

by Lack and Varley on January 12, 1945, traveled with an air speed of about 25 miles per hour, which is close to the above range of flight speeds. Cooke (1939), however, shows six different flight speeds for Mallards ranging from 46 to 60 miles per hour, and two flight speeds for Pintails of 52 and 65 miles per hour. It is highly probable that birds greatly accelerate their flight speeds for short periods of time when they are frightened or pursued, but this study shows that some ducks migrate at much slower speeds than is claimed by many writers.

## REFERENCES CITED

BROOKS, MAURICE

1945. Electronics as a possible aid in the study of bird flight and migration. *Science*, 101: 329.

COOKE, MAY THACHER

1939. Flight speed of birds. (Appendix A to a book on duck shooting by Van Campen Heilner): 405-415 (Penn. Publ. Co., Philadelphia.)

HACHISUKA, MARQUESS, COUNT KIYOSU, PRINCE TAKA-TSUKASA, DR. SEIOSUKE UCHIDA, AND MARQUIS YAMSHINA

1942. A hand-list of the Japanese birds. Third revised edition, 8: 238.

LACK, DAVID, AND VARLEY, G. C.

1945. Detection of birds by radar. *Nature*, 156: 446.

MCKAY, H. A. C.

1945. Detection of birds by radar. *Nature*, 156: 629.

1101 Third Street

Menomonie

Wisconsin

---

 THE BIRDS OF MONA ISLAND, PUERTO RICO

BY VENTURA BARNÉS, JR.

MONA ISLAND is located in Mona Passage, forty-eight miles off the west coast of Puerto Rico and thirty-two miles off the east coast of Hispaniola. From a geological standpoint, it is volcanic in nature and is of relatively recent origin, pertaining to the Pliocene Period of the Tertiary.

From near at hand Mona gives the impression of an inaccessible rock emerging from the bottom of the Caribbean, with a barren tableland on the summit, bounded by sharply-cut, precipitous cliffs. The island has an area of approximately twenty-four square miles. Toward the southeastern section a level coastal plain extends from Sardinera to Uvero Beach on the extreme east-southeast coast, reaching the abrupt cliffs at the eastern point called Caigo o no Caigo. The plain has an average width of about one mile and is approximately eight miles long. A narrow dirt road has been made from Sardinera to

Uvero, through the thick vegetation in the vicinity of Uvero Beach, and then continues beyond Uvero, to climb the steep talus of the limestone plateau and reach the lighthouse on the northeast cape. The semi-arid coastal plain covers approximately eight hundred and forty acres of level, sandy soil. The rest of the island consists of a high limestone plateau or meseta with an altitude varying from 130 to 190 feet, without hills or considerable elevations. In the middle section there exists a considerable depression, with very sparse, red loam soil where the vegetation is more exuberant and the humidity higher. This point is known as Los Cerezos. Scattered throughout the island are many caves and deep crevices connected with each other underground, forming long, tortuous tunnels where the humidity is very high.

There are no streams or ponds, with the exception of a small swampy area of brackish water covered with mangroves about one mile from Sardinera Beach in an easterly direction. A few water holes are scattered throughout the limestone plateau and the coastal plain. Heavy showers are frequent especially during the evening from May to July, which is the rainy season.

Although the soil is thin, most of the island is covered with the thick vegetation, typical of semi-arid regions, where cacti and other xerophytes abound. Shrubs and medium-sized trees are well established, forming small associations on the slope of the cliff toward the coastal plain. Here the humidity is much higher than in other sections, permitting more luxuriant growth of trees and plants in general. Guinea grass (*Panicum maximum*) and wild cotton (*Gossypium* sp.) have been introduced and are now growing in the littoral of the south coast. The Guinea grass covers most of the level land where it grows to best advantage. When cotton is in bloom its thick stands are speckled with white and yellow flowers, forming a beautiful contrast to the background.

The edges of the limestone plateau consist of sharp, precipitous escarpments which render it inaccessible along the north, northwest and northeast coasts. The only possible and accessible anchorages around the island, which at best are not too reliable shelter, are Sardinera (southwest coast), Uvero (south coast), and Playa de Pájaro (east coast). There are a few trails leading from the coastal plain to the upper portions of the limestone meseta which ascend the barren cliffs at a sharp angle.

A large section, covering several acres, in the vicinity of Sardinera Beach has been planted with casuarina trees (*Casuarina equisetifolia*)

by the Forest Service. The "pines" have developed very well under the conditions found in the island so that there is a thick stand called "Pine Growth" covering all that level, sandy area.

As far as I am aware, few ornithologists have visited Mona. In 1878, Gundlach mentions wings of a paroquet from Mona, killed by Dr. Block, of Mayaguez. W. W. Brown, Jr., traveling for C. B. Cory, collected on the island in February, 1892. B. S. Bowdish visited Mona in August, 1901. Karl P. Schmidt landed on Mona in 1919 and listed twenty-two species of birds. Parke H. Struthers worked on Mona in July, 1921; and Dr. H. E. Anthony, from the American Museum of Natural History, investigated the cavern deposits there in 1926. Dr. S. T. Danforth accompanied by J. Adjer Smyth visited the island for three days, from April 14 to 16, 1935. On this trip they recorded the Dominican Sparrow Hawk, *Falco sparverius dominicensis*.

The writer saw Mona first in 1941, making a few records of the birds. From September, 1943, to June, 1945, he had the privilege of visiting the island regularly every month in connection with the establishment of fisheries activities and a biological survey of the waters adjacent to the island. Every opportunity was taken for the study of the birds with special attention devoted to the migrants:

The fauna of Mona Island is limited, and in general includes those species to be expected in a dry, tropical climate. Mammals, reptiles, insects, and birds are poorly represented. Only eleven forms of land birds are known to occur on Mona, and four of these are migrants. *Agelaius xanthomus monensis*, recently described from material from Mona, is the only endemic form.

During the writer's work, one hundred and twenty-two birdskins were collected, representing thirty-seven species. Six other species are added on sight records: *Puffinus lherminieri lherminieri*, *Oceanodroma leucorhoa leucorhoa*, *Pelecanus occidentalis occidentalis*, *Nyctanassa violacea violacea*, *Anous stolidus stolidus*, and *Pandion haliaetus carolinensis*. There are included two records made by Danforth, viz., *Falco peregrinus anatum*, and *Arenaria interpres morinella* (see Auk, 53: 100, January, 1936); and seven species listed by Dr. Alexander Wetmore from Mona Island, *Oreopeleia montana montana*, *Oreopeleia chrysia*, *Aratinga chloroptera maugei*, *Coccyzus americanus americanus*, *Tolmarchus taylori*, *Progne dominicensis*, and *Seiurus motacilla* ('Birds of Porto Rico and the Virgin Islands,' New York Academy of Sciences, Sci. Surv. Porto Rico and Virgin Is., 9, pts. 3, 4: 1-598, 1927), making a total of 52 species and subspecies.

An annotated list of the birds from Mona Island follows. The specimens collected by the writer are in his private collection, deposited at the Institute of Tropical Agriculture, University of Puerto Rico, Mayaguez, Puerto Rico.

I wish to express my gratitude to Dr. Alexander Wetmore, Secretary of the Smithsonian Institution, for his kindness in revising the manuscript.

*Puffinus lherminieri lherminieri* Lesson, AUDUBON'S SHEARWATER.—Observed on many occasions on the barren cliffs of the northern side of the island. On March 18, 1944, one followed our boat for more than three hours, giving opportunity for a positive identification.

*Oceanodroma leucorhoa leucorhoa* (Vieillot), LEACH'S PETREL.—Observed on waters adjacent to Mona, following the fishing boats. They are known by the fishermen as *Lavapiés* because of the peculiar habit of dipping in the waves as if they were "washing their feet."

*Phaëthon lepturus catesbyi* Brandt, YELLOW-BILLED TROPIC-BIRD.—One male collected at the barren cliff north of Sardinera Beach, May 4, 1944. A breeding colony was observed in the vicinity of Cueva del Capitán, on May 18, 1944, when many birds were recorded flying over the entrance of the large cave, and at short intervals entering and leaving. I could not reach the nesting site because of the steep cliffs.

*Pelecanus occidentalis occidentalis* Linnaeus, WEST INDIAN BROWN PELICAN.—One adult bird was observed at Sardinera Beach, May 12, 1943. Later, on April 4, 1944, another was recorded on a small beach east of La Esperanza on the northeast coast.

*Sula leucogaster leucogaster* (Boddaert), WHITE-BELLIED BOOBY.—Common, breeding on the northern cliffs of the island. A breeding colony was observed March 27, 1944, in a large cave known as El Toro, northwest of Sardinera Beach, on top of the limestone plateau. Eighty-seven nests were recorded scattered over the rocky floor and in the shallow crevices of the high walls. The nests contained eggs in different stages of incubation, and young of different ages. The parent birds were not much alarmed and some continued feeding the young while I sat quietly behind a huge piece of stalagmite. The larger young in the nests were constantly shaking their wings as though trying to fly. Some pushed themselves out of the nest for a few yards, but never missed their own particular nest when returning.

A male was collected off the coast at Uvero on March 10, 1943.

*Sula sula sula* Linnaeus, RED-FOOTED BOOBY.—A common resident along the coast. A male was collected off Sardinera Beach on October 21, 1941.

*Fregata magnificens rothschildi* Mathews, CARIBBEAN MAN-O'-WAR-BIRD.—A common resident around the coast, breeding in large colonies on top of the limestone plateau where I recorded a breeding group on March 4, 1943. It was located on a small area covered with low trees in the vicinity of Cueva del Gato. The nests were built on the forks of branches, and consisted of rough, shallow platforms with small depressions where a single, large, white egg was laid. Most of the nests (32 in number) contained eggs in different stages of incubation, and five held one young, each, not more than two or three days old. Next year (1944) they did not breed here, probably being frightened away by the laborers working on the meseta. One male was collected off Sardinera Beach on November 5, 1944.

*Nyctanassa violacea violacea* (Linnaeus), YELLOW-CROWNED NIGHT HERON.—Fairly common through the island. These herons remained in the thickest growths during

daytime and became active after nightfall. On November 5, 1944, an adult, too long dead to be saved, was brought by one of the fishermen, who call this species *Carrao*.

I never succeeded in finding a nest, although I found enlarged testes and ovaries in seven birds that were killed in June, 1944, by the fishermen who frequently killed these herons for food.

*Anas discors* Linnaeus, BLUE-WINGED TEAL.—Of accidental occurrence on the island. A male collected in the small mangrove swamp southeast of Sardinera Beach on November 5, 1944. This is the first record for the species on Mona Island.

*Pandion haliaetus carolinensis* (Gmelin), OSPREY.—One bird was observed perching on the highest branch of an almacigo (*Elaphrium simaruba*), east of Uvero Beach on the south coast on November 12, 1944.

*Falco peregrinus anatum* (Bonaparte), DUCK HAWK.—A winter migrant, recorded by Dr. Danforth from Uvero and Playa de Pájaro.

*Falco sparverius dominicensis* Gmelin, DOMINICAN SPARROW HAWK.—Not common but observed on several occasions through the coastal plain and on the limestone plateau. It is always found in pairs, male and female flying together. My specimens include a female collected at Sardinera Beach, October 21, 1941; two males at Uvero Beach, April 4, 1944; one male and one female on the coastal plain, March 23, 1944.

The stomach contents of these birds showed 100% animal matter, consisting of four small lizards, one small field rat, and the remains of a grasshopper and other insects I could not identify.

*Porzana carolina* (Linnaeus), SORA.—One female was collected in the small ciénaga east of Sardinera on November 5, 1944. This is an unusual record and is the first authentic report of the occurrence of this migrant. The bird's condition was very poor, as it was thin and emaciated.

*Squatarola squatarola* (Linnaeus), BLACK-BELLIED PLOVER.—Eleven were seen in a flock on the beach at Sardinera, and a male and a female collected on October 21, 1944. This constitutes the first authentic record of this species on Mona Island.

*Charadrius vociferus rubidus* (Riley), ANTILLEAN KILLDEER.—A male was collected at Uvero Beach, June 5, 1943, and one male obtained at Sardinera, June 5, 1944. These constitute the first records for Mona Island of this bird which appears not to breed here.

*Arenaria interpres morinella* (Linnaeus), RUDDY TURNSTONE.—Recorded by Dr. Danforth from Uvero Beach.

*Actitis macularia* (Linnaeus), SPOTTED SANDPIPER.—Large numbers of this species arrive on Mona during the season of migration, associated with other sandpipers. They are found particularly along the coast, from Sardinera to Uvero, and also at Playa de Pájaro. Recorded also from small pools formed by rain along the dirt road.

One female was collected on the beach east of Sardinera on November 2, 1943.

*Tringa solitaria solitaria* Wilson, EASTERN SOLITARY SANDPIPER.—A rather common winter migrant, found along the coast and sandy beaches. A male and female were collected on the swampy mangrove area east of Sardinera on Dec. 10, 1944.

*Totanus melanoleucus* (Gmelin), GREATER YELLOW-LEGS.—One male was collected at a small pond of rain water on the dirt road between Sardinera and Uvero, south coast of Mona Island, December 10, 1944; five were noted at Sardinera on November 10, 1944; two were recorded at Playa de Pájaro, east coast, on November 27, 1944.

*Totanus flavipes* (Gmelin), LESSER YELLOW-LEGS.—A common winter migrant. Twenty-two were recorded on the beach at Sardinera on November 10, 1944. One male was collected in the mangrove swamp east of Sardinera on December 10, 1944.

*Erolia minutilla* (Vieillot), LEAST SANDPIPER.—A common winter migrant, observed on several occasions along the sandy beaches of the south and southeast coasts. A male and a female were collected in the mangrove swamp area east of Sardinera, December 10, 1944.

*Ereunetes pusillus* (Linnaeus), SEMIPALMATED SANDPIPER.—A rather common winter migrant, found along the sandy beaches. On November 29, 1944, eighteen birds were seen on the beach at La Esperanza, northwest of Sardinera. One was observed at Uvero, December 8, 1944. A male was collected in the small swamp area east of Sardinera, November 5, 1944.

*Crocethia alba* (Pallas), SANDERLING.—An uncommon migrant. One male and two females, collected at Sardinera Beach on November 12, 1944, constitute the only records.

*Larus atricilla* Linnaeus, LAUGHING GULL.—Seen commonly along the coast. On April 4, 1944, an adult female was collected off Sardinera. Seven were noted at Uvero on July 8, 1944. I noticed many flying over large schools of tuna between Mona and Monito, associated with boobies and terns.

*Sterna fuscata fuscata* Linnaeus, EASTERN SOOTY TERN.—The Sooty Terns are rather common in the waters adjacent to Mona where I noticed them flying very low over large schools of tuna. I have never recorded them breeding on the island. One male was collected off the coast at Sardinera on April 4, 1944.

*Sterna anaethetus melanopectera* Swainson, BRIDLED TERN.—Common along the coast. A male was collected at Uvero on March 23, 1944.

*Thalasseus maximus maximus* (Boddaert), ROYAL TERN.—One male was collected at Playa de Pájaro, November 6, 1944. Three individuals were noted at Sardinera Beach, August 12, 1944; seven were observed at Uvero, flying low over the sea, on March 23, 1944.

*Anous stolidus stolidus* (Linnaeus), NODDY TERN.—Exceedingly abundant along the coast. A large breeding colony was found on June 12, 1943, on the abrupt cliffs of the plateau on the northern part of the island, on an inaccessible point of the meseta. This was close to Cueva del Toro. Another colony was found breeding at La Esperanza, May 23, 1944, where I could see the nests placed in crevices of the high cliffs. I was informed by the fishermen who had been for a long time on Mona, that the *Severo* used to breed on top of the plateau on the rocky floor of the meseta, and there is still a small trail called the Trail of Los Severos which leads from Sardinera to where this tern used to nest.

A male was collected off Uvero Beach on November 10, 1944.

*Columba leucocephala* Linnaeus, WHITE-CROWNED PIGEON.—Common on the island from May to August, in compact flocks both on the coastal plain and on the plateau. One female was collected in the Pine Growth on March 23, 1944. A male was obtained at Uvero, October 21, 1941.

Undoubtedly this pigeon comes from Hispaniola to breed on the island. I have witnessed the arrival of large, compact flocks approaching from the southeast, flying high over the channel in compact formation. They breed through the island, on top of the plateau and on the coastal plain. On occasions I have noted as many as eight nests on a single tree of the papayo (*Metopium toxiferum*). The nest consists of a rough, shallow platform, with a small depression that contains

two eggs of a brilliant white color. The nests are usually placed between upright forks and are built of coarse sticks, twigs, and dry leaves. On July 17, 1943, I observed eleven pairs breeding in tall casuarina pines on Sardinera. Flocks were seen feeding on the seeds of the cogollo palm (*Sabal causiarum*) in the vicinity of Uvero.

Stomach contents of 17 birds consisted of fruits of papayo and cogollo palm (*Sabal causiarum*), drupes of jaguey (*Ficus* sp.), and large red berries of the cerezo.

*Columba squamosa* Bonnaterre, SCALED PIGEON.—Found in limited numbers on the island, not as common as the preceding species. One male was collected at Sardinera on March 23, 1944, and another was obtained at Uvero on October 6, 1944. Apparently they breed here though I never succeeded in finding a nest.

The White-crowned and the Scaled Pigeons vanish from the island after August and do not appear again until the following March, when the first return. Stomachs examined showed the fruit of papayo.

*Zenaida aurita zenaida* (Bonaparte), ZENAIDA DOVE.—Rather common throughout the year. They are well distributed over the coastal plain and the limestone plateau where this is densely covered with shrubs. I noticed them breeding at different seasons. Nests were observed on August 28, 1943 (Uvero); December 6, 1944 (Uvero); January 21, 1944 (Los Cerezos, on the plateau); February 9, 1944 (Pine Growth); February 11, 1944 (Sardinera); February 16, 1944 (Palmar de Cogollo); March 21, 1944 (in the vicinity of Cueva del Gato, on the plateau). From May to August they are associated in flocks of 30 birds or so feeding in the sandy areas of the coastal plain around Uvero and Caigo o no Caigo.

Stomachs of 21 examples showed small seeds of leguminous plants, 102 papayo drupes, seeds of cardosanto (*Argemone mexicana*), 57 fruits of almacigo (*Elaeophrium simaruba*), and particles of sand.

A male was collected on March 22, 1944, at Sardinera Beach; one male was obtained at Uvero on March 23, 1944; one female was killed on the plateau in the proximity of Cueva del Gato on March 24, 1944.

*Zenaida asiatica asiatica* (Linnaeus), WHITE-WINGED DOVE.—One female and two males were collected on May 4, 1944, at Uvero Beach, south coast, from a small flock of about 30 birds observed feeding in the dry, cactus-covered area close to the sandy beach. They remained on the island until about the first of June. On my next trip to the island (June 7), I succeeded in collecting a female. The flock recorded on May 4 may have been in flight to the southwestern littoral of the main island of Puerto Rico, the only point on the island where they are found, as far as I am aware.

The stomach contents revealed the presence of seeds of leguminous plants and of cardosanto (*Argemone mexicana*).

*Columbigallina passerina exigua* (Riley), MONA ISLAND GROUND DOVE.—Common and well distributed through the coastal plain and on the meseta. Three males were collected at Sardinera on March 22, 1944; three females were obtained at Uvero on March 22, 1944; three males and two females were collected on the extreme north end of the plateau on March 23, 1944; one male was killed and preserved on March 24, 1944, near Los Cerezos, where it was found to be exceedingly abundant. I noticed flocks of a hundred or more birds in the Pine Growth at Sardinera. Through the coastal plain they are generally found in large parties, feeding in the extensive cactus association. At Uvero, on October 6, 1944, 300 were noticed frequenting a small water hole from 7:30 to 11:00 A. M.

These birds breed in low bushes and in thick patches of shrubs. On different occasions nests were found placed on the ground, well concealed by the high grass. The nest consists of a small, shallow, cup-shaped platform with a deep depression where two white eggs are deposited. I found nests on May 11, 1944, at Sardinera, built in the thick bushes close to the cliff; at Uvero Beach, June 2, 1944; at Cueva del Gato on June 8, 1944; and two nests with young on a low bush on the trail to Los Cerezos, June 28, 1944. A nest containing two eggs was found concealed by grass in the middle of the dirt road, May 17, 1944. The incubating bird flushed when I approached.

Stomach contents were seeds of different leguminous plants and of cardosanto (*Argemone mexicana*), also particles of sand.

*Oreopeleia chrysis* (Bonaparte), KEY WEST QUAIL-DOVE.—Included by Dr. Wetmore from Mona on the basis of sight records by Bowdish, who claims he saw this species on several occasions. Probably now extirpated.

*Oreopeleia montana montana* (Linnaeus), RUDDY QUAIL-DOVE.—Cited by Dr. Wetmore from specimens collected by Mr. Bowdish, who found this species abundant from August 9 to 21, 1901. Probably now extirpated on the island.

*Aratinga chloroptera maugei* (Souancé), PUERTO RICAN PAROQUET.—Cited by Dr. Wetmore from Mona Island based on specimens collected on the island. Now extirpated.

*Coccyzus minor teres* Peters, MANGROVE CUCKOO.—Locally fairly common in areas well covered with shrubs and thick, low bushes. One male was collected at Sardinera, October 21, 1941; one male and two females were taken at Palmar de Cogollo on April 4, 1944; a female was obtained at Sardinera, March 23, 1944.

Stomach contents showed remains of several insects not identified except that elytra of beetles were noticed.

*Coccyzus americanus americanus* (Linnaeus), YELLOW-BILLED CUCKOO.—This winter migrant was cited by Dr. Wetmore from Mona Island based on an adult bird shot by Bowdish on August 17, 1901.

*Crotophaga ani* Linnaeus, SMOOTH-BILLED ANI.—A small flock was recorded, consisting of 27 birds, usually met with on the coastal plain, and never found on top of the limestone plateau. The Ani seems to be restricted to the lowlands of the coastal plain, ranging through the thick bushes and on the tall Guinea grass (*Panicum maximum*).

A nest was recorded on September 10, 1944, placed in an almacigo about 11 feet from the ground at the extreme end of a main branch. It contained 14 fresh eggs, of a blue color, placed in layers of five. None of the birds was seen in the vicinity of the nest. Six days later the nest was still in the tree, but was empty.

One male was collected on April 5, 1944, southeast of Sardinera at the edge of the dirt road.

*Megaceryle alcyon alcyon* (Linnaeus), EASTERN BELTED KINGFISHER.—Uncommon winter migrant. A male was collected April 6, 1944, at Sardinera.

*Tyrannus dominicensis dominicensis* (Gmelin), GRAY KINGBIRD.—A rather common resident, well distributed throughout the coastal plain and on the limestone plateau. One male was collected at Sardinera Beach in the Pine Growth, October 21, 1941. A female was collected in the arid scrub at sea level on March 23, 1944; one male and one female were obtained at Uvero Beach, April 5, 1944.

A nest with two eggs was found on a branch of a papayo (*Metopium toxiferum*) at the edge of the dirt road, about ten feet from the ground. Both birds were about when I climbed to look at it on May 13, 1944.



*Tolmarchus taylori* (Vieillot), PUERTO RICAN PETCHARY.—Cited by Dr. Wetmore from Mona Island on the basis of reports obtained by Struthers in 1921. I have never recorded the species here.

*Progne dominicensis* (Gmelin), CARIBBEAN MARTIN.—Reported by Dr. Wetmore from Mona Island from the records of Bowdish who found this species common during his stay in August, 1901. I did not observe it during my survey.

*Margarops fuscatus fuscatus* (Vieillot), PEARLY-EYED THRASHER.—A very common resident, widely distributed on the coastal plain and on the limestone plateau, always met with in small groups of trees and in thick bushes, and common around the camp at Sardinera. This is the most abundant land bird on the island. It seems to breed throughout the year according to my records of nests with eggs or young.

The nest is a bulky, rough structure, built with coarse pieces of sticks, grass, and other vegetable matter. It is usually located inside caves or in deep crevices on the cliffs. Twenty-seven nests all contained sets of two eggs each, of a creamy-white color, speckled with deep brown over the entire surface. Of these nests, nine were found from May 3 to 28, four in June, and fourteen at other seasons.

A male was collected at Sardinera Beach on November 12, 1943. Two males with enlarged testes were collected at Uvero on May 21, 1944.

This thrasher feeds mainly on fruits, but also on insects, spiders, and other arthropods. On several occasions I verified that it ate the eggs and young of the White-headed Pigeon, the Zenaida Dove, and the Ground Dove. No matter how well concealed the nests are, the thrasher always discovers them.

One of the fishermen established in a small cabin at Uvero Beach, where these thrashers were particularly abundant, caught them in a rat trap baited with ripe papaya (*Carica papaya*).

At the close of day, males sing their melancholy songs until the sun is down. Before sunrise, when it is still dark, the song is heard constantly around the camp at Sardinera.

*Mniotilta varia* (Linnaeus), BLACK AND WHITE WARBLER.—A common winter migrant. One male was collected on the plateau at Los Cerezos, October 6, 1944.

*Compothlypis americana pusilla* (Wilson), NORTHERN PARULA WARBLER.—An uncommon winter migrant. One male was collected at Uvero Beach on the south coast on April 19, 1944.

*Dendroica coronata coronata* (Linnaeus), MYRTLE WARBLER.—A rather common winter migrant. One male and two females were collected in the Pine Growth, east of Sardinera, on March 24, 1944. Another male was taken at Uvero Beach on April 4, 1944.

*Dendroica dominica dominica* (Linnaeus), YELLOW-THROATED WARBLER.—An uncommon winter migrant. One male was collected at Uvero Beach, on the south coast, on October 5, 1944.

*Dendroica discolor discolor* (Vieillot), NORTHERN PRAIRIE WARBLER.—A fairly common winter migrant, well distributed through the Pine Growth and the coastal plain. Two males and one female were collected in the Pine Growth east of Sardinera on March 23, 1944; two males were taken at Uvero Beach, October 5, 1944; one male was collected at Sardinera Beach, November 12, 1944.

*Dendroica palmarum palmarum* (Gmelin), WESTERN PALM WARBLER.—An uncommon winter migrant, recorded from the Pine Growth east of Sardinera Beach, where a male and female were collected on October 26, 1944.

*Seiurus aurocapillus aurocapillus* (Linnaeus), OVEN-BIRD.—Not common. A male was collected in the Pine Growth on April 4, 1944.

*Seiurus noveboracensis noveboracensis* (Gmelin), NORTHERN WATER-THRUSH.—The only bird of this species that I observed on the island was a male collected on March 24, 1944, in the Pine Growth east of Sardinera Beach, while it was feeding around an abandoned water hole under the casuarinas.

*Seiurus motacilla* (Vieillot), LOUISIANA WATER-THRUSH.—Recorded by Dr. Wetmore from specimens collected by Bowdish on August 18, 1901.

*Setophaga ruticilla* (Linnaeus), REDSTART.—A rather common winter migrant through the Pine Growth and the coastal plain. A female was collected at Uvero Beach on April 4, 1944.

*Agelaius xanthomus monensis* Barnés, MONA ISLAND BLACKBIRD.—Moderately common and restricted to the limestone plateau where it feeds in the cactus association and gathers in small flocks of ten to twelve birds. It has never been recorded from the Pine Growth or from the coastal plain.

The breeding season is in July and August. I have recorded seven nests, built on tall cacti (*Selenicereus* sp.). Two nests found on July 9, 1944, contained sets of four eggs each in an advanced stage of incubation. Five nests found later on July 27, contained four eggs each. The nest is a global structure, somewhat elongated, built of dry grass, small twigs, and other vegetable matter. Both parent birds remain close to the nest during the breeding period and are not easily alarmed. After the young leave the nests they gather in small parties.

One male and one female with testes and ovaries enlarged were collected on March 23, 1944, on the northwestern side of the plateau; two males were taken at Cueva del Gato, on the plateau, April 5, 1944; two males at Las Caobas, on the plateau, April 6, 1944; one male and one female at Cueva del Capitán, on the plateau, April 7, 1944; two males, one female, and one (?) at the north end of the plateau, October 6, 1944.

*Piranga olivacea* (Gmelin), SCARLET TANAGER.—A rare winter migrant. One male was collected at Palmar de Cogollo, northeast of Uvero Beach, May 3, 1944. This is the first record of the species.

#### *Division of Fisheries and Wildlife*

*Department of Agriculture and Commerce*

*Mayaguez, Puerto Rico*

---

## LIFE HISTORY OF THE COSTA RICAN TITYRA

BY ALEXANDER F. SKUTCH

THE Costa Rican Tityra (*Tityra semifasciata costaricensis*) is a member of the Cotingidae, a large and heterogeneous family of arboreal birds, related to the Tyrannidae or American flycatchers, and confined to the warmer parts of the Western Hemisphere, including the Antilles. Very few species extend beyond the Tropics; only one, Xantus's Becard, reaches the southern boundary of the United States. Of very small to medium size (for passerine birds), the cotingas are for the most part clad in browns and grays, but some