles, and penetrated several miles into the interior at each point. This, I believe, has never previously been done by a naturalist, and would have been impossible without a prolonged period of calm weather. The coast is rocky, often bordered by coral reefs, and the northeast trades raise a surf which often makes landing impossible, and as there are no harbors and no anchorage, a dead calm is needed to lie off the shore overnight. The reefs can only be crossed with safety in daylight in a quiet sea.

Our knowledge of the avifauna of Cozumel Island is fairly complete, as excellent collections have been made on several occasions. Salvin's classic paper on the 'Birds of the Islands of the Coast of Yucatan and Bay of Honduras' lists 160 species from Cozumel Island, and gives an excellent summary of the principal features of zoögeographical interest. While he brought out some of the peculiarities involved, he could not believe them real, and confidently predicted that exploration of the adjacent mainland would eliminate the large number of endemic forms. No description of the island exists, nothing has been published about the

geology, the habits or status of the endemic birds, which do NOT occur on the adjacent mainland, except as noted beyond. Some 81 species were observed during my visit, but only those are mentioned beyond about which something novel can be recorded, or that are of special zoögeographic interest.

The geology of Cozumel Island would seem to be essentially the same as that of the adjacent mainland. It is a flat table-topped rock of shell limestone, everywhere much broken and weathered, but there is far more top soil than on the mainland, particularly on the western side. The Yucatan Peninsula rises about one and one half feet per mile as one goes westward from the coast. I was interested to observe that the sloping of Cozumel Island is reversed, the land rising as one proceeds eastward, the east beach being consequently the highest part. The channel between the island and mainland is a minimum twelve miles in width and reaches a maximum depth of 42 fathoms, through which the Gulf Stream runs northward at the rate of 4 miles per hour. Depths greater than one thousand fathoms occur 20 miles east of Cozumel and between Yucatan and Cuba. It will be seen, therefore, that Cozumel Island lies on the Yucatan Bank. According to Prof. Heilprin (1891) this whole bank is of relatively recent uplift. Most of the Yucatan Peninsula is late Pliocene, possibly the "Floridian" horizon, and the north coast is Quaternary. The marked resemblance of the flora of Yucatan to that of the Greater Antilles has long since led botanists to infer a former land connection across the Yucatan Channel. Prof. Heilprin argued cogently that this was scarcely justifiable, unless the 1000 fathoms in the channel could be explained away, nor did he regard the theories advanced to account for it as satisfactory. On the other hand, he did regard it as probable that such a land connection existed in the late Tertiary, on the ground that the Gulf of Mexico is a subsiding basin, and that the deep straits did not exist at that time.

More recent work, especially by Vaughan (1919), regards such a connection as quite possible in the upper Miocene, and makes it certain that the Yucatan Bank was extensively emerged and that Cozumel Island did not at that time exist. A period of moderate submergence and cataclysmic faulting took place in the Pliocene, forming the Antilles nearly as they are at present, and the Deeps in the Caribbean Sea. It is possible that Cozumel became an island at this time, but it is just as likely that it ceased to be one in the Pleistocene, another period of general emergence. Detailed geological evidence is, however, lacking.

The character of the country on Cozumel Island appears to be very similar to that of the mainland. Real forest survives only in the northern part of the island along the southern side of the lagoon. The rest of the timber is low and scrubby, its height and the density of the underbrush depending upon how recently it has been cut or burned over. While extensive areas of the island have been repeatedly cleared for pasturing cattle or making a "milpa" or truck patch, one cannot avoid the impression that certain sections of the island never did support a forest of any size, the ground being too rocky or the influence of the sea too great. There is a long narrow lagoon, at the northern end of the island, paralleling the beach for several miles. It is unusual in having a firm sandy bottom, numerous sand-bars and islands, and a very sparse development of stunted mangroves. A smaller lagoon at the southern end is the usual mangrove swamp, the trees growing in very soft mud.

Field work on the island brought out several very interesting points. The most abundant and generally distributed birds are the endemic species. Next in order of abundance are the representatives of mainland species, which are subspecifically distinct. The great majority of the remaining resident land birds are noticeably rare and local. The few exceptions are such wide-ranging and aggressive types as the Turkey Vulture, Great-tailed Grackle, and the Kingbird (*Tyrannus melancholicus*).

One cannot avoid the impression amounting almost to conviction that the endemic species were the first arrivals and became well established before the majority of the mainland species reached the island. Dr. Chapman (1896) has long since pointed out that the avifauna of the mainland of Yucatan must be a derived one at least in part, the peninsula not having existed for a sufficient length of time for the peculiar genera and species to have evolved locally. This view the present writer would strongly endorse. As geological evidence has accumulated since this paper was written, which makes it practically certain that Cozumel could not always have been an island, we may regard its peculiar species, especially the West Indian element, as an older, relict fauna which was overpowered on the mainland by the invasion of the present fauna; but which was able to survive on Cozumel Island, thanks to the remarkably sedentary habits of so many tropical land birds. Field experience with the peculiar genus *Melanoptila* affords some evidence on this point. The most abundant bird on Cozumel, tame, ubiquitous, and bold, it is rare and local on the adjacent mainland, is strictly littoral, and very shy and secretive. It is undoubtedly the relict of an older fauna which has either obtained or retained a slender foothold on the mainland.

The West Indian element in the avifauna is of four different types: (1) peculiar species of Antillean rather than continental relationships; (2) endemic subspecies of Antillean species; (3) Antillean species occurring on Cozumel Island without differentiation, but absent from the mainland; (4) winter visitants from North America, which are typically West Indian as regards their winter range, and unknown in Mexico or Central America. The last group, especially, adds biological to the geological evidence, that at one time Cozumel and Yucatan must have been much nearer to the West Indian or the southeastern United States than now. It is scarcely conceivable that the Prairie Warbler (*Dendroica discolor*), for instance, could have acquired accidentally the habit of crossing the Caribbean to Cozumel in numbers. There is no need, however, for postulating a former land-bridge, geologically unproved. The prevailing winds are northeast and southeast, and hurricanes come invariably from the direction of the West Indies. We must also remember that the great majority of these North American migrants did not originate in North America, but their ancestors probably came from the general region of their present winter range. In connection with the Prairie Warbler, it is not without significance that its nearest relatives inhabit the Cayman Island group in the West Indies and the lonely little Swan Island in the middle of the Caribbean.

REMARKS ON THE SPECIES OF SPECIAL INTEREST

Columba leucocephala Linnæus.—The White-crowned Pigeon was quite common in the heavy forest near the north lagoon, and was feeding greedily on the fruit of some tree. It was extremely shy. It is very interesting that this West Indian species should occur on Cozumel, on the outer keys off the British Honduras coast and on Ruatan Island in the Bay of Honduras, but should be only a straggler to the mainland.

Sterna caspia Pallas.—A single Caspian Tern spent the day of Feb. 5th flying around the schooner in the harbor of San Miguel in company with Royal Terns. For considerable periods of time it perched on a buoy less than fifty yards from the boat, and was often in shot-gun range. It has never been recorded south of southern Texas on the Atlantic side of the continent.

Phenicopterus ruber Linnæus.—One of the delightful surprises of my visit to Cozumel Island was finding a flock of over 600 Rosy Flamingoes scattered over the vast shallows of the north lagoon. The birds were extremely wary when within gun-shot of the shore, and Captain Gough had to organize a regular battue of his crew to collect a specimen for me. Three birds shot were in full moult and showed no signs of breeding. The native guide claimed that a few were present all summer, but did not nest. The flesh of Flamingo when boiled and fried is very dark in color, a little rank in flavor, but entirely palatable and tender.

Rupornis magnirostris gracilis Ridgway.—This island race is quite distinct both from *R. m. griseocauda* and *R. m. conspecta* Peters of the adjacent mainland. It is a

surprisingly common bird for a Hawk, and is remarkably tame and curious. "Squeaking up" birds never worked better with me than on Cozumel, and *Rupornis* was one of the first to respond, craning its neck with curiosity, and uttering a peculiar squealing scream at the same time.

Amazona xantholora (Gray).—I was much surprised to discover that this Parrot was not a resident in the usual sense of the word, but a daily visitor, thus being a marked exception to the sedentary habits of so many tropical birds. About twenty minutes after sunrise every morning flocks of various sizes came streaming in across the sea from the mainland and scattered over the island. They departed a few minutes before sunset. In habits and notes this species closely resembles *A. albifrons*, but the white forehead of the latter is a conspicuous field-mark.

Chætura pelagica (Linnæus).—The Chimney Swift has been definitely collected on Cozumel Island. The small, endemic *C. gumeri* Lawrence was common in many parts of Yucatan visited, and also on Cozumel. On several occasions flocks of a much larger Swift, which can only have been this species, were seen with *gumeri*, but never came within gunshot.

Chlorostilbon forficatus Ridgway.—The Cozumel Emerald is much more closely related to the rare and local *C. auriceps* of western Mexico than to the common *C. caniveti* of the adjacent mainland, and both sexes are immediately separable in life from that species by the long forked tail. The widely distributed *caniveti* is probably a more recent arrival from South America, which has displaced an older group now represented by *auriceps*, *forficatus*, *maugæi* in Porto Rico, and *Riccordia* in Cuba and Haiti. The Cozumel Emerald is fairly common, but was absent from the heavy forest at the north end of the island.

Crotophaga ani Linnæus.—The West Indian Ani has never been recorded north of Panama on the Central American mainland, but has been taken on Holbox, Cozumel, and Ruatan Islands. I saw one flock during my visit.

Centurus dubius leei Ridgway.—This strongly marked subspecies is abundant and ubiquitous throughout the island.

Centurus rubriventris pygmæus Ridgway.—The association of these two closely related Woodpeckers reminded me strongly of the Downy and Hairy in the eastern United States and the Greater and Lesser Spotted Woodpeckers in western Europe. As in Europe, the smaller species is less common, with a marked preference for heavier timber. The two species are remarkably similar in life, and are best distinguished by size. As with the Hairy and Downy Woodpeckers, the difference in the bill is a better character than total length, and the notes of the smaller species are distinctly weaker.

Elainea martinica remota Berlepsch.—Field experience with all the species of this genus known from Central America induces me to endorse von Berlepsch's treatment of this group rather than Mr. Ridgway's, the chief point of difference being the specific distinctness of *E. martinica* and *E. flavogastra subpagana*. The latter is a noisy, active bird of open, cleared country; the former, as I know it, a quiet, retiring species of mangrove swamps, dense thickets or forest, with quite different notes. Both occur together on certain of the Lesser Antilles, and both occur on the mainland of Yucatan, but in radically different habitats. The subspecies *remota* seems worthy of recognition on the basis of the few specimens seen, the broader bill being the most noticeable character. The rump is, as claimed, suffused with brown, but typical *martinica* from the Lesser Antilles occasionally shows the same variation.

Camptostoma imberbe Sclater.—Two young males of the Beardless Flycatcher were collected, both in very fresh plumage. These differ from mainland examples of the same age and plumage in being grayer, less brown above, grayer, less yellow below, the edgings of the remiges a much brighter and deeper shade of cinnamon, and both have longer tails than any adult male from the continent. In default of adults, however, formal description can well be postponed. This Flycatcher occurs in the arid scrub of northern Yucatan, but is absent from the forested region farther south adjacent to Cozumel Island. Incidentally forty specimens in the American Museum from Texas, Mexico, Guatemala, Nicaragua and northwest Costa Rica show that southern birds do not differ perceptibly from Mexican, but specimens from Jalisco and Morelos are larger, browner above, and browner, less yellow below than any others, although Mr. Ridgway could not detect any geographic differences in color or measurements in the series examined by him.

***Polioptila cærulea cozumelæ*, new subspecies**

SUBSPECIFIC CHARACTERS.—Much darker in coloration than any other race of the species; differing from typical *cærulea* in having the upperparts slate-gray instead of light grayish blue, the pileum not appreciably darker; underparts dark gull-gray on throat, breast and flanks, changing to light gull-gray on center of abdomen and white on under tail-coverts, very different from the white underparts of *cærulea*, faintly shaded with pale bluish gray; smaller than *cærulea*, in this respect resembling *mexicana*, which does not differ from *cærula* in color.

TYPE.—No. 254,623, Amer. Mus. Nat. Hist.; ♂ ad. breeding; Cozumel Island, Yucatan; Feb. 21, 1926; Ludlow Griscom.

SPECIMENS EXAMINED

Polioptila cærulea cærulea.—142 specimens of both sexes from every part of the range, including Bahamas, Cuba, Mexico, and Guatemala.

Polioptila cærulea cozumelæ.—Cozumel Island, 2 ♂, 3 ♀.

The Cozumel Island Gnatcatcher has never had a definite systematic position. Years ago Mr. Ridgway described *P. c. cæsiogastra*, from the Bahamas, as slightly darker than *cærulea*, and doubtfully referred Cozumel specimens to the new form. Salvin (1888, *Ibis*, p. 245) commented on the darkness of the Cozumel bird, and referred it doubtfully to *cæsiogastra*, of which he had never examined an authentic specimen. In the 'Birds of North and Middle America,' III, 1904, p. 723, Mr. Ridgway notes that Cozumel specimens are darker than Bahaman, and may prove separable. More recently Todd (1911, *Ann. Carnegie Mus.*, VII, p. 427) has shown that *cæsiogastra* is inseparable from *cærulea*, a conclusion endorsed by the few specimens I have been able to examine. The validity of *cozumelæ* is in no way affected, however, by the validity of *cæsiogastra*. Even if the latter should be recognized in the future on the basis of averaging mostly "pale bluish gray" below, this character is very different from

the deep gull-gray underparts of *cozumelæ*, which is also SMALLER. In the color of this region it is quite indistinguishable from the South American *P. dumicola*.

Field experience made it obvious that there were two races of *Polioptila cærulea* on Cozumel Island, which were distinguishable in life. The dark resident form was common, paired, the males in song. An occasional light bird was seen wandering around alone and silent, either typical *cærulea* or *mexicana*.

Troglodytes beani Ridgway.—This very distinct species is more closely related to *tanneri* and the Lesser Antillean species than to the *ædon-musculus* group of the continent. In habits it does not particularly suggest the House Wren, but is more akin to the forest species of *Thryophilus* and *Pheugopedius*, and has entered into no relationship with man. It is naturally secretive, but very curious and can be "squeaked up" readily. The song is quite different from that of the *ædon-musculus* group. It is one of the commonest birds on the island.

Toxostoma guttatum (Ridgway).—The occurrence of a Thrasher on Cozumel Island is perhaps its most interesting zoögeographical feature. It is a very common bird, but rather shy and secretive, living in the heart of the densest thickets. Here in the dim light, with the ground carpeted with dead leaves, it melts into the background. Your approach is inevitably somewhat noisy, and if hunted in this way, a dark shadow has suddenly ceased to exist about the time you realize you have seen a Cozumel Thrasher running away over the ground. Ensconced in the heart of a thicket, however, squeaking produced excellent results, thanks to the extraordinary bump of curiosity possessed by nearly all the endemic birds of the island. In a few seconds I would be surrounded by *Melanoptila*, and peering sharply about would finally make out the head and pale yellow eye of a Thrasher or catch a nervous lift of the tail. But I never saw one arrive. It always appeared. The song is sweeter and richer in tone than that of our own Brown Thrasher, but softer and lower. The bird sings concealed in the thickets and the distance of the singer is somewhat difficult to judge. It is a much more frequent and rapid runner than the Brown Thrasher.

Melanoptila glabrirostris Sclater.—This monotypic genus is most nearly related to *Melanotis* and *Mimodes*. In life it is a black Catbird, and even the song is a poor, harsh Catbird's song. On Cozumel Island it is, as already stated, the most abundant and ubiquitous land-bird, and here *Mimus gilvus gracilis* is uncommon and found only near clearings and settlements. On the mainland coast *Melanoptila* is practically confined to the outer beach, is rare and very shy, and *Mimus* is common.

Vireo bairdi Ridgway.—In coloration this species is unique in its genus, and I know of no evidence as to its point of origin. On the adjacent mainland within 100 yards of the sea *Vireo ochraceus*, a totally different species, is common, but does not occur on Cozumel. The song of *V. bairdi* is quite different from that of any other species known to me, but is a poor, squeaky affair, and not sharply accented. In habits this Vireo does not differ materially from other species, but is perhaps particularly tame and inquisitive. It is very common.

Cyclarhis flaviventris insularis Ridgway.—Miller and I have shown that *flaviventris* and *flavipectus* intergrade, and that the latter is merely a northern race of the widely ranging South American *gujanensis* (Amer. Mus. Novit., No. 183, 1925, p. 6).

Four specimens of this so-called island species before me show a remarkable amount of variation. Two have practically no yellow on the underparts, and were this character constant, as it undoubtedly was in the four specimens examined by Mr. Ridgway, *insularis* could be regarded as specifically distinct, even though obviously a representative form. The third specimen, however, has considerable yellow wash below, and the fourth is barely separable from *C. flaviventris yucatanensis* of the adjacent mainland. Under these circumstances I prefer to regard *insularis* as a well-marked subspecies only. In habits and song it is just like the continental forms, all of which I know in life. Comparatively few were seen, though numbers were heard singing. It is a rather shy and secretive bird, however, and the nature of the country did not permit stalking it without alarming it into silence, long before it was visible in the thick tree-tops it preferred.

Dendroica ruficapilla rufivertex Ridgway.—This species, of obvious Antillean relationships, replaces *D. bryanti*, which is abundant on the adjacent mainland, wherever mangroves exist. The Cozumel Yellow Warbler is not a Mangrove Warbler, but is abundant throughout the island. Females proved very difficult to separate in life from male *D. æstiva* in winter plumage. The song is a finer, richer affair than that of our Yellow Warbler.

Dendroica discolor (Vieillot).—The Prairie Warbler was seen on several occasions. It will be recalled that *D. cærulescens* has been captured on Swan Island and Cozumel Island.

Dendroica palmarum palmarum (Gmelin).—The Palm Warbler was fairly common.

Euethia olivacea intermedia Ridgway.—This little Grassquit is more closely related to the West Indian race than to the continental *pusilla*. It is common near towns and clearings, but was rarely found in the unsettled parts of the island.

Cardinalis cardinalis saturatus Ridgway.—The Cozumel Cardinal is entirely worthy of separation from mainland forms. It is a very slightly larger bird with stouter feet. The adult male is darker than *yucatanicus* especially on the back. My females are also distinctly darker above. I was surprised that Mr. Ridgway did not regard the female as different in coloration, until I examined an old skin received many years ago in exchange from the National Museum. This skin is not darker, but looks suspiciously as though the bird had been put in alcohol after being shot, and skinned later, which might account for some fading.

Cæreba caboti (Baird).—The Cozumel Banana-quit is most closely related to the species found in the Bahamas and on Old Providence and St. Andrews Islands in the Caribbean. It is a fairly common bird, with habits and notes like those of the continental *C. mexicana*.

Spindalis benedicti Ridgway.—As is well known, this genus is otherwise confined to the Greater Antilles. I did not find the present species at all common, and saw only one female. This bird did not have the usual Cozumel curiosity and seemed shy and wild. It was not in song and not breeding, however, which may in part account for its apparent scarcity. The call-note was a weak, reedy lisp, suggesting notes of various species of *Chlorospingus*.

Piranga roseo-gularis cozumelæ Ridgway.—The series collected would seem to indicate that this is the least strongly characterized of the island subspecies. The bird is fairly common, but does not differ in habits and notes from the typical form.

Icterus cucullatus cozumelæ Nelson.—I was much surprised at the rarity of this species, which cannot be overlooked on the mainland, as I saw only a single pair during my entire stay. These were scared away by a passerby on horseback before I could collect them.

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