

REPORT ON BIRDS RECORDED BY THE PINCHOT EXPEDITION OF 1929 TO THE CARIBBEAN AND PACIFIC

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The Pinchot South Seas expedition of 1929, organized by the Hon. Gifford Pinchot, had as part of its objective the making of scientific collections and the recording of the natural history of the regions visited. The party left New York Harbor on the yacht *Mary Pinchot* on March 31, 1929, traveled south to Key West, and through the Caribbean Sea to Panama. The journey was continued through the Panama Canal to various islands in the Pacific and on October 15 was terminated in Tahiti. Through press of time the party returned by steamer to San Francisco.

Through the cooperation of the United States Biological Survey and the interest of Mr. Pinchot, the senior author accompanied the party as one of the naturalists, devoting his attention largely to birds but also studying and collecting in other groups. The collections of birds secured include approximately 500 skins and skeletons, with a few eggs, collected and prepared with the assistance of Mr. Pinchot and Gifford Pinchot, jr. Through the kindness of Mr. Pinchot and the courtesy of the Biological Survey the material has been deposited in the United States National Museum, where it forms a most welcome accession, since in addition to one form new to science it includes 22 others not previously represented in the national collections.

In the following report the senior author has supplied field notes and observations, including some on species of birds of which skins were not collected, while the junior author has identified the specimens, and made such critical comments as seem pertinent. The avifauna of the Caribbean islands and that of the Pacific islands are so essentially different that for convenience the report that follows is presented in two sections, the Isthmus of Panama serving as the dividing line between the two geographic regions considered.

THE BIRDS OBTAINED ON THE CARIBBEAN ISLANDS

The *Mary Pinchot*, while en route between Key West and Cristobal, Canal Zone, made anchorages at four islands in the Caribbean Sea, affording opportunity to secure natural-history specimens. With a long journey to the objective in the Pacific area in contemplation, stops en route were necessarily brief but yielded valuable results, although necessarily only partial collections were made. The actual time available was further reduced by the necessity for seeking out favorable localities for birds in territory entirely new to the collector.

Those in authority on all of the islands were kind and considerate and did all they could to tender assistance. Collecting was done on the west end of the island of Grand Cayman from North Cove to Borden on April 16 and April 17. It was regretted that time did not permit a visit to the eastern part of the island, which has greater elevation, more extensive forests, and less population. It is reached from the westward by poorly defined trails, and is difficult to approach from the sea, except under very favorable wind conditions. So far as possible, ground showing varied physical conditions was visited, ranging from the edge of mangrove swamps through rough brush to drier and more open plantations.

The party arrived at Swan Island (pls. 1 and 2) the morning of April 19, and spent the greater part of the day and the day following there and on Little Swan Island (pl. 1). The latter is a coral upheaval quite different from the larger island, from which it is separated by a narrow passage. It is probably 60 feet high and very much torn, which makes travel difficult, especially as the crevices are overgrown with cactus and other resistant plants. Travel on the larger island was comparatively easy, since it is level and largely covered by coconut groves and grassy areas. The clumps of thick shrubbery usually were not large enough to cause much trouble. It was interesting to see familiar migrating warblers in rollicking, scattered groups making short, erratic flights from bush to tree, gleaning luckless insects on their way, much as they do later in the year in the northern woods.

The island of Old Providence (pl. 2), of volcanic origin, with high peaks and long ridges, is very different from and much more picturesque than the low-lying islands previously visited. Collecting was done mainly along trails back from the sea and in canyons, which in the rainy period carry good-sized streams, but at this



Photograph by H. H. Cleaves

SWAN ISLAND, CARIBBEAN SEA



Photograph by A. K. Fisher

TYPICAL SCRUB ON LITTLE SWAN ISLAND



Photograph by A. K. Fisher

COCONUT GROVE, SWAN ISLAND



Photograph by H. H. Cleaves

OLD PROVIDENCE ISLAND, CARIBBEAN SEA

season contained only pools in the deeper depressions. The ship was at Old Providence three days, but birds were collected mainly on April 23 and 24.

St. Andrews, another coral uplift, was visited on April 27; during the few hours devoted to collecting only 10 species of birds were seen, and 6 of these were obtained.

SULA LEUCOGASTRA LEUCOGASTRA (Boddaert)

Brown booby

Pelecanus leucogaster BODDAERT, Tabl. Planch. Enl., 1783, p. 57. (Cayenne.)

Often seen on the wing away from land. A good-sized colony of breeding birds was found on Little Swan Island, April 20, with young of different stages of development.

SULA PISCATOR (Linnaeus)

Red-footed booby

Pelecanus piscator LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 134. (Java Seas.)

A common breeding bird on Little Swan Island, where young of different stages of growth were observed on April 19 and 20. Seen at various times in flight over the sea.

FREGATA MAGNIFICENS Mathews

Frigate bird, man-o'-war bird

Fregata minor magnificens MATHEWS, Austr. Av. Rec., vol. 2, December 19, 1914, p. 120. (Barrington Island, Galapagos Archipelago.)

There was a large breeding colony on Little Swan Island, April 19 and 20, where the birds were seen in flight on various occasions.

ARDEA HERODIAS Linnaeus

Great blue heron

Ardea herodias LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 143. (Hudson Bay.)

One was seen at the narrow rift between Little Swan and Big Swan Islands.

FLORIDA CAERULEA CAERULESCENS (Latham)

Little blue heron

Ardea caerulescens LATHAM, Index Orn., vol. 2, 1790, p. 690. (Cayenne.)

At Grand Cayman a native woman killed one with a stick, but when secured the bird was not in condition for a specimen. At St. Andrews Island one in white phase of plumage was seen near an island pond which was nearly dry.

BUTORIDES VIRESCENS VIRESCENS (Linnaeus)

Little green heron

Ardea virescens LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 144. (Coast of South Carolina.)

A female taken on Swan Island April 19, 1929, is an example of the green heron of North America, present here as a migrant. This bird lacks the lighter edgings of the scapular feathers found in most specimens of this race, but this is also true of numerous skins from eastern North America; otherwise it is similar in color to them. It measures as follows: Wing, 174.0; tail, 61.3; culmen, 61.0; tarsus, 49.3 mm.

The identification of this bird brings up for consideration the status of the supposed resident form of Swan Island currently known as *Butorides virescens saturatus* Ridgway,¹ represented by two skins in the United States National Museum collected by Dr. Charles H. Townsend on Swan Island, March 6 and 26, 1887. These two skins are very dark, being in fact remarkably suggestive in general appearance of *Butorides v. frazari* of Lower California. They have the following dimensions: Wing, 177.0-178.0; tail, 59.9-62.7; culmen, 61.0-61.2; and tarsus, 51.6-50.4 mm.

Dr. Thomas Barbour writes that in his visits to Swan Island he has not found the green heron nesting, and that George Nelson, of the Museum of Comparative Zoölogy, who has been on the island five times with an average stay of two months each time, likewise failed to find these birds breeding. Further, it appears that there is no suitable habitat for them, the few herons of this group that appear being migrants which have been seen flying in from the coast of Honduras and these do not remain on the island long. The two Townsend specimens have the dimensions of the *B. v. virescens*, and, although much darker than normal, are matched by occasional birds from the eastern United States (notably by U. S. N. M. No. 77293, from Hernando County, Fla.). The two collected by Doctor Townsend are here identified as *Butorides virescens virescens*, so that the name *B. v. saturatus* Ridgway will be listed in the synonymy of this race.

The bird secured, the only one observed on the island, alighted at the landing place before the launch, and was shot almost immediately. Naturalists seldom have the good fortune to obtain so easily material that is destined to straighten out moot questions based on faulty specimens. Since for long periods there is no fresh water on the island except that collected in closed cisterns, it would seem very improbable that green herons would attempt to breed there.

¹ *Butorides saturatus* Ridgway, Proc. U. S. Nat. Mus., vol. 10, August 6, 1888, p. 577. (Swan Island, Caribbean Sea.)

BUTORIDES VIRESCENS MACULATUS (Boddaert)

West Indian green heron

Cancroma maculata BODDAERT, Tabl. Planch. Enl., 1783, p. 54. (Martinique, Lesser Antilles.)

A female from Grand Cayman taken April 16, 1929, has the following measurements: Wing, 166.0; tail, 58.4; culmen, 57.4; and tarsus, 43.2 mm. It has the small size and light coloration characteristic of this race of the little green heron which is found throughout the Greater Antilles.

This individual, which was taken at the edge of the mangroves at North Cove, was very similar in voice and action to the northern subspecies. It was the only one observed.

FALCO COLUMBARIUS COLUMBARIUS Linnaeus

Pigeon hawk

Falco columbarius LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 90. (Carolina.)

One of these little falcons was seen at close range as it flew above an opening at the west end of Swan Island.

GALLINULA CHLOROPUS (Linnaeus)

Florida gallinule

Fulica chloropus LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 152. (England.)

On Grand Cayman Island, April 16, 1929, while in pursuit of the green heron, the collectors drove a gallinule out of the thick mangroves and would have taken it if it had not been considered more important to secure the heron. This was the only one seen among the islands visited.

If it is assumed that this bird was a migrant, as would seem of necessity to be the case, it should be the North American subspecies *G. c. cachinnans*.

COLUMBA LEUCOCEPHALA Linnaeus

White-crowned pigeon

Columba leucocephala LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 164, (Bahama Islands.)

An adult male was taken on Grand Cayman April 16, 1929, by A. K. Fisher, and another on Swan Island, April 19, by Gifford Pinchot.

This pigeon was common on both Grand Cayman and Swan Islands. A sharp lookout was kept for other species, so that any movement among pigeons was noticed. For this reason many more white-crowned pigeons were seen than would have been the case if

one species only occurred on the island. This is a fine bird and might rival the band-tailed species of the western United States as a game bird.

ZENAIDA ZENAIDA ZENAIDA (Bonaparte)

Zenaida dove

Columba zenaida BONAPARTE, Journ. Acad. Nat. Sci. Philadelphia, vol. 5, June, 1825, p. 30. (Florida Keys.)

A female, taken on Grand Cayman, April 17, 1929, by G. B. Pinchot, is like specimens from elsewhere in the range of this race. It has the following measurements: Wing, 149.4; tail, 86.1; culmen with cere, 13.4; tarsus, 22.5 mm.

In this connection it is of interest to consider the status of *Zenaida spadicea* Cory,² which was recognized by Ridgway³ after examination of the original material, but which has not been found by subsequent collectors. Bangs⁴ in 1911 received 13 specimens of the Zenaida dove from Grand Cayman, Little Cayman, and Cayman Brac taken in May, June, and July, 1911, by W. W. Brown, jr., and says that there is no difference between birds from the three islands in question. All are *Zenaida z. zenaida*, and are similar to that race as found throughout its extensive range. Bangs therefore cites *Zenaida spadicea* Cory as a synonym of *Zenaida zenaida zenaida* (Bonaparte), in which he seems to be entirely correct.

Through the courtesy of Dr. C. E. Hellmayr the type and three other specimens of *Z. spadicea* in the collection of the Field Museum of Natural History have been available for examination. The type is a male taken on Grand Cayman, August 23, 1886, by W. B. Richardson. The other three are marked as males and were secured on the same island on August 18 and 23. They have the dimensions of *Zenaida z. zenaida*, but are very deeply rufescent in color, being much darker than any true Zenaida doves seen, which is apparently due in part to grease soaking out on the feathers; in part, as Bangs has already suggested, to wear, which has removed the bloom from the plumage; and in part possibly to something used as a preservative when the skins were prepared. The junior author considers them stained, abnormal skins of *Zenaida zenaida zenaida*. This is supported by the fact that Cory, in the Auk for 1886, page 502, in listing the birds taken on Grand Cayman Island by W. B. Richardson during the expedition in question gives *Zenaida spadicea* as the

² *Zenaida spadicea* Cory, Auk, 1886, p. 498. (Grand Cayman.)

³ U. S. Nat. Mus. Bull. 50, pt. 7, 1916, p. 362.

⁴ Bull. Mus. Comp. Zool., vol. 60, March, 1916, pp. 306-307.

only Zenaida dove, whereas subsequent collectors have found the true Zenaida dove, but have taken nothing that could be recognized as *spadicea*.

The specimen taken in 1929, the only one seen, was obtained at the point visited which was farthest from the more settled areas. If time had permitted collecting in the wilder parts of the island to the eastward, it is very probable that more would have been found, since reports show that birds live in more abundance there.

MELOPELIA ASIATICA ASIATICA (Linnaeus)

White-winged dove

Columba asiatica LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 163. ("Indiis"=Jamaica.)

Two skins taken on Old Providence Island, Colombia, April 25, 1929, are in molt on the head and forepart of the body. One is an adult male, the other an immature individual with sex not marked. The adult is renewing the wing feathers. These two seem to have the white on the throat somewhat more extensive than in birds from elsewhere, but this difference is not altogether certain, and from this material the Old Providence bird is identified as typical *asiatica*. The male has the following measurements: Wing, 156.5; tail, 100.9; culmen with cere, 18.9; tarsus, 24.4 mm. The early date of molt seems remarkable.

This pigeon was very common on the island and its cooing was heard everywhere. It furnished good sport for the captain and members of the crew. Other species, although carefully looked for, were not observed.

COLUMBIGALLINA PASSERINA INSULARIS Ridgway

Cuban ground-dove

Columbigallina passerina insularis RIDGWAY, Proc. U. S. Nat. Mus., vol. 10, August 6, 1888, p. 574. (Grand Cayman.)

Three specimens taken on Grand Cayman April 17, 1929, by Gifford Pinchot and A. K. Fisher, include two males and a female. These specimens have the following measurements:

Males: Wing, 81.4-85.0; tail, 57.8-61.3; culmen with cere, 10.7-10.9; tarsus, 15.5-15.8 mm.

Female: Wing, 81.0; tail, 57.0; culmen with cere, 9.8; tarsus, 15.9 mm.

This little dove was common in all the open places visited. In its actions it was identical with the form occurring in Florida, feeding or quarreling most of the time.

AMAZONA LEUCOCEPHALA CAYMANENSIS (Cory)

Cayman parrot

Chrysotis caymanensis CORY, Auk, 1886, p. 497. (Grand Cayman Island, West Indies.)

Two males and one other specimen with sex not marked were taken by Gifford Pinchot and A. K. Fisher on Grand Cayman April 17, 1929. On comparison with a considerable series from Cuba the alleged color differences are not apparent, the only evident distinction being that of slightly greater size.

The males have the following measurements: Wing, 195.0–201.0; tail, 119.0–119.9; culmen from cere, 26.3–25.9; tarsus, 22.5–23.9 mm. As these measurements are within the maximum for typical *A. l. leucocephala*, the supposed characters of *caymanensis* would seem to be very slight.

This form is new to the collections of the National Museum.

Quite a number of parrots were seen, but on only a few occasions was it practicable to collect them. They were rather silent except when individuals of a flock became separated from one another; then in true parrot fashion they voiced their troubles. We were told that when certain fruits were ripening the parrots visited the door-yards where such food was found, to enjoy the unwilling hospitality of the owner. Those which we saw feeding appeared to eat the ovaries and internal soft parts of flowers.

COCCYZUS MINOR MAYNARDI Ridgway

Bahama mangrove cuckoo

Coccyzus maynardi RIDGWAY, Man. North Amer. Birds, Sept., 1887, p. 274. (Ten Thousand Islands, Fla.)

A female in excellent plumage taken on Grand Cayman April 17, 1929, represents the present form, agreeing in its pale coloration with a series of *maynardi* from the Bahamas, and differing decidedly from the darker forms *nesiotes* of Jamaica and *teres* of Hispaniola and Porto Rico, and farther south and east. It has the following measurements: Wing, 126.3; tail, 162.0; culmen from base, 27.0; tarsus, 27.4 mm.

The subspecies of the mangrove cuckoo from Grand Cayman has been an undecided question. The specimens examined by Ridgway⁵ from this island were in such worn condition of plumage that he was uncertain whether they were *nesiotes* or *maynardi*, but finally called them the former. Bangs⁶ identified a series taken by W. W. Brown, jr., from May to July, 1911, on the three islands of the Cayman group as *nesiotes*, remarking: "These specimens agree with Jamaican skins

⁵ U. S. Nat. Mus. Bull. 50, pt. 7, 1916, pp. 25, 27.

⁶ Bull. Mus. Comp. Zoöl., vol. 60, 1916, pp. 309, 310.

in size and proportions and are a little larger than the Bahaman form *C. m. maynardi* Ridg. In the color of the under parts this series shows a wide range of individual variation. The darkest ones are exactly like the paler specimens from Jamaica and the palest ones like the darker examples of *maynardi*. Thus as a whole the series averages a little paler below than the average of a long series of *nesiotes* from Jamaica. All, however, were taken later in the season than any skin we have from Jamaica and are without doubt somewhat faded out."

As the specimen secured by Doctor Fisher is in fresh plumage there is no question as to its identity with *maynardi*.

Whenever we were in the vicinity of mangrove swamps we kept a sharp lookout for cuckoos, since added specimens from this island were needed to work out properly the distribution of the insular forms. Failing to find them in this habitat it was an agreeable surprise to run across an individual in the thick, low undergrowth of an abandoned or much-neglected banana plantation in a dry upland stretch of country. As the bird was in dense foliage near the ground, it was not recognized until it had moved toward the outer edge of the clump it was occupying. It was tame and unsuspecting and did not seem to notice the approach of a stranger.

The yellow-billed and black-billed cuckoos of the north frequently utter thin "rain-crow" notes, and are heard very much more often than they are seen. If this holds true for the mangrove cuckoo, it must be uncommon in the localities visited, as its notes were not once heard, and the individual secured was the only one seen by members of the party.

COCYZUS MINOR ABBOTTI Stone

Abbott's cuckoo

Coccyzus abbotti STONE, Proc. Acad. Nat. Sci. Philadelphia, vol. 51, 1899, p. 301. (St. Andrews Island, Caribbean Sea.)

An adult male was taken on Old Providence Island April 24, 1929. This bird has the following measurements: Wing, 135.8; tail, 165.5; culmen from base, 30.5; tarsus, 27.4 mm. It is in full, perfect plumage. Superficially this specimen has the general appearance of *C. m. nesiotes* and *C. m. teres*, being deep buff below like the average of those races. Above it is grayer on the head and hind-neck than *teres*, and is also characterized by larger, heavier bill.

This race has not been represented previously in the National Museum collections.

Although cuckoos were frequently heard and glimpses were caught of two or three others as they flew from thick shrubbery, the one mentioned above was the only one secured. It is true that while

Captain Beale was dove hunting he shot a cuckoo, but it was picked and beheaded by a willing native before the captain learned what had happened. The notes of this bird were similar to those of the other cuckoos.

CROTOPHAGA ANI Linnaeus

Ani

Crotophaga ani LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 105. (Jamaica.)

Two were taken on Grand Cayman, April 16 and 17, 1929.

This interesting species, locally known as "jew bird," was found in pastures, woods, and in fact anywhere from the roadside to the deepest forests. It is in good standing with the majority of people where ticks are common, on account of its fondness for these troublesome pests.

CHORDEILES MINOR VICINUS Riley

Bahaman nighthawk

Chordeiles virginianus vicinus RILEY, Auk, 1903, p. 432. (Long Island, Bahamas.)

A male taken on Swan Island April 19, 1929, is apparently the first record of the nighthawk for this locality. This specimen measures as follows: Wing, 169.0; tail, 99.1; culmen from base, 6.0; tarsus, 15.3 mm. Though more buffy than some, it agrees in paler coloration with many of the Bahama Island race, and is lighter than *C. m. gundlachii* of Cuba, which geographically is the race that might be expected for a Swan Island bird. It is probably a migrant, as the Bahama form comes to those islands only to breed and goes south again at the approach of winter.

A few nighthawks were seen flying over Grand Cayman the afternoon of April 17 but none was taken.

ANTHRACOTHORAX PREVOSTII HENDERSONI (Cory)

Old Providence hummingbird

Lampornis hendersoni CORY, Auk, 1887 p. 177. (Old Providence Island, Caribbean Sea.)

Two immature birds were taken on Old Providence Island on April 23 and 24, 1929, one a male and the other not having the sex determined. These are decidedly duller green, less bronzy above, than any skin of *A. p. prevostii* in similar stage seen, in addition to having a smaller bill. One has the bill damaged and is otherwise injured by shooting. The other, a male, has the following dimensions: Wing, 67.0; tail, 35.3; culmen from base, 21.6 mm. This race is new to the national collections.

Hummingbirds were quite common, but did not often come near enough to be collected with a small charge. The damaged specimen

was taken with a large load, when it alighted too far away for a smaller one.

These hummers seem to share an irritable disposition with other members of the family. One of them entering another's domain or approaching a preempted flower is attacked and rushed in no uncertain manner. It is probable that there is some change, and that conditions are less tense, when there is an abundance of flowers, and food is secured with little effort.

ANTHRACOTHORAX NIGRICOLLIS PINCHOTI Wetmore

Pinchot's hummingbird

Anthracothorax violicauda pinchoti WETMORE, Proc. Biol. Soc. Washington, vol. 43, 1930, p. 7. (St. Andrews Island, Caribbean Sea.)

Use of the specific name *violicauda* in the original description of this race was in accordance with Mathews' statement in the Austral Avian Record, vol. 3, 1915, p. 42, where the figure given by Daubenton in the Planch. Enl., 671, Figure 2, is identified as *violicauda* of Boddaert (1783), which on this basis replaced *nigricollis* of Vieillot (1817). Doctor Hellmayr considers Mathews' treatment erroneous, and, after examination of the plate, and some study of the question, the junior author agrees with Hellmayr that Daubenton's figure refers to the female of the hummer currently known as *Anthracothorax viridigula* (formerly *A. gramineus*), so that the name *nigricollis* is the proper one for the species of hummer here under discussion. The bird from St. Andrews Island therefore will be known as *Anthracothorax nigricollis pinchoti*. Daubenton's figure agrees with *viridigula* in showing the throat stripe green, and seems more nearly to represent that species.

The type of this new race, a male, the only specimen secured, was collected on St. Andrews Island April 27, 1929. These hummingbirds have long been known on St. Andrews, but their allocation to the typical form of *Anthracothorax nigricollis* of the distant mainland of South America has seemed anomalous, so it has not been surprising to find that the single specimen obtained by the Pinchot expedition differs on careful comparison with a long series of true *nigricollis* from the eastern portions of northern South America. A second specimen from St. Andrews, an adult male with a broken bill, collected May 1, 1887, by Dr. W. L. Abbott, has been available for examination through loan from the Academy of Natural Sciences. From these two birds it appears that the male of the St. Andrews bird is generally similar to true *Anthracothorax n. nigricollis* (Vieillot)⁷ but has the black of the throat and breast restricted, and bordered by metallic green instead of blue on the sides of the

⁷ *Trochilus nigricollis* Vieillot, Nouv. Dict. Hist. Nat., vol. 7, 1817, p. 349. (Brazil.)

throat and upper foreneck. Following are measurements of the two specimens at hand: Two males, wing, 65.9^s–69.5 (67.7); tail, 36.1^s–37.8 (37.0); culmen, 24.8^s mm.

The type skin, which is not quite adult, differs from the specimen secured by Abbott, which is older, principally in being greener above and in having the black of the breast somewhat more obscured by greenish. *A. n. pinchoti* seems to have carried to an extreme the differences that distinguish *A. n. iridescens* of western Ecuador.

The new form was named in honor of Gifford Pinchot.

During the morning of April 27, two hummers were seen in an area beyond the outlying habitations. Unfortunately, on account of the scarcity of flowers the flight of these birds was erratic and continued for long distances between individual flowers, so that it was not possible to collect them. It was very disappointing not to have an opportunity to secure specimens, but as the time for leaving was near, the collecting field had to be left behind. While the senior author was standing with a native policeman on the main street of the town, awaiting the arrival of the launch from the yacht, a hummer suddenly flew by and alighted on a dead twig of a neighboring tree. As quick as thought the bird came tumbling out of the tree. The quickness and accuracy of the shot seemed to have impressed the policeman, and he evidently forgot any embarrassing regulation that may have been broken in the interest of science.

MEGACERYLE ALCYON ALCYON (Linnaeus)

Belted kingfisher

Alcedo alcyon LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 115. (In America.)

A kingfisher was heard, and later seen, at Swan Island.

COLAPTES CHRYSOCAULOSUS GUNDLACHI Cory

Grand Cayman flicker

Colaptes gundlachi CORY, Auk, 1886, p. 498. (Grand Cayman, West Indies.)

A male taken on Grand Cayman Island April 17, 1929, has the following measurements: Wing, 129.9; tail, 102.1; culmen from base, 32.3; tarsus, 25.5 mm.

This race is new to the collections of the National Museum.

A number of these flickers were seen and heard among the large trees of the localities visited and had it been known at the moment that material was very desirable more would have been collected. The note of this species is similar to that of the golden-winged flicker, and the specimen taken was lured by imitating the rapidly repeated *whit to whit to love* call of the northern bird.

^s Type specimen.

CENTURUS CAYMANENSIS CORY

Grand Cayman woodpecker

Centurus caymanensis CORY, Auk, 1886, p. 499. (Grand Cayman, West Indies.)

Two males and a female were taken on Grand Cayman, April 17, 1929, by A. K. Fisher and G. B. Pinchot. All are adult.

In action and habit this species reminds one of the red-bellied woodpeckers of the United States.

TOLMARCHUS CAUDIFASCIATUS CAYMANENSIS (NICOLL)

Grand Cayman petchary

Pitangus caymanensis NICOLL, Ibis, 1904, p. 582. (Grand Cayman, West Indies.)

Four males and one female were taken on Grand Cayman, April 17, 1929, by A. K. Fisher and G. B. Pinchot. The junior author agrees with Hellmayr⁹ that this insular form should be recognized as a race of *Tolmarchus caudifasciatus caudifasciatus* of Cuba.

The present series adds a new race to the collections of the National Museum.

Until one becomes acquainted with this species it can be mistaken very easily for the gray kingbird. It is found more often in the woods than in the open country, which is the favorite feeding ground of the related species. In its movements it more nearly resembles the crested flycatchers (*Myiarchus*) than the other related forms. It was a common bird that was general in suitable localities over the areas visited.

MYIARCHUS SAGRAE SAGRAE (GUNDLACH)

La Sagra's flycatcher

Muscicapa Sagrae GUNDLACH, Boston Journ. Nat. Hist., vol. 6, 1852, p. 313. (Cuba.)

A male and another specimen with sex not marked were taken on Grand Cayman, April 16, 1929, by A. K. Fisher and G. B. Pinchot. These two are in slightly worn plumage and appear grayer above and blacker on the head than a series from Cuba. However, there is a female specimen in the National Museum taken on Grand Cayman, March 15, 1887, that is identical with birds from Cuba.

These two specimens, which were taken in the woods near the edge of a mangrove swamp, were the only ones seen. Their movements were characteristic of the genus.

⁹ Cat. Birds Amer., pt. 5, 1927, p. 157.

MYIOCHANES VIRENS (Linnaeus)

Wood pewee

Muscicapa virens LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 327. (Carolina.)

A female was taken on Swan Island, April 19, 1929. This migrant species seems to occur here with regularity, as a number of them were seen.

ELAENIA MARTINICA CAYMANENSIS Berlepsch

Cayman elaenia

Elaenia martinica caymanensis BERLEPSCH, Proc. Fourth Int. Orn. Congr., 1907, p. 394. (Grand Cayman, West Indies.)

A fine series of seven males, four females, and one other with sex not marked was taken on Grand Cayman Island April 16 and 17, 1929, by A. K. Fisher and G. B. Pinchot. These birds are in excellent plumage and are quite uniform in color, the only difference being that some are slightly more yellowish than others.

This flycatcher was one of the common forms and one that responded readily to the calls of the collector used to attract birds. It fed extensively on certain berries, and in manner of feeding resembled somewhat the waxwings, especially in filling up to capacity. When for any reason it became excited it elevated its crest so that the white crown was plainly visible.

ELAENIA MARTINICA CINERASCENS Ridgway

Old Providence elaenia

Elainea cinerascens RIDGWAY, Proc. U. S. Nat. Mus., vol. 7, 1884, p. 180. (Old Providence Island, Caribbean Sea.)

A female in somewhat worn plumage was collected on Old Providence Island, April 23, 1929.

A common species on Old Providence. Elaenias were seen also on St. Andrews, but on account of limited time no specimens were collected.

HIRUNDO ERYTHROGASTER Boddaert

Barn swallow

Hirundo erythrogaster BODDAERT, Tabl. Planch. Enl., 1783, p. 45. (Cayenne.)

On April 18, as the ship was passing from Grand Cayman to Swan Island, a barn swallow came aboard. It was rather tired and there was no difficulty in catching it so that Mr. Cleaves might make a moving picture of it. The species was observed on Swan Island, and considerable numbers were seen on April 24 and April 27 on both Old Providence and St. Andrews, catching insects over broad, moist areas. On May 8 at Cristobal, Canal Zone, not far from where the yacht was docked, several hundred of this species, with a small

number of bank swallows, made an interesting sight. Evidently many insects were swarming from the ground. At a distance the mass of them suggested a sand whirl or smoke column broadening out from a restricted base. The swallows began their attack on this flight not more than a yard above the surface, rising in widening circles to 20 feet or more above, when they would swing downward to resume operations once again at the base of the funnel.

MIMUS POLYGLOTTOS ORPHEUS (Linnaeus)

Jamaican mocking bird

Turdus orpheus LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 169. (Jamaica.)

Two males, one female, and one with sex not marked were taken on Grand Cayman Island, April 16, 1929, by A. K. Fisher and G. B. Pinchot. All are adults in somewhat worn plumage.

The mocking bird was common everywhere, both in town and in the outlying districts. Oftentimes when a number were together there was sure to be misunderstanding among them and a running fight would ensue. Whether this irritability was due to trespass on one another's domain, appropriation of one another's food, or to sexual jealousy was not evident.

MIMUS MAGNIROSTRIS Cory

Large-billed mocking bird

Mimus magnirostris CORY, Auk, 1887, p. 178.¹⁰ (St. Andrews Island, Caribbean Sea.)

A female of this striking bird was secured on St. Andrews Island, Caribbean Sea, April 27, 1929. It is in somewhat worn plumage.

This mocker was the only one seen, and the song was not heard in the areas which were visited.

DUMETELLA CAROLINENSIS (Linnaeus)

Catbird

Muscicapa carolinensis LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 328. (Virginia or Carolina.)

A female catbird was taken on Grand Cayman Island April 17, 1929.

This familiar species was more or less common on both Grand Cayman and Swan Islands, but was not seen on either Old Providence or St. Andrews. It was among the first to be attracted from the shrubbery by a chirping noise, and, as in the north, readily approached, uttering its rather discordant notes.

¹⁰ Though this appears in the number for July, an author's edition of this description was published May 28, 1887.

HYLOCICHLA USTULATA SWAINSONI (Tschudi)

Olive-backed thrush

Turdus swainsoni TSCHUDI, Faun. Per., Orn., 1845-1846, p. 28. (New Jersey.)

A male collected on Swan Island, April 19, 1929, is the first record of this North American migrant on this island. The olive-backed thrush has been found casually in Cuba during migration; its regular route of migration carries it through Mexico and Central America to northern Argentina.

This specimen was indistinctly seen and was secured in the hope that it might be *Mimocichla*, which was among the desired material.

VIREO CRASSIROSTRIS CRASSIROSTRIS (Bryant)

Large-billed vireo

Lanivireo crassirostris BRYANT, Proc. Boston Soc. Nat. Hist., vol. 7, 1859, p. 112. (Nassau, New Providence Island, Bahama Islands.)

An adult male was collected on Grand Cayman, April 17, 1929. Bangs,¹¹ after comparison of a large series, has concluded that the bird of Grand Cayman, which has been recognized as *Vireo crassirostris alleni* Cory,¹² is not different from the highly variable typical *crassirostris* that ranges widely through the Bahamas.

The specimen secured was the only one which came under our observation. The bird was in thick underbrush, and attention was called to it by its note, which suggested that of the white-eyed vireo.

VIREO CRASSIROSTRIS APPROXIMANS Ridgway

Old Providence large-billed vireo

Vireo approximans RIDGWAY, Proc. U. S. Nat. Mus., vol. 7, July 29, 1884, p. 179. (Old Providence Island, Caribbean Sea.)

A male and a female were prepared as skins on Old Providence Island, April 24, 1929. The skull of a third specimen was preserved. As this vireo is rare in collections it is of interest to record the following measurements: Male, wing, 61.0; tail, 51.1; culmen from base, 14.5; tarsus, 21.8 mm. Female, wing, 58.0; tail, 46.9; culmen from base, 14.4; tarsus, 22.7 mm. These are the first examples of this race to come to the United States National Museum.

During certain parts of the day this vireo was an incessant singer with comparatively short, irregular intervals between songs. The specimens were taken in rather thick undergrowth bordering a stream which at that time was merely a chain of shallow pools.

¹¹ Bull. Mus. Comp. Zool., vol. 60, 1916, pp. 314, 315.

¹² *Vireo alleni* Cory, Auk, 1886, p. 500. (Grand Cayman.)

VIREO MAGISTER CAYMANENSIS Cory

Cayman vireo

Vireo caymanensis CORY, Auk, 1887, p. 7. (Grand Cayman Island, West Indies.)

Three males were collected on Grand Cayman Island, April 16 and 17, 1929, by A. K. Fisher and G. B. Pinchot. The junior author agrees with Bangs¹³ that this bird should be treated as a race of *Vireo magister*.

The three specimens have the following measurements: Wing, 73.9, 75.4, 69.8; tail, 57.9, 57.9, 55.4; culmen from base, 16.4, 16.1, 16.5; and tarsus, 21.0, 21.2, 20.0 mm.

VIREO OLIVACEUS GRANDIOR (Ridgway)

Old Providence vireo

Vireosylvia grandior RIDGWAY, Proc. U. S. Nat. Mus., vol. 7, July 29, 1884, p. 178. (Old Providence Island, Caribbean Sea.)

Two females of this form, of which there are few specimens in museums, were taken on Old Providence Island, April 23 and 24, 1929. These are in full plumage and measure as follows: Wing, 86.0, 83.0; tail, 68.7, 65.4; culmen from base, 18.7, 19.4; and tarsus, 22.1, 21.5 mm.

Attention was attracted to this bird by a clear vireo note. One specimen was taken on a dry hillside, and the other along a partially dried stream.

VIREO OLIVACEUS CANESCENS (Cory)

St. Andrews vireo

Vireosylvia canescens CORY, Auk, May 28, 1887, p. 178. (St. Andrews Island, Caribbean Sea.)

An adult male in slightly worn plumage was taken on St. Andrews Island, April 27, 1929. It measures as follows: Wing, 87.0; tail, 68.7; tarsus, 22.2 mm. The bill is broken. This form is easily distinguished from *V. o. grandior* of Old Providence by the grayer, less greenish dorsal surface. This is the first specimen to be received by the National Museum.

This bird acted very much like a red-eyed vireo as it gleaned food among the foliage of one of the larger trees on the higher ground toward the center of the island.

¹³ Bull. Mus. Comp. Zool., vol. 60, 1916, p. 314.

COEREBA SHARPEI (Cory)

Cayman honey creeper

Certhiola sharpei Cory, Auk, 1886, p. 497. (Grand Cayman Island, West Indies.)

Two males were collected on Grand Cayman Island, April 16, 1929.

A very common species. It was seen everywhere from the town of Georgetown to the wilder section of the island. A pair was building a nest in a tree which stood by the building occupied as a post office.

COEREBA OBLITA Griscom

St. Andrews honey creeper

Coereba oblita Griscom, Amer. Mus. Nov., No. 7, April 30, 1923, p. 7. (St. Andrews Island, Caribbean Sea.)

On St. Andrews Island on April 27, H. H. Cleaves secured a nest of a honey creeper placed 2 feet from the ground in a low shrub. This nest is the ball-shaped structure usual among these birds, with the entrance through a hole in one side. It is made of coarse grasses, dried stems of creepers, fragments of leaves, and dried seed heads of plants mixed with many shreds of cotton, and lined with finer materials. The three eggs (of which one was broken) are white, spotted with warm sepia, mars brown, and russet. One egg has a heavy wreath of markings about the large end, a second has irregular blotches over the shell, which merge to cover the large end uniformly. These two measure 19.0 by 13.0 and 19.6 by 12.9 mm. A common bird, but no specimen was collected.

COEREBA TRICOLOR (Ridgway)

Old Providence honey creeper

Certhiola tricolor RIDGWAY, Proc. U. S. Nat. Mus., vol. 7, July 29, 1884, p. 178. (Old Providence Island, Caribbean Sea.)

An adult male and a juvenile female were taken on Old Providence Island, April 23, 1929. The adult male has the following measurements: Wing, 67.9; tail, 47.5; culmen from base, 15.5; tarsus, 20.5 mm.

On Old Providence and elsewhere in the Caribbean Islands visited the honey creepers seemed to be attracted by the collector and showed considerable interest in his movements. When specimens were to be obtained, care had to be taken to allow them to get far enough away to insure good material. A pair was building a nest in a tall slender sapling near a water hole.

MNIOTILTA VARIA (Linnaeus)

Black and white warbler

Motacilla varia LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 333. (Santo Domingo.)

Not uncommon among the undergrowth on Swan Island April 19, 1929.

DENDROICA PETECHIA FLAVIDA Cory

St. Andrews golden warbler

Dendroica flavida CORY, Auk, May 28, 1887, p. 179. (St. Andrews Island, Caribbean Sea.)

A young bird in full juvenal plumage taken on St. Andrews Island April 27, 1929, is the first of this race to come to the National Museum. This bird is somewhat worn, but as yet shows no indication of the molt into first fall plumage. The upper surface is deep mouse-gray to mouse-gray, with a wash of ecru-olive on the forehead and light yellowish-olive on the rump; wing coverts deep mouse-gray edged lightly with olive-buff; primaries and secondaries blackish, bordered lightly with light yellowish-olive; rectrices blackish, edged extensively with olive-yellow on the outer webs, and lightly with reed-yellow on the inner webs; below dull white, with a faint wash of olive-buff on breast; under tail coverts olive-buff; sides smoke-gray; inner webs of primaries edged with reed-yellow and of secondaries with whitish.

The specimen is much grayer than birds of other races of *petechia* seen in a similar stage.

In addition to the bird just described, an adult male golden warbler was collected on Old Providence April 23, 1929, that seems to be the first to be recorded from that island. Through the courtesy of the Field Museum there have been available for examination the type and other specimens on which the race *flavida* of St. Andrews was founded, with the result that the Old Providence bird is faintly paler yellow and has the crown yellow instead of rufescent. In heavy rufescent markings below it even exceeds the average of *flavida*, a race peculiar for the extent of this color on the under surface. Though these differences appear distinct, yet they are of such a nature as to be possibly within the range of individual variation, so that the Old Providence bird is identified for the present as *flavida*. This skin measures as follows: Wing, 63.8; tail, 54.5; culmen from base, 13.2; tarsus, 20.3 mm. Further material should be obtained and may easily demonstrate that the Old Providence bird is distinct.

Adult warblers were seen on St. Andrews but no attempt was made to collect them.

DENDROICA PETECHIA EOA (Gosse)

Jamaican golden warbler

Sylvicola eoa Gosse, Birds Jamaica, 1847, p. 158. (Crab Pond, Jamaica.)

Four specimens taken on Grand Cayman, April 16 and 17, 1929, by A. K. Fisher and G. B. Pinchot, include one male and three females.

Peters,¹⁴ in a revision of the golden warblers, indicates that the bird of the Cayman Islands is identical with that of Jamaica.

A common species seen everywhere in the lower growths in the localities visited.

DENDROICA CAERULESCENS CAERULESCENS (Gmelin)

Black-throated blue warbler

Motacilla caerulescens GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 960. (Santo Domingo.)

Several of these warblers were seen among migratory flocks found on Swan Island April 19.

DENDROICA FUSCA (Müller)

Blackburnian warbler

Motacilla fusca MÜLLER, Natursyst. Suppl., 1776, p. 175. ("Guyane.")

While the senior author was sitting with a companion at the edge of the beach on the east end of Swan Island, a blackburnian warbler tried to alight on the other man's hat. It fluttered about as if hunting for fresh water, hopping along the beach to inspect the little pools of salt water as if in hopes of finding one containing water fit to drink.

DENDROICA VITELLINA NELSONI Bangs

Swan Island warbler

Dendroica vitellina nelsoni BANGS, Bull. Mus. Comp. Zool., vol. 62, January, 1919, p. 494. (Swan Island, Caribbean Sea.)

One male and two females, all in excellent plumage, were taken on Swan Island April 19 and 20, 1929.

A common species often seen in the mixed flocks of migrating warblers. In action and general appearance it called to mind the prairie warbler.

¹⁴ Proc. Biol. Soc. Washington, vol. 40, Mar. 5, 1927, p. 34.

SEIURUS NOVEBORACENSIS (Gmelin)

Northern water-thrush

Motacilla noveboracensis GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 958. (Louisiana and New York.)

An individual was seen at close range among the mangroves at North Cove on Grand Cayman, April 16. On April 24 two were seen on Old Providence along a shallow, canopied pool, searching for food among the pebbles. They seemed perfectly at home and as if in no hurry to reach their summer home in the north.

SEIURUS AUROCAPILLUS (Linnaeus)

Oven-bird

Motacilla aurocapilla LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 334. (Near Philadelphia, Pa.)

A few were seen on Swan Island in general company with other migrants.

GEOTHYLPIUS TRICHAS BRACHIDACTYLA (Swainson)

Northern yellowthroat

Trichas brachidactylus SWAINSON, Anim. in Menag., 1838, p. 295. (Northern Provinces of United States.)

One of these little birds was seen in a small inland thicket in a coconut grove on Swan Island. As it was not collected, its allocation to the northern subspecies is solely on the basis that this is the ordinary migrant through this area.

SETOPHAGA RUTICILLA (Linnaeus)

Redstart

Motacilla ruticilla LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 186. (Virginia.)

Several were seen in different localities on Swan Island. One was flying about after insects around the buildings.

ICTERUS LAWRENCHII Cory

St. Andrews oriole

Icterus lawrencii CORY, Auk, May 28, 1887, p. 178. (St. Andrews Island, Caribbean Sea.)

A pair of these beautiful orioles taken on St. Andrews Island on April 27, 1929, measure as follows: Male, wing, 108.3; tail, 90.2; culmen from base, 25.4; tarsus, 24.7 mm. Female, wing, 100.8; tail,

86.8; culmen from base, 24.7; tarsus, 25.2 mm. These are the first skins of this fine bird in the National Museum collections.

This bird is evidently of the same stock as *Icterus bairdi* of Grand Cayman, which is much lighter yellow, and *Icterus leucopteryx* of Jamaica, which is decidedly darker. The three would be considered subspecies by some workers, but in the opinion of the junior author they are sufficiently distinct to stand as species.

It was a great disappointment not to be able to see or hear *Icterus bairdi* on Grand Cayman, where we might have come in contact with this species had our limited time not prevented us from going to the extensive wild area to the eastward, which is approached only by poorly defined trails. A few days devoted to this wilderness surely would have brought reward for the extra efforts.

On St. Andrews, when the clear, alluring notes of *Icterus lawrencii* come to the ear, it is easy to understand why the step is quickened and the eye more on the alert. The attendant, on hearing the note, said it was made by the "banana bird." He further stated that during the ripening season the species did considerable damage to bananas. At this time of the year none of this fruit was available, so the birds were gleaning their food from among the treetops and taller shrubbery. Besides the two secured, one was seen and another heard.

HOLOQUISCALUS JAMAICENSIS CAYMANENSIS (Cory)

Grand Cayman grackle

Quiscalus caymanensis CORY, Auk, 1886, p. 499. (Grand Cayman, West Indies.)

Three males and one female were taken on Grand Cayman, April 16, 1929, by Gifford Pinchot and A. K. Fisher. These bear out the characters assigned by Peters in his recent revision of this interesting genus.¹⁵ The female has the following measurements: Wing, 117.5; tail, 99.0; culmen from base, 27.8; tarsus, 32.2 mm. Most frequently seen in the open areas bordering the mangroves or in the coconut plantations.

PIRANGA RUBRA RUBRA (Linnaeus)

Summer tanager

Fringilla rubra LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 181. (Virginia or Carolina.)

A fine adult male of this tanager was seen with other migrants at the edge of a clearing on Swan Island.

¹⁵ Auk, 1921, pp. 443, 444.

TIARIS GRANDIOR (Cory)

Old Providence grassquit

Euethia grandior CORY, Auk, 1887, p. 245. (Old Providence Island, Caribbean Sea.)

Three males, two adult and one immature, were taken on Old Providence Island April 24, and a female on St. Andrews Island April 27, 1929. The latter has the following measurements: Wing, 57.8; tail, 49.8; culmen from base, 10.0; tarsus, 18.7 mm. This well-marked form has not been represented previously in the National Museum.

This active little species was common on both Old Providence and St. Andrews. When it is working through the shrubbery or when the male flies to a point of vantage to deliver its song, it reminds one of the northern indigo bird.

SPIZA AMERICANA (Gmelin)

Dickcissel

Emberiza americana GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 872. (New York.)

A male was collected on Swan Island April 19, 1929, from among five or six birds seen sitting in the top of a dead tree after the manner of waxwings. The bird collected caused some surprise when it was found to be this species. Apparently the dickcissel crosses regularly over the sea in this region, since there is a previous record of two taken here March 25 and April 14, 1887, by C. H. Townsend.^{15a}

MELOPYRRHA TAYLORI Hartert

Grand Cayman bullfinch

Melopyrrha taylori HARTEET, Nov. Zool., vol. 3, September 18, 1896, p. 257. (Grand Cayman Island, West Indies.)

An adult and two immature males, a female, and a second female preserved as a skeleton were taken on Grand Cayman April 17, 1929, by A. K. Fisher and G. B. Pinchot. One of the young males is in somewhat worn post-juvinal plumage. The other is in molt into adult dress.

Though Doctor Hartert¹⁶ has recently considered the present bird a subspecies of *Melopyrrha nigra* of Cuba, the two seem sufficiently distinct to warrant specific status for *M. taylori*.

This little finch was moderately common among the shrubbery bordering roads along which we traveled.

^{15a} Ridgway, Proc. U. S. Nat. Mus., vol. 10, August 6, 1888, p. 576.

¹⁶ Nov. Zool., vol. 24, 1919, p. 154.

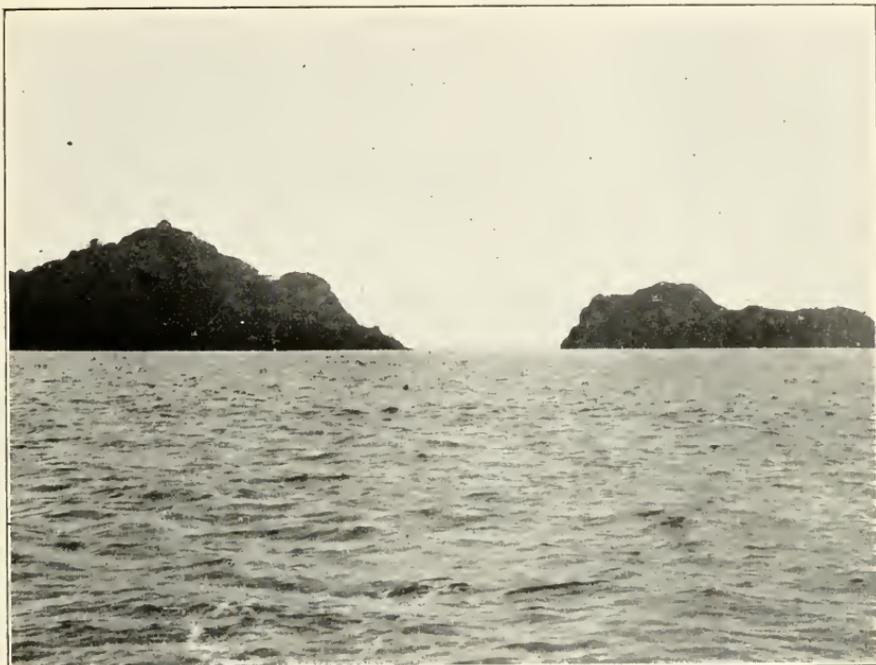
THE BIRDS OBTAINED ON THE PACIFIC ISLANDS

After a delay because of machinery troubles at the Isthmus, the Pinchot party left Balboa on June 1 and sailed out on the Pacific. Early in the morning of June 4, Cocos Island (pl. 3) became faintly visible among low-lying clouds on the western horizon, and about noon the *Mary Pinchot* came to anchor at Chatham Bay. Cocos Island, with its deep verdure, wonderful waterfalls, and picturesque tropical appearance, was much more attractive than any of the Galapagos group, which are interesting topographically mainly on account of vagaries in outline due to their volcanic origin. Bird collecting at Cocos was carried on mainly with Chatham and Wafer Bays as bases for surrounding areas. As the long-drawn-out showers were almost equal to continual rain, shore work was difficult, so that on June 11 the yacht was headed for the Galapagos group (pls. 4 to 7).

On June 14 Tower Island was reached. From this date to August 26 the party visited, some of them more than once, the following 12 islands of the group: Tower, Indefatigable, Seymour, Daphne, Eden, Duncan, Charles, Hood, Chatham, Barrington, Albemarle, and Narborough. Of this period, over a month was consumed in making two round trips to Panama for supplies and repairs. More time was spent on Tower, Indefatigable, Charles, Chatham, and Albemarle than on the others, but on Albemarle Island little opportunity for collecting was available. At one anchorage at Indefatigable, Seymour Island was near and equally available, so that no time was lost in travel at this point. At Charles Island, anchorage was made at Black Beach and Postoffice Bay, and the interior of the island was visited by some members of the party. Work was done on this island on the last three days in June and on July 10 and 11.

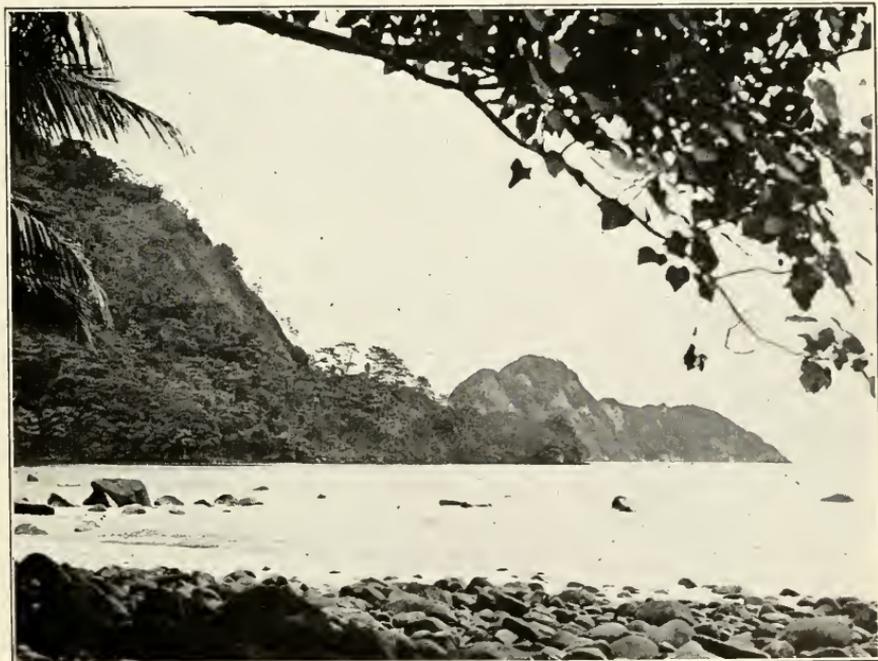
Progreso, a small cluster of buildings in the upper humid reaches of Chatham Island, where cane, fruit, and coffee grow, was so attractive that the yacht anchored four times in Wreck Bay during July and August. Tagus Cove on Albemarle Island, near Narborough Island, was especially interesting as being the only place where cormorants and penguins were found. Although several days were spent near Villamiel on Albemarle, little collecting was done.

On August 26, with the Galapagos astern, the yacht headed for the Marquesas Islands, some 3,000 miles to the westward, and on the



Photograph by A. K. Fisher

COCOS ISLAND



Photograph by H. H. Cleaves

CHATHAM BAY, COCOS ISLAND



Photograph by A. K. Fisher

THE "MARY PINCHOT" AT ANCHOR, BARRINGTON ISLAND, GALAPAGOS GROUP



Photograph by H. H. Cleaves

SETTLEMENT AT WRECK BAY, CHATHAM ISLAND, GALAPAGOS GROUP

morning of September 11 Hivaoa and Motane came into view. Although it was originally planned to make this wonderful group one of the principal points for biological work, various delays absorbed the time so that finally only 18 days were spent among the five islands visited.

Hivaoa, Fatuhiva, Uahuka, Nukuhiva, and Eiao (pls. 8 to 10) were visited in turn, and whenever natives were met they welcomed the party and gave assistance in securing biological material. The great stretches of forest and the high mountains and towering peaks of the islands make the collector feel that great possibilities are in waiting if only time were available for full exploration. The Tuamotu group was reached on October 2 and a week was spent at the three atolls of Fakarava, Takaroa, and Toau (pl. 10). Most of the collecting was done among the coconut groves on Toau. These low-lying coral atolls are in marked contrast to the towering Marquesas, with their high volcanic peaks and numerous valleys and canyons.

The following day, after leaving the Tuamotu Islands, Papeete, Tahiti, was reached (on October 9). Collecting was then at an end, and on October 15 the party sailed on the steamship *Makura* for San Francisco.

SPHENISCUS MENDICULUS Sundevall

Galapagos penguin

Spheniscus mendiculus SUNDEVALL, Proc. Zool. Soc. London, 1871, p. 129. (James Island, Galapagos Archipelago.)

The two females taken were obtained at Tagus Cove, Albemarle Island, Galapagos, August 25, 1929.

Although the penguin was kept in mind, as we visited the various islands of the Galapagos group, we did not find it until we reached the narrow stretches of water between Narborough Island and Tagus Cove, Albemarle Island, late in August. In all not over a dozen were seen. The first individual noted was on an off-lying rock near the shore of Narborough Island. It was several feet above the water and slowly climbed down to escape before it could be photographed. Two others were seen in the general vicinity, and one followed by the launch kept well ahead. In manner of swimming it very closely resembled the muskrat. At a point of rock at the entrance of Tagus Cove several were seen about an eddy, and two of them were secured. They were swimming higher and in more grebe-like manner than the one above mentioned. The ovaries were dormant.

DIOMEDEA IRRORATA Salvin

Galapagos albatross

Diomedea irrorata SALVIN, Proc. Zool. Soc. London, 1883, p. 430. (Callao Bay, Peru.)

The albatross rookery on Hood Island, Galapagos group, was visited on two occasions, June 30 and July 11, and numerous photographs were taken of the birds in various positions. (Pl. 6.)

The nest, if we may designate as such the bare spot on which the egg was deposited, was placed in an open area between scattered shrubbery. Probably in most cases there were not more than half a dozen nests to an acre. It was difficult to estimate the total number, as only a few could be seen from any given point.

On the earlier trip eggs predominated, while on July 11 young were in evidence, some, although still in the down, being of good size. In the aggregate a considerable number of abandoned addled eggs were scattered over the rookery area. During the heat of the day numbers of the birds retired to the shade of the bushes, but many of the males remained close to their mates on the egg or young. In some of the more open places near shore boobies were often nesting in close proximity to the albatrosses.

The albatrosses were tame, easily approached, and even easily handled, though after a few minutes the males usually waddled away with an awkward gait. The birds when first approached frequently elevated their "eyebrows," which gave them a queer expression.

The nuptial dance was occasionally seen and differed very materially in detail from that of the Laysan albatross as noted by Dr. Walter K. Fisher in 1902.¹⁷

The birds on the nests showed no resentment when lizards or small birds came within reach of them. One bird was taken to the yacht, and when liberated fluttered clumsily to the water, whence later it took wing in the direction of home.

Except near the rookery comparatively few albatrosses were seen flying over the ocean.

PUFFINUS LHERMINIERI SUBALARIS Ridgway

Galapagos shearwater

Puffinus subalaris RIDGWAY, Proc. U. S. Nat. Mus., vol. 19, 1897, p. 650. (Dalrymple Rock, Chatham Island, Galapagos.)

Six adult birds were obtained in the Galapagos Islands as follows: Tower Island, June 15 and 16, 1929, two males and one female;

¹⁷ U. S. Fish Commission Bull., 1906, vol. 23, for 1903, pt. 3, p. 787 (p. 19 of extract—Birds of Laysan and the Leeward Islands, Hawaiian group—1903).

Daphne Island, June 23, male; Hood Island, July 1, two females. Allocation of this bird as a race of *Puffinus lherminieri* is in accordance with the recent review of Murphy.¹⁸

This shearwater was a common species over the open water, at times out of sight of land, and along the nesting cliffs of all the islands of the Galapagos group that were visited. The majority of the specimens collected were taken in the vicinity of their nesting places.

When they were returning to their nesting crevices they often seemed to have difficulty in flying into the hole, and would circle around and make half a dozen attempts before succeeding. When small fish fry are driven to the surface by bonitos or other predacious fish, this shearwater often joins with the noddy tern in securing the smaller individuals. When the shoal is large they will alight at times on the surface and take the fish as they pass by.

The flight of this species is characteristic and resembles that of a swift more than it does that of its longer-winged relatives.

PTERODROMA PHAEOPYGIA (Salvin)

Dark-rumped petrel

OEstrelata phaeopygia SALVIN, Trans. Zool. Soc. London, vol. 9, 1876, p. 507, pl. 88, fig. 1. (Chatham Island, Galapagos Archipelago.)

Two females came aboard ship at Academy Bay, Indefatigable Island, in the Galapagos, on the night of June 8, 1929. These birds appear to be fully adult.

Mathews,¹⁹ following Rothschild,²⁰ has recently revived *OEstrelata sandwichensis*, described by Ridgway from Hawaii, as a subspecies of *P. phaeopygia*, for which there may be reason. With four skins of *phaeopygia* at hand, including two from the coast of Ecuador in addition to the two listed above from the Galapagos, there is no close approach to the type of *sandwichensis* in small size of bill. The latter does not show light edgings on the feathers of the back, present in the four *phaeopygia*, although this lack is perhaps due to wear. The question is one that should be checked with additional material.²¹

The two females from the collections of the Pinchot expedition measure as follows:

Wing, 293.0–295.0; tail, 134.0–150.0; culmen from base, 33.3–34.0; tarsus, 37.3–38.3 mm.

¹⁸ Amer. Mus. Nov., No. 276, Sept. 8, 1927, pp. 7–8.

¹⁹ Syst. Av. Austr., pt. 1, 1927, p. 120.

²⁰ Av. Laysan, pt. 3, 1900, pp. 289–290.

²¹ In this connection see Ridgway, Proc. U. S. Nat. Mus., vol. 19, 1897, pp. 648–650.

This petrel was first seen near Indefatigable Island June 21, during some rough weather, and later was observed almost daily. It seemed to frequent the open stretches more often than the Galapagos shearwater, though at times the two species were found together. Only on a few occasions did they come near enough to the yacht to be taken, and then only when it was impracticable to retrieve specimens. One evening when we were returning to anchorage from Daphne Island several hundred were seen in a rather dense, hovering group near Eden Island, where evidently they were feeding among a large shoal of small fish. On July 7, while en route to Academy Bay, Indefatigable Island, from Chatham Island, numbers were continually seen, both flying and sitting on the surface of the water. Numbers came within easy range and would have been taken had it been practicable to pick them up. Fortunately, through the kindness of Seaman LeMert Mills, two that flew aboard that night were saved and made into specimens.

The last one of these petrels was seen on August 30, several hundred miles west of the Galapagos group.

OCEANODROMA CASTRO CRYPTOLEUCURA (Ridgway)

Hawaiian fork-tailed petrel

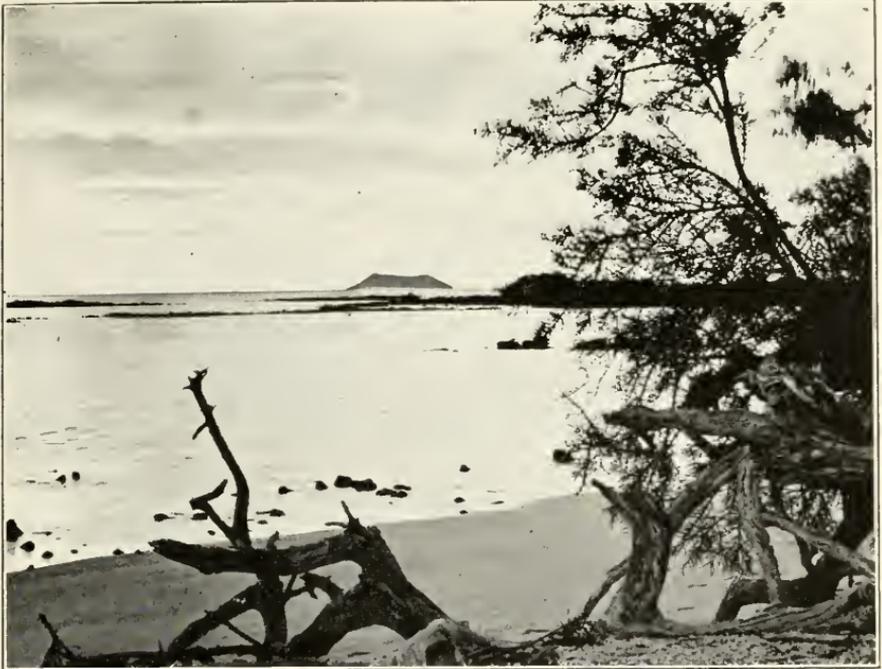
Cymochorea cryptoleucura RIDGWAY, Proc. U. S. Nat. Mus., vol. 4, March 29, 1882, p. 337. (Waimea, Kauai, Hawaiian Islands.)

A male was secured at the Hood Island anchorage, Galapagos Islands, July 11, 1929.

Comparison of a small series of these petrels shows two races, one for the Atlantic area and one for the Pacific, as indicated by Mathews,²² of which the latter, bearing the name *cryptoleucura*, ranges from the Galapagos to the Hawaiian Islands. It is distinguished from *O. c. castro* by somewhat more sooty coloration and slightly smaller size. The male from Hood Island measures as follows: Wing, 155.0; tail, 69.2; culmen from base, 15.0; tarsus, 21.2 mm.

Although stormy petrels were in evidence daily, the specimen that came aboard at Hood Island was the only one of this kind noted. Without long field experience with these birds, it is very difficult, except under unusually favorable conditions, to identify the species until they come to hand. While they are rising and dipping over the surface in unison with the motion of the waves, it is often impossible to see even such marked characters as the extended feet of the Wilson type. It is more than probable that we saw *Hydrobates tethys*, a Galapagos species, without recognizing it.

²² Syst. Av. Austr., pt. 1, June 13, 1927, p. 106.



Photograph by H. H. Cleaves

SEYMOUR ISLAND, GALAPAGOS GROUP, DAPHNE ISLAND SHOWING IN THE DISTANCE



Photograph by H. H. Cleaves

INDEFATIGABLE ISLAND, GALAPAGOS GROUP



Photograph by H. H. Cleaves

MAN-O'-WAR BIRD, TOLIER ISLAND, GALAPAGOS GROUP



Photograph by A. K. Fisher

GALAPAGOS ALBATROSSES, HOOD ISLAND

OCEANITES GRACILIS GALAPAGOENSIS Lowe

Galapagos petrel

Oceanites gracilis galapagoensis P. R. LOWE, Bull. Brit. Orn. Club, vol. 41, July 5, 1921, p. 140. (Charles Island, Galapagos.)

Four females were obtained in the Galapagos, two on Indefatigable Island, June 22, 1929, one at Charles Island, the type locality, June 28, and one at Narborough Island, August 25. These specimens, the first of this race to come to the National Museum, bear out the characters attributed to this form in the original description, for when compared with skins from Peru the birds of the Galapagos are distinctly larger, in addition to being paler, more grayish below. In the series at hand the latter seem also to be more extensively white below, an appearance due perhaps to their slightly larger size. Following are measurements of these four: Wing, 129.2, 131.3, 131.6, 134.2; tail, 55.5, 56.8, 54.7, 61.1; culmen from base, 10.5, 10.8, 10.3, 10.5; tarsus, 30.2, 30.2, 30.6, 32.0 mm.

As more material of this species was secured, the question arises as to whether it is a commoner form than other stormy petrels, or whether the larger number taken was due merely to better opportunities for collecting. At Indefatigable Island quite a number came within long range astern, feeding on drift scrap from the yacht, and two were secured.

PHAËTHON AETHEREUS Linnaeus

Red-billed tropic-bird

Phaëthon aethereus LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 134. (Ascension Island, South Atlantic.)

On Hood Island, in the Galapagos, Gifford Pinchot secured an adult bird and a downy young only a few days old on July 1, 1929. The young bird is light gray above and white below.

Single individuals, or pairs of this tropic-bird, often were seen flying over the ocean, but rarely came near the yacht. On Hood Island a number bred in a low-lying cliff. Mr. Pinchot had a hard climb in securing the adult and young above mentioned. Another fine adult killed July 11 at Hood Island fell out of reach in the sea and drifted off shore on a strong ebb tide.

PHAËTHON LEPTURUS DOROTHEAE Mathews

White-tailed tropic-bird

Phaëthon lepturus dorotheae MATHEWS, Austr. Av. Rec., vol. 2, August 2, 1913, p. 7. (Near Cairns,²³ Queensland, Australia.)

A juvenile bird not quite on the wing was collected by Gifford Pinchot at the island of Fatuhiva in the Marquesas, September

²³ See Mathews, Birds Austr., vol. 4, pt. 3, June 23, 1915, p. 311.

17, 1929. It has the upper surface heavily barred with black and a black spot at the tips of the elongating central rectrices. It is allocated to subspecies after Mathews without critical comparison of adult skins.

Adults often were seen flying about their high nesting crags or far out over the water, but none was observed near enough to distinguish the markings.

PELECANUS OCCIDENTALIS OCCIDENTALIS Linnaeus

Brown pelican

Pelecanus onocrotalus occidentalis LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 215. (West Indies.)

Pelicans were abundant about Panama Bay, and as we passed out to the Pacific on June 1 almost every pile was decorated with one of these birds.

On the evening of July 17 on our return, many flocks containing from 10 to 50 individuals were seen flying toward a roosting place in the vicinity of Taboga Island. Some of these flocks passed just over the yacht and gave a good opportunity for silhouette photographs.

Around the shores and bays of the Galapagos group pelicans were common, and their clumsy but effective dive in pursuit of fish, reminding one of a keg falling overboard, was often heard or seen. At Tower Island, as we were approaching shore, a pelican almost alighted on Mr. Pinchot's head, as he stood amidships directing the course. These birds were found breeding among the mangroves on Indefatigable Island, June 24.

Pelicans were common also about Cocos Island. As no specimens were taken it is not certain whether they were the present form or the more northern California brown pelican.

SULA LEUCOGASTRA PLOTUS (Forster)

Brown booby

Pelecanus plotus FORSTER, Desc. Anim., 1844, p. 278. (Near New Caledonia.)

An adult female taken on Cocos Island, June 5, 1929, by A. K. Fisher, resembles birds from Polynesian localities in being distinctly darker above than specimens from the West Indies.

This species was common at Wafer Bay, Cocos Island, where undoubtedly a colony was nesting. At almost any time of day 50 or more birds were to be seen diving after their prey. They were seen also on the Chatham Bay side of the island, but were not so common there as the red-footed booby.

The species was observed at Tower Island in large numbers, and as individuals in other parts of the Galapagos group.

SULA PISCATOR (Linnaeus)

Red-footed booby

Pelicanus piscator LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 134. (Java Seas.)

A female in immature dress was taken on Cocos Island, June 5, 1929, by A. K. Fisher. No attempt is made here to distinguish subspecies in this bird.

Large numbers of this species in the so-called immature plumage were breeding on the islet Nuez at Cocos Island during the first week in June. If this is the true red-footed species in which the plumage of the adult is mainly creamy-white, with primaries blackish-brown, it is hard to understand why there were not at least a few adult-plumaged birds among the hundreds in immature dress which breed at this point. So far as memory goes, not a bird in adult plumage was seen during our entire stay in that vicinity. The species was often common about the yacht, and a few individuals came aboard at night.

SULA NEBOUXII Milne-Edwards

Blue-footed booby

Sula nebouxii MILNE-EDWARDS, Ann. Sci. Nat. (Zool.), sér. 6, vol. 13, art. 4, 1882, p. 37, pl. 14. (Pacific coast of America—probably Chile.)

A male was obtained at Indefatigable Island in the Galapagos, June 24, 1929.

In the Galapagos group this species was seen daily, usually singly, in pairs, or in small groups, never in large masses like the brown and red-footed boobies. One never tires of watching this and other species of the family diving for fish. With wings tightly pressed against the body the birds descend at an angle of 45° like a projectile, often from considerable heights, striking the water with a thud and reappearing at the surface 8 or 10 feet beyond as if following a parabolic curve. One afternoon at Wreck Bay, Chatham Island, five boobies of this species gave a fine exhibition, descending in almost perfect alignment to strike the water and reappear together. After a moment's rest they arose in a half spiral to regain position for another onslaught on their prey. This maneuvering over a rather restricted area was kept up for fully half an hour.

One of the natives on Chatham Island had a booby which he was carrying home for food, and we understand that these birds are considered quite a delicacy.

SULA VARIEGATA (Tschudi)

Peruvian booby

Dysporus variegatus TSCHUDI, Arch. Naturg., 1843, p. 390. ("In littoribus et insulis Oceani pacifici.")

A female in adult plumage was obtained on Tower Island in the Galapagos Archipelago June 14, 1929.

This species, first seen at Tower Island, was found later to be quite common about Indefatigable, Daphne, Chatham, and Hood Islands. It is a fine-appearing bird and suggests the gannet more than the booby type.

NANNOPTERUM HARRISI (Rothschild)

Flightless cormorant

Phalacrocorax harrisi ROTHSCHILD, Bull. Brit. Orn. Club, vol. 7, May 25, 1898, p. lii. (Narborough Island, Galapagos Archipelago.)

Two males and three females were obtained at Narborough Island in the Galapagos August 25, 1929, two being preserved as skeletons and the others as skins. Doctor Fisher found that two males weighed 9 pounds each, and two females 6 pounds each, a surprising sexual difference in bulk.

Two sets of two eggs each were obtained by Mr. Pinchot on the same date from rather large nests made compactly of seaweed. One had been abandoned. The eggs are pale glaucous-blue, this color being entirely concealed and covered by a chalky-white deposit over the entire shell, so that the underlying color may be seen only by chipping this cover layer away. The eggs are much nest-stained. The two sets measure as follows: 65.1 by 41.8 and 69.4 by 41.2; 65.9 by 42.5 and 70.2 by 42.7 mm. These figures agree with those given by Rothschild and Hartert.²⁴

On August 25 after crossing in the launch from Tagus Cove, Albe-marle Island, to Narborough Island, we almost immediately ran across five of these cormorants on a rocky point some 8 feet above the water. After photographs were taken, specimens were secured. The birds are very tame and seem little affected by approach either on land or on the water. As we scouted along shore quite a number were seen both on the rocks and in the water. When moving they jump with both feet together and body erect much as a small child will do while descending steps. They are expert swimmers, and often hunt or follow their prey for 50 yards or more under water before coming to the surface.

When we returned to Tagus Cove anchorage, a number of pairs were found breeding on a low shelf of rock. The nests were com-

²⁴ Nov. Zool., vol. 9, July, 1902, p. 409.

pect and made of fine drift seaweed. An interesting question is why this species is so unevenly restricted when so many suitable, widely separated places exist; also why, with the exception of this small colony, no cormorants were seen between Panama and the entrance of San Francisco Bay on our long 7,500-mile trip through the South Seas.

FREGATA MAGNIFICENS Mathews

Frigate bird, man-o'-war bird

Fregata minor magnificens MATHEWS, Austr. Av. Rec., vol. 2, December 19, 1914, p. 120. (Barrington Island, Galapagos Archipelago.)

A male and a female taken on Cocos Island June 5, 1929, by A. K. Fisher, are immature birds, with the head, neck, and upper breast suffused with brown. The light wing bar in both is pale, and stands out in marked contrast to the darker feathers of the wing.

Some form of this bird of wonderful flight was seen at every island encountered between Cocos Island and Tahiti.

They would often follow the yacht, soar above it, or even alight on its higher rigging, and on occasion it was feared they might injure the radio outfit by alighting on it. At Tower Island, every morning 50 or more females would leave the males to attend to the nests and would fly out to the vessel to circle about in graceful curves for a time and then return to the island. At the nesting colony on Tower Island (pl. 6), the birds were easily approached, and after a few preliminary half-hearted thrusts at the intruder, would allow themselves to be stroked with the hand. On one occasion a male, in his first excitement at being approached, disgorged some fish that he evidently had taken from boobies. In feeding habits they have two very dissimilar methods of procuring food, namely, as robbers and as scavengers. As pirates they rob other birds of fish just captured, and as scavengers they pick morsels from the ocean surface. When taking food from the water the wing tips are thrown upward with wonderful grace as the bird poises for a moment, while reaching downward with extended neck. The booby appears to be the most frequent victim upon which these great birds practice piracy. When boobies find shoals of fish and are feeding in numbers, the man-o'-war birds are sure to be hovering near to secure their unjust share of the chase. Some individual boobies seem to have acquired prudence, and after catching fish, remain on the surface long enough to be forgotten by their persecutors before taking wing to resume their pursuit of food. The man-o'-war bird also robs the noddy, and at times pursues the little stormy petrel. The question is whether the petrel also would be devoured if the man-o'-war should catch up with it.

This bird does not seem to be able to carry anything weighty in its beak. It has been seen to pick up and let fall objects that would give gulls little trouble to carry. Near Chatham Island one picked up a small object and let it fall a dozen times before becoming discouraged and abandoning it.

There seems to have been a great mortality among the man-o'-war birds, for in all the nesting places visited many skeletons were found on the nests or on the ground underneath. No evidence of such marked mortality was found among boobies and other species nesting in the vicinity.

ARDEA HERODIAS COGNATA Bangs

Galapagos blue heron

Ardea herodias cognata BANGS, Proc. New England Zool. Club, vol. 3, February 6, 1903, p. 100. (Indefatigable Island, Galapagos Islands.)

Great blue herons were seen at Tower and Indefatigable Islands, and at Postoffice Bay, Charles Island, at a lagoon, one allowed itself to be approached to within 10 feet, when it flew and alighted again a short distance away. With their formidable bills these great birds have probably trained the dogs and cats which roam the islands to have proper respect for them.

CASMERODIUS ALBUS EGRETTE (Gmelin)

American egret

Ardea egretta GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 629. (Cayenne.)

One was reported seen on Tower Island, June 15. None was found on Albemarle Island where it has been stated they have bred.

DEMIGRETTE SACRA SACRA (Gmelin)

Reef heron

Ardea sacra GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 640. (Tahiti.)

A female collected at Eiao in the Marquesas Islands on September 28, 1929, is entirely in dark plumage except for the white throat.

This species was found sparingly in the Marquesas and Tuamotu group. On Fatuhiva, one was seen well back among the hills along a stream, while the one secured at Eiao was feeding on the outlying tide rocks. No individual in the white phase of plumage was observed. Although noted about at sunset its pernoctalian traits were not as marked as in our night heron. At Toau, Tuamotu Island, as we passed a cabin, a tame one of this species was persistent in its attempt to follow us. Mild discipline had no effect on it, so the owner laughingly had to pick it up and carry it home. The native name was "gay-too-sir." Later this bird was seen in the cabin associated with the children, and on the outside with chickens

that displayed due respect for it. A pig that ill advisedly planned to appropriate a piece of food which the bird was eating had a rapid change of heart, evinced by his quick retreat, sudden squeal, and the shaking of his head.

BUTORIDES VIRESCENS HYPERNOTIUS Oberholser

Panama green heron

Butorides virescens hypernotius OBERHOLSER, Proc. U. S. Nat. Mus., vol. 42, August 29, 1912, p. 549. (Rio Indio, near Gatun, Canal Zone.)

An adult male taken on Cocos Island June 6, 1929, by A. K. Fisher agrees with *hypernotius* in size but is slightly lighter on the abdomen than our series of that bird. As the skins of the Central American bird seen are somewhat stained by grease it appears that the difference noted is probably adventitious. Gifford²⁵ observed that the green heron was found in small numbers on Cocos Island in September, 1905, and recorded that in size his specimens are smaller than those of California (*B. v. anthonyi*). The present specimen bears out this statement and indicates that the bird is the Panamanian form, which ranges from central Costa Rica through the Canal Zone to Colombia. The skin in hand has the following measurements: Wing, 171.5; tail, 62.3; exposed culmen, 58.9; tarsus, 51.1 mm. The claws are worn blunt at the ends, indicating probably that the bird walked about much on stones.

Two individuals only of this heron were seen at Cocos Island. One at Chatham Bay flew up from the small bowlders at the mouth of a stream where it crossed the beach, before the boat landed. After we reached shore we looked for it but it could not be found, nor was it seen on subsequent trips. The specimen secured at Wafer Bay was taken in a swampy tract a short distance back from the beach. It evidently had been feeding recently as its gullet contained three good-sized fish (*Sicydium*).

BUTORIDES SUNDEVALLI Sharpe

Galapagos heron

Butorides sundevalli SHARPE, Cat. Birds Brit. Mus., vol. 26, 1898, p. 185. (James Island, Galapagos Archipelago.)

Two specimens were taken in the Galapagos, an immature male at Tower Island June 14, 1929, and an adult female at Duncan Island June 26. The young bird is quite distinctly streaked below.

The Galapagos heron was seen almost daily along the low lava reefs or at the edges of tide pools, where it was so tame it could easily be approached. The specimen from Duncan Island was taken by LeMert S. Mills, an active young seaman, who caught it as he landed from a skiff.

²⁵ Proc. California Acad. Sci., vol. 2, Aug. 11, 1913, pp. 65, 66.

One morning on Indefatigable Island while we were on a beach, Seaman Ralph Nelson began to break up a crab (*Grapsus*) with a staff, to ascertain whether it contained edible meat. A Galapagos heron had been feeding among the rocks, and had paid no apparent attention to us, but when it saw the crab being broken the bird came running up to where we were standing. To find out what it would do, we quietly backed off, when the bird immediately approached the crab, looked it over without touching it, and then, satisfied, walked back to its feeding-ground. When the pounding of the crab was resumed, the heron raced back again, this time stopping between us only a foot or two away. First it would look at the crab and then up at our faces as if asking what all this affair was about. Its bewildered expression was very amusing.

NYCTANASSA VIOLACEA PAUPER (Sclater and Salvin)

Galapagos night heron

Nycticorax pauper SCLATER and SALVIN, Proc. Zool. Soc. London, 1870, p. 327. (Indefatigable Island, Galapagos Archipelago.)

Four specimens were collected in the Galapagos, two immature females at Tower Island June 14 and 16, 1929, an adult male at Daphne Island June 23, and an immature male at Tagus Cove on Indefatigable Island August 25. These are all appreciably darker than the typical form and seem to be easily separable as a distinct race.

This was not an uncommon species on all of the Galapagos Islands visited by us, the immature birds being much in evidence. On Tower Island a certain adult, when approached, reminded one of a road-runner as it ran into a thick clump of shrubbery, whence it would not flush.

PHOENICOPTERUS RUBER Linnaeus

Flamingo

Phoenicopterus ruber LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 139. (Jamaica, Cuba, and Bahamas.)

Although reported by natives, the only one seen was a young bird in a dooryard at Villamiel, Albemarle Island, which recently had been captured not far distant.

DAFILA GALAPAGENSIS (Ridgway)

Galapagos pintail

Poecilometta galapagensis RIDGWAY, Proc. U. S. Nat. Mus., vol. 12, February 5, 1890, p. 115. (Charles Island, Galapagos Archipelago.)

On June 24 one of these ducks was seen at close range on a lagoon on Indefatigable Island. A few flying birds were reported by members of the party from time to time, but this was the only one near enough to show any pattern.



Photograph by H. H. Cleaves

INDEFATIGABLE ISLAND, GALAPAGOS GROUP



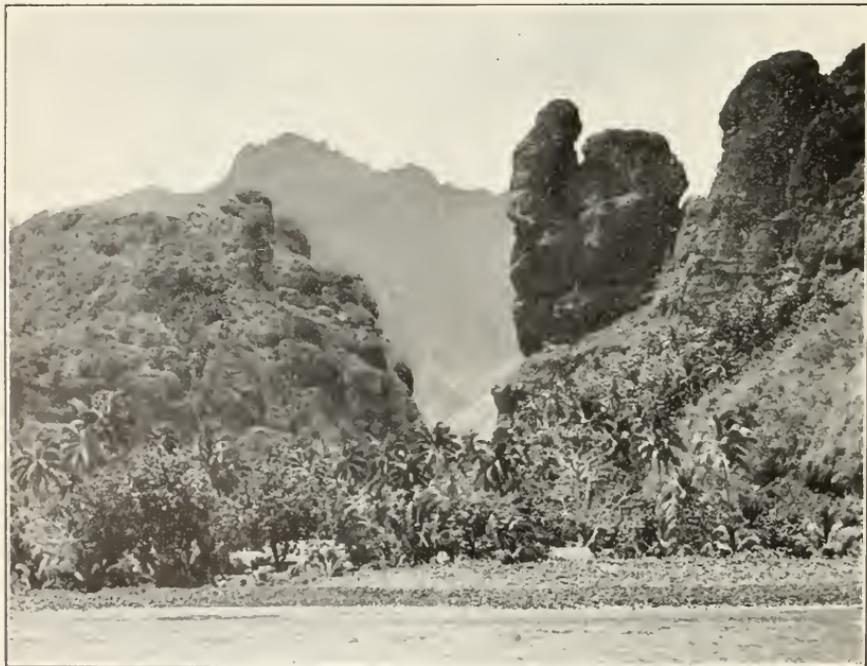
Photograph by A. K. Fisher

GALAPAGOS HAWK AT NEST, SEYMOUR ISLAND



Photograph by A. K. Fisher

THE "MARY PINCHOT" IN HARBOR, BAY OF VIRGINS, FATUHIVA, MARQUESAS ISLANDS



Photograph by H. H. Cleaves

FATUHIVA ISLAND, MARQUESAS ISLANDS

BUTEO GALAPAGOENSIS (Gould)

Galapagos hawk

Polyborus galapagoensis GOULD, Proc. Zool. Soc. London, October 3, 1837, p. 9. (Galapagos Islands.)

This interesting hawk, the only species of its family known to inhabit the Galapagos group, was seen on all the larger islands visited except Tower Island, where very likely it simply escaped notice. In size and in other respects it suggests our broad-winged hawk. Its nests were found on Seymour, Indefatigable, and Hood Islands, and at this season were empty except for an addled egg found on Seymour. The nests were placed on lava outcrops and on account of their size and elevation could be seen at a considerable distance. (Pl. 7.) They were at least $3\frac{1}{2}$ feet in diameter and about the same in height, much like a well-formed haycock but not so rounded on top. The mass was made up of tree branches, bits of weed stalks, and other rubbish, with finer material on top, bearing a shallow depression. As the birds were seen on and in the vicinity of the nests at frequent intervals, it is likely that the breeding season was approaching.

Polyandry, at least among North American birds of prey, seems to be unknown. It was of great interest, therefore, to find a female of the Galapagos hawk receiving sexual advances from two males. A female and two males were seen quite frequently about a nest on Seymour Island or flying in sight of one another in search of food. On June 20 all three birds were present in the vicinity of the nest, the female sitting on one of the larger trees, 35 to 40 yards distant. While the observer was quietly stationed near the nest, one of the males flew and alighted on the limb close to the female. Almost immediately they began their courtship and sexual union soon was accomplished. The male then flew and alighted near the observer, while almost immediately his place at the side of the female was taken by the second male. Very soon his mating advances were received as had been those of his predecessor and their connubial relations were completed. There was no indication of jealousy on the part of either male, and the birds departed at different times but flew in the same general direction.

These hawks were very tame and showed no fear when approached within a few feet. They were photographed in both still and moving pictures, and the operator stood not over a yard away. Once to induce a hawk to leave a tree and go to its nest to be photographed, it was necessary to climb the tree and push the hawk off the limb by placing the muzzle of a gun against its underparts. On Hood Island, Doctor Mathewson fed lizards to a hawk by presenting them attached to a short stick. When the hawk had difficulty in detaching the preferred morsel with its beak it used its foot suc-

cessfully. On Indefatigable Island one of these hawks was seen to drop on prey and almost immediately arise with a lizard in its talons. Chief Engineer Christenson killed a hawk with a rifle, and its stomach contained the remains of a dove. This would seem to be unusual, because birds, even the ground finches, showed little fear of the hawks.

PANDION HALIAËTUS CAROLINENSIS (Gmelin)

Osprey

Falco carolinensis GMELIN, Syst. Nat., vol. 1, pt. 1, 1788, p. 263. (Carolina.)

An osprey was seen on several occasions at Wafer Bay, Cocos Island, June 5-10, as it flew back and forth over the water.

GALLUS GALLUS (Linnaeus)

Jungle fowl

Phasianus gallus LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 158. (Pulau Condor, off mouth of Mekong River.)

An adult female and a chick in the down were secured on Uahuka in the Marquesas, September 23, 1929. The chick, with only a trace of the juvenal plumage appearing at the sides of the breast, has the wings developed so that the tips of the primaries in the made-up skin extend beyond the tail. The wing feathers are firm and strong and the bird quite evidently was able to fly.

This species, which was introduced into the Marquesas Islands in the early days, has spread and become feral in the wilder parts. It seemed strange to hear the cock crowing in localities far from human habitation. The jungle fowl is hunted by the natives and has become somewhat wary.

HAEMATOPUS PALLIATUS GALAPAGENSIS Ridgway

Galapagos oystercatcher

Haematopus galapagensis RIDGWAY, Auk, 1886, p. 331. (Chatham Island, Galapagos Archipelago.)

A male was taken at Indefatigable Island in the Galapagos, June 20, 1929.

Anywhere on the islands of the Galapagos group where there are low-lying reefs uncovered by the tide, we were almost sure to run across one or two to half a dozen of these interesting birds. With a little caution it was possible to walk among a group of oystercatchers, the lack of fear making them very different from their wary relatives on our Atlantic seaboard. Unless one tried to get within a few feet of them little attention was paid to the oncomer, as they busied themselves in procuring food from the reefs recently

uncovered by the ebbing tide. At times a bird would stand motionless on one foot for many minutes as if to rest, and it was surprising to note how inconspicuous they often were, especially when little sand pockets occurred among the dark masses of rock. The dark upperparts and light underparts blended so perfectly with the shore-line landscape that the outline of the bird was lost until possibly the red bill betrayed them.

CHARADRIUS SEMIPALMATUS Bonaparte

Semipalmated plover

Charadrius semipalmatus BONAPARTE, Journ. Acad. Nat. Sci. Philadelphia, vol. 5, 1825, p. 98. (Coast of New Jersey.)

A female taken at Wafer Bay, Cocos Island, June 5, 1929, marks another migrant species nesting in the north that does not seem to have been recorded previously from this island.

Mr. Cleaves reported seeing this plover with the black-bellied plover on Indefatigable Island, June 17, the only record other than the specimen taken on Cocos Island.

PLUVIALIS DOMINICUS FULVUS (Gmelin)

Pacific golden plover

Charadrius fulvus GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 687. (Tahiti.)

A female was collected on Eiao in the Marquesas group, September 28, 1929.

Eiao Island is an elevated table-land with parts of its sides made up of almost perpendicular walls over 2,000 feet high. The escarpment has been broken down in some places, one of which bears a steep trail leading up to the summit. The top is an interesting, rolling plateau, cut in places by broad but rather shallow valleys, and bearing here and there clumps of woodland. On the open knolls and slopes where the introduced sheep had closely trimmed the turf we flushed a flock of 15 or more golden plovers and an occasional tattler which seemed much out of place. This open stretch of several hundred acres uniformly showed shorebird droppings, which would seem to indicate that a large number had recently held rendezvous here before passing onward.

ARENARIA INTERPRES OAHUENSIS (Bloxham)

Pacific turnstone

Tringa oahuensis BLOXHAM, Byron's Voy. Blonde to the Sandwich Islands, 1826 (publ. February 20, 1827), p. 251. (Hawaiian Islands.)

Two specimens, male and female, were obtained on Tower Island in the Galapagos June 15, 1929. Both are in worn winter dress, the male showing some advance toward breeding plumage about the head.

In addition to those taken on Tower Island, five turnstones were seen on a dry slough on Seymour Island June 21; four on a reef at Daphne Island June 23; and three on Hood Island on July 1.

NUMENIUS HUDSONICUS Latham

Hudsonian curlew

Numenius hudsonicus LATHAM, Index Orn., vol. 2, 1790, p. 712. (Hudson Bay.)

Two of these curlews, with five turnstones, seen June 21 on a dry lagoon on Seymour Island, were the only ones observed during the trip.

HETEROSCELUS INCANUS (Gmelin)

Wandering tattler

Scolopax incanus GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 658. (Eimeo, or Moorea, Island, Society group, and Palmerston Island, Pacific Ocean.)

A male was taken at Wafer Bay on Cocos Island June 5, 1929, by A. K. Fisher. This specimen is in winter dress at a time when its companions in Alaska are beginning to nest and so would seem to represent an abnormal individual that had lacked physiological incentive for the northward migration.

Snodgrass and Heller²⁶ record one as seen in Chatham Bay, Cocos Island, in July. This species was found again in fall in the Marquesas, where an adult male, still partially in breeding dress, was taken on Uahuka September 19, and an adult and an immature bird were shot on Eiao September 28.

The wandering tattler was noted in the Galapagos Islands at Indefatigable Island, at Daphne June 23, and at Hood Island July 1. At Eiao Island of the Marquesas group it seemed very odd to find individuals on the high, dry plateau at an altitude of over 2,000 feet, and others on the low reefs on the shore of the island. In the Tuamotu Islands this species was seen at Takaroa October 1, and at Toau October 4. On this latter atoll it also was found at little ponds away from the shore where in action and flight it suggested the solitary sandpiper.

PISOBIA FUSCICOLLIS (Vieillot)

White-rumped sandpiper

Tringa fuscicollis VIELLOT, Nouv. Dict. Hist. Nat., vol. 34, 1819, p. 461. (Paraguay.)

A female taken at Wafer Bay, Cocos Island, June 5, 1929, is in breeding plumage. The date is late for occurrence of this migrant.

²⁶ Proc. Washington Acad. Sci., vol. 4, Sept. 30, 1902, pp. 511-512.

The specimens collected of the wandering tattler, semiplanted plover, and this species were found feeding on the bare flats at low ebb at Wafer Bay.

HIMANTOPUS MEXICANUS (Müller)

Black-necked stilt

Charadrius mexicanus MÜLLER, Natursyst. Suppl., 1776, p. 117. (Mexico.)

A black-necked stilt, with its young, was seen on a beach on Indefatigable Island June 17-20.

PHALAROPUS FULICARIUS (Linnaeus)

Red phalarope

Tringa fulicaria LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 148. (Hudson Bay.)

A female molting from nuptial to first fall plumage taken at Narborough Island August 25, 1929, is apparently the first record of the species for the Galapagos. According to Bent,²⁷ the fall migration of the red phalarope begins off the coast of California in July or early August, so that the date of taking of the present specimen would seem to be usual.

When we were sailing between Albemarle and Narborough Islands the water was very smooth, and among other things we saw large numbers of phalaropes for the first and only time. Mr. Cleaves estimated that the total was not far from 2,000. Later in the day while we were in the launch, one of these birds was secured, and identification made sure.

LARUS FULIGINOSUS Gould

Sooty gull

Larus fuliginosus GOULD, Zool. Voy. Beagle, pt. 3, Birds, March, 1841, p. 141. (James Island, Galapagos Archipelago.)

A male was secured at Tower Island June 14, 1929.

This gull was seen at every island we visited in the Galapagos group. It was common, associated with the fork-tailed gull, along the rocky ledges, it was grouped in numbers on the sandy beaches, and it often visited the vessel, especially when food refuse was being thrown overboard. At Tower Island two or three dozen congregated on the beach where a manta was being dissected, and fed with great relish on the discarded scraps.

The general appearance of this species, together with its manner of flight, its close grouping on the beaches when at rest, and method of feeding, continually brings to mind Heermann's gull, which it

²⁷ U. S. Nat. Mus. Bull. 142, 1927, p. 13.

resembles quite closely. It was not so tame as the fork-tailed gull and did not give the same opportunity for photographic work. At Villamiel, Albemarle Island, where the buildings are near the beach which lies behind the reefs, the gulls use the tops of the homes as resting and lounging places, a habit so common among the relatives at northern seaports.

This colony of gulls seemed to have adopted a new and rather effective method of procuring food with little effort to themselves. The shallow stretch of water that lies between the beach and the reefs is used by a number of pelicans for fishing purposes. While watching their awkward but effective diving we were surprised and amused to see hovering gulls alight on the heads of the pelicans that had made successful catches. For some reason, in a few moments the pelican opened its mouth, when the gull adroitly removed a portion of the catch and flew away with it. During half an hour several gulls were seen to perform this trick. This was not observed elsewhere.

CREAGRUS FURCATUS (Neboux)

Fork-tailed gull

Larus furcatus NEBOUX, Zool. Voy. Venus, Atlas, 1842, pl. 10. ("Monterey," California.)

A male was taken at Tower Island, June 14, 1929.

The type locality of Monterey assigned to this species is probably erroneous. The species was described from the collections obtained on the voyage of the *Venus*, and it is suggested that the bird was obtained while the ship was en route from the Galapagos to California.

To those who have lived where gulls are numerous both as to individuals and as to species, and where perplexing immature plumages are often confusing, a vague feeling of disappointment comes as they sail a sea without gulls. When we left Panama behind, gulls faded away astern and we saw no more until we were approaching Tower Island of the Galapagos group. We still were several hours away when a pair of beautiful fork-tailed gulls met the yacht, circled around it several times, and then started on their return as if to pilot us to the island. When we sailed to the westward from the Galapagos not another gull was seen over the stretch of 7,000 miles traveled, until we were within a few hours of the journey's end, when gulls began to come out to us, as the Farallons, off Golden Gate, became visible through the haze.

The fork-tailed gull was seen at all of the Galapagos Islands visited, and whenever rocky ledges were approached they appeared in numbers usually associated with the sooty gull, the only other species found in the region.

They were very tame and unsuspecting and showed little fear when approached. Mr. Cleaves, while taking moving pictures of them at Hood Island, was forced to push some individuals out of the field, as they were obstructing the foreground. When a gun was discharged near by they circled about for a few moments and then returned to their resting places. They utter rather plaintive notes, compared with the harsh rasping calls of their northern relatives. This species, with its delicately colored plumage, graceful flight, and interesting habits, may be considered one of the most attractive of the whole group.

STERNA FUSCATA OAHUENSIS Bloxham

Pacific sooty tern

Sterna Oahuensis BLOXHAM, Byron's Voy. Blonde to the Sandwich Islands, 1826 (publ. Feb. 20, 1827), p. 251. (Hawaiian Islands.)

An adult male, taken at Uahuka in the Marquesas Islands September 24, 1929, measures as follows: Wing, 268.0; tail, 185.5; culmen, 41.2; tarsus, 22.0 mm. Sooty terns from the Pacific islands, according to Mathews,²⁸ have longer "streamers" or outer tail feathers than those from the West Indies, and in the small series compared at this time appear to the junior author, in addition, to be more sooty black above. They are separated as a distinct race under the name given above.

At the same island of Uahuka, two juvenile birds were taken on September 19 and 24, one of them about one-half grown and the other with wings developed to a point where it must have had the power of flight.

The sooty tern was seen casually in the Galapagos, Marquesas, and Tuamotu groups, as individuals or small flocks now and then passed the yacht at some distance. When we reached Uahuka in the Marquesas, however, an immense colony was found on Hat Island—a flat-topped island of 10 acres or more in extent, with perpendicular walls varying in height from 15 to 30 feet above the ocean surface. Those who climbed to the top, with the aid of a rope fastened above by a native, found the birds at their nests so closely associated that it was difficult to walk without stepping on eggs or young. The birds, as they arose in great masses, made a deafening noise that could be heard a mile or more away. Some of the young, in scrambling about, frequently fall into the sea and, according to statements of natives, are soon eaten by groupers or other larger fish. In fact, the natives are said to use them as bait. The small one made into a specimen was picked up soon after it fell into the water. Almost at any time of night these terns were heard flying about the vessel.

²⁸ Birds Austr., vol. 2, pt. 4, Nov. 1, 1912, p. 394.

The rats, which were numerous on the island, destroyed eggs and young, and before we left, a supply of poisoned grain was scattered about to reduce the numbers of these rodents.

THALASSEUS BERGII RECTIROSTRIS (Peale)

Crested tern

Sterna rectirostris Peale, U. S. Expl. Exp., vol. 8, 1848, p. 281. (Fiji Islands.)

An adult male in breeding dress was obtained at Toau, in the Tuamotu group, October 4, 1929. The only other specimens available from the Pacific area are in post-breeding dress, two in this stage from Makemo Island in the Tuamotus being distinctly paler above than this adult. The skin from Toau has the following measurements: Wing, 343.0; tail, 163.0; culmen, 59.0; tarsus, 28.4 mm.

This fine tern was seen almost daily at the Tuamotu Islands, but not elsewhere.

PROCELSTERNA CERULEA CERULEA (F. D. Bennett)

Gray noddy

Sterna cerulea F. D. BENNETT, Narr. Whaling Voy., vol. 2, 1840, p. 248. (Christmas Island and other low coral formations of the Pacific.)

The two specimens taken include a male from Uahuka in the Marquesas, September 19, and a female from Toau in the Tuamotus, October 5, 1929. The bird from the Marquesas is darker than the other and it is possible that the two are subspecifically distinct, but with only limited material at hand it is not practicable at this time to separate them. Following are measurements: Male, wing, 175.0; tail, 97.0; culmen, 27.0; tarsus, 24.7 mm. Female, wing, 175.0; tail, 93.8; culmen, 26.0; tarsus, 23.8 mm.

Mathews²⁹ is unquestionably in error in lumping birds from Christmas Island, the type locality of *cerulea*, with those of the Hawaiian Islands. On turning to the original description of *cerulea*, we read "plumage light blue or slate colour," which agrees with the darker birds of the south but would hardly apply to the paler ones of the Hawaiian Islands, which have the breast nearly white. A skin seen in the British Museum, taken on Christmas Island "with egg," October 6, 1884, a topotype of *cerulea*, is closely similar to birds from the Marquesas, and is decidedly darker than Hawaiian specimens.

The specimen of this lovely little tern taken at Uahuka was collected some distance inland from the shore, but others were seen

²⁹ Birds Austr., vol. 2, pt. 4, Nov. 1, 1912, p. 431; Syst. Av. Austr., pt. 1, June 13, 1927, p. 144.

about some steep cliffs, where they may have been breeding. Certain phases of their flight strongly suggest that of the nighthawk.

At Toau the only one seen was the specimen taken.

MEGALOPTERUS MINUTUS MINUTUS (Boie)

Pacific white-capped noddy

Anous minutus BOIE, Isis, 1844, p. 188. (Nova Hollandia=Raine Island, Northeast Australia.³⁰)

Two males and a female from Toau, in the Tuamotu group, taken October 5 and 6, 1929, measure as follows: Males, wing, 226.0, 224.0; tail, 117.8, 115.8; culmen, 42.5, 45.3; tarsus, 20.4, 21.3 mm. Female, wing, 228.0; tail, 120.8; culmen, 42.6; tarsus, 21.0 mm.

Various names are at present current for birds of this species from various parts of the Pacific area, some of which certainly are not valid. With material lacking from many of the localities concerned it is not practicable at this time to attempt definite revision of the group but as has elsewhere been stated,³¹ birds from the area south of the Hawaiian group, Wake, Marcus, and the Caroline Islands apparently should be known as *Megalopterus minutus minutus* (Boie) with a range from eastern Australia across to the Tuamotus, and possibly Cocos Island, since there is little evident in available descriptions and in the few specimens seen to distinguish geographic races in this region. The single bird at hand from Cocos Island, a female taken June 6, 1929, by A. K. Fisher, which should represent the race *diamesus*,³² differs from skins from the Tuamotus only in being faintly lighter than most, a difference so slight as to be apparently individual. This specimen has the following measurements: Wing, 230.0; tail, 123.5; culmen, 42.5; tarsus, 20.8 mm.

ANOÛS STOLIDUS PILEATUS (Scopoli)

Pacific noddy

Sterna pileata SCOPOLI; Del. Flor. Faun. Insubr., pt. 2, 1786, p. 92. (Philippines.)

Two females were obtained, one at Nukuhiva in the Marquesas September 26, and one at Toau in the Tuamotus October 5, 1929. The skin from Nukuhiva has the following measurements: Wing, 283.0; tail, 167.0; culmen, 39.6; tarsus, 23.7 mm.

The specimen from Toau is in partial molt. The two species of noddies observed at Toau, Tuamotu Islands, were common and in

³⁰ See Mathews, Syst. Av. Austr., pt. 1, June 13, 1927, p. 146.

³¹ Wetmore, Alexander, Ibis, 1925, pp. 826, 827.

³² *Micranous diamesus* Heller and Snodgrass, Condor, 1901, p. 76. (Cocos Island.)

about the same numbers. In flight the two forms intermingled, but were readily distinguished by their size, color, and crown patch.

ANOÛS STOLIDUS RIDGWAYI Anthony

Ridgway's noddy tern

Anous stolidus ridgwayi ANTHONY, Auk, 1898, p. 36. (Socorro Island, Mexico.)

The single specimen taken on Cocos Island June 6, 1929, by A. K. Fisher, is a bird in molt without the light crown cap. This individual is renewing the primaries. It is identified as *ridgwayi* in accordance with present usage, though no particular difference is noted in comparing it with skins of *A. s. galapagensis* from the Galapagos Islands, since it is as dark as the average of that race.

ANOÛS STOLIDUS GALAPAGENSIS Sharpe

Galapagos noddy

Anous galapagensis SHARPE, Phil. Trans., vol. 168, 1879, p. 469. (Dalrymple Rock, Chatham Island, Galapagos Islands.)

A male was secured at Tower Island June 14, 1929.

When we were near islands, noddies of one form or another were common along the rocky ledges or out over the water, where they were in search of food. Often large flocks were seen milling over shoals of fish, especially when bonitos or other predacious fish were driving small fry toward the surface. In the fading light of evening or when the noddies were flying with a dark shore as a background, often the only part of each bird visible was the light crown patch that bobbed along like a will-o'-the-wisp.

GYGIS ALBA CANDIDA (Gmelin)

Fairy tern, love tern

Sterna candida GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 607. (Christmas Island, Pacific Ocean.)

Two adult males and a nestling with wing quills just starting were taken on Cocos Island June 10, 1929, by A. K. Fisher. The adults have the following measurements: Wing, 236, 247; tail, 106.0, 125.7; culmen, 38.1, 38.9; tarsus, 13.9, 13.4 mm. These birds seem to agree in range of measurement with a few skins at hand from the Tuamotu Islands and Tahiti, and on this basis are supposed to represent the form typical of the central Pacific region.

A male taken at Toan in the Tuamotus has the following measurements: Wing, 240.0; tail, 119.3; culmen, 43.0; tarsus, 12.8 mm.

Hartert³³ believes, though he did not have specimens from Gmelin's type locality, that this form must be known as *candida*,

³³ Nov. Zool., vol. 34, Aug., 1927, pp. 19-20.

this name antedating *pacifica* of Lesson of 1825. The name *candida* is here used in accordance with Hartert's suggestion.

These graceful little terns were common and were seen flying in pairs among the trees high up on the island, along the beaches, or over the sea. Mr. Cleaves took a number of photographs of them at the nesting place on Nuez Islet. They were common also at Wafer Bay.

GYGIS MICRORHYNCHA Saunders

Slender-billed fairy tern

Gygis microrhyncha SAUNDERS, Proc. Zool. Soc. London, 1876, p. 668. (Marquesas Islands.)

The five skins of this fine bird obtained in the Marquesas were collected as follows: Male and female, Hivaoa, September 11 and 13; female, Nukuhiva, September 25; and male and female, Eiao, September 27, 1929. Until recently it has been supposed that this distinct species, known only from the Marquesas, was found on Nukuhiva Island alone, but this proves not to be the case. There is considerable variation in size, as the following measurements indicate, but otherwise the birds appear similar:

Sex	Locality	Wing	Tail	Culmen	Tarsus
		<i>Mm.</i>	<i>Mm.</i>	<i>Mm.</i>	<i>Mm.</i>
Male.....	Hivaoa.....	206.5	73.6	35.5	11.5
Do.....	Eiao.....	222.0	90.2	38.0	11.5
Female.....	Hivaoa.....	224.0	80.7	-----	12.3
Do.....	Nukuhiva.....	215.0	76.2	37.0	11.4
Do.....	Eiao.....	216.0	76.4	35.7	12.5

This little tern was common in the various islands of the Marquesas, especially in the higher timbered reaches. At Uahuka they also frequented the coconut groves, flying both above and under the treetops.

COLUMBA LIVIA Gmelin

Rock pigeon

Columba domestica β *livia* GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 769. (South Europe.³⁴)

A male was taken at Uahuka in the Marquesas September 21, 1929. The pigeon is also recorded by Murphy³⁵ as naturalized on this same island, which he calls Huahuna.

Flocks of this pigeon often were seen among the rocky cliffs in the interior of Uahuka, and at the little village of Omoa many fed along the beach or rested on the cliffs at each side of a narrow bay.

³⁴ Type locality designated by Hartert, Vög. pal. Faun., vol. 2, Aug., 1920, p. 1465.

³⁵ Amer. Mus. Nov., No. 115, May 29, 1924, p. 8.

NESOPELIA GALAPAGOENSIS GALAPAGOENSIS (Gould)

Galapagos dove

Zenaida Galapagoensis GOULD, Zool. Voy. Beagle, vol. 3, Birds, 1841, p. 115, pl. 46. (Galapagos Archipelago.)

Two specimens, an adult and an immature female, were taken at Tower Island June 14, 1929.

This dove was common or even abundant on most of the islands we visited. It was scarce on Chatham Island, and was not seen on Charles Island, its absence or scarcity at these points probably being due to cats or mongrel dogs, accompaniments of civilization that are potent factors in the extermination of desirable wild life.

The doves are very tame and are sure to congregate about an observer who is seated on the ground. Once when the senior author was reclining in the shade of a shrub, a dove alighted on his elevated knee, walked along his leg, and then mounted to the toe of his shoe, where it rested and preened itself.

PTILINOPUS DUPETITHOUARSII DUPETITHOUARSII (Neboux)

Marquesan dove

Columba Du Petithouarsii NEBOUX, Rev. Zool., 1840, p. 289. (Christina Island=Tahuata, Marquesas Islands.⁸⁰)

Five skins of this dove were secured on Fatuhiva in the Marquesas September 14 and 17, 1929.

This dove, the native name of which is "cook-koo," was common at Fatuhiva and often was seen flying high in air. Practically all the specimens secured were taken from banyan trees, where the birds were feeding on the berries among the top branches. In such a place they were rather difficult to see, for after alighting they remained motionless except when they reached for an occasional berry and in so doing disturbed a leaf.

PTILINOPUS DUPETITHOUARSII VIRIDIOR (Murphy)

Nukuhiva dove

Ptilopus dupetithouarsi viridor MURPHY, Amer. Mus. Nov., No. 115, May 29, 1924, p. 4. (Nukuhiva, Marquesas Islands.)

Two of these doves were obtained on Uahuka September 21, and one on Nukuhiva September 26. This race is well marked, differing from typical *P. d. dupetithouarsii* as indicated in the original description, in being distinctly greener, with a narrower, less obvious orange border at the sides of the pileum.

At the time we were in the region, the banyan tree seemed to be the most important source of food of this dove, as it was with the race at Fatuhiva.

⁸⁰ See Murphy, R. C., Amer. Mus. Nov., No. 115, May 29, 1924, p. 3.

We saw a few doves at Hivaoa in the high reaches, but as hunting them had made them wary, none was secured.

PTILINOPUS CORALENSIS Peale

Tuamotuan dove

Ptilinopus coralensis PEALE, U. S. Expl. Exp., vol. 8, 1848, p. 100. (Carlshoff or Aratika Island, Tuamotu group.)

Five males, four adult and one immature, were taken on Toau Atoll October 3, 6, and 7, 1929. The young bird is fully grown but is still in juvenal dress.

At Toau this dove, the native name of which is "o-oh," was comparatively rare, and it took a good deal of hunting to secure the four specimens above mentioned. It was never seen flying, but usually sat in a thick-foliaged, large-leaved tree, where the hunters slowly stalked it, aided by its occasional *o-oh* notes. The little native boys with sharp eyes and keen ears materially assisted in locating the birds.

COCCYZUS FERRUGINEUS Gould

Cocos Island cuckoo

Coccyzus ferrugineus GOULD, Proc. Zool. Soc. London, 1843, p. 105. (Cocos Island.)

An adult male of this cuckoo was collected at Wafer Bay, Cocos Island, June 10, 1929, by A. K. Fisher. It is generally similar to two others of the same sex in the National Museum but has the under side of the rectrices paler, less decidedly black with less sharply defined boundaries between the light and dark areas. It measures as follows: Wing, 128.4; tail, 162.0; culmen from base, 26.2; tarsus, 28.8 mm.

During our entire stay at Cocos Island the note of the cuckoo was not heard, indicating that the bird was not common. Mr. Cleaves and Chief Engineer Christensen each saw one, and the specimen taken at Wafer Bay makes three in all that came under observation. The cuckoo at Wafer Bay was sitting silently, and had it not moved slightly, it would not have been detected.

COCCYZUS MELACORYPHUS Vieillot

Azara's cuckoo

Coccyzus melacoryphus VIEILLOT, Nouv. Dict. Hist. Nat., vol. 8, 1817, p. 271. (Paraguay.)

Two were secured at Postoffice Bay on Charles Island in the Galapagos July 9, 1929.

Cuckoos seem to be rare in the Galapagos Islands, but this may be only apparent, as they sit rather closely in clumps of thick

shrubby and do not flush easily. They were observed only on Charles and Albemarle Islands. The specimens taken back of Post-office Bay were in thick vegetation along a dry wash, and were secured when they happened to cross the open space. One or two cuckoos were seen at another part of Charles Island, and one flew from a thick clump of bushes on Albemarle and subsequently could not be found.

ASIO GALAPAGOENSIS (Gould)

Galapagos short-eared owl

Otus (Brachyotus) galapagoensis GOULD, Proc. Zool. Soc. London, 1837, p. 10. (Galapagos Islands.)

A female obtained on Tower Island in the Galapagos, June 15, 1929, has the following measurements: Wing, 285.0; tail, 145.8; culmen with cere, 30.0; tarsus, 48.7 mm.

This owl was seen on Tower, Daphne, and Albermarle Islands, and pellets, which were assumed to be from this bird as they contained rat remains, were found at other places. Like our North American species this owl is diurnal and was seen flying in broad daylight.

COLLOCALIA OCISTA Oberholser

Marquesan swiftlet

Collocalia ocista OBERHOLSER, Proc. Acad. Nat. Sci. Philadelphia, 1906, p. 184. (Nukuhiva, Marquesas Islands.)

A series of eight was obtained at Uahuka in the Marquesas Islands September 19, 20, 21, and 23, 1929. Measurements of specimens with the sex indicated are as follows: Male, wing, 120.4; tail, 58.7; culmen from base, 4.9; tarsus, 9.0 mm. Two females, wing, 110.7, 118.0; tail, 58.3, 58.7; culmen from base, 4.8, 5.2; tarsus, 10.0, 9.0 mm.

Two specimens were placed in alcohol for anatomical material.

This interesting swift was observed in Hivaoa, Uahuka, Nukuhiva, and Eiao. It also undoubtedly occurs on Fatuhiva but did not happen to come under observation there. Two were killed on Hivaoa, but could not be found in the thick undergrowth where they had fallen. If we had had such willing helpers as the keen-eyed little natives at Fatuhiva and the Tuamotu Islands, there is little doubt that the birds would have been located. The swifts were more general on Uahuka, in coconut groves, along the open hill-sides, over the tops of bare ridges, and across the faces of steep cliffs. In the crevices of the cliffs they presumably had their nests. Their flight was usually rapid, resembling that of our chimney swift, but at times when they found slow-going insects in the shade of coconut groves they were much slower and more bat-like in their flight.

On one of the trips which Mr. Cleaves made to the upper reaches of Cocos Island, he saw swallows and swifts flying over a broad, grassy open stretch of country. In the absence of specimens it is hard to conjecture to just what species these birds belonged. Some day when material is forthcoming this interesting problem will be solved.

ERIBATES MAGNIROSTRIS (Gould)

Galapagos flycatcher

Myiobius magnirostris GOULD, Zool. Voy. Beagle, vol. 3, Birds, July, 1839, p. 48, pl. 8. (Chatham Island, Galapagos Archipelago.)

Of the three skins obtained, one was collected on Indefatigable Island June 24, and two on Duncan Island June 26, 1929. This little flycatcher was first observed on Indefatigable Island and later at Duncan, Charles, Chatham, and Hood. In action it suggests the crested flycatcher, and in size appears as if one of the smaller flycatchers had assumed the dress of its larger relatives. The species is very tame and appears anxious to get a better understanding of the human who has entered its domain. On one occasion while the senior author was pointing with a short stick to a distant canyon, one of these little birds flew from a near-by branch and alighted on the stick, as though it desired to be in closer touch with the visitors.

NESOTRICCUS RIDGWAYI Townsend

Cocos Island flycatcher

Nesotriccus Ridgwayi TOWNSEND, Bull. Mus. Comp. Zool., vol. 27, 1895, p. 124, col. pl. (Cocos Island.)

Three skins taken at Wafer Bay, Cocos Island, June 10, 1929, by A. K. Fisher, include a male, a female, and one with sex not marked. The female is especially interesting, since Ridgway³⁷ in his review of North and Central American flycatchers in 1907 in discussing this insular species noted that the female was not known. The skin from the Pinchot expedition collection is generally similar to the male, but is slightly less yellowish below and is distinctly smaller.

The two skins with sex marked measure as follows:

Male, wing, 61.7; tail, 56.5; culmen from base, 16.9; tarsus, 21.0 mm.

Female, wing, 57.3; tail, 52.3; culmen from base, 15.3; tarsus, 20.5 mm.

At Cocos, frequent showers made precipitation all but continuous, and this, added to the thick, tangled undergrowth, made land bird collecting very difficult. On the last day, before leaving the island, considerable time was spent in the low ground in the vicinity of

³⁷ Ridgway, Birds North and Middle America, pt. 4, 1907, p. 483.

Wafer Bay. While watching some small birds in the treetops, supposed to be immature golden warblers, we noticed one with a broader bill and promptly collected it. Later, while we were squeaking to attract birds in low marsh land, a pair of these flycatchers appeared and joined some golden warblers and finches which were earlier arrivals. In action, as they passed from twig to branch, they were not different from the golden warbler. These three were the only ones seen, although considerable search was made for others.

PYROCEPHALUS NANUS NANUS Gould

Galapagos vermilion flycatcher

Pyrocephalus nanus GOULD, Zool. Voy. Beagle, pt. 3, Birds, July, 1839, p. 45, pl. 7. (Several Islands of Galapagos Archipelago.)

One male and three females were obtained on Indefatigable Island June 18, 20, and 24, and a male and a female on Charles Island June 27 and 28, 1929. The female from Charles Island is an immature bird with breast of deep buff lightly streaked, differing so decidedly from one of similar age from Indefatigable, which is pale yellow below, as to indicate that further study of *Pyrocephalus carolensis* Ridway³⁵ may show that that supposed form may be distinct, rather than a synonym of *P. nanus* as now considered. In view of the evident close relationship of the two recognized forms of *Pyrocephalus* from the Galapagos, it seems proper to consider them as subspecies rather than as distinct species.

This form of vermilion flycatcher was common on Indefatigable and Charles Islands, and a male was seen on Barrington. The females were very tame and on one occasion tried to alight on a gun that was being carried on the shoulder. The males were shyer and consequently less often seen. Persecution may account for this, since they are the only bright-colored birds on the island. The breeding season probably was over, for the males were silent, and were not seen to go through the wonderful aerial gyrations that form a regular mating manifestation in the Arizona form.

PYROCEPHALUS NANUS DUBIUS Gould

Pygmy vermilion flycatcher

Pyrocephalus dubius GOULD, Zool. Voy. Beagle, vol. 3, Birds, July, 1839, p. 46. (Chatham Island, Galapagos Archipelago.)

Three males and three females were secured on Chatham Island July 4 and August 20, 1929. These have the following measurements:

³⁵ *Pyrocephalus carolensis* Ridgway, Proc. U. S. Nat. Mus., vol. 17, Nov. 15, 1894, p. 365. (Charles Island, Galapagos Archipelago.)

Males, wing, 57.9, 59.2, 57.0; tail, 50.0, 50.0, 49.8; culmen from base, 12.7, 11.4, 11.6; tarsus, 16.6, 17.2, 16.5 mm.

Females, wing, 57.3, 57.8, 56.1; tail, 50.5, 48.0, 46.9, culmen from base, 12.4, 11.6, 12.4; tarsus, 16.8, 17.5, 16.3 mm.

This form was common especially along the wide trail leading toward Progreso. It was found from sea level to the highest point.

PROGNE MODESTA Gould

Galapagos martin

Progne modesta GOULD, Zool. Voy. Beagle, pt. 3, Birds, July, 1839, p. 39, pl. 5. (James Island, Galapagos Archipelago.)

A pair was obtained at Eden Island, near Indefatigable, June 24, 1929.

Martins were seen almost daily when we went ashore on the more open and level stretches of Indefatigable and Seymour Islands. Unfortunately whenever they appeared the distance was too great or the time was inopportune to capture them. At Daphne Island, June 23, numbers were observed about the cliffs, where they nested in crevices in close association with Galapagos shearwaters, noddy terns, tropic-birds, and fork-tailed gulls. The following day Eden was visited and numbers were seen either entering or leaving their nesting crevices in the cliffs. Two specimens were secured as they flew over the boat.

NESOMIMUS MELANOTIS DIERYTHRUS Heller and Snodgrass

Indefatigable Island mocking bird

Nesomimus melanotis dierythrus HELLER and SNODGRASS, Condor, May, 1901, p. 74. (North Seymour Island, near Indefatigable, Galapagos Archipelago.)

Two males were obtained on Indefatigable Island June 19 and July 8, 1929.

NESOMIMUS MELANOTIS BAURI Ridgway

Tower Island mocking bird

Nesomimus bauri RIDGWAY, Proc. U. S. Nat. Mus., vol. 17, November 15, 1894, p. 357. (Tower Island, Galapagos Archipelago.)

Two males with spotted breasts of immature plumage were taken on Tower Island June 14, 1929.

NESOMIMUS MELANOTIS BARRINGTONI Rothschild

Barrington Island mocking bird

Nesomimus barringtoni ROTHSCHILD, Bull. Brit. Orn. Club, vol. 8, October 31, 1898, p. vii. (Barrington Island, Galapagos Archipelago.)

Male and female were taken on Barrington Island August 1, 1929.

NESOMIMUS MELANOTIS PARVULUS (Gould)

Albemarle Island mocking bird

Orpheus parvulus GOULD, Proc. Zool. Soc. London, 1837, p. 27. (Galapagos Archipelago.)

A male was shot at Villamiel, August 22, and a female at Tagus Cove, August 25, on Albemarle Island. It seems preferable to call this bird a race of *melanotis* in view of its close resemblance to other forms placed there, rather than to consider it a specific entity as Rothschild and Hartert have done.³⁹

NESOMIMUS MACDONALDI Ridgway

Hood Island mocking bird

Nesomimus macdonaldi RIDGWAY, Proc. U. S. Nat. Mus., vol. 12, February 5, 1890, p. 103, fig. 1. (Hood Island, Galapagos Archipelago.)

Two males, one adult and one immature, were taken at Hood Island June 30, 1929. The adult bird is molting the rectrices. The immature individual has the breast distinctly spotted with dusky and the under tail-coverts buffy brown.

NESOMIMUS ADAMSI Ridgway

Chatham Island mocking bird

Nesomimus macdonaldi RIDGWAY, Proc. U. S. Nat. Mus., vol. 12, February 5, 1894, p. 358. (Chatham Island, Galapagos Archipelago.)

An immature female with spotted breast, and an adult male, were taken at Chatham Island July 3 and 4, 1929, respectively.

On account of their similar habits the six subspecies taken on Tower, Indefatigable, Chatham, Hood, Barrington, and Albemarle Islands will be treated under one heading. As the Charles Island bird was reported as very rare, everyone who went ashore was requested to be on the lookout for it, but none was seen.

This mocker is a free and easy, rollicking, inquisitive, fearless clown, so it was thought appropriate to give him the nickname of "Jake" which was approved and accepted; thus all mockers thereafter were "Jakes." Almost as soon as we landed on any of the islands, some of these birds would meet us and would go over in detail any article that by chance was laid down for a moment. A gun for instance was examined carefully with attempt to run the bill into narrow crevices or the birds peered down into the mysterious darkness of the barrels. When their attention was attracted they had two ways of approach, either by flying direct and alighting on the nearest elevation, or wrenlike, by coming quietly through the undergrowth to appear suddenly at our side. Their song, the principal one heard,

³⁹ Nov. Zool., vol. 6, Aug., 1899, pp. 143, 146, 147.

was attractive, but to a possibly prejudiced mind did not seem equal to that of our mocking birds, brown thrashers, or catbirds.

These mockers feed ordinarily on fruit and berries and take the juicy parts of cactus pads for drink. Whenever mocking birds or finches see cactus pads being cut they immediately come to the spot and eagerly eat the watery pulp as soon as it is placed within reach. They also eat insects, especially grasshoppers, and we learned something of the food habits of the iguana when an individual rushed and secured a grasshopper that a mocking bird had accidentally dropped near it. Mockers always seemed ready to join in lunch, but not always willing to accept what was given them. Once on Chatham while the senior author was eating a guava and scattering the pieces of skin on the ground, seven mockers came and joined in the feast. On another occasion while he was eating lunch two mockers and five lizards formed in a broken circle and ate with relish bits of fruit jam thrown to them.

Although members of a family seem to get along well together the mocking bird is liable to be quarrelsome with outsiders and, if possible, will prevent them from entering its domain. Families of full-grown young, still with spotted breasts, were seen, but no fresh nests or eggs were observed.

CONOPODERAS MENDANAE MENDANAE (Tristram)

Hivaoa warbler

Aerocephalus mendanae TRISTRAM, Ibis, 1883, p. 43, pl. 1. (Marquesas Islands=Hivaoa or Tahuata Island.⁴⁰)

Two males taken at Hivaoa, September 12, 1929, have the following measurements: Wing, 97.4, 96.8; tail, 85.8, 85.4; culmen from base, 28.7, 30.6; tarsus, 32.3, 30.8 mm.

Murphy⁴⁰ has listed the Marquesan warblers as subspecies of *Conopoderas caffa* of the Society Islands, a treatment with which the junior author does not agree. Though obviously of similar stock, the Marquesan forms all stand out as distinctly brighter yellow, maintaining this general appearance throughout their other variations from type so that they are distinguished at a glance. In view of this unity and of the separate groups of islands inhabited, it seems best to consider the two series of geographic races specifically distinct.

CONOPODERAS MENDANAE PERCERNIS Wetmore

Nukuhiva warbler

Conopoderas percernis WETMORE, Bull. Mus. Comp. Zool., vol. 63, August, 1919, p. 213. (Nukuhiva Island, Marquesas Islands.)

The two males and one female obtained were collected on Nukuhiva, September 25 and 26, 1929. They measure as follows: Males,

⁴⁰ See Murphy, Amer. Mus. Nov., No. 337, Dec. 13, 1928, p. 12.

wing, 95.5, 100.2; tail, 87.8, 90.2; culmen from base, 28.9, 29.2; tarsus, 32.9, 32.3 mm. Female, wing, 95.5; tail, 84.3; culmen from base, 28.0; tarsus, 30.6 mm.

This race differs from typical *mendanae* in brighter yellow of the under surface and of the light edgings of the feathers of the dorsal region.

CONOPODERAS MENDANAE IDAE Murphy

Uahuka warbler

Conopoderas caffra idae MURPHY, Amer. Mus. Nov., No. 337, December 13, 1928, p. 15. [Huahuna (Uahuka) Island, Marquesas Islands.]

Three males, two females, and one bird with sex not indicated were collected at Uahuka Island in the Marquesas September 19, 20, and 21, 1929. All are in fresh, bright plumage. Measurements are as follows:

Three males, wing, 87.2-89.3 (88.5); tail, 78.3-81.0 (79.6); culmen from base, 23.2-24.4 (23.7); tarsus, 29.3-31.8 (30.3) mm.

One female, wing, 80.5; tail, 73.6; culmen from base, 23.3; tarsus, 26.9 mm.

This form, in coloration, is much like *percernis* but is decidedly smaller.

CONOPODERAS MENDANAE FATUHIVAE Murphy

Fatuhiva warbler

Conopoderas caffra fatuhivae MURPHY, Amer. Mus. Nov., No. 337, December 13, 1928, p. 14. (Fatuhiva Island, Marquesas Islands.)

Six males and one female collected on Fatuhiva Island, September 14, 15, and 17, 1929, are all in excellent plumage. The series measures as follows:

Six males, wing, 92.5-99.7 (96.3); tail, 80.2-87.0 (84.4); culmen from base, 28.0-29.8 (29.1); tarsus, 31.5-34.2 (33.1) mm.

One female, wing, 91.8; tail, 82.0; culmen from base, 28.7; tarsus, 31.3 mm.

The present form is generally similar to *C. m. percernis* but has the rump much more extensively yellow, while the bill and tarsus are longer. The feet and tarsi are paler brown in the dried skin.

CONOPODERAS MENDANAE AQUILONIS Murphy

Eiao warbler

Conopoderas caffra aquilonis MURPHY, Amer. Mus. Nov., No. 337, December 13, 1928, p. 17. (Eiao Island, Marquesas Islands.)

Three males and one female obtained September 27 and 28, 1929, on Eiao Island in the Marquesas, have the following measurements:

Three males, wing, 89.7-92.4 (91.4); tail, 78.4-83.9 (81.3); culmen from base, 24.3-25.8 (25.1); tarsus, 28.3-30.2 (28.9) mm.



Photograph by H. H. Cleaves
COCONUT GROVE, HIVAOA ISLAND, MARQUESAS ISLANDS



Photograph by H. H. Cleaves
HIVAOA ISLAND, MARQUESAS ISLANDS



Photograph by H. H. Cleaves

A LOWLAND STREAM ON HIVA OA ISLAND, MARQUESAS ISLANDS



Photograph by H. H. Cleaves

TOAU, TUAMOTU ISLANDS

One female, wing, 89.0; tail, 80.7; culmen from base, 23.8; tarsus, 29.4 mm.

In the Marquesas Islands five forms of this interesting bird, each peculiar to the island it inhabits, were taken on Hivaoa, Fatuhiva, Uahuka, Nukuhiva, and Eiao.

Our first landing was at Hivaoa, and although collecting began early none of this species was seen on the first day. It is uncertain whether the fact that the imported mynah bird occurs only on this island had anything to do with the absence of the warbler. The following day we went back in a canyon to one of the upper coconut groves and soon were encouraged by hearing a fine song coming from the top of a coconut tree. After a good deal of effort two specimens were secured. When a bird has completed its song in one treetop it often flies to another, maybe 100 yards distant. Its regular flight between trees very closely suggests that of an oriole, and the size and yellowish color add to this resemblance.

The song is very attractive and so modulated that one thinks first of a thrush and then of a thrasher, but fails to detect at any time the flutelike cadence of the former bird. On some occasions several birds were heard singing at the same time. While singing, the birds are motionless and are so well hidden by the coconut foliage that it is next to impossible to see them from below. At some of the other islands, especially Fatuhiva and Uahuka, the birds were found in the villages among the coconut groves, and the natives referred to them when seen or heard as "comacco."

Uahuka was the only place where we saw young birds still more or less dependent on the parents. Here the old birds were seen feeding the young on food gleaned from among the coconuts.

CONOPODERAS ATYPHA ATYPHA Wetmore

Fakarava warbler

Conopoderas atypa atypa WETMORE, Bull. Mus. Comp. Zoöl., vol. 63, August, 1919, p. 206. (Fakarava Island, Tuamotu Islands.)

The series of nine obtained in the Tuamotu group includes two males and one female from Fakarava collected October 2, 1929, and three males, one female, and two with sex not indicated shot on Toau Atoll October 4, 1929. In view of the extended series of warblers from the Tuamotus examined by Murphy and Mathews⁴¹ their decision is accepted that the typical form of *atypa* ranges through most of the northern and western islands of the Tuamotu group. The species is one in which there is considerable range in individual color variation, so that in examining the first specimens obtained, collected by the *Albatross* Expedition of 1899 and 1900 to the

⁴¹ Amer. Mus. Nov., No. 350, May 7, 1929, pp. 6-12.

Tropical Pacific, the junior author was misled into attempting to distinguish additional races in this area.

In the present series from Fakarava two birds are rufescent and one gray. The six from Toau include three rufescent birds, two with yellowish cast, and one that is much paler, evidently inclining toward albinism. The habits of this warbler, the native name of which is "okeko keko," are very similar to that of the Marquesan bird, except that the song is not so general, nor of so long duration. This may be due to the fact that the breeding season was completed at an earlier date. The birds were seen more often in the lower shrubbery than among the coconut leaves, though some still remained much of the time in their favorite resorts. The young no longer were following their parents and it was the exception to see two together. Judging from their habit of creeping among the leaves, especially near the bases of the coconut trees, the species must secure considerable food from this source.

POMAREA IPHIS IPHIS Murphy

Huahuna flycatcher

Pomarea iphis iphis MURPHY, Amer. Mus. Nov., No. 337, December 13, 1928, p. 6. (Huahuna Island, Marquesas group.)

The six specimens obtained were collected on Uahuka Island (known also as Huahuna) in the Marquesas September 20 and 21, 1929. Among them is a juvenile bird only recently from the nest, still clothed in the fluffy first plumage. This bird is grayer on the crown and upper back and has the breast and sides dull gray, so that Murphy's statement⁴² that "juvenals resemble adult females save for the absence of dark streaking on the throat" must refer to birds in postjuvinal dress.

A nest containing one small young secured September 20 is a cup-shaped structure with rather heavy walls and base placed in the fork of a mango tree 10 feet from the ground, where it was built about several small limbs so that it was firmly and strongly anchored. It is composed of slender brown plant fibers, some of which come from the coconut palm, a small amount of wild cotton down, and a few spider webs, with a few coarse black and brownish-black hairs in the lining. It is approximately 100 mm. long by 70 mm. high.

This species was found only on Uahuka. The first individual seen was at a distance sitting on a dead lower branch of a tree and in outline suggested a phoebe. This bird was followed and later its nest in a mango was found. It is probably a mere coincidence that all the birds seen or collected were in or near mango trees, which form a very small part of the wooded area. In action the Uahuka flycatcher is more like our flycatcher, and quite different

⁴² Amer. Mus. Nov., No. 337, Dec. 13, 1928, p. 7.

from the *Fatuhiva* species, which rambles through the foliage much after the manner of our warblers.

POMAREA WHITNEYI Murphy

Fatuhiva flycatcher

Pomarea whitneyi MURPHY, Amer. Mus. Nov., No. 337, December 13, 1928, p. 8. (Fatuhiva Island, Marquesas Islands.)

A series of six secured September 14, 16, and 17, 1929, on Fatuhiva in the Marquesas include three adult and two immature males, and one female. One of the immature males has begun to molt into adult dress, black feathers appearing on head, throat, and breast.

This species was seen only on Fatuhiva, usually in the thick undergrowth. It was very active and continually on the move, which made it more different of approach.

ACRIDOTHERES TRISTIS TRISTIS (Linnaeus)

Indian mynah

Paradisca tristis LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 167. (Philippines=Calcutta.⁴⁵)

Two females of this introduced species were taken on Hivaoa Island in the Marquesas group September 11 and 12, 1929. These seem similar to typical specimens from its proper home in India and are identified as the typical subspecies. They have the following measurements: Wing, 138.2, 136.1; tail, 80.4, 83.1; culmen from base 22.2, 22.0; tarsus, 38.2, 37.5 mm.

Mynah birds were seen only at Hivaoa, Marquesas Islands, and at Tahiti, Society Islands. In both places they were common, and in their habitat few other birds were observed.

DENDROICA PETECHIA AUREOLA (Gould)

Galapagos golden warbler

Sylvicola aureola GOULD, Zool. Voy. Beagle, pt. 3, Birds, Nov., 1839, p. 86, pl. 28. (Galapagos Islands.)

On Cocos Island, A. K. Fisher secured a series of ten, June 5, 6, 9, and 10, 1929, including adults of both sexes and a number of young. The latter range from juveniles with the underparts nearly pure white to others in various stages of molt into the post-juvinal dress. Comparison of these birds in all stages bears out previous statements that the golden warbler found on Cocos Island is identical with that ranging through the Galapagos Archipelago.

Measurements of four adults from Cocos Island follow:

Two males, wing, 65.3-65.9; tail, 50.8-53.3; culmen from base, 12.4-13.3; tarsus, 19.3-21.0 mm.

⁴⁵ Baker, E. C. Stuart, Faun. Brit. India, Birds, ed. 2, vol. 3, March, 1926, p. 53.

Two females, wing, 60.0–61.7; tail, 48.3–51.3; culmen from base, 12.8–12.9; tarsus, 19.7–19.8 mm.

In the Galapagos an immature female was taken on Tower Island June 15, and adult males on Indefatigable June 19, and at Villamiel on Albemarle Island August 22.

On Cocos Island the golden warbler was the commonest species among land birds, with the possible exception of the finch. No young were seen that were still dependent on the parents, but those in recently acquired post-juvenal plumage were much in evidence. The species was fairly common in the Galapagos Islands, and on Chatham and Charles the many advancing stages of the immature plumage were noted.

This and the vermilion flycatcher were the two bright-colored birds of the Galapagos group. The adult males seemed more or less quarrelsome, and anxious to drive the others out of the neighborhood.

CERTHIDEA CINERASCENS CINERASCENS Ridgway

Gray certhidea

Certhidea cinerascens RIDGWAY, Proc. U. S. Nat. Mus., vol. 12, February 5, 1890, p. 105. (Hood Island, Galapagos Archipelago.)

Two males and a female were secured on Hood Island June 30, 1929. These specimens are in partial molt.

Though currently referred to the family of wood warblers⁴⁴ this genus seems better placed in the Fringillidae.⁴⁵

CERTHIDEA CINERASCENS BIFASCIATA Ridgway

Barrington Island certhidea

Certhidea bifasciata RIDGWAY, Proc. U. S. Nat. Mus., vol. 17, November 15, 1894, p. 359. (Barrington Island, Galapagos Archipelago.)

Male and female collected on Barrington Island August 1, 1929, have the following measurements:

Male, wing, 52.0; tail, 37.3; culmen from base, 10.8; tarsus, 19.8 mm.

Female, wing, 51.0; tail, 37.7; culmen from base, 10.7; tarsus, 19.5 mm.

CERTHIDEA OLIVACEA OLIVACEA Gould

Darwin's certhidea

Certhidea olivacea GOULD, Proc. Zool. Soc. London, 1837, p. 7. (Galapagos Archipelago.)

A female taken on Indefatigable Island has the following measurements: Wing, 52.7; tail, 36.3; culmen from base, 9.7; tarsus, 21.3 mm.

⁴⁴ See Lucas, Proc. U. S. Nat. Mus., vol. 17, 1894, pp. 309, 310; and Ridgway, U. S. Nat. Mus. Bull. 50, pt. 2, 1903, p. 762.

⁴⁵ See Swarth, Proc. California Acad. Sci., vol. 18, Jan. 29, 1929, pp. 36–41.

CERTHIDEA OLIVACEA LUTEOLA Ridgway

Chatham Island certhidea

Certhidea luteola RIDGWAY, Proc. U. S. Nat. Mus., vol. 17, November 15, 1894, p. 360. (Chatham Island, Galapagos Archipelago.)

Three specimens were obtained on Chatham Island, two adults on July 3, and a bird in juvenal dress on July 4, 1929.

CERTHIDEA OLIVACEA MENTALIS Ridgway

Tower Island certhidea

Certhidea mentalis RIDGWAY, Proc. U. S. Nat. Mus., vol. 17, November 15, 1894, p. 359. (Tower Island, Galapagos Archipelago.)

A female was secured at Tower Island, June 14, 1929.

Certhidea is another of those plastic genera that can not resist those all-powerful but mysterious forces that bring changes caused by environment. On Indefatigable, Chatham, Tower, Hood, and Barrington Islands we found forms specifically or subspecifically different, but the same so far as habits go. The bird was looked for carefully on Charles Island, but without success.

It was a confiding little bird, and seemed anxious to be as near the observer as possible. In its movements it reminded one much of a pine siskin. They often were in mixed flocks with ground finches and all seemed in perfect harmony with one another, quite in contrast with the mockers and golden warblers. They usually keep in low shrubbery and are rarely found in the trees.

PINAROLOXIAS INORNATA (Gould)

Cocos Island finch

Cactornis inornatus GOULD, Proc. Zool. Soc. London, 1843, p. 104. (Bow Island=Cocos Island.)

Eight skins and two skeletons secured on Cocos Island June 4, 7, and 10, 1929, by A. K. Fisher include four males and six females. As few measurements have been published the following will be of interest:

Four males, wing, 64.4–67.3 (65.8); tail, 40.7–41.2 (40.9); culmen from base, 14.1–14.7 (14.4); tarsus, 21.2–21.7 (21.3) mm.

Six females, wing, 61.3–65.2 (62.9); tail, 39.5–43.6 (41.3); culmen from base, 12.8–14.3 (13.4); tarsus, 20.0–22.3 (21.2) mm.

The fully adult female has the bill blackish, while in immatures of that sex the bill is yellowish brown, more or less obscured by dusky at base in tip. The immature female in addition has the rectrices prominently tipped with brown.

The general movements and actions of this little bird were more like those of a honey creeper than any other finch that has come

under observation. It is a bird of the deep woods and was rarely seen in the more open country unless lured there by squeaking notes. Usually they were found grouped in little families. Dr. J. B. Mathewson found a rounded nest which contained two unfledged young in the top of a sapling about 15 feet from the ground. The parent bird looked on while the doctor was examining the nest but did not show any anxiety. This finch was the most common of the land birds, with the possible exception of the golden warbler.

GEOSPIZA FATIGATA Ridgway

Indefatigable cactus finch

Geospiza fatigata RIDGWAY, Proc. U. S. Nat. Mus., vol. 18, April 23, 1896, p. 293. (Indefatigable Island, Galapagos Archipelago.)

Eight skins of this form include three from Indefatigable taken June 18 and 24, and five from Barrington Island August 1, 1929. Adults from the latter locality are in partial molt. Following are measurements:

Sex and locality	Wing	Tail	Culmen from base	Depth of bill	Tarsus
Male:	<i>Mm.</i>	<i>Mm.</i>	<i>Mm.</i>	<i>Mm.</i>	<i>Mm.</i>
Indefatigable Island.....	70.2	43.9	19.5	9.8	21.3
Barrington Island.....	71.1	45.6	21.1	10.5	22.3
Do.....	71.5	44.0	19.3	10.8	23.1
Do.....	69.2	41.4	19.5	10.5	22.3
Female:					
Indefatigable Island.....	69.3	45.8	19.1	9.5	22.6
Barrington Island.....	70.7	44.0	20.2	11.2	22.5
Do.....	69.0	40.9	17.8	10.7	22.3

GEOSPIZA ACUTIROSTRIS Ridgway

Sharp-billed ground finch

Geospiza acutirostris RIDGWAY, Proc. U. S. Nat. Mus., vol. 17, November 15, 1894, p. 363. (Tower Island, Galapagos Archipelago.)

One immature and two adult males were taken on Tower Island June 15 and 16, 1929, the adults having the bill black. Following are measurements from the old birds: Wing, 60.2, 60.5; tail, 36.8, 39.6; culmen from base, 13.2, 13.5; tarsus, 19.5, 18.5 mm.

GEOSPIZA FULIGINOSA Gould

Sooty ground finch

Geospiza fuliginosa GOULD, Proc. Zool. Soc. London, October 3, 1837, p. 5. (Chatham Island, Galapagos Archipelago.)

The present species is apparently one of the abundant species of its genus, since it is represented in the collection by 25 skins from

Albemarle, Chatham, Hood, Barrington, Charles, Duncan, and Indefatigable Islands. The series is quite uniform in structural characters with the usual variations in plumage markings due to relative age. Some of the males in full black dress have the bills pale-colored and in some they are black.

GEOSPIZA FORTIS Gould

Sturdy ground finch

Geospiza fortis GOULD, Proc. Zool. Soc. London, October 3, 1837, p. 5. (Galapagos Islands.)

One adult male of this form was collected on Seymour Island, near Indefatigable, June 21, 1929, and two, an immature male and a female, on Charles Island June 28. The adult male from Seymour has the following measurements: Wing, 71.8; tail, 42.7; culmen from base, 17.1; depth of bill, 12.7; tarsus, 22.8 mm. The female from Charles Island measures: Wing, 70.0; tail, 43.8; culmen from base, 17.0; depth of bill, 11.9; tarsus, 22.0 mm.

GEOSPIZA ALBEMARLEI Ridgway

Albemarle ground finch

Geospiza albemarleii RIDGWAY, Proc. U. S. Nat. Mus., vol. 17, November 15, 1894, p. 362. (Tagus Cove, Albemarle Island, Galapagos Archipelago.)

The series of eight skins of this species, including one immature and three adult males and four females, was obtained on Albemarle Island August 22 and 25, those taken on the 22d coming from Villamiel. The adult males have the bill black with a slight wash of brown on the gonys.

The following measurements were taken from this series:

Males, wing, 73.2, 76.0, 73.8; tail, 41.0, 46.3, 44.5; culmen from base, 18.0, 17.5, 18.7; tarsus, 23.0, 22.9, 22.5 mm.

Females, wing, 71.4, 73.2, 70.3, 67.3; tail, 44.0, 47.4, 45.3, 40.5; culmen from base, 15.3, 17.9, 17.8, 16.1; tarsus, 22.0, 21.7, 22.2, 21.6 mm.

GEOSPIZA DUBIA Gould

Dubious ground finch

Geospiza dubia GOULD, Proc. Zool. Soc. London, October 3, 1837, p. 6. (Galapagos Islands.)

A pair of these finches came from Chatham Island, collected July 4, 1929. They measure as follows:

Male, wing, 73.0; tail in molt; culmen from base, 18.2; depth of bill, 15.0; tarsus, 23.3 mm. Female, wing, 68.6; tail, 45.1, culmen from base, 17.3; depth of bill, 14.0; tarsus, 22.8 mm.

GEOSPIZA PROPINQUA Ridgway

Tower Island ground finch

Geospiza propinqua RIDGWAY, Proc. U. S. Nat. Mus., vol. 17, November 15, 1894, p. 361. (Tower Island, Galapagos Archipelago.)

Four were obtained on Tower Island June 14 and 16, 1929, including adult and immature males, and two females. The adult male has the bill black except for a brownish wash along the gonys. In the immature male it is brown. One of the females is very black with the light markings much restricted. The other, with the light markings predominating below, is apparently a juvenile individual.

These skins have the following measurements:

Male, wing, 76.4, 72.5; tail, 47.5, 43.8; culmen from base, 18.6, 19.5; depth of bill, 11.4, 10.9; tarsus, 24.6, 24.5 mm.

Females, wing, 70.5, 68.9; tail, 42.0, 42.0; culmen from base, 19.3, 18.0; depth of bill, 12.7, 11.8; tarsus, 24.7, 22.5 mm.

GEOSPIZA CONIROSTRIS Ridgway

Conical-billed ground finch

Geospiza conirostris RIDGWAY, Proc. U. S. Nat. Mus., vol. 12, February 5, 1890, p. 106, fig. 2. (Hood Island, Galapagos Archipelago.)

Six skins taken on Hood Island June 30 and July 1, 1929, include one adult male and five females. The male has the bill black with a slight wash of brown on the gonys. The females are very dark, with the light margins of the feathers much restricted. Measurements are as follows:

Male, wing, 81.8; tail, 45.0; culmen from base, 20.8; depth of bill, 15.2; tarsus, 23.2 mm.

Females, wing, 73.3, 72.2, 72.6, 76.3, 74.5; tail, 43.6, 44.0, 44.0, 46.2, 44.0, culmen from base, 19.2, 19.4, 20.5, 20.2, 20.5; depth of bill, 14.7, 13.6, 16.2, 15.0, 14.5; tarsus, 21.7, 22.0, 23.0, 23.0, 23.0 mm.

GEOSPIZA PACHYRHYNCHA Ridgway

Thick-billed ground finch

Geospiza pachyrhyncha RIDGWAY, Proc. U. S. Nat. Mus., vol. 18, April 23, 1896, p. 293. (Tower Island, Galapagos Archipelago.)

Two females of this heavy-billed form were collected on Tower Island June 16, 1929, one being considerably darker than the other with the sides of the mandible largely black. Measurements are as follows: Wing, 82.0, 78.8; tail, 49.5, 46.7; culmen from base, 22.1, 23.7; depth of bill, 20.0, 21.8; tarsus, 25.8, 24.2 mm.

GEOSPIZA STRENUA Gould

Gould's ground finch

Geospiza strenua GOULD, Proc. Zool. Soc. London, October 3, 1837, p. 5. (Galapagos Archipelago.)

A female was secured on Indefatigable June 18, 1929, an adult male at Academy Bay on the same island July 8, and a pair at Villamiel, Albemarle Island, August 22. Of the latter the male is immature, being in the dress of the female with light-colored bill. The bill in the adult from Indefatigable is black. Measurements are as follows:

Sex and locality	Wing	Tail	Culmen from base	Depth of bill	Tarsus
Male:	<i>Mm.</i>	<i>Mm.</i>	<i>Mm.</i>	<i>Mm.</i>	<i>Mm.</i>
Indefatigable Island.....	80.1	50.3	22.6	19.0	29.3
Albemarle Island.....	74.8	45.1	20.3	17.0	23.8
Female:					
Indefatigable Island.....	77.0	49.8	19.5	15.8	23.6
Albemarle Island.....	75.0	47.3	21.9	19.4	25.2

Treatment of the forms of *Geospiza* in the present collection follows that of Ridgway in part 1 of Bulletin 50 of the United States National Museum, all specimens being determined in accordance with characters there given. No attempt is made to use trinomials, though it is plainly evident that some of the forms are related sub-specifically on adjacent islands, the problem of such relationship being so complicated as to be successfully studied only with a complete representation in series of the various forms.

In a recent paper, H. S. Swarth⁴⁶ has erected a separate family, the Geospizidae, for the genera *Geospiza*, *Pinaroloxias*, *Camarhynchus*, *Platyspiza*, and *Certhidea*. After due consideration of the alleged characters we are unable to find trenchant grounds for separating these from the Fringillidae. The close association of the genera listed is evident, but it is doubtful if they have sufficient difference as a group to merit even subfamily designation.

So far as habits go we shall have to consider the 10 species of Galapagos ground finches that came under observation as one form. Unfortunately Wenman and Culpepper Islands, rich in bird life, were not visited; if they had been, several additional species would undoubtedly have been observed.

These finches go in mixed flocks, and feed together just as if they were the same species. Fully one hundred have been seen in one of these masses. On two occasions a number were seen to congre-

⁴⁶ Proc. California Acad. Sci., vol. 18, Jan. 29, 1929, pp. 30-31.

gate about a certain spot and go down in the crevices among lava rock one or two at a time. It was learned that they went after water, but the question is how they knew it was there. They feed on berries and small fruit and are especially fond of the pricklypear of the cactus. They also get fluid by picking into the cactus pads. Large numbers of their old nests were found but no fresh ones were located.

CAMARHYNCHUS PROSTHEMELAS Sclater and Salvin

Black-headed ground finch

Camarhynchus prothemelas SCLATER and SALVIN, Proc. Zool. Soc. London, November, 1870, p. 325, fig. 4. (Indefatigable Island, Galapagos Archipelago.)

Two females and one juvenile bird with sex not marked were collected on Charles Island June 27, 1929. The young bird, which is fully grown, differs from the adults principally in being somewhat browner. The females have the following measurements: Wing, 60.0, 60.2; tail, 37.3, 37.5; culmen from base, 10.0, 9.4; tarsus, 21.5, 21.5 mm.

PLATYSPIZA CRASSIROSTRIS (Gould)

Darwin's ground finch

Camarhynchus crassirostris GOULD, Proc. Zool. Soc. London, October 3, 1837, p. 6. (Galapagos Islands.)

Four skins of this species include two females and one with sex not marked from Chatham Island taken July 3 and 4, and August 20, and a male from Academy Bay, Indefatigable Island, July 8, 1929.

Measurements of these birds are as follows:

Sex and locality	Wing	Tail	Culmen from base	Tarsus
	<i>Mm.</i>	<i>Mm.</i>	<i>Mm.</i>	<i>Mm.</i>
Male, Indefatigable Island.....	85.4	57.1	16.3	29.5
Female, Chatham Island.....	81.5	54.7	17.2	27.7
Do.....	81.7	51.0	16.0	27.4

In habits all the ground finches were very much alike, but under observation *Platyspiza* seemed to be more arboreal and to feed largely on the ovaries and minor parts of flowers, bringing to mind the purple finch. Those collected were taken while feeding on the soft parts of flowers of cotton and agave.

They appeared to be far less numerous than *Geospiza*.