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TABOGA, TABOQUILLA, AND
URAVÁ, PANAMÁ

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THE BIRDS OF THE ISLANDS OF TABOGA, TABOQUILLA, AND URAVÁ, PANAMÁ

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(WITH THREE PLATES)

The island of Taboga lies in Panama Bay, off the Pacific entrance of the Panama Canal, slightly less than 6 miles south from Bruja Point, the nearest spot on the mainland. Taboguilla is a mile and a half north of east from Taboga, and Uravá Island is immediately adjacent to Taboga on the southwest, the two being separated by a narrow channel. An islet, El Morro, on the northeast, is in reality a part of the larger island, as the two are joined by a sandy beach that is covered at high tide. The pleasant town of Taboga (pl. 1, fig. 1), crowded between the inland hills and the beach, has narrow streets terraced one above the other, with Restinga, a tourist development especially popular on weekends, situated along the sandy beach at its northern extension. There are few houses outside the town, except for the installations of the Air Force on the summit of the island for the operation of a radio beacon. On Taboguilla and Uravá there are small houses used by farmers who come from the larger island, but there is now no permanent population.

Although I have not made exhaustive search into the history of the Spanish use of Taboga, it appears that it was settled early, as would be expected from its reputation for healthy and pleasant living conditions as a result of its lack of mosquito-breeding swamplands and its location in the cooling passage of the trade winds. Vázquez de Espinosa, who traveled through the Spanish part of the New World for ten years at the beginning of the seventeenth century and wrote in meticulous detail of what he saw, does not mention Taboga in his account of Panamá, a circumstance that perhaps may mean that at that early date the island was merely the site of fincas, or perhaps was not permanently occupied. The buccaneer captains Sawkins and Sharp, accompanied by their physician Lionel Wafer, in May 1680 are said to have landed for a time on Taboga to rest in the dry-season homes of the Spaniards, so that apparently there was a small settlement then.

From this early date onward Taboga was noted as a resort for convalescents and for those who sought relief from the humid heat of the city of Panamá. In World War II the islands were strongly fortified, with a considerable concentration of military forces, which have left heavy mark on the natural features, though now the shelters and stations are abandoned and have in considerable part disappeared. Fortunately camouflage demanded preservation of cover, so that parts of the forest escaped destruction, and the abundant plant growth of the rainy seasons has gone far in covering these man-made scars.

In journeys across the open Bahía de Panamá, beginning in 1921, I have had views of Taboga and its smaller neighbor islands on various occasions, both from the sea and from the air, and have been intrigued by the possibilities that the bird life there might offer. Naturalists have collected the reptiles, amphibians, and plants, but little has been recorded of the birds, except the belief that, aside from the nesting sea birds, they were practically nonexistent. Opportunity to visit Taboga came in the dry season of 1952 when, after an excursion to the Río Indio on the Caribbean coast of Panamá, I had ten days free before I had to return to an administrative desk in Washington.

Through the friendly interest of Brig. Gen. E. C. Kiel and the assistance of Col. Philip D. Coates, Commanding Officer, Albrook Air Force Base, and Lt. Col. J. M. Martin, in charge of transportation, I crossed to Taboga on an Air Force crash boat the morning of March 14, returning to Balboa on March 24 on an LSM of the same service. W. M. Perrygo, of the U. S. National Museum, who has been my companion in work in Panamá since 1946, accompanied me. While on the island we were particularly indebted to Sgt. Joe E. Curlott, Jr., stationed on Taboga, who took us by truck on several occasions to the summit of the island and lightened our work in other ways by transportation during the strong heat of midday. We lived comfortably and pleasantly in the Hotel Taboga, of Julio Chu and his brother. On March 18 and 20 we crossed to Taboguilla Island and on March 22 visited Uravá. Our other days were spent on Taboga. In all we secured 127 birds, representing 23 species (with 2 additional subspecies).

Taboga Island is about $2\frac{1}{2}$ miles long by $1\frac{1}{4}$ miles wide, with a cove on each side that constricts the diameter considerably near the center. The high point on the island (pl. 1, fig. 2) rises to 1,010 feet, with a steep face on the west, a more gradual one to the east, and sloping, low-lying flats to the north. Another low area makes connection with the southwestern section, where a steep hill rises to 665 feet (pl. 2, fig. 2). The southern side has a considerable tract of original forest,

rather difficult of access, with other forested areas on the west and along the bases of the steeper slopes. The higher levels above 800 feet on the northern portion and above 450 feet on the southwest part are areas of poor, stony soil, with many rock exposures, without forest but grown thinly to bunch grass and with occasional thickets of low bushes. There is permanent water in the higher sections that even near the close of the dry season supplies small pools in the stream beds at the bases of the hills. The village lies near the center of the eastern side of the higher section, where it receives the welcome sweep of the northeast trade winds.

Taboguilla Island (pl. 2, fig. 1) is about a mile long and two-thirds of a mile wide, rising in a peak to 610 feet. Two rocks, with summits covered with shrubs, lie off the southwest end, and an open bay on the northwest has an extensive sandy beach that is mainly covered at high tide (pl. 3, fig. 1). The island is wooded, with small clearings for cultivation. I found scanty water seeps in the lower stream beds that descend from the peak.

Uravá Island, connected with the southeastern end of Taboga by a shallowly submerged reef, has a central peak 600 feet high (pl. 3, fig. 2). It is wooded, with clearings for cultivation on the western side, where there are scanty water seeps.

Rains on the islands are reported to be heavy, while the dry season is equally dry. During March the view of the mainland was frequently obscured by smoke from fires set to burn off the brush and trees felled in clearing land for planting.

Although, as I have stated, naturalists have studied the plants, reptiles, amphibians, and mollusks of Taboga, few have given attention to its birds. The abundant avifauna of the mainland has so overshadowed the few species found on these islands that there has been little incentive to make collections on them. The earliest collector of whom I find record is Fred Hicks, who sent to the Smithsonian Institution a yellow warbler and four hummingbirds taken on Taboga on January 31, 1865. Among specimens purchased for the National Museum from the Rev. H. Th. Heyde there are five hummingbirds from Taboga taken in August and September 1888.

In the collection made by Thomas Hallinan in 1915, now in the American Museum of Natural History, there are 11 skins, including 6 species, that were taken on Taboga and Taboguilla on March 27, August 15, September 12, and December 5, all except one tropical kingbird being sea birds. Ludlow Griscom was on Taboga on February 17, 1924, in company with Thomas Barbour, W. S. Brooks, and Ned Wigglesworth. Eugene Eisenmann has visited Taboga on several

occasions during the rainy season, and I am indebted to him for notes on certain species that I did not find myself. Undoubtedly there have been other ornithologists who have made visits of a day or so, of whom I have not learned, but so far as I am aware no systematic collection of birds has been made prior to my work of 1952.

The list assembled in the present paper includes 54 forms, of which two, the large-billed hawk and the golden warbler, were found only on Taboguilla. Of the total, 21 are passage migrants, among which the black and fluttering petrels, except on rare occasions, are found only at sea. The caracara is without doubt a wanderer from the mainland.

Of those remaining, 23 are assumed to nest, while the others may do so in small numbers, but this is not certain. The small list of those that are believed to breed includes two kinds of pigeons, four of hummingbirds, and four flycatchers, the others being single representatives of their families. At least 15 times as many kinds nest on the mainland in the area visible from the summit of Taboga, which makes the small list for the islands surprising, in view of the short space of ocean involved. The lack of the ruddy ground dove is especially noticeable, as is the absence of ant-shrikes, additional flycatchers, tanagers, and other members of the sparrow family. It is possible, of course, that some forms have become extinct through human occupation, but this could hardly apply to the smaller, inconspicuous species of birds that on the mainland of Panamá live regularly around fields and gardens.

Relationship of the avifauna on the whole seems close to that of the Pearl Islands, out of sight below the horizon to the southwest. This is demonstrated in the hummingbird *Amazilia edward margaritarum*, which is the form of the larger islands in the Perlas group and is distinct from the representative race of this species found on the adjacent mainland. It is revealed also in the elainea, and in the saltator, described here as new, that are nearer to the island form in each case than to that of the mainland. The vireo *Vireo flavoviridis insulanus*, which is found on the mainland from the Canal Zone eastward, as well as in the Pearl Islands, seems to attain the maximum of its subspecific characters on Taboga and its neighboring islets.

According to paleogeographers the existing land connection between North America and South America through the Isthmus of Panamá has been continuous since its establishment in Late Pliocene time. It is supposed that the land area on the Pacific side of the isthmus may have been more extensive in the early stages, so that the mainland may have included the area where we now find the islands under discussion. On this premise, purely as a matter of speculation,

the recession of the shoreline, leaving Taboga, Taboguilla, and Uravá as islands, may have come early, toward the end of the Pliocene or in early Pleistocene time. The islands, in the beginning, may have been barren and rocky, like some of the other islands I have seen along this coast—Pelado, off the mouth of the Río Chimán, for example. As soil formed and plant and tree cover developed there would be suitable habitat for the small birds that reached the islands by casual means. The water barrier, though not wide, would seem to have prevented many of the common mainland forms from crossing. Whether this has been true history or not, isolation over a long period seems to have been the factor that has so greatly restricted the variety in the present bird life of this island group to a point even below what is found in the Pearl Islands farther out in the Gulf of Panamá.

It is obvious that there are many additions to be made to this list of the birds of Taboga, Taboguilla, and Uravá in the form of migrant species that come regularly to the mainland of Panamá. In fact, islands such as these, because of their limited area, are usually better points for the detection of casual wanderers of unusual species than the more extensive habitats of the mainland. We may expect therefore to encounter here any and all of the migrants that reach Panamá. I would suggest also a visit to the forested part of the peak above the village of Taboga, which we did not cover thoroughly because of lack of time.

There is probability also of regular occurrence at other periods than the dry season of various species of the indigenous birds of Panamá. When I remarked on the absence of parrots, residents of Taboga told me that small pericos (probably the Tovi parakeet, *Brotogeris jugularis*) were common at times. It would be surprising also if the blue-headed parrot, or casanga, did not come to Taboga, as it does to San José Island in the Perlas Archipelago. Dr. Eugene Eisenmann tells me that he saw a pair of one of the small native swifts of the genus *Chaetura* on Taboga on July 5, 1951. One evening in the village I had a glimpse of a nighthawk flying near the sea, but was not certain of the species.

Mention must be made of a number of specimens to be found in the Rothschild Collection in the American Museum that are marked "Taboga" but that obviously are attributed erroneously to that island. These are trade skins bearing original tag labels cut from rather stiff cards, on which the name and address of Bartlett, of London, presumably the dealer Edward Bartlett, had been printed, this being evident when various of the sections are examined together. Zimmer¹

¹ Amer. Mus. Nov., No. 1246, Dec. 17, 1943, p. 10.

has commented on two of these supposed Taboga specimens, which actually are *Tangara cayana flava*, a small tanager of northeastern Brazil, and mentions others. One of these is a skin of another tanager, *Tangara musica*, apparently the race *intermedia* of northern South America. Another bird bearing this locality is a skin of *Zonotrichia capensis*, which is discussed by Chapman² in his review of this species. The specimen is small and pale in color, so that Chapman believed it to be an undescribed subspecies of uncertain locality. I saw this skin several years ago, noting its peculiarities, and recently have studied it in detail. Careful examination shows that it is a Baía trade skin, the legs being interlocked by crossing twice at the tibiotarsal joint as usual in this type of study skin. With this in mind it became obvious that the bird is merely a somewhat light-colored example of *Zonotrichia capensis matutina* (Lichtenstein) of eastern and southern Brazil. The sex is not recorded, but the small size indicates that it is a female. The legs are so concealed in the feathers that the peculiarity of crossing mentioned is visible only on close examination, so that originally I overlooked it, as apparently Dr. Chapman did also. It is obvious that all these South American birds bear an erroneous locality.

In passing Taboga at sea in previous years I had noted the open, grass-grown, higher slopes which are exactly similar to the habitat of *Zonotrichia capensis orestera* of Cerro Campana on the mainland not far away. And the chance that this sparrow might be found was one of the possibilities that I had in mind in planning the visit to Taboga. However, Perrygo and I covered the high ridges in detail but found nothing, though we were impressed by the suitability of the habitat, with the exception that the highest levels reached only a little over 1,000 feet, which is below the 1,800- to 3,000-foot range where we found these sparrows on Campana.

ANNOTATED LIST

Family HYDROBATIDAE: Storm Petrels

LOOMELANIA MELANIA (Bonaparte): Black Petrel

Procellaria melania BONAPARTE, Compt. Rend. Acad. Sci. Paris, vol. 38, 1854, p. 662 (coast of California).

The black petrel is seen regularly by day offshore in the Bahía de Panamá, and apparently at night it may roam closer to land. On the evening of March 21, a few minutes after I had captured the least

² Bull. Amer. Mus. Nat. Hist., vol. 77, Dec. 10, 1940, pp. 410-411, fig. 6.

petrel mentioned in the following account, a black petrel came blundering into the brightly lighted, open dining room of the Hotel Taboga and dropped to the floor beside my table. It was captured without difficulty and added to the collection, giving me another of my desiderata. On March 24 at noon, while crossing to Balboa, I saw a black petrel about 5 miles off the entrance of the Canal.

This species, like the following, is marked by plain, dark coloration, but is larger.

HALOCYPTENA MICROSOMA Coues: Least Petrel

Halocyptena microsoma COUES, Proc. Acad. Nat. Sci. Philadelphia, March-April [June 30] 1864, p. 79 (San José del Cabo, Baja California).

On various occasions in recent years I have observed the least petrel offshore in the Bahía de Panamá and have looked forward to some opportunity that would bring one to hand. While sitting in the open dining room, overlooking the sea, in the Hotel Taboga on the evening of March 21, I saw what I thought was a good-sized bat flutter against the inner wall and drop behind an open door. Going over to investigate I captured one of these small petrels. The ceiling and solid rear wall were painted white, and the place was brilliantly lighted by electric light.

The species is easily identified by its small size and its uniformly dark color without markings of white.

Family PELECANIDAE: Pelicans

PELECANUS OCCIDENTALIS CAROLINENSIS Gmelin: Eastern Brown Pelican

Pelecanus carolinensis GMELIN, Systema naturae, vol. 1, pt. 2, 1789, p. 571 (Charleston Harbor, S. C.).

The brown pelican is found by scores and hundreds in the waters adjacent to Taboga, and it is unusual to look out over the sea without having one or many in view. There is a considerable nesting colony on the northwestern and western slopes of the island, the nests being in trees on the steep, almost precipitous slopes, 400 to 800 feet above the rocky shores (pl. 1, fig. 2). Breeding is somewhat irregular, as we observed well-grown young on February 3, and as late as March 15 found birds that had completed nests but had not yet laid. The two taken were such a mated pair, while in a nest nearby, only 6 feet from the ground on a very steep slope, I took a set of three eggs about one-fourth incubated. These are considerably stained with blood. They measure 73.0 by 51.0, 74.3 by 49.4, and 74.5 by 51.4 mm.

We found other nesting colonies in trees on rocky islets, off the northwestern shore of Taboguilla, and on Uravá recorded small breeding groups in the trees around the base of the slope leading to the high point of the island. From a distance the slopes housing the colonies appear white from the excrement of the birds.

Pelicans fed on the great schools of small fishes that were scattered irregularly for miles over the sea. The plunging of the diving birds was heard often when we were near the shore, though the birds themselves might be hidden by branches of the low forest in which we were working. When the schools of sardines were stationary the pelicans often rested on the water in close flocks, stabbing at the fish with their great bills. The pelican is known here to the fishermen as the *quacco*.

The hindneck in the two taken is definitely darker brown than the average of *carolinensis* from southeastern United States, but otherwise the birds appear similar. Measurements are as follows: Male, wing 512, tail 135, culmen from base 311, tarsus 79 mm.; female, wing 485, tail 152, culmen from base 284, tarsus 75 mm. In the darker coloration of the hindneck these two resemble specimens I have seen from the Pearl Islands.

Family SULIDAE: Boobies, Gannets

SULA NEBOUXII NEBOUXII Milne-Edwards: Blue-footed Booby

Sula neboxii A. MILNE-EDWARDS, Ann. Sci. Nat. Zool., vol. 13, art. 4, April 1882, p. 37, pl. 14 (Pacific coast of America).

On March 18 I saw a blue-footed booby fly from a rocky islet on the western side of Taboguilla Island. In the American Museum of Natural History there are two specimens taken by Thomas Hallinan, one marked Taboga, March 27, 1915, and one labeled Taboguilla, September 12, 1915.

SULA LEUCOGASTER ETESIACA Thayer and Bangs: Colombian Brown Booby

Sula etesiaca THAYER and BANGS, Bull. Mus. Comp. Zoöl., vol. 46, June 1905, p. 92 (Gorgona Island).

On March 18 I recorded a dozen of these boobies resting on a rock ledge on a small islet off the western side of Taboguilla Island. Several were seen here on March 20. Thomas Hallinan secured three on Taboguilla, September 12, 1915, and two on Taboga, December 5, 1915, the specimens now being in the American Museum of Natural History.

Family PHALACROCORACIDAE: Cormorants

PHALACROCORAX OLIVACEUS OLIVACEUS (Humboldt): Southern Olivaceous Cormorant

Pelecanus olivaceus HUMBOLDT, in Humboldt and Bonpland, Recueil d'observations de zoologie et d'anatomie comparée, 1805, p. 6 (Magdalena River, lat. 8° 55' N., Colombia).

The great bands of cormorants found regularly over the Bay of Panamá pass near Taboga at times in their search for fish. Many were recorded on February 3. During our visit in March, daily in late afternoon a few perched in trees above the water on the outer side of the islet of El Morro, off Restinga. I recorded a few around Taboguilla on March 18 and 20.

Family FREGATIDAE: Frigate-birds

FREGATA MAGNIFICENS Mathews: Magnificent Frigate-bird

Fregata magnificens MATHEWS, Austr. Avian Rec., vol. 2, Dec. 19, 1914, p. 120 (Barrington Island, Galápagos Islands).

In the latter part of March many hundreds of frigate-birds roosted at night in trees on the steep western and northwestern sides of Taboga, and I noted smaller groups on tree-covered islets off the northwestern side of Taboguilla. At dawn the birds rose from their rookeries, towered high in air, and then crossed in front of the village over the sea, sailing with set wings into the steady breeze. Often they were spread out in a broad line over a mile long, spaced 50 to 200 feet apart. Similar flights were noted in evening when the birds were searching for food or were returning to their roosts. At such times their long-winged, angular forms seemed to fill the sky, a sight that remains in memory.

They are agile fishermen, circling at high speed and dropping swiftly to pick minnows off the tops of the waves. As they pass they snap at the fish, the head on the relatively long neck swinging far underneath. The bill is then brought forward to normal position, projecting ahead, and the fish is swallowed, all without check in speed of flight. All that I observed were fishing on their own, no instances of piracy on other fish-eating birds being noted. On March 23 I recorded one bird with the red throat pouch developed, but most were in nonbreeding condition at this time.

A male taken at Taboguilla on December 5, 1915, by Thomas Hallinan is now in the collection of the American Museum of Natural History.

Family ARDEIDAE: Herons, Bitterns

CASMERODIUS ALBUS EGRETTA (Gmelin): American Common Egret
Ardea Egretta GMELIN, Systema naturae, vol. 1, pt. 2, 1789, p. 629 (Cayenne).

Eight to a dozen egrets were usually to be found on rock shelves or ledges above the sea on the western side of Taboga. I saw one fly in from the mainland to Taboguilla, and recorded others on Uravá.

NYCTANASSA VIOLACEA CALIGINIS Wetmore: Panamá Yellow-crowned
Night Heron

Nyctanassa violacea caliginis WETMORE, Proc. Biol. Soc. Washington, vol. 59, Mar. 11, 1946, p. 49 (Isla San José, Archipiélago de las Perlas, Panamá).

There is an adult specimen of this race in the American Museum of Natural History taken on Taboga on August 15, 1915, by Thomas Hallinan. On March 18 I saw an adult very near at hand on the rocky northern end of Taboguilla Island. Because of its dark color I was satisfied that it was the present form. On March 21 a yellow-crowned night heron called at dawn on the shore below the hotel on Taboga.

Family THRESKIORNITHIDAE: Ibises, Spoonbills

GUARA ALBA (Linnaeus): White Ibis

Guara alba LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 145 (South Carolina).

One specimen of the white ibis in the collection of the American Museum of Natural History was taken on Taboguilla, December 5, 1915, by Thomas Hallinan.

Family CATHARTIDAE: New World Vultures

CORAGYPS ATRATUS (Meyer): Black Vulture

Vultur atratus MEYER, Zool. Annal., vol. 1, 1794, p. 290 (St. Johns River, Fla.).

The black vultures on Taboga Island in the main were beach scavengers that frequented the water front at the village. Sometimes as many as 50 congregated about one huge dead fish cast up on the sand.

CATHARTES AURA (Linnaeus): Turkey Vulture

Vultur Aura LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 86 (Veracruz, México).

Turkey vultures appeared daily in the skies of Taboga and were seen also over Uravá. Usually I observed them over the high, open slopes of the island summit. There were never many of them, 12 to

14 being the maximum number for one day. Supposedly, at least two forms were represented, one resident and one migrant from the north.

Family ACCIPITRIDAE: Hawks, Old World Vultures, Harriers

BUTEO PLATYPTERUS PLATYPTERUS (Vieillot): Northern Broad-winged Hawk

Sparvius platypterus VIEILLOT, Tabl. Encycl. Méth., vol. 3, 1823, p. 1273 (Schuylkill River, Pa.).

Migrant broad-winged hawks were seen on Taboguilla on March 20, on Uravá and Taboga on March 22, and on Taboga on March 23. These were evidently strays from the main northern flight which passes over the mainland. It is interesting to note that while they come to Taboga and the adjacent islands which are in sight of the Panamanian coast, as yet none has been recorded on the Pearl Islands, which lie farther out at sea.

BUTEO SWAINSONI Bonaparte: Swainson's Hawk

Buteo Swainsoni BONAPARTE, A geographical and comparative list of the birds of Europe and North America, 1838, p. 3 (Fort Vancouver, Wash).

On March 20 several of these hawks were observed passing north over Taboguilla Island. The line of flight of this species in coming north from South America, like that of the broad-winged hawk, lies over the Panamanian mainland.

BUTEO MAGNIROSTRIS (Gmelin): Large-billed Hawk

Falco magnirostris GMELIN, Systema naturae, vol. 1, pt. 1, 1788, p. 282 (Cayenne).

On March 18 on Taboguilla Island I saw one of these birds in high forest on the upper slopes, obtaining a distinct view of the brown-banded tail. They were said to be rare here, and I had no report of them on Taboga. The subspecies must remain uncertain until a specimen has been obtained.

Family PANDIONIDAE: Ospreys

PANDION HALIAETUS CAROLINENSIS (Gmelin): American Osprey

Falco haliaëtus carolinensis GMELIN, Systema naturae, vol. 1, pt. 1, 1788, p. 263 (South Carolina).

Ospreys were seen along the shores of Taboga on March 17 (two recorded), 21, and 22. On the last date one rested in a tree near the summit of El Morro.

Family FALCONIDAE: Falcons, Caracaras

CARACARA CHERIWAY (Jacquin): Caracara

Falco cheriway JACQUIN, Beyträge zur Geschichte der Vögel, 1784, p. 17, pl. 4, (Aruba and the coast of Venezuela).

On March 17 we flushed a caracara on a high open slope on Taboga. The record is interesting as it indicates wandering from the distant mainland on the part of this bird. As two races, typical *cheriway* and *audubonii*, are recorded from Panamá, the subspecies is uncertain.

The usual generic name for this group, *Polyborus* Vieillot, 1816, is found to be a synonym of *Circus*, so that it must be replaced by the next available term, *Caracara* Merrem, 1826.³

FALCO PEREGRINUS ANATUM Bonaparte: Peregrine Falcon

Falco Anatum BONAPARTE, A geographical and comparative list of the birds of Europe and North America, 1838, p. 4 (Great Egg Harbor, N. J.).

On Taboga on March 15 we watched two beautiful peregrines for some time as they circled over the higher slopes. They were male and female, shown by their difference in size, though there was no indication that they were paired. Early on the morning of March 22 another appeared over these same high slopes. This one, in play, stooped repeatedly at a turkey vulture, to the very obvious alarm of that poor bird, which swooped and turned in useless efforts to escape.

The peregrine falcon is of regular occurrence on the Pacific side of central Panamá, and it is of interest to record them on this island in the sea.

FALCO ALBIGULARIS ALBIGULARIS Daudin: Bat Falcon

Falco albigularis DAUDIN, Traité . . . d'ornithologie, vol. 2, 1800, p. 131 (Cayenne).

On March 14 a bat falcon rose from the forest at the southern end of Taboga and circled over the summit. Presumably this was a resident bird.

Family SCOLOPACIDAE: Snipe, Woodcock, Sandpipers

ACTITIS MACULARIA (Linnaeus): Spotted Sandpiper

Tringa macularia LINNAEUS, Systema naturae, ed. 12, vol. 1, 1766, p. 249 (Pennsylvania).

This common migrant was seen on Taboga and Taboguilla, March 18, and at Restinga, on Taboga, March 19.

³ See Hellmayr and Conover, Catalogue of the birds of the Americas, pt. 1, No. 4, Aug. 19, 1949, p. 281; and Twenty-fifth Supplement to the American Ornithologists' Union Check-list of North American Birds, Auk, vol. 67, 1950, p. 369.

Family LARIDAE: Gulls, Terns

LARUS ATRICILLA Linnaeus: Laughing Gull

Larus atricilla LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 136 (Bahamas).

In crossing from Balboa to Taboga on February 3 early in the morning I noted scattered individuals and small groups of laughing gulls for the entire distance. On my return, in late afternoon, hundreds had come from farther out in the bay. All were in winter dress with no indication of molt. The main body must have moved north when we returned on March 14, as none were seen during the passage on that date. On our return on March 24 I noted one midway, and four or five others, all in winter dress, resting on a buoy at the entrance to the Panama Canal.

THALASSEUS MAXIMUS MAXIMUS (Boddaert): American Royal Tern

Sterna maxima BODDAERT, Table des planches enluminées, 1783, p. 58 (Cayenne).

On March 15 and 16 I saw one of these terns resting on a buoy off Restinga.

Family COLUMBIDAE: Pigeons, Doves

COLUMBA CAYENNENSIS PALLIDICRISSA Chubb: Pale-vented Pigeon

Columba pallidicrissa Chubb, Ibis, January 1910, p. 60 (Costa Rica).

A number of these pigeons were noted during our work on Taboga, and they apparently nested there as I saw a male in display flight on March 17. They move about, however, as Perrygo saw one rise, tower high in air, and then fly toward the mainland. They were so shy that I did not succeed in obtaining specimens, the identification being based on specimens taken elsewhere on the Pacific side of Panamá.

LEPTOTILA VERREAUXI VERREAUXI (Bonaparte): Verreaux's Dove

Leptotila verreauxi BONAPARTE, Compt. Rend. Acad. Sci. Paris, vol. 40, 1855, p. 99 (Colombia).

This pigeon was common on all three islands, specimens being taken on Taboga and Taboguilla. They were found in second-growth thickets and in forest. Although they were hunted to some extent, they were fairly tame. Though these doves usually remained under cover, I saw them flying between the trees at Restinga and the wooded islet of El Morro, a distance of 300 meters or more, wholly in the open. This readiness to fly over water, since the birds crossed directly when the beach that connects the islet with Taboga at low tide was

submerged, made me speculate on the possibility of longer flights to the mainland.

On Taboguilla they came to drink at water seeps on the rocky slopes back of the beach. Two males taken here on March 20 had the crop glands developed, indicating that they were near breeding.

The four males and one female prepared as specimens from Taboga and Taboguilla are similar to skins from the mainland of Panamá.

Family CUCULIDAE: Cuckoos, Roadrunners, Anis

CROTOPHAGA ANI Linnaeus: Ani

Crotophaga Ani LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 105 (Jamaica).

The ani was fairly common about the small cultivated fields of all three islands. I collected two females on Taboga, March 16, that show the same tendency toward enlarged keel on the bill that I have noted elsewhere⁴ in birds from the Pearl Islands and from the adjacent mainland.

Family APODIDAE: Swifts

CHAETURA PELAGICA (Linnaeus): Chimney Swift

Hirundo Pelagica LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 192 (South Carolina).

We recorded one of these swifts in morning and one in evening on Taboga on March 15. I have seen chimney swifts from time to time in northward migration in central Panamá, and it is interesting to record one so far at sea.

Family TROCHILIDAE: Hummingbirds

CHLOROSTILBON ASSIMILIS Lawrence: Allied Emerald Hummingbird

Chlorostilbon assimilis LAWRENCE, Ann. Lyc. Nat. Hist. New York, vol. 7, January 1861, p. 292 (Atlantic slope of Panamá, near Panama Railroad).

During March this was the most common of the hummingbirds on Taboga Island, where it was found about flowers, usually low down near the ground. In town it came regularly to patios, and to the small plaza on the water front, to search the blossoms of ornamental shrubbery, and often perched fearlessly on low wires over the narrow streets. We saw them in equal number on Taboguilla and recorded several crossing from Taboga to Taboguilla, flying low over the water surface (as did the large bees that made the same flight). Our speci-

⁴ Smithsonian Misc. Coll., vol. 106, No. 1, Aug. 5, 1946, p. 40.

mens are identical with those from the Pacific side of Panamá, and it is probable that these hummers move regularly between the islands in the Gulf of Panamá and the mainland. Years ago W. W. Brown, Jr., noted them in flight between the continental shores and Rey Island.

There are three old specimens from Taboga in the National Museum, one taken by Hicks on January 31, 1865, and two by Heyde and Lux, one marked August and the other September 1888.

Though Peters⁵ treats *assimilis* as a race of *Chlorostilbon canivetii*, I feel certain that he was influenced in this decision by general resemblances and that these two are specifically distinct. In both, the males are mainly metallic green and the females whitish below, so that they look alike in general appearance. Both sexes of *canivetii* have the lower mandible flesh-colored except at the tip, and in the males the tail is deeply furcate. While *C. c. salvini* of Costa Rica seems to bridge the gap toward *assimilis* in darker bill, the base of the mandible remains uniformly light-colored. Zimmer⁶ in a more recent study has gone much farther by placing all the emerald hummers under a single specific name, *Chlorostilbon mellisugus*, a procedure that simplifies completely the handling of names but one that I am not convinced expresses the true relationships. The problem, like that involving the crows of the world, is one that is highly complicated because of a general uniformity in color. The relationships of *assimilis* seem close to the black-billed forms of northern South America. I treat it here, temporarily at least, as specifically distinct.

AMAZILIA TZACATL TZACATL (De la Llave): Rieffer's Hummingbird

Trochilus tzacatl DE LA LLAVE, Registro Trimestre, vol. 2, No. 5, 1833, p. 48 (México).

I saw a Rieffer's hummingbird distinctly on Taboga, March 23, the only one that we recorded.

AMAZILIA EDWARD MARGARITARUM (Griscom)

Saucerottia edwardi margaritarum GRISCOM, Amer. Mus. Nov., No. 282, Sept. 12, 1927, p. 4 (Isla Pedro González, Archipiélago de las Perlas, Panamá).

This hummingbird was fairly common on Taboga, where it was encountered frequently in stands of dry, woody-stemmed growth standing head high in old fields, or was observed feeding at flowers from ground level up to the tops of tall trees. We secured one and

⁵ Check-list of birds of the world, vol. 5, 1945, p. 38.

⁶ Amer. Mus. Nov., No. 1474, Nov. 10, 1950, pp. 6-12.

saw others on Taboguilla on March 20. I noted them occasionally feeding at flowers in gardens in town, and once observed one in flight between the shade trees at Restinga across to the little islet of El Morro. The white abdomen shows clearly as the birds move and serves to identify them readily.

In the collections of the National Museum there are two old specimens from Taboga, one marked January 31, 1865, by Fred Hicks, and another without date but taken probably in 1888 by H. Th. Heyde. There is also one, without date or collector indicated, in the American Museum of Natural History.

It has been a distinct surprise to find that our eight specimens from Taboga and Taboguilla are inseparable from the birds of the Pearl Islands, out of sight over the horizon to the southwest.

Material now at hand permits a clearer view of the forms of this group of hummers, showing that they are surprisingly plastic for birds of this family and allowing clear presentation of intergradation between *niveoverter* and the group of subspecies that has separated from typical *edward*. It has been a matter of much interest to find two additional populations that merit recognition. The species as a whole ranges from southeastern Costa Rica in the drainage of the Río Diquis to the lower elevations of the Chucunaque valley and Punta Garachiné in Darién. The following review of the races that may be distinguished presents them in geographic order from west to east.

Amazilia edward niveoverter (Gould) :

Trochilus (——?) *niveoverter* GOULD, Proc. Zool. Soc. London, pt. 18, 1850 (Feb. 28, 1851), p. 164 (near David, Chiriquí, Panamá).

Tail dark; blackish with more or less bluish, or violet, reflections; back strongly iridescent copper-color or bronze; under tail coverts mouse gray, edged with whitish, sometimes with a mixture of avel-laneous.

Southwestern Costa Rica (Boruca) to Chiriquí (Bugaba, Boquerón, El Volcán, El Banco, Boquete), Veraguas, and Bocas del Toro, wandering or straggling to the Canal Zone (Gatún). It is uncertain whether it is this form or the next that is found on the western side of the Azuero Peninsula.

Amazilia edward ludibunda, subsp. nov. :

Characters.—Similar to the preceding race, *Amazilia edward niveoverter* (Gould), but slightly darker green above; green of the lower back more extensive, with coppery or bronzy iridescence; under tail coverts decidedly darker.

Description.—Type, U.S.N.M. No. 400314, male, Quebrada Chitabé, 4 miles west of Pesé, Herrera, Panamá, March 30, 1948, collected by A. Wetmore and W. M. Perrygo (orig. No. 14081). Crown, sides of head, hindneck, and upper back iridescent, between grass green and Cossack green; lower back, primary and greater coverts, and rump iridescent cinnamon-rufous, producing a coppery sheen; upper tail coverts duller, more chestnut-brown, with reduced iridescence; lesser and middle wing coverts iridescent parrot green; primaries and secondaries dull violet-black; rectrices dusky slate-violet, the longer ones tipped slightly with russet; throat, foreneck, and upper breast strongly iridescent meadow green; sides bordered toward back with iridescent peacock green; lower breast, abdomen, and bordering portion of sides white; under tail coverts dark olive-gray, with a slight greenish reflection, the feathers tipped with cinnamon, the lateral ones whitish basally. Base of mandible avellaneous; rest of bill, tarsi, and feet dull black (from dried skin).

Measurements.—Males, 4 specimens, wing 51.1-53.6 (52.2), tail 28.5-29.6 (29.1), culmen from base 18.2-19.8 (19.1) mm.

Females, 2 specimens, wing 51.1-54.3 (52.7), tail 27.2-28.7 (27.9), culmen from base 19.0-19.6 (19.3) mm.

Type, male, wing 52.9, tail 29.5, culmen from base 19.6 mm.

Range.—The eastern side of the Azuero Peninsula, western Panamá (specimens examined from El Barrero and Pesé, Herrera).

Remarks.—The decidedly duller color separates this race at a glance from *Amazilia edward niveoventer*. The assumption is that it ranges over the eastern slope of the Azuero Peninsula, probably being found throughout the area during the rainy season, retreating to the foothill country, in the vicinity of heads of the streams where water is permanent, during the long dry season.

Amazilia edward collata, subsp. nov.:

Characters.—Similar to the following race, *Amazilia edward edward* (De Lattre and Bourcier), but darker green above, with coppery iridescence much reduced; tail darker; under tail coverts with brown markings duller and less in extent.

Description.—Type, U.S.N.M. No. 433638, head of Río Antón, 1,900 feet elevation, near El Valle de Antón, Coclé, Panamá, March 28, 1951, collected by A. Wetmore and W. M. Perrygo (orig. No. 16563). Crown, sides of neck, and upper back iridescent Cossack green; lower back and upper tail coverts iridescent grass green with scattered coppery reflections; rump dull citrine drab; remiges dull purplish black,

with a faint violaceous sheen; rectrices rather dull neutral red, slightly iridescent, the feathers edged lightly with fuscous, the edging showing a faint brassy sheen; throat, foreneck, upper breast, and sides shining, iridescent vivid green; lower breast and abdomen white; under tail coverts deep mouse gray, edged with whitish with some mixture of avellaneous; under wing coverts shining parrot green. Base of mandible avellaneous; rest of bill, tarsi, and toes black (from dried skin).

Measurements.—Males, 8 specimens, wing 51.1-56.0 (53.5), tail 27.5-31.0 (28.9), culmen from base 19.0-21.3 (19.8) mm.

Females, 5 specimens, wing 50.7-53.4 (51.7), tail 26.9-29.2 (28.0), culmen from base 19.9-21.0 (20.5) mm.

Type, male, wing 54.2, tail 31.0, culmen from base 19.0 mm.

Range.—Known from eastern Coclé (El Valle de Antón) to the extreme western section of the Province of Panamá (La Campana); probably ranging west to Veraguas.

Remarks.—This race in its darker tail serves as a link to connect typical *edward* of the Canal Zone with *nivcoventer* of Chiriquí. In its darker, duller back it differs from both, resembling here the blackish-tailed form *ludibunda* of the eastern side of the Azuero Peninsula. In one area of low, woody-stemmed weeds near El Valle de Antón we found these birds very abundant.

Amazilia edward edward (De Lattre and Bourcier):

Trochilus edward DE LATTRE and BOURCIER, Rev. Zool., September (November) 1846, p. 308 (Isthmus of Panamá).

Back and rump with extensive copper and bronze reflections; tail distinctly iridescent reddish brown, usually near liver brown; under tail coverts grayish olive centrally, edged widely with cinnamon-buff.

The Canal Zone (Gatún; near Juan Mina; Corozal), and adjacent sections of the provinces of Colón (Portobelo) and Panamá (to the west to La Chorrera, and to the east to Pacora and Utivé).

The specimens from Pacora and Utivé are intermediate toward the next race, *rosbyi*.

Amazilia edward rosbyi (Griscom):

Saucerottia edwardi rosbyi GRISCOM, Amer. Mus. Nov., No. 282, Sept. 12, 1927, p. 5 (Punta Garachiné, Darién, Panamá).

Lower back extensively coppery bronze like *edward*; tail golden bronze; under tail coverts cinnamon, with some markings of clay color or pinkish cinnamon on flanks, especially in females.

Eastern part of the Province of Panamá (Cerro Ultima, at 2,000 feet on the western end of Cerro Azul; Chepo; Quebrada Cauchero, at the southern base of Cerro Chucantí) to the Pacific slope of western Darién (Río Capetí; Boca de Cupe; Garachiné).

Some of the specimens from Chepo are intermediate toward *edward*.

Amazilia edward margaritarum (Griscom) :

Saucerottia edwardi margaritarum GRISCOM, Amer. Mus. Nov., No. 282, September 12, 1927, p. 4 (Isla Pedro González, Archipiélago de las Perlas, Panamá).

Closely similar to *crobyi*, but under tail coverts somewhat duller brown, being sayal brown to tawny-olive; with more brown on the flanks, particularly in females.

Archipiélago de las Perlas (Isla El Rey, Saboga, San José, Pedro González); Taboga, Taboguilla.

Differences between this form and *A. e. crobyi* in the relatively few specimens of the latter available are slight. It is possible that it may be found necessary to merge these two when more material is examined. In that event the name *margaritarum* will be used.

ANTHOSCENUS LONGIROSTRIS LONGIROSTRIS (Audebert and Vieillot)

Trochilus longirostris AUDEBERT and VIEILLOT, Oiseaux dorés . . . , vol. 1, 1801, p. 107, pl. 59 (Trinidad).

There are two specimens in the National Museum from Taboga Island taken by Heyde and Lux in September 1888. These are unquestionably the basis, through a typographical error, of Ridgway's record⁷ from "Saboga Island," that locality being in the Pearl Islands, from which this hummer has not been recorded.

A large hummingbird of this size that I saw indistinctly below the summit of Taboga on February 3 was probably this species.

Family TYRANNIDAE: Tyrant Flycatchers

MUSCIVORA TYRANNUS MONACHUS (Hartlaub): Northern Fork-tailed Flycatcher

Tyrannus (Mivulus) monachus HARTLAUB, Rev. Zool., vol. 7, 1944, p. 214 (Guatemala).

A fork-tailed flycatcher seen by Eugene Eisenmann at Restinga on Taboga, July 5, 1951, is presumed to be a straggler of the race found on the mainland.

⁷ U. S. Nat. Mus. Bull. 50, pt. 5, 1911, p. 347.

TYRANNUS TYRANNUS (Linnaeus): Eastern Kingbird

Lanius tyrannus LINNAEUS, *Systema naturae*, ed. 10, vol. 1, 1758, p. 94 (South Carolina).

Found in migration. I noted several of these kingbirds on Taboguilla, March 20, two flocks and scattered individuals on Uravá, March 22, and many on Taboga, March 22 and 23. They apparently pass directly across the Bay of Panamá, as they are common as passage migrants on the Pearl Islands.

TYRANNUS MELANCHOLICUS CHLORONOTUS Berlepsch: Lichtenstein's Tropical Kingbird

Tyrannus chloronotus BERLEPSCH, *Ornis*, vol. 14, 1907, p. 474 (Temax, Yucatán).

The tropical kingbird was common on the three islands in more open areas and several were collected. On February 3 we noted a number along the road leading to the summit of Taboga, and in March recorded them as common around the fields. On Uravá and Taboguilla they were found in open areas where clearings had been made, and elsewhere along the shore. One was taken on Taboguilla on August 15, 1915, by Thomas Hallinan.

MYIODYNASTES LUTEIVENTRIS Sclater: Sulphur-bellied Flycatcher

Myiodynastes luteiventris SCLATER, *Proc. Zool. Soc. London*, pt. 27, May 1859, p. 42 (Vera Paz, Guatemala, and Orizaba, México).

On March 20 I saw a flycatcher of this species in forest near the summit of Taboguilla but did not succeed in collecting it. When the bird is clearly observed the blackish chin and side of the throat and the yellower underparts mark this species clearly and distinguish it from the resident form of this genus, *Myiodynastes maculatus difficilis*, found commonly in the tropical zone in Panamá. The latter ranges in the Pearl Islands, but we did not find it on Taboga.

MYIARCHUS FEROX PANAMENSIS Lawrence

Myiarchus panamensis LAWRENCE, *Ann. Lyc. Nat. Hist. New York*, vol. 7, May 1860, p. 284 (Atlantic slope of Canal Zone on the Panama Railroad).

This was one of the most common of the passeriform birds, being found through the open woodland on all three islands. The birds were quiet, except for their low notes, and though not wary often remained unseen except to a keen eye. On one occasion on Taboga I saw eight at one time within 75 yards of me. They were beginning to nest at the end of March.

The series from Taboga, Taboguilla, and Uravá has the bill averaging very slightly heavier than in the mainland birds. In addition the average color of the dorsal surface is very faintly darker. In size of bill they approach specimens from the Perlas Islands. The differences are slight and there is much overlap, a fair number in the extensive series from mainland Panamá being indistinguishable.

Lawrence notes that the two specimens from which he described this bird were collected by McLeaman on the "Atlantic side of the Isthmus of Panama, along the line of the Panama Railroad."⁸

CONTOPUS VIRENS (Linnaeus): Eastern Wood Pewee

Muscicapa virens LINNAEUS, *Systema naturae*, ed. 12, vol. 1, 1766, p. 327 (South Carolina).

Two males of this migrant species were taken on Taboguilla Island, March 18 and 20. One other bird of this genus was seen on the latter date.

EMPIDONAX VIRESCENS (Vieillot)

Platyrhynchus virescens VIEILLOT, *Nouv. Dict. Hist. Nat.*, nouv. éd., vol. 27, 1818, p. 22 (near Philadelphia, Pa.).

Migrant; taken on Taboguilla Island, March 18. This bird had the lower mandible dark except at the extreme base, instead of light throughout as is the normal condition.

SUBLEGATUS GLABER ARENARUM (Salvin)

Elainea arenarum SALVIN, *Proc. Zool. Soc. London*, 1863, p. 190 (near Puntarenas, Costa Rica).

This small species is much less common than the other resident flycatchers. On March 18 I collected two females on Taboguilla Island at the edge of cultivated fields. One rested in the middle branches of a mango tree, and the other was in a bush near the ground. A small grayish flycatcher seen indistinctly on March 23 near the beach back of Restinga on Taboga Island was supposed to have been this species, but it is possible that it may have been a small elainea (*E. chiriquensis*).

The two taken are slightly darker above than the average from the mainland but are equaled in this respect by some individual specimens. In placing a name on these two I have followed the ten-

⁸ *Ann. Lyc. Nat. Hist. New York*, vol. 7, 1861, p. 295.

tative usage adopted in connection with specimens from San José and Pedro González Islands, in the Perlas group.⁹

The subspecies to be recognized in Panamá and the name to be applied to it are at present uncertain.

ELAENIA FLAVOGASTER CRISTULA, subsp. nov.

Characters.—Similar to *Elaenia flavogaster pallididorsalis* Aldrich¹⁰ but grayer, less greenish olive above; light edgings of rectrices slightly less greenish.

Description.—Type, U.S.N.M. No. 445281, male, Taboga Island, Panamá, March 16, 1952, collected by A. Wetmore and W. M. Perrygo (orig. No. 17311). Crown dark olive, the feathers margined with deep olive, a broad concealed line of white centrally, which is visible when the short crest is elevated; hindneck, back, and lesser wing coverts deep olive; rump and upper tail coverts grayish olive; rectrices dull hair brown, margined faintly externally with citrine drab; primaries, secondaries, tertials, greater and middle wing coverts fuscous-black; greater and middle wing coverts edged irregularly with dull white, forming two prominent bars; tertials margined externally with dull white; outer webs of secondaries margined lightly with primrose yellow, and of primaries with dark olive-buff; rectrices clove brown, the outer one margined indistinctly with deep olive-buff, the others edged with citrine-drab, the color more prominent toward the base of the feather; loreal area and region below eye light grayish olive, mixed with white, the latter forming an indistinct line extending from above the lores to above the anterior part of the eye; cirlet of small feathers bordering margin of eyelids white; auricular area deep grayish olive; chin, throat, and upper foreneck dull white mixed with smoke gray; an indefinitely delimited band of light grayish olive across upper breast, some of the feathers margined lightly with dull primrose yellow; lower breast and abdomen primrose yellow, becoming duller laterally to merge with the deep olive-buff of sides and flanks; under wing coverts dull primrose yellow, becoming primrose yellow on edge of wing; a broken line of clove brown inside edge of wing; axillars olive-buff; inner webs of primaries and secondaries edged with dull white. Maxilla hair brown at base, fuscous-black at tip; tarsus and toes dull black (from dried skin).

⁹ Wetmore, A., Smithsonian Misc. Coll., vol. 106, No. 1, Aug. 5, 1946, pp. 50-51.

¹⁰ *Elaenia flavogastra pallididorsalis* Aldrich, Sci. Publ. Cleveland Mus. Nat. Hist., vol. 7, Aug. 31, 1937, p. 106 (Paracoté, Veraguas, Panamá).

Measurements.—Males, 13 specimens, wing 75.4-83.3 (79.5), tail 69.5-78.2 (74.0), culmen from base 12.5-14.7 (13.7), tarsus 19.0-21.4 (20.0) mm.

Females, 6 specimens, wing 74.2-77.9 (76.0), tail 65.0-71.0 (68.4), culmen from base 12.2-14.6 (13.3), tarsus 19.5-21.3 (20.3) mm.

Type, male, wing 76.5, tail 69.7, culmen from base 12.5, tarsus 20.0 mm.

Range.—Taboga, Taboguilla, and Uravá Islands, Panamá.

Remarks.—The new race is definitely darker above than *E. f. silvicultrix* Wetmore of the Pearl Islands. The separation from the mainland form on the darker gray dorsal coloration is for some specimens an average difference. Some individuals are close to the mainland birds, but the series as a whole is distinct.

This is one of the most abundant birds on the three islands when it is found. On Taboga on February 3 we noted it commonly along the road leading to the summit of the island, and in our later work recorded it every day. By March 17 the birds were mating and preparing to nest. The wheezy songs were heard constantly through the daylight hours as this is one of the species that remains active regardless of the heat of the sun. The birds ranged in the open forest, in low second growth, and along the edge of the clearings. They were usually tame and frequently perched with the crest elevated forming an attractive silhouette. Their food was berries and drupes of various kinds, all so small in size that they were swallowed entire. The flight was tilting, and, while only moderately strong, I saw them crossing spaces of 200 to 300 yards, as for example from the trees at Restinga across the water to the islet of El Morro. We had no indication, however, that they flew longer distances.

Family VIREONIDAE: Vireos

VIREO FLAVOVIRIDIS FLAVOVIRIDIS (Cassin): Common Yellow-green Vireo

Vireosylva flavoviridis CASSIN, Proc. Acad. Nat. Sci. Philadelphia, vol 5, June 30, 1851, p. 152, pl. 11 (San Juan de Nicaragua).¹¹

Migrant. A male was taken on Taboga on March 16. It is probable that the typical form, marked by brighter green back, passes regularly through these islands in its migration between its winter home in the upper Amazon Valley and its breeding grounds in Central America.

¹¹ Originally described from four specimens from Panama City and San Juan de Nicaragua; type locality designated as "western Nicaragua" by van Rossem and Hachisuka, Proc. Biol. Soc. Washington, vol. 50, Sept. 30, 1937; and as "San Juan de Nicaragua" by Zimmer, Amer. Mus. Nov., No. 1127, June 26, 1941, p. 2.

VIREO FLAVOVIRIDIS INSULANUS Bangs: Panamá Yellow-green Vireo

Vireo insulanus BANGS, Proc. New England Zoöl. Club, vol. 3, Mar. 31, 1902, p. 73 (San Miguel Island = Isla El Rey, Archipiélago de las Perlas, Panamá).

This is one of the most common of the small breeding land birds of Taboga and its neighboring islands, being found through the forested areas and in the taller thickets near the cultivated fields. I noted a number on February 3, and during our work in the latter part of March they were recorded daily after March 16. They were usually in pairs, with males singing steadily and displaying, so that the nesting season then was beginning. They were much disturbed by our calling to attract small birds and often came within a few feet. Ten specimens were collected as follows: Taboga, March 16, 17, and 23; Taboguilla, March 18 and 20; Uravá, March 22.

The status of the race *insulanus* has been uncertain, owing to the migration of other subspecies, including typical *flavoviridis* and *hypoleucus*, through its breeding range in Panamá. It is probable that *V. f. forreri* of the Tres Mariás Islands, off the coast of northwestern México, also travels through the Republic, though specimens have not been taken to date. All four races move south after the close of the nesting season to the upper Amazon Basin, where the species is found from southeastern Colombia to northeastern Bolivia. As the breeding season approaches they return northward to their respective nesting grounds between Panamá and northern México.

Several years ago in a survey of limited material,¹² mainly from the Pearl Islands, I was unable to separate *insulanus* and *flavoviridis*, an opinion held by Zimmer¹³ on the basis of other material. A steady accumulation of specimens, however, has given a better perspective, so that now I find that the series from San José Island that I examined originally contains examples of both *insulanus* and *flavoviridis*, which explains the confusion under which I labored earlier.

Peters¹⁴ has published an excellent summary of this species, maintaining it as an entity apart from the red-eyed vireo (*Vireo olivaceus*), with which I agree. It is readily evident that these two, as well as certain related groups are closely allied, but they differ sufficiently to warrant specific separation; to merge them under one specific name causes confusion rather than orderly presentation.

¹² Smithsonian Misc. Coll., vol. 106, No. 1, 1946, p. 54.

¹³ Amer. Mus. Nov., No. 1127, June 26, 1941, p. 3.

¹⁴ Auk, vol. 48, 1931, pp. 575-587.

Although Peters (l. c.) includes birds from the Térraba valley, southwestern Costa Rica, in the breeding territory of *V. f. insulanus*, there is definite question in my mind as to whether the breeding range of this race on the mainland extends west of the Canal Zone. Apparently it is found on the Pacific slope of the mainland of Panamá from the mouth of the Río Bayano through the Canal Zone, but all that I have examined to date from the western edge of the Province of Panamá to the eastern side of the Azuero Peninsula and Veraguas are *flavoviridis*. Possibly these are migrants, but some of them seemed to be on their breeding grounds.

The race *insulanus* is definitely duller, less yellowish green above, than *flavoviridis*, and slightly duller on the sides and flanks, these being its main characters. In fact, it is the darkest of any of the four races into which the species is divided at present. The mainland specimens are very slightly brighter on the back than those from the Pearl Islands. The birds from Taboga are slightly darker than those from the islands of San José and Pedro González, so that they seem to represent the race in its most specialized form.

VIREO FLAVOVIRIDIS HYPOLEUCUS van Rossem and Hachisuka:
Northwestern Yellow-green Vireo

Vireo olivaceus hypoleucus VAN ROSSEM and HACHISUKA, Proc. Biol. Soc. Washington, vol. 50, Sept. 30, 1937, p. 159 (1,200 feet elevation in San Francisco Canyon, lat. 27°N., eastern Sonora, México).

Two females of this migrant were taken on Taboga on March 16 and 18. The form nests in northwestern México, from Sonora to Nayarít, and migrates to the upper Amazon Basin. The present report is the first record for the Republic of Panamá. In the field I did not distinguish the two taken from *insulanus*, the breeding form of the islands.

As *Vireo f. hypoleucus* was described after publication of the paper by Peters mentioned above, it is pertinent to summarize its characters here. From the adjacent *V. f. flavoviridis* the race *hypoleucus* is separated by decidedly duller green color above, thus being closer in appearance to *insulanus*. From the latter form it differs in being slightly more grayish green. Usually, the loreal area is whiter than in *insulanus*, and the sides and flanks are somewhat brighter yellowish green. *V. f. forreri* of the Tres Mariás Islands has the loreal area duller than any of the other races, it being nearly concolor with the anterior part of the pileum.

VIREO FLAVIFRONS Vieillot: Yellow-throated Vireo

Vireo flavifrons VIEILLOT, Oiseaux de l'Amérique septentrionale, vol. 1, 1808, p. 85, pl. 54 (eastern United States).

On March 17 we recorded several of these vireos, evidently passage migrants.

Family COEREBIDAE: Honey-creepers

CYANERPES CYANEA CARNEIPES (Sclater): Northern Blue Honey-creeper

Coereba carneipes P. L. SCLATER, Proc. Zool. Soc. London, 1859 (February 1860), p. 376 (Playa Vicente, Oaxaca).

Eugene Eisenmann saw two beside the road leading to the summit of Taboga on July 5, 1951. A boy told me that this bird was present on Taboguilla, but I did not find it. It is common in the Pearl Islands. This species, like the blue tanagers, often flies far above the forest trees, so that it is possible that it may cross to these islands from the mainland.

Family PARULIDAE: Wood Warblers

MNIOTILTA VARIA (Linnaeus): Black and White Warbler

Motacilla varia LINNAEUS, Systema naturae, ed. 12, vol. 1, 1766, p. 333 (Hispaniola).

Migrant, apparently fairly common. On March 17 on Taboga I saw three and collected an adult male. I saw another on March 21 and the following day noted one on the Island of Uravá.

PROTONOTARIA CITREA (Boddaert): Prothonotary Warbler

Motacilla citrea BODDAERT, Table des planches enluminées, 1783, p. 44 (Louisiana).

Migrant. I collected two females, one on the summit of Taboguilla Island, March 20, and one on Taboga, March 23. The latter was very fat.

DENDROICA PETECHIA AEQUATORIALIS Sundevall: Panamá Golden Warbler

Dendroica petechia h) *aequatorialis* SUNDEVALL, Öfy. Kongl. Vet.-Akad. Förh., vol. 26, 1869 (1870), p. 609 (Panamá City, Panamá).

On Taboguilla on March 18 and 20 we found the golden warbler fairly common, ranging from near the shore through the forested areas halfway to the summit of the island (pl. 2, fig. 1). As usual there was no difficulty in calling them, and thus they were easily seen. In careful search we did not locate any on Taboga, so that if

they occur they must be very rare. None were seen on Uravá. The present assumption is that at present they are confined to Taboguilla. It is interesting to observe that in the scarcity of mangroves they range through the forests as they do on the islands of San José and Pedro González in the Archipiélago de las Perlas.

The series of eight taken includes well-marked males which agree with available *aequatorialis* from the mainland coast, from Chico, Chimán, and Majé.

DENDROICA PETECHIA AMNICOLA Batchelder: Newfoundland Yellow Warbler

Dendroica aestiva amnicola BATCHELDER, Proc. New England Zoöl. Club, vol. 6, Feb. 6, 1918, p. 82 (Curslet, Newfoundland).

A female in molt was taken on Taboguilla on March 20. Other yellow warblers were seen in Uravá on March 22 and on Taboga on March 23, so that it was apparent that migration was in progress. To date I have record of five migrant subspecies from Panamá, of which two, *D. p. aestiva* and *D. p. amnicola*, are common, while *D. p. rubiginosa* is less often found. *D. p. morcomi* and *D. p. brewsteri* at present are represented respectively by one and two specimens.

Fred Hicks collected a yellow warbler on Taboga on January 31, 1865, according to the catalog of his collection. As the specimen cannot be found, the subspecific identity is not known.

DENDROICA CERULEA (Wilson): Cerulean Warbler

Sylvia cerulea WILSON, American ornithology, vol. 2, 1810, p. 141, pl. 17, fig. 5 (Philadelphia, Pa.).

Migrant. An adult male was taken on Taboga in an area of large trees on March 23.

Family ICTERIDAE: Blackbirds, Troupials

CASSIDIX MEXICANUS PERUVIANUS (Swainson): Southern Boat-tailed Grackle

Quiscalus Peruvianus SWAINSON, Animals in menageries, Dec. 31, 1837, p. 354 (Perú).

Resident, common, on Taboga, Taboguilla, and Uravá. This is a bird of the coastal areas that ranges back around the groves and small fields in lowlands. There was a colony in the crowns of tall coconut palms in the village on Taboga, where females were carrying food to the nests on March 19. At the same time numerous males were

in active mating display, while flocks of immature birds of the last brood ranged in company around the inland fields. At low tide scattered birds fed about pools on the shore in front of the village. A pair was taken on Taboga on March 16 and 17, and a pair on Taboguilla on March 20.

Family THRAUPIDAE: Tanagers

THRAUPIS VIRENS DIACONUS (Lesson): Northern Blue Tanager

Tanagra (Aglaia) diaconus LESSON, Rev. Zool., June 1842, p. 175 (Realejo, Nicaragua).

The blue tanager was one of the common birds on the three islands, being found in the tree-covered areas. These birds came constantly to the papaya plantations to feed on the ripening fruit, and at this season at least they did considerable damage. They were especially common on Taboguilla, where I had as many as 50 about me at one time, attracted by my calling for small birds. On such occasions they peer about, moving nervously, with soft calls. At other times they are seen in bounding flight over the trees.

The three taken on Taboga March 16 and 17, and the two from Taboguilla shot March 18, all refer to the race found from east-central Panamá (including the Pearl Islands) northward. Gyldenstolpe¹⁵ finds that the type of *Loxia virens* Linnaeus,¹⁶ which is preserved in the Zoological Museum of the University of Uppsala, is to be identified without question as an example of this species, being what has been considered the typical race from Surinam. The term *virens* therefore is taken as the species name to replace *episcopus* Linnaeus, which occurs in the same work on page 316.

PIRANGA RUBRA RUBRA (Linnaeus): Eastern Summer Tanager

Fringilla rubra LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 181 (South Carolina).

Migrant. Single birds of this species were seen on Taboga on March 18 and 21 and on Taboguilla on March 20. Natives reported that at times they came in great abundance. The full-plumaged males were known as *sangre toro*, the name given on the mainland to *Ramphocelus dimidiatus*, another red-colored tanager.

¹⁵ Kungl. Svenska Vet.-Akad. Handl., vol. 22, No. 3, 1945, p. 311.

¹⁶ Systema naturae, ed. 12, vol. 1, 1776, p. 303.

Family FRINGILLIDAE: Grosbeaks, Finches, Buntings

SALTATOR ALBICOLLIS MELICUS, subsp. nov.

Characters.—Similar to *Saltator albicollis isthmicus* Sclater¹⁷ but with larger, heavier bill; sides of head grayer; streak on either side of throat averaging darker; flanks averaging darker; dorsal surface of tail, and upper tail coverts averaging slightly darker gray.

Description.—Type, U.S.N.M. No. 445589, male, Taboga Island, Panamá, March 19, 1952, collected by A. Wetmore and W. M. Perrygo (orig. No. 17356). Hindneck, back, and wings olive-citrine, the crown duller, being yellowish olive; outer webs of primaries and secondaries edged with yellowish citrine; rump and upper tail coverts dark olive-gray; rectrices dull mouse gray, edged with dark olive-gray, the shafts blackish, the two outer feathers edged narrowly with whitish on lower surface; remiges dark mouse gray; edge of upper eyelid narrowly Marguerite yellow, becoming dull white in front of eye, and broadening above lores to extend to the nasal fossa; lores, space below eye and ramal area deep mouse gray, becoming deep grayish olive over auriculars; throat white, bordered externally by a fairly broad line of dark greenish olive, which becomes iron gray where it borders the mandibular rami; rest of under surface, in general, white, washed with light yellowish, except in center of abdomen, changing to light pinkish buff on under tail coverts and the adjacent posterior section of the flanks; breast streaked with dark greenish olive, forming an indefinite chest band; sides of breast and neck adjacent to this band yellowish olive; streakings fewer and much narrower on lower breast, changing to dark olive-gray and becoming heavier on flanks; edge of wing barium yellow; under wing coverts and axillars cream-buff; inner webs of primaries whitish basally. Bill slate black; tarsus dull benzo brown; toes fuscous-black; claws slate black (from dried skin).

Measurements.—Males (7 specimens), wing 88.2-92.5 (90.8), tail 79.3-85.0 (82.4); culmen from base 18.8-20.9 (19.8), depth of bill at base 12.3-13.0 (12.6), tarsus 22.3-24.1 (23.2) mm.

Females (4 specimens), wing 85.7-90.0 (87.5), tail 79.4-83.6 (81.0), culmen from base 19.4-20.0 (19.6), depth of bill at base 12.6-13.7 (12.9), tarsus 22.8-24.8 (23.7) mm.

Type, male, wing 91.8, tail 82.9, culmen from base 18.8, depth of bill at base 13.0, tarsus 24.1 mm.

Range.—Taboga Island, Panamá.

¹⁷ *Saltator isthmicus* P. L. Sclater, Proc. Zool. Soc. London, August 1861, p. 130 (Isthmus of Panamá).

Remarks.—The more swollen bill, while not seeming of great extent in actual measurement, is easily apparent on comparing skins. In 21 males of *S. a. isthmicus* the depth of the bill at base measures 11.2-12.5 (11.8) and in 14 females 11.5-12.8 (12.2) mm. In other dimensions *melicus* and *isthmicus* are identical. In general appearance the new race is similar to *isthmicus* of the adjacent mainland, and is more remote from *speratus* of the Perlas Islands. The latter is closer to *striatipictus* of Colombia, being another indication of affinity in the avifauna of that island group with northwestern South America.

The name of the form described from Taboga is given in allusion to the sweet-voiced song.

We heard the notes of these birds on our first visit to Taboga on February 3 and later found them fairly common but shy. They ranged in the thickets bordering the fields, or in the scrub on the lower slopes, where we found them most active early in the morning. In such areas males sang from elevated perches near the tops of trees, under open cover, while others ranged through the leaf-covered branches often uttering low notes as they searched for food. At times they decoyed rather easily, and on other occasions they were quite shy, so that it took considerable work to secure our series of 11 skins. The clear song, rather cardinal-like in its tone, was the principal pleasing bird note of the island, usually heard in contrast to the rasping calls of the elainea. The flight was rapidly tilting and covered only short distances at a time. At the end of March the birds were about to nest. One taken March 16 was an immature barely grown, with yellow-tipped bill, so that the breeding season may be irregular.

As five races of this saltator are now recognized in the Republic of Panamá, it will be of interest to list them, with their characters and their distribution.

Saltator albicollis striatipictus Lafresnaye:

Saltator striatipictus LAFRESNAYE, Rev. Zool., vol. 10, March 1847, p. 73 (Cali, Valle de Cauca, Colombia).

Undersurface clearly and predominantly white, with little wash of yellowish green; streakings slightly grayer.

Trinidad, northern Venezuela, and northern Colombia; Cana, Darién. (Apparently of restricted range in Panamá.)

Saltator albicollis speratus Bangs and Penard:

Saltator striatipictus speratus BANGS and PENARD, Bull. Mus. Comp. Zoöl., vol. 63, June 1919, p. 33 (Saboga Island, Archipiélago de las Perlas, Panamá).

Similar in general appearance to *striatipictus*, but with more pronounced yellowish-green wash on under surface; slightly less heavily streaked.

The Pearl Islands, where recorded from El Rey, San José, Pedro González, Moreno, Saboga, and Viveros.

This form is slightly intermediate toward *isthmicus* but is definitely more closely allied to *striatipictus*. It is of particular interest as another element in the avifauna of the Pearl Islands that seems to have been derived from northwestern Colombia.

Saltator albicollis isthmicus Sclater:

Saltator isthmicus P. L. SCLATER, Proc. Zool. Soc. London, August 1861, p. 130 (Isthmus of Panamá).

Similar to *striatipictus*, but strongly washed with olive-green below, with the streaks more olive than dark gray; flanks and under tail coverts distinctly buffy; the entire lower surface less strongly white.

Mainly on the Pacific slope of Panamá from San Antonio, on the lower Río Bayano, and Chepo through the Canal Zone to the Azuero Peninsula and Veraguas; ranging on the Caribbean slope to Gatún, in the northern part of the Canal Zone, and on the Río Indio to El Uracillo, in extreme northeastern Coclé. Probably extending up the valley of the Río Bayano in eastern Panamá, and on the west into eastern Chiriquí.

Saltator albicollis melicus Wetmore:

Described above, on page 29.

Similar in general to *S. a. isthmicus*, but with larger, heavier bill; sides of head grayer; streak on either side of throat averaging grayer; flanks averaging darker; dorsal surface of tail and upper tail coverts averaging slightly darker gray.

Taboga Island.

Saltator albicollis furax Bangs and Penard:

Saltator striatipictus furax BANGS and PENARD, Bull. Mus. Comp. Zoöl., vol. 63, June 1919, p. 32 (near Boruca, Costa Rica).

Similar to *isthmicus* but darker below, with the streaking heavier and more definitely green.

Western Chiriquí (David, El Volcán) to the Térraba valley, southwestern Costa Rica.

**SPOROPHILA NIGRICOLLIS NIGRICOLLIS (Vieillot): Yellow-bellied
Seedeater**

Pyrrhula nigricollis VIEILLOT, Tabl. Encycl. Méth., Orn., livr. 93, July 1823, p. 1027 (Brazil).

Eugene Eisenmann recorded this species near Restinga on June 24, 1948, and reports it as common on July 5, 1951. We did not find it in February and March 1952. Distribution of the species in Panamá is not clearly understood at present and seems in part to be seasonal, as the birds are reported to appear during the rains in localities where they are absent during the dry season. The birds are easily recognized from other seedeaters in any plumage by the light-gray bill.



1, THE VILLAGE AND BAY ON TABOGA ISLAND, WITH THE ISLET EL MORRO
AT THE RIGHT
March 17, 1952



2, THE WESTERN SIDE OF TABOGA ISLAND, SITE OF NESTING COLONIES
OF THE BROWN PELICAN
March 17, 1952



1. TABOQUILLA ISLAND, FROM THE VILLAGE OF TABOGA
March 16, 1952



2. HILLS ON THE SOUTHERN END OF TABOGA ISLAND, AS SEEN FROM
THE VILLAGE
March 16, 1952



1. BEACH ON TABOGUILLA ISLAND, WITH TABOGA AND ITS VILLAGE
IN THE DISTANCE

March 18, 1952



2. URAVÁ ISLAND, AT THE LEFT, AND THE SOUTHERN END OF
TABOGA ISLAND

March 18, 1952