STUDIES ON THE FAUNA OF CURAÇAO AND OTHER CARIBBEAN ISLANDS: No. 25.

THE BIRDS OF ST. MARTIN, SABA, AND ST. EUSTATIUS

by

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From September 22nd 1951 until April 19th 1952 I stayed, with my wife as a good companion and technical assistant, in the Netherlands Antilles to make an ornithological survey of these islands. This work, which included both making a collection of study-skins and gathering field data and distributional records, was done under the auspices of the Foundation for Scientific Research in Surinam and the Netherlands Antilles (*"Natuurwetenschappelijke Studiekring voor Suriname en de Nederlandse Antillen"*) and was financed by the Government of the Netherlands Antilles. I am greatly indebted, therefore, to the Government officials of the Netherlands Antilles, particularly to Mr. J. H. SPROCKEL, minister of Education, and to the staff of the Department of Education. My thanks are also due to the members of the board of the "Studiekring", among whom I should not forget to mention in deep appreciation the names of Dr P. WAGENAAR HUMMELINCK and Dr J. H. WESTERMANN. The trustees of the University of Amsterdam and the director of the Zoological Museum kindly granted me 8 months study-leave and released me from my responsibilities as curator of the Zoological Museum during this period. Sincere thanks are also due to board and members of the Natural Sciences

Study Group Netherlands Antilles (*"Natuurwetenschappelijke Werkgroep Nederlandse Antillen"*), who never failed to help us magnificently, making our stay on the islands a most exillerating experience.

This first part of the scientific reporting on our voyage deals with the birds of St. Martin, Saba, and St. Eustatius. These small islands are among the most northerly of the group known as the Lesser Antilles (fig. 1).

We stayed on these islands from 1.II.1952 until 14.III.1952, collecting a total of 164 bird specimens, all of which have been incorporated now in the collection of the Zoological Museum of Amsterdam. A few preliminary results of the study of the collection has already been published by BOND (1952).

It would be impossible to mention the names of all the friendly people in those islands, who helped us in various ways and provided us with much valuable local information. We feel, however, that we should make an exception in the cases of Mr. J. C. PAAP, the Governor of these islands, and of the local administrators of Saba and St. Eustatius, none of whom ever neglected to give us any assistance we thought necessary during our stay. Not forgetting to thank the many people in all three islands for their sincere friendship and for the pleasant talks during lonely evenings in these romantic, though remote, islands.

I am also indebted to the authorities and colleagues of the following museums and institutions: Rijksmuseum van Natuurlijke Historie, Leiden (Dr G. C. A. JUNGE), British Museum of Natural History, London, (Mr. J. D. MACDONALD), Royal Museum of Natural History, Stockholm (Count Dr N. GYLDENSTOLPE), Academy of Natural Sciences of Philadelphia (Mr. JAMES BOND), United States National Museum, Washington (Dr A. WETMORE, Dr H. FRIEDMANN), American Museum of Natural History, New York (Dr J. T. ZIMMER). They kindly sent me material for comparison and examination and supplied me with a great deal of interesting advice.

Some general information concerning the islands of St. Martin, Saba, and St. Eustatius — including maps and photographs — are to be found in the 17th paper of these *Studies*, vol. IV (fig. 17, 20, 21, 23 and 24; plate IIIb, IV, Va and VIII).

The photographs from plate I and IIIa have been taken by Mr. H. W. E. CROOCKEWIT (1953), those of Plate II and IIIb by Dr HUMMELINCK (1949). The coloured Plate IV has been drawn by Mr. H. J. SLIJPER, under supervision of the author.

HISTORICAL

Very little has been written about the birds inhabiting the islands St. Martin, Saba, and St. Eustatius. The first author who presents a somewhat detailed information is C. B. CORY in 1891, giving a list of 20 species collected by CYRUS S. WINCH on St. Eustatius in the summer of 1890. However, WINCH was not the first person to collect birds in these islands. For JAMES BOND recently informed me, that the Academy of Natural Sciences of Philadelphia has in its possession three birds, formerly mounted, which they received from Dr H. E. VAN RIJGERSMA, Governor at St. Martin, some time prior to 1861. Included in the collection are numerous fishes, reptiles and other animals. These birds, which have never been reported upon, include *Podilymbus podiceps antillarum*, *Phaëthon aethereus mesonauta*, *Sterna sandvicensis acuflavida*. The well-known collector F. A. OBER, who sent many specimens to the United States National Museum from nearly all of the Lesser Antilles, also appears to have visited Saba and St. Eustatius, for the U.S. National Museum possesses several bird skins from these islands, particularly from Saba, including the type specimens of *Pyrrhulagra coryi* Ridgway (St. Eustatius) and *Geotrygon sabae* Riley (Saba). Also the only known specimens of *Cinclocerthia ruficauda pavida* from St. Eustatius and *Vireo a. altiloquus* from Saba. All these birds were entered in the museum's catalogue in October 1880 and were apparently collected some time in the 1870's (FRIEDMANN *in litt.*). OBER's and WINCH's specimens were mentioned regularly in the American literature, particularly in RIDGWAY's "*The birds of North and Middle America*" (Bull. U. S. Nat. Mus. *50*, from 1901 onward, continued in 1941 by FRIEDMANN) and in CORY's and HELLMAYR's "*Catalogue of birds of the Americas*" (Field Mus. Nat. Hist., Zool. Ser., *13*, 1918–1948; the last volumes in cooperation with CONOVER).

Apart from these rather regular collections, there are, of course, single specimens in other museums from one or more of the three islands. Among these are a specimen of *Sterna f. fuscata*, caught by Dr A. VON GOËS on St. Martin on 10.VI.1865 (SUNDEVALL, Öfv. Kongl. Vetensk. Ak. Förh., 1869, p. 589), now probably in

the Stockholm Museum, specimens from St. Martin of *Pelecanus o. occidentalis* dating from 1866 and 1869, and *Pandion haliaëtus carolinensis* and *Falco sparverius caribaearum* (1869), all of which have been preserved in the Leiden Museum.

Turning to the 20th century, JAMES LEE PETERS visited St. Eustatius (probably also St. Martin) in February 1922 to collect birds for the Museum of Comparative Zoology at Harvard College, Cambridge (Mass., U.S.A.). But he apparently never reported upon them. Some of his specimens are now in the Leiden Museum following former exchange transactions (*Elaenia m. martinica, Coereba flaveola bartholemica, Loxigilla noctis coryi*).

The first regular account on the birds of St. Martin and St. Eustatius was written by STUART T. DANFORTH, at that time professor at the University of Porto Rico, who stayed in St. Martin in 1927, from December 21 to 27, and in St. Eustatius on December 28. DANFORTH published his results in a list, containing 37 species and one additional subspecies (DANFORTH 1930). Ten years later (1937) DANFORTH visited Saba from January 23 to February 4 and wrote a subsequent survey on the birds of this island, mentioning 28 forms (DANFORTH 1939). The whole DANFORTH collection of birds is now in the U.S. National Museum, whence I received on loan several conjectural specimens for further examination.

In 1928 JAMES BOND paid a visit to Saba, staying there from November 30 to December 15. A collection of 17 specimens was made, including *Puffinus l. lherminieri, Geotrygon mystacea, Eulampis jugularis,* and *Cinclocerthia ruficauda pavida.* These specimens are now in the Academy of Natural Sciences of Philadelphia (BOND *in litt.*) and have been of use in compiling BOND's valuable "*Checklist of birds of the West Indies*" (1945; 3rd ed. 1950).

A first list of the birds of all three islands combined was published by S. J. KRUYTHOFF (1938; 2nd ed. 1939), who was at that time a teacher at Philipsburg, St. Martin. His list, which appears to be based mainly on data supplied by DANFORTH, contains a great number of local vernacular names and many latin indications, the majority of which being incorrectly spelled. Those of KRUYTHOFF's records which appear reliable have been mentioned in the present paper, and include three species not previously recorded,

viz., Phoenicopterus r. ruber, Numenius phaeopus hudsonicus, Hirundo rustica erythrogaster. The occurrence in St. Martin of the following species mentioned by KRUYTHOFF, but omitted in our list, is quite probable, though not proved, since these birds have been reported from one or more of the neighbouring islands (Anguilla, St. Barts, St. Kitts): *Dendrocygna* spec. ("whistler"), *Anas bahamensis* ("white-throat"), *Gallinula chloropus, Fulica caribaea, Haematopus ostralegus.* Further confirmation of their occurrence in one of the islands is, of course, needed. The following records by KRUYTHOFF are being rejected here because of lack of evidence (original spelling given): *"Casmerodius Alba Egretta, Nycticorax N. Naevius, Charadrius semipalmatus, Pluvialis Dominicus, Pisolia Minutilla, P. Melanotos, Ereunetes pusillus, Tringa Solitaria, Sterna Dougallii, Sterna Albifrons Antillarum, Totanus Melanoleucus".*

In two valuable articles J. H. WESTERMANN (1946, 1947) not only discusses the problems concerning the preservation of bird life in the Netherlands Antilles, but also mentions interesting details connected with the breeding colonies of sea birds (*Pelecanus o. occidentalis, Sula l. leucogaster*) along the coasts of St. Martin and Saba. Other important data in WESTERMANN's publications concerns the increasing rarity of *Buteo j. jamaicensis* and the detrimental effect of the mongoose upon the avifauna of St. Martin.

In an account on Islote Aves or Bird Island, the isolated key to the west of Dominica, P. WAGENAAR HUMMELINCK (1952) also mentions the regular occurrence of two species of sea birds on St. Martin, previously unknown as breeding birds in that island (*Sterna fuscata, Anoüs stolidus*).

Lastly, some historical considerations are to be found in a short paper by the author (1954) on ornithological research in the Netherlands Antilles, up to 1951.

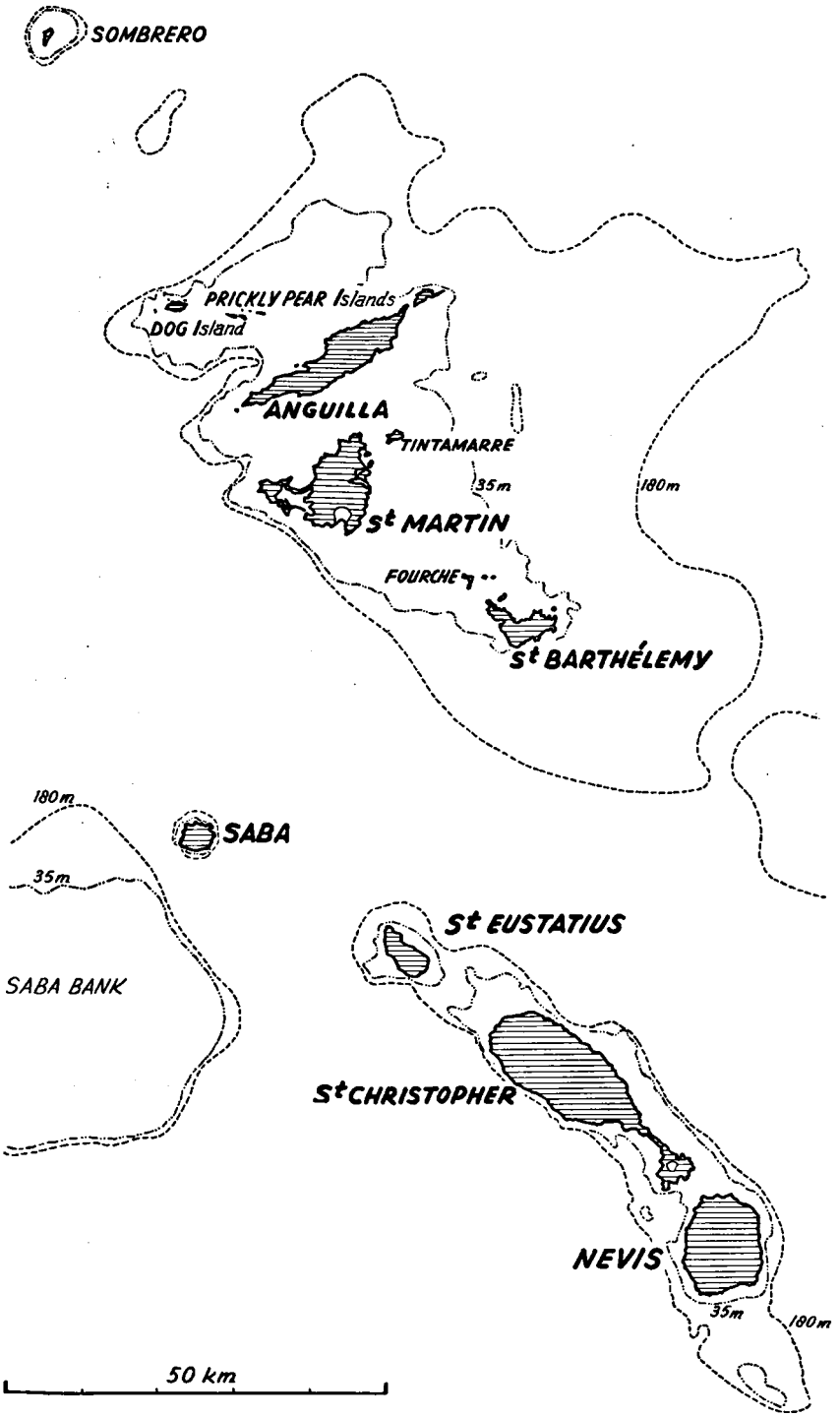

Fig. 1. Sketch map of *St. Martin, Saba, St. Eustatius* and neighbouring islands; contour intervals of about 35 and 180 m. deep.

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THE ISLANDS

ST. MARTIN

St. Martin measures about 85 km². Only the southern part (40 km²), of which Sint Maarten is the official name, belongs to the Netherlands Antilles. It is a hilly island (highest point is Paradise Hill, 412 m) with wide and magnificent sandy beaches and extensive salt water lagoons (also salt ponds); the lagoons are usually bordered with a fringe of low mangroves (*Rhizophora* and *Avicennia*). The hills are covered with a dense scrub or low forest, ranging from a more or less xerophytic type on the drier western slopes to a more luxurious semi-deciduous seasonal forest on the eastern slopes, which are fully exposed to the moist eastern trade wind; the latter type of forest is also found in some of the deeper valleys. Gum trees (*Bursera*), white cedars (*Tecoma*) and several berry-bearing species of *Eugenia* abound in these forests; besides, there is an abundance of epiphytic bromeliads, some species of orchids and entangling vines and lianas. Beautiful cattle-pastures are found in the wider valleys, where cattle of a mixture of European races and Indian zebus apparently flourish. Big tamarinds and fig trees, and occasionally some lonely mango, give some shade in these artificial savannahs. In the xerophytic scrub several species of thorned *Acacia* and *Opuntia* are abundant. Small groves of manchioneel trees (*Hippomane mancinella*) usually border the sandy beaches; sea-grapes (*Coccoloba uvifera*) and coconut palms add to the charming appearance of St. Martin's beaches.

Bird life in St. Martin is characterized by its poorness in species as well as in individuals. Bananaquits (*Coereba flaveola*), grassquits (*Tiaris bicolor*), pearly-eyed thrashers (*Margarops fuscatus*), grey kingbirds (*Tyrannus dominicensis*) and ground-doves (*Columbigallina passerina*) are the only species which are locally more or less common. Brown pelicans (*Pelecanus fuscus*) may also be seen daily as they are fishing in nearly all shallow bays. However, when making a trip across the island, or finding our way through the hill scrub, we were impressed by the scarcity of birds. One day (Febr. 11th) we crossed the dense, although rather dry forest on the hills of Bellevue, south of Marigot, and failed to observe or hear more than one *Coereba flaveola*, a few singing *Setophaga ruticilla*, one or two *Margarops fuscatus*, and one or two *Zenaida aurita* (Plate IV) during two hours of constant observation: the most abundant bird (*Setophaga ruticilla*) being a winter visitant from North America!

The lagoons and extensive salt ponds furnish good habitats for herons, egrets, ducks, and waders, particularly during the migratory periods. Corresponding habitats are absent in Saba and St. Eustatius. We did not see so many water birds, however, but DANFORTH

(1939) mentions 7 species of waders and one rail observed during a visit in December 1927. Mr. JULIEN CONNOR, who was an eager hunter in St. Martin, told me, that Bahama pintails (*Anas bahamensis*), North American pintails (*Anas acuta*) and blue-winged teal (*Anas discors*) are regularly killed in the autumn months in the great salt ponds behind Philipsburg.

Uncontrolled shooting has apparently led to the practical extirmination of the red-tailed hawk (*Buteo jamaicensis*), which is persecuted all over the island as being a "chicken-hawk". Also such game birds as the scaly-naped pigeon (*Columba squamosa*) and the zenaida dove (*Zenaida aurita*) have become seriously diminished in numbers, or have practically disappeared (*C. squamosa*!) owing to excessive hunting.

Apart from natural distributional causes of the poorness of an island fauna both the prevalence of disastrous hurricanes and the destructive habits of the mongoose (formerly imported and at present flourishing) have, to my mind, greatly influenced the diminution of the number of birds living on St. Martin.

The inaccessible rocky cliffs of the southeast coast of the island (Point Blanche, Plate IIIb) and the rocky "keys" between St. Martin and St. Barts are the breeding places of several species of sea birds, including brown pelicans (*Pelecanus occidentalis*), (Plate IIb), sooty terns (*Sterna fuscata*) and noddy terns (*Anoüs stolidus*, Plate IIa).

The number of bird species recorded from St. Martin is 53; among these are 24 migrants from North America. The remaining 30 are composed of 8 species of sea birds and 21 land or fresh water birds.

Four genera, listed by BOND (1948, p. 212–213) as endemic to the West Indies, are represented in St. Martin, *viz.*, *Sericotes*, *Orthorhyncus*, *Margarops*, *Loxigilla*.

We visited St. Martin in the periods 1–15.II.1952 and 13–14.III. 1952 and collected 58 specimens, belonging to 19 species, including specimens of all four endemic genera. In addition we observed another 15 species, making a total of 34 species, of which 2 have not been recorded previously, *viz.*, *Tringa s. solitaria* and *Larus argentatus smithsonianus*, both being winter visitors from North America.

SABA

Saba is the smallest of the three islands, measuring only 12 km². It is an old volcano (Plate IIIa), whose principal peak of over 860 m altitude — officially named Mt. Scenery — is generally called "The Mountain". Unlike St. Martin both Saba and St. Eustatius belong to the inner arc of Lesser Antillean islands, which are of young volcanic origin. Saba has a very rugged topography, with extremely steep cliff coasts and deep ravines, which are called "guts". The island has a beautifully green vegetation, which is particularly luxurious in the narrow guts, where such plants as nidulous ferns, begonias, and many big-leaved arums immediately attract attention. The top of The Mountain is often hidden in clouds and covered predominantly with a fascinating tropical cloud forest. Peculiar fern tree associations occur as secondary growths on cleared areas. The slopes on the leeward side of the island, which are considerably drier, are covered with a xerophytic vegetation of low herbs, opuntias, and scattered trees (white cedars). These are the favoured hunting grounds of the red-tailed buzzard (*Buteo jamaicensis*), which is less rare in Saba than in the other islands, and of the Lesser Antillean kestrel (*Falco sparverius*). The small neat-looking villages, known respectively as The Bottom, Windwardside and Hellsgate, are well-kept and full of garden flowers; hence, such birds as the grassquit (*Tiaris bicolor*) and the ground-dove (*Columbigallina passerina*), which live for a great part on the seeds of small weeds often occurring near human dwellings, are remarkably scarce!

Many trees and shrubs were in fruits during our visit, among these were soursop, mango, custard-apple, and "monkey-berry" (*Eugenia*). Several species of birds were eagerly feeding upon their fruits (*Margarops fuscatus*, *Allenia fusca*, Plate IV, *Elaenia martinica*, *Loxigilla noctis*, Plate IV).

The pearly-eyed thrasher (*Margarops fuscatus*) was among the commonest of the birds met with on Saba; the otherwise ubiquitous bananaquit (*Coereba flaveola*) appeared far less abundant. Characteristic birds of the mountain forests were two species of "thrush" (*Margarops fuscatus*, *Allenia fusca*, Plate IV), the zenaida dove (*Zenaida aurita*, Plate IV) and the American redstart (*Setophaga ruticilla*). Two species appeared to be more or less restricted to the forests in the cloud-zone, *viz.*, the trembler (*Cinclocerthia ruficauda*, Plate IV) and the garnet-throated hummingbird (*Eulampis jugularis*).

Of the sea birds, two species of tropic-birds (*Phaëthon aethereus*, *P. lepturus*) were found nesting in the cliffs; a species of shearwater (*Puffinus lherminieri*) is known to breed in sheltered places in the higher parts of the island, and brown boobies (*Sula leucogaster*) are said to nest on the rocky pinnacle, called Diamond Rock, on the northwest coast.

34 species of birds have up to now been recorded from Saba

or its surrounding seas, among which are 5 migrants from North America. The remaining 29 species are composed of 8 species of sea birds and 21 more or less resident land birds.

Seven genera, listed by BOND (1948, p. 212–213) as endemic to the West Indies, are known to occur in Saba, *viz.*, *Eulampis*, *Sericotes*, *Orthorhyncus*, *Margarops*, *Allenia*, *Cinclocerthia*, *Loxigilla*. In addition the Lesser Antillean *Tanagra musica flavifrons* (Plate IV) has been found in Saba, where it proved, however, to be extremely rare.

We visited Saba in the period 28.II–13.III.1952 and collected 49 specimens, belonging to 20 species, including specimens of all seven endemic genera. In addition we observed another 9 species, making a total of 29 species, of which 2 migrants from North America have not been recorded previously, *viz.*, *Sterna hirundo* and *Wilsonia citrina*.

ST. EUSTATIUS

St. Eustatius measures about 21 km²; its length in S.E.-N.W. direction is approximately 8 km. The island is dominated by the presence of an extinct volcano, The Quill, in the southeast (Plate Ia); in the nortwest are lower volcanic remnants, called the Little Mountains. The central, connecting part of the island is a rather low and slightly undulating country with meagre meadows for cattle and donkeys and with some agriculture. The volcano The Quill, which is about 600 m high, has the shape of a regular cone. Its crater, which can be entered at a height of approximately 450 m, has very steep walls. The bottom of the crater lies about 274 m above sea level and is rather flat. In it shelters the most beautiful — though not fully original — tropical rain forest imaginable (Plate Ib). Here it is dark and moist, the ground is covered with mosses, ferns, and decayed wood; nidulous ferns, arums, bromeliads, orchids, and a variety of lianas flourish in the tall trees, among which the cotton tree (*Ceiba pentandra*) with its broad plank roots and the breadfruit tree (*Artocarpus*) with its big leaves are most conspicuous. This extremely small patch of tropical rain forest, measuring only approximately 40 hectares, is the only habitat in St. Eustatius of the bridled quail-dove (*Geotrygon mystacea*, Plate IV) and the trembler (*Cinclocerthia ruficauda*, Plate IV). In addition it is an important refuge of the rare blue pigeon (*Columba squamosa*), which houses close to the summit of the mountain near the steep crater wall of some two hundred meter height. Besides, we found in this forest pearly-eyed thrashers (*Margarops fuscatus*), bananaquits (*Coereba flaveola*) and American redstarts (*Setophaga ruticilla*). The southern slope of The Quill descends rather steeply into the sea; in its almost inaccessible cliffs we found a colony of red-billed tropic-birds (*Phaëthon aethereus*).

Birds are rather abundant in St. Eustatius, particularly in the less disturbed forests, both on and in The Quill and in the Little Mountains. In the cultivated areas the abundance of Lesser An-

tillean kestrels (*Falco sparverius*) and Greater Antillean grey kingbirds (*Tyrannus dominicensis*), which throughout their areas are known to prefer open park-like countries, is noteworthy. In the drier parts of the forests of the Little Mountains and in the higher trees of the gardens in the little village of Oranjestad black-whiskered vireos (*Vireo altiloquus*) were rather common; these birds appeared also in the big almond tree (*Terminalia catappa*) in the garden of the guest-house.

Shooting seems more restricted in this island than in St. Martin and there are fortunately no mongooses. Still, the scaly-naped pigeon (*Columba squamosa*) is very rare in St. Eustatius and much persecuted as a delicious game. However, as a result of the presence of patches of practically undisturbed luxurious forest both this species and the zenaida dove (*Zenaida aurita*, Plate IV) have survived in greater numbers than in the other islands.

Up to now 33 species of birds have been recorded from St. Eustatius; 4 are migrants from North America, and 7 are sea birds. There are 22 more or less resident species of land and fresh water birds.

All seven endemic West Indian genera known from Saba also occur in St. Eustatius, *viz. Eulampis, Sericotes, Orthorhyncus, Margarops, Allenia, Cinclocerthia, Loxigilla.*

We visited St. Eustatius in the period 16–27.II.1952 and collected 57 specimens, belonging to 17 species, including specimens of five endemic genera, but no specimens of *Allenia* and *Cinclocerthia*. In addition we observed another 9 species, making a total of 26.

ZOOGEOGRAPHY

The number of bird species at present known from St. Martin, Saba, and St. Eustatius is 62. Among these are 25 migrants or winter visitors, 10 sea birds and 6 fresh water birds, leaving, therefore, a total of 21 resident land birds. In not one case is a genus of land birds represented by more than one species in one island. This is, of course, a situation which may be considered to limit interspecific competition considerably. A comparison of the avifauna of the three islands reveals that St. Martin is poorest,

both in species and in individuals. Such forms as *Allenia fusca* and *Eulampis jugularis* are seemingly absent from this island, the northern limit of these species passing through Saba and Barbuda.

In contrast to most of the former opinions the West Indian Islands have been considered more recently as oceanic islands, in the sense, that direct land connections with the American continents are presumed to have always been absent and that the land fauna of the West Indies is, therefore, derived from accidental colonization from across the sea (*cf.* BOND 1948). The contours of the islands have of course changed several times in past geological periods. Even as recently ago as in the pleistocene periods of low sea level St. Martin, Anguilla and St. Barts formed part of one large island mass, which in holocene times has become partly submerged (SPENCER, Trans. Canad. Inst. *7*, 1904, p. 354; WESTERMANN, Meded. Kon. Ver. Ind. Inst. Amsterdam *85*, 1949, p. 49, compare fig. 1). Hence a close similarity of the land fauna at present inhabiting these islands has to be expected. The present bird fauna, however, does not provide instances of taxonomic similarity that might be considered to have directly resulted from this recent inter-insular connection. The only two species of land birds that occur in St. Martin in a subspecies different from that inhabiting Saba and St. Eustatius are not only found in Anguilla and St. Barts, but in addition in the islands of Barbuda and Antigua, which are part of quite another island mass (*Elaenia martinica riisii* against *E.m. martinica*; *Loxigilla noctis ridgwayi* against *L.n. coryi*). Saba is single peak near a more or less isolated submarine table land of 30 to 40 m depth below the present sea level (see fig. 1). Its faunal affinities are only incidentally to those islands that are nearest in distance. St. Eustatius forms part of the St. Kitts chain of islands, which also comprise Nevis (see fig. 1). The present distribution of birds in this area is, however, so erratic, that no direct ornitho-geographic evidence seems to exist resulting from the latest connection of St. Eustatius with St. Kitts.

The West Indian avifauna of to-day is composed of (1) a stock of older elements, probably originating from what MAYR (1946) calls Tropical North America, (2) derivatives from North America (mostly *via* Central America), (3) derivatives from South America. Of these categories North American, holarctic, elements are extre-

mely scarce in our three islands. With the exception of the red-tailed hawk (*Buteo jamaicensis*) they are absent from the northern Lesser Antilles and the Virgin Islands, unless the green heron (*Butorides virescens*) can be considered as such. Recent South American invaders are — in my mind — the ground-dove (*Columbigallina passerina*), the bananaquit (*Coereba flaveola*) and the green euphonia (*Tanagra musica*). A South American form, like the crested flycatcher (*Myiarchus tyrannulus*), which occurs in the Lesser Antilles as far north as St. Kitts, not reaching St. Eustatius or Saba, incidentally proves its way of colonization from the South American continent northward. The recent endemic West Indian genera listed by BOND (1948, p. 212–213) may well have had their distant origin in both Tropical North America or South America, but can at present best be considered as relicts. Still, some of these relicts may have eventually evolved into distinct genera in the West Indies, becoming, thereby, secondarily autochthonous. Examples of such autochthonous genera are probably the monotypic hummingbird-genera *Eulampis*, *Sericotes* and *Orthorhyncus*, which, in their distant past, must have been of a South American family-origin. These relicts seem to be very susceptible to competition with related aggressive mainland forms: *e.g.*, *Eulampis jugularis* against *Glaucis hirsuta* in Grenada (BOND, Proc. Ac. Nat. Sci. Phil. *94*, 1942, p. 96) and *Elaenia martinica* against *E. flavogaster* in Grenada, the Grenadines and St. Vincent (BOND 1948, p. 222–223).

According to BOND's classification (1948) the islands St. Martin, Saba, and St. Eustatius harbour 7 endemic genera, or 14% of the total of 50 West Indian endemic genera. Other Lesser Antilles may have many more endemics, like Dominica (10, or 20%), Martinique (9, or 18%), and St. Lucia (11, or 22%), but these islands are considerably larger and, consequently, may offer shelter to a more varied avifauna. The Virgin Islands, which — zoogeographically — seem to be even more isolated than St. Martin, Saba, and St. Eustatius, and of a more or less comparable size, contain not more than 3 endemic genera (6%: *Sericotes*, *Orthorhyncus*, *Margarops*). In Porto Rico, the easternmost island of the Greater Antilles, and situated directly west of the Virgin Islands, 9 endemic genera are found (18%), a figure which is only slightly higher than that of the northern Lesser Antilles.

In order to form an idea of the zoogeographical origin of the bird fauna of St. Martin, Saba, and St. Eustatius I have tabulated the 21 species of land birds according to their present ranges as follows.

A. North, Central, and South America: 1 species = 5%.
Falco sparverius.

B. North and Central America and the West Indies: 3 species = 14%.
Buteo jamaicensis, Progne subis, Dendroica petechia.

C. Central America and the West Indies: 1 species = 5%.
Zenaida aurita.

D. West Indies only: 11 species = 52%.
Columba squamosa, Geotrygon mystacea, Eulampis jugularis, Sericotes holosericeus, Orthorhyncus cristatus, Elaenia martinica, Margarops fuscatus, Allenia fusca, Cinclocerthia ruficauda, Vireo altiloquus, Loxigilla noctis.

E. West Indies and adjacent coasts: 2 species = 10%.
Tyrannus dominicensis, Tiaris bicolor.

F. South and Central America and the West Indies: 3 species = 14%.
Columbigallina passerina, Coereba flaveola, Tanagra musica.

The great number of exclusively West Indian elements (52%) and the small proportion of South American forms (5%) are noteworthy facts.

A further analysis of the 21 species of non-migratory land birds inhabiting St. Martin, Saba, and St. Eustatius presents the following picture: 12 species also occur in the westernmost Greater Antilles, Cuba or Jamaica (= 57%); 17 species occur in the southernmost Lesser Antilles, St. Vincent or Grenada (= 81%). Some of the typical Lesser Antillean species, however, have such a limited range, that they neither occur westwards to Cuba or Jamaica, nor southwards to St. Vincent (*Geotrygon mystacea, Margarops fuscatus, Cinclocerthia ruficauda*). The figures indicate that the majority of the species inhabiting St. Martin, Saba, and St. Eustatius have their distributional nuclei in the Lesser Antilles rather than elsewhere in the West Indies.

The oceanic character of most of the West Indian islands is sufficient proof of the fact that all land birds have colonized the islands by bridging the sea gaps through individual flights. The process of general spread of certain species by crossing the sea is illustrated by the capture or observation over the open sea of individuals of several species, such as for instance, *Sericotes h. holosericeus*, seen between some of the Grenadines and between Montserrat and Antigua (CLARK, Proc. Boston Soc. Nat. Hist. *32*, 1905, p. 274) and *Coereba flaveola dominica*, seen several miles from the nearest land in the southern Lesser Antilles (E. PETERS, Journ. f. Orn. 40, 1892, p. 116; BOND, Proc. Ac. Nat. Sci. Phil. *94*, 1942, p. 96). The presence of museum-specimens from islands generally inhabited by another insular form is equal proof of the distributional aggressiveness of these species, which apparently spread rather easily from island to island.

For example: *Tyrannus dominicensis vorax* from St. Eustatius, where the race *dominicensis* occurs (BRODKORB, Auk *67*, 1950, p. 342). Nearest range of *vorax* is Montserrat, Barbuda, and Antigua. — *Coereba flaveola luteola* from Grenada, where the race *aterrima* occurs (BOND, Proc. Ac. Nat. Sci. Phil. *94*, 1942, p. 97). Nearest range of *luteola* is Trinidad and Tobago. — *Coereba flaveola dominicana* from Martinique, where the race *martinica* occurs (BOND, *l.c.*, p. 96). Nearest breeding range of *dominicana* is Dominica.

Incidentally it should be remembered that *Coereba flaveola*, originally a South American species, has spread northwards through the Lesser Antilles and the Bahama Islands, even reaching — though as an accidental visitor — the south coast of Florida. The collecting of one specimen of *Vireo a. altiloquus* in Saba, while a distinct race, *V.a. barbadensis*, is a rather common breeding bird in St. Eustatius, either indicates that these small birds easily bridge sea channels, or that the two islands are inhabited by distinct races, one originating from the southern Lesser Antilles (*barbadensis*: St. Eustatius), the other from the Greater Antilles (*altiloquus*: Saba).

Personal observations of inter-island flights by Lesser Antillean birds are restricted to the following instance: on 25.II.1952, standing at the beach of Tumble Down Dick Bay, St. Eustatius, my attention was drawn to a large bird that flew high in the air coming exactly from the direction of Saba, which could be easily seen on the horizon approximately not more than 30 km away. The bird, which turned out to be a red-tailed hawk (*Buteo jamaicensis*), sailed high overhead and dis-

appeared over the hills of the Little Mountains. I must add, that I encountered a red-tailed hawk only once again on St. Eustatius, although I saw it daily on Saba in one or two pairs.

It can be stated, that the birds occurring in Saba and St. Eustatius are at present fairly well known. This is, unfortunately, not the case with St. Martin. Our own visit to the island was too short. In addition, we arrived during the wrong season to study the nesting of sea birds such as terns, gulls, and shearwaters. We did not see, for example, any sooty tern (*Sterna fuscata*), lesser tern (*Sterna albifrons*) or noddy tern (*Anoüs stolidus*). The interesting species of water or shore birds known from neighbouring islands were not observed during our stay. Among these the following species are stated by KRUYTHOFF (1939) to occur in St. Martin, but the evidence is insufficient: *Dendrocygna* spp. ("whistler"), *Anas bahamensis* ("white-throat"), *Gallinula chloropus, Fulica caribaea, Haematopus ostralegus.*

During the months of fall migration many passerine birds, waders, and ducks are said to frequent the islands. Hence, many migratory forms are still to be added to the list of species known from the islands. Among these is the yellow-bellied sapsucker (*Sphyrapicus varius*), which is claimed by Mr. JULIEN CONNOR to have occurred on St. Martin in autumn and winter.

The bird fauna of such small islands as St. Martin, Saba, and St. Eustatius is very vulnerable to extinction through natural causes. In addition, hurricanes, the mongoose (St. Martin only), as well as unlimited shooting, all threaten the existence of the more feeble species. As a result, birds such as *Columba squamosa, Zenaida aurita, Buteo jamaicensis* and several species of herons (*Butorides virescens, Nyctanassa violacea*) are in great need of immediate protection.

The establishing of nature and game reserves where shooting is prohibited and some guarding is feasible, would be an important way of preserving the native bird fauna. First among the proposed nature reserves is the crater of the volcano The Quill on St. Eustatius and the adjacent White Wall, which both seriously deserve full protection on account of their faunal and geological peculiarities.

SYSTEMATIC LIST

In the following chapter all species of birds known to have occurred in the islands of St. Martin, Saba, or St. Eustatius have been treated separately. The sequence of species is the same as that in JAMES BOND: *"Check-list of Birds of the West Indies"* (3rd ed., 1950). The vernacular names mentioned immediately after the scientific names are, with a few minor exceptions, those used in BOND's *"Field Guide to the Birds of the West Indies"* (1947). This volume proved to be invaluable while working in the field. Field identification of the many species of migratory birds from North America was considerably facilitated by the use of ROGER TORY PETERSON's *"A Field Guide to the Birds"* (2nd ed., 1947), at the moment probably the finest book in the world for identification of birds in the field.

Particulars on the manner of treatment of each species, which was kept uniform throughout, seem unnecessary, except for the paragraph summarizing the total material studied. The names of those localities where the author collected are printed in *italics*.

All measurements are in millimeters, unless stated otherwise.

Measurements of eggs were made by Mr. C. NEIJSSEL, honorary oologist at the Zoological Museum of Amsterdam.

1 **Podilymbus podiceps antillarum** Bangs

Pied-Billed Grebe

Podilymbus podiceps antillarum BANGS, Proc. New Engl. Zool. Cl. *4*, 1913, p. 89 — Cuba.

Native name — unknown.

ST. MARTIN. — Resident?

No material

Status — Mr. JAMES BOND informed me, that there is a specimen from St. Martin in the Academy of Natural Sciences of Philadelphia. It was sent by Dr H. E. VAN RIJGERSMA (St. Martin) prior to 1861. No subsequent records.

We did not observe this species in the Lesser Antilles.

Zoogeography — *Podilymbus p. antillarum* is a breeding bird occurring in all suitable localities throughout the West Indies and in many parts of Central America.

Podilymbus is an exclusively American, monotypic, genus, ranging from British

Columbia in the north to Argentina in the south. Its distributional origin is unknown, but might be found in South America.

Protective measures — Not protected by law.

2 **Puffinus lherminieri lherminieri** Lesson

Dusky or Audubon's Shearwater

Pufflnus (sic!) *lherminieri* LESSON, Rev. Zool. 1839, p. 102 — "ad ripas Antillarum".

Puffinus lherminieri lherminieri, PETERS 1931, *1* p. 59 (St. Martin, Saba, St. Eustatius); DANFORTH 1939, p. 505 (Saba).

Native name — *Wedrego* (all three islands).

ST. MARTIN, SABA, ST. EUSTATIUS. — Breeding bird.

No material.

Status — The species was first collected by BOND on Saba in December 1928 although apparently this record was never published (BOND *in litt.*). DANFORTH (*l.c.*) collected an egg and a breeding male at about 600 m altitude near Hellsgate, Saba, on 27.I.1937. The egg was fresh, white, and measured 52 × 38.8 mm.

We did not collect this species, but both the name "wedrego" and the bird itself were well known among the native people of all three islands, who told us without exception that the birds made very good eating. They were said to be particularly common at some time of the year on the Booby Hill Cliffs, Saba, and on the rocks and cliffs south of Tumble Down Dick Bay, St. Eustatius. The police-officials of Windwardside, Saba, knew the incessant nocturnal cries of the wedrego very well and sometimes picked up birds that had flown against the police station during dark nights.

All known breeding stations appeared deserted at the time of our stay and we saw no sign of this bird when crossing the sea between the islands. However, we saw some birds, which may have been this species, flying in the dark from the rocky coast into the sea during one of the traditional Sabanese "moon-light picknicks" at Fort Bay on 12.III.1952.

Zoogeography — *Puffinus l. lherminieri* is the Caribbean representative of a world-wide tropical and subtropical species, which is known to breed on many of the Lesser Antilles and on the Bahama and Bermuda Islands. Its zoogeographical origin is unknown.

Protective measures — Not protected by law. Breeding birds are reported to be taken sometimes from their nesting holes for food. Protective measures not urgent, since the breeding localities are not very accessible.

3 **Phaëthon aethereus mesonauta** Peters

Red-Billed Tropic-Bird

Phaëton aethereus mesonauta PETERS, Occ. Pap. Boston Soc. Nat. Hist. *5*, 1930, p. 261 — Swan Key, Almirante Bay, Panama.

Phaëthon aethereus, HELLMAYR & CONOVER, 1 (2), 1948, p. 111 (St. Eustatius). *Phaëthon aethereus mesonauta*, DANFORTH 1939, p. 505 (Saba).

Native name — *Trophic*; *White Bird* (Saba).

ST. MARTIN, SABA, ST. EUSTATIUS. — Breeding recorded on Saba and St. Eustatius; almost certainly breeds on St. Martin.

SABA: *Booby Hill Cliffs*, 11.III.1952 (1 ♀, 2 eggs). ST. EUSTATIUS: Cliffs to the south of *Tumble Down Dick Bay*, 18 and 19.II.1952 (1 ♂, 2 ♀).

Taxonomy — All specimens show the racial characteristics: dark cross bars of upper parts and primary coverts black, not grey; the smaller primary coverts tipped or terminally edged with white.

Iris dark brown; bill red; legs and feet dull yellowish or pale buff, webs black.

Measurements — SABA: ♀, wing 321, exposed culmen 61, bill from forehead 70, central tail feathers 530. ST. EUSTATIUS: ♂, wing 306, exposed culmen 61.5, bill from forehead 67, central tail feathers 500 and 515, respectively; ♀, wing 307, 318, exposed culmen 60, 62, bill from forehead 68, 68, central tail feathers 525 and 565, and 620 (one lost), respectively.

Status — This species was collected by Dr H. E. VAN RIJGERSMA on St. Martin before 1861. The specimen is now in the Academy of Natural Sciences of Philadelphia (BOND *in litt.*). This tropic-bird was observed by BOND on Saba and has been found breeding by DANFORTH (*l.c.*) in January-February 1937 in the Booby Hill Cliffs, Saba.

We saw the red-billed tropic-bird along the coast of all three islands. On St. Martin it was seen flying close to the steep, heavily stratified and folded rocks of Point Blanche, where it may have been nesting (8.II.1952; Plate IIIb). On Saba I obtained a specimen and 2 fresh eggs from a breeding colony in the Booby Hill Cliffs (number of breeding pairs unknown). On St. Eustatius breeding colonies of some 20 or 30 pairs were visited high up in the steep cliffs of White Wall (18.II.1952) and south of Tumble Down Dick Bay (25.II.1952), but in both cases the nesting crevices proved inaccessible. The adult birds were flying high over head, circling around the cliffs, whistling and screaming continually.

Reproduction cycle — All specimens collected were taken from their nesting holes in steep, almost inaccessible, cliffs, where they were sitting on their single egg. The eggs taken on Saba on 11.III.1952 were almost fresh. DANFORTH (*l.c.*) was the first to report on the breeding place on the Booby Hill Cliffs, Saba, where several downy young, but only two eggs were found between 23.I and 4.II.1937.

Eggs — Two eggs from Saba are long-ovate in shape, with a rather rough texture, but fine granulation. The ground colour is pale greyish brown in one egg, very light grey, almost white, in the other egg. Both eggs are minutely spotted with violet, purplish and blackish markings, particularly at the broader pole, giving the eggs a finely speckled appearance. According to the native collector the two eggs represent two full clutches. The eggs measure: 67.5 × 42.5 and 62.1 × 43.6, respectively. Two additional eggs from Saba, measured by DANFORTH (*l.c.*, p. 505), have the following dimensions: 63.3 × 43.5 and 58.8 × 46.4, respectively.

Zoogeography — *Phaëthon a. mesonauta* ranges throughout the tropical and subtropical North Atlantic Ocean and the whole Caribbean Sea; also along the tropical Pacific coast of Central and South America.

This tropic-bird is primarily a species of the warmer waters of the Atlantic Ocean, where it occurs in two closely resembling races. Its zoogeographical origin is unknown.

Protective measures — Not protected by law. Incubating birds are often taken from their nests by natives for food. As the birds are easily caught on their nests — which, however, are not always easily accessible — legal protection is here recommended.

4 **Phaëthon lepturus catesbyi** Brandt

White-Tailed, or Yellow-Billed Tropic-Bird

Phaëthon catesbyi BRANDT, Mém. Ac. Imp. Sci. St. Pétersb. (6) 5, 1840, p. 270 — Bermuda (see: BOND, Auk *62*, 1945, p. 660).
Phaethon flavirostris, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 84 (Saba).

Native name — *Trophic.*

SABA, ST. EUSTATIUS. — Probably breeding bird.

No material.

Status — Only recorded by CORY (l.c.), from whose statements it appears that it was collected by WINCH on St. Eustatius in 1890, and probably also by OBER on Saba.

We observed this species only once, on 16.II.1952, at Fort Bay, Saba. There were two birds, both adults, with long tail feathers and a vermillion red bill. They were somewhat smaller and conspicuously more slender in appearance than *Phaëthon aethereus*, which I had seen before. The black shoulder patches on the un-barred white upper surface served as diagnostic field characters. Both birds were flying high against the rocky cliffs and were seen entering an inaccessible, narrow crevice one after another. Eventually one left the hole for a short flight, but soon returned, and both birds stayed in the crevice for over an hour, when our ship was leaving Fort Bay. I feel quite sure that this crevice was a breeding hole of the species.

Zoogeography — *Phaëthon l. catesbyi* is the Caribbean representative of an almost world-wide species of tropical and subtropical seas. It is a breeding bird throughout the whole Caribbean, including the Bahama and Bermuda Islands. The species is not known from the eastern Pacific. Its zoogeographical origin is unknown.

Protective measures — see preceding species.

Pelecanus occidentalis occidentalis Linneaus

Brown Pelican

Pelecanus occidentalis LINNAEUS, Syst. Nat. ed. 12 *1*, 1766, p. 215 — Jamaica.
Pelecanus occidentalis occidentalis, DANFORTH 1930, p. 44 (St. Martin); WETMORE, Auk *62*, p. 578, 579, 1945 (St. Eustatius).
"*Pelicanus Occidentalis O.*", KRUYTHOFF 1939, p. 55 (St. Martin, Saba, St. Eustatius).

Native name — *Pelican.*

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident.

ST. MARTIN: 1866 (1 juv.; Leiden Mus.); 1869 (1 ♀ ad.; Leiden Mus.); *Pelican Key*, 8.II.1952 (1 ♂ ad., 3 ♀ ad., 12 eggs).

Taxonomy — All specimens are in adult plumage, although two of them have the crown and sides of the head white instead of straw yellow. The under parts are dark brownish grey, being only slightly paler in one of the females. Upper parts silvery grey. These birds fall well within the limits of the variation of the West Indian race *occidentalis* as defined by WETMORE (*l.c.*). They are smaller than the North American form *carolinensis* (wing, ♂, 500—550, ♀, 483–528) and said to be darker underneath in breeding plumage.

Iris greyish white (♂), or slightly tinged with reddish (♀); naked skin around eye whitish grey (♂), or pale flesh colour (♀); gular pouch olive grey (♂), or buffy grey (♀); bill greyish white (♂), or pale flesh colour (♀), becoming blackish towards the tip; legs and feet blackish.

Measurements — ST. MARTIN: ♂ ad., wing 507, tail 135, bill (exposed culmen) 302, tarsus 71.5; ♀ ad., wing 460, 473, 484, 489, tail 125, 130, 137, bill 251, 256, 263, 273, tarsus 70, 72, 72; juv., wing 490, bill 298.

Status — Apart from the two specimens from St. Martin (1866 and 1869) in the Leiden Museum, few actual records are present. DANFORTH (*l.c.*) observed pelicans in December 1927 at Great Bay and Simpson Bay, St. Martin. KRUYTHOFF (*l.c.*) mentions its occurrence in St. Martin, Saba, and St. Eustatius throughout the year. WAGENAAR HUMMELINCK visited Pelican Key, St. Martin, on 3.VIII.1949 and found breeding pelicans (verbal communication; Plate IIb).

During our entire visit through February and March 1952, pelicans were common along the coast of St. Martin and St. Eustatius. We did not see them on Saba. On 8.II.1952 we visited a breeding colony of approximately 30 to 35 pairs on the slopes of Pelican Key, southeast of St. Martin, but owing to the rough sea I was unable to go ashore, although native fishermen did. No pelicans were seen on the neighbouring rocky islands, Molly Beday and Hen and Chicken.

Biotope — Found breeding only on the small rocky island mentioned above. The favourite feeding grounds seemed to be quiet sandy bays with clear and rather shallow water, but we observed brown pelicans fishing in rather rough seas as well some miles off shore.

Reproduction cycle — When we visited Pelican Key on 8.II.1952 we found both fresh eggs and rather large downy young. WAGENAAR HUMMELINCK made photographs of pelican-nests on the same island on 3.VIII.1949, showing 2 or 3 downy young in each nest. Breeding therefore seems to take place during a large part of the year.

The testes of the adult male collected measured about 20 × 15 mm.

Nest and eggs — The roughly built nests of twigs and small sticks were placed on bare rocks and in low bushes.

The eggs are long-ovate in shape, chalky white, with fine granulation. All egg shells show rather heavy longitudinal streaks of blood, indicating blooding of the oviduct during the process of laying. Blood-stained eggs of pelicans have also been described by WETMORE (Smiths. Misc. Coll., *121* (2), 1952, p. 7) from Taboga Island in the Panama Bay.

Measurements —	69.4 × 45.9	71.9 × 46.0	73.7 × 48.7
	69.5 × 47.0	71.9 × 46.4	74.4 × 45.8
	70.9 × 46.0	72.2 × 47.1	76.6 × 45.0
	71.6 × 46.7	73.3 × 46.0	76.6 × 46.1

Average size of 12 eggs, 72.2 × 46.4.

Field observations — Pelicans were daily visitors to Great Bay, St. Martin, where they continued fishing from sunrise to sunset, but they were common along the whole coast. Sometimes they were observed sailing extremely high in the air and crossing the island from one coast to the other. Most of the pelicans seen along the coast of St. Martin were adults; not more than one or two specimens in juvenile plumage were seen during our whole stay. On St. Eustatius we only encountered pelicans along the pebble beach of Tumble Down Dick Bay (19 and 25.II.1952), where they were resting close to the sea or on some cliff ledges, which were white from their droppings. Practically the whole flock of about 50 birds consisted of individuals in immature plumage, not more than 10 birds being adult. This beach was obviously a more or less permanent residence for non-breeding pelicans.

Zoogeography — *Pelecanus o. occidentalis* is the breeding form of brown pelican throughout the West Indies, with the exception of the northern Bahama Islands and the north coast of Cuba (BOND 1950).

Brown pelicans breed along the warmer temperate and tropic coasts of North and Central America and along the west coast of South America south to central Chile. Their distributional origin is uncertain, but they have obviously belonged to the coastal fauna of the tropical archipelagoes that connected the northern and southern American continents from Tertiary times onward.

Protective measures — Protected by law (WESTERMANN 1946, p. 81). Renewed attention to the protection of the breeding places on the keys to the southeast of St. Martin is recommended.

6 **Sula leucogaster leucogaster** (Boddaert)

Brown Booby

Pelecanus leucogaster BODDAERT, Tabl. Pl. Enl., 1783, p. 57, no. 973 — Cayenne.
Sula leucogaster leucogaster, DANFORTH 1939, p. 506 (Saba).
"*Sula Leucogastra L.*", KRUYTHOFF 1939, p. 51 (St. Martin, Saba, St. Eustatius).

Native name — *Booby*.

ST. MARTIN, SABA. — Probably breeding.

No material.

Status — The only pertinent, published record is that by DANFORTH (*l.c.*), who saw some of these boobies at sea south of Saba. WESTERMANN (1947, p. 211) mentions its breeding in June and July on the keys to the southeast of St. Martin and on Diamond Rock, Saba.

We saw a solitary juvenile individual fishing at sea just outside Great Bay, St. Martin, on 5 and 13.II.1952. The small keys between St. Martin and St. Bartholomew were mentioned by native fishermen as the nesting places of these boobies. No boobies were present there, however, when we sailed close to these islands on 8.II.1952. A few solitary, adult and immature birds were seen at sea close to

Saba on 16.II.1952. Sabanese fishermen told us that "brown-and-white boobies" could be found nesting at certain times of the year on the rocky key, called Diamond Rock, northwest of Saba. This small and steep rock, although white from bird guano, was uninhabited at the time of our visit.

Zoogeography — *Sula leucogaster* is a pan-tropical species, breeding throughout the West Indies.

Protective measures — Not protected by law. Legal protection should be given to both the bird and its breeding places (*cf.* WESTERMANN 1946, p. 83).

7 **Fregata magnificens** Mathews

American Frigate-Bird or Man-o'-War Bird

Fregata minor magnificens MATHEWS, Austr. Av. Rec. *2*, 1914, p. 120 — Barrington Island, Galapagos.

Fregata magnificens, DANFORTH 1930, p. 44 (St. Martin); KRUYTHOFF 1939, p. 55 (St. Martin, Saba, St. Eustatius).

Native name — *Hurricane bird* (St. Martin, Saba), *Weather bird* (St. Eustatius).

ST. MARTIN, SABA, ST. EUSTATIUS. — Breeding not recorded.

No material.

Status — The only pertinent, published record is by DANFORTH (*l.c.*), who observed this species in 1927 over the bays of southern St. Martin.

We observed man-o'-war birds soaring along the coasts of all three islands, but in very small numbers. The greatest number being 5, on 13.III.1952, at Great Bay, St. Martin. Adult males, adult females, and individuals in immature plumage have been observed.

Zoogeography — *Fregata magnificens* is a species of tropical American seas. It is wide-spread throughout the Caribbean, along the tropical Pacific coast of the Americas, and throughout the tropical Atlantic Ocean of the northern hemisphere.

This frigate bird may perhaps be considered to be an autochthonous species of the tropical waters which, during several of the past geological periods, linked up the northern and southern American continents.

Protective measures — Not protected by law.

8 **Ardea herodias herodias** Linnaeus

Great Blue Heron

Ardea herodias LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 143 — Hudson Bay.

Ardea herodias adoxa, DANFORTH 1930, p. 45 (St. Martin).

Ardea herodias herodias, DANFORTH, Journ. Agr. Un. Puerto Rico *19*, 1935, p. 445 (St. Martin).

"*Ardea Herodias Adoxa*", KRUYTHOFF 1939, p. 51 (St. Martin, St. Eustatius).

Native name — unknown.

ST. MARTIN. — Winter visitor.

No material.

Taxonomy — In spite of OBERHOLSER's revision of this species (Proc. U.S. Nat. Mus. *43*, 1939, p. 531–559), some uncertainty still remains regarding the subspecies breeding within the limits of the West Indies. BOND (1950, p. 8) may be right in considering individuals with relatively longer and heavier bills to be breeding birds from the tropics. The female from St. Martin, mentioned by DANFORTH (1935), has a rather short wing (425.6 mm) and small bill (exposed culmen 125.3 mm) and thus may belong to the North American winter visitant *herodias*, of which *adoxa* seems to be a synonym.

Status — The species has been recorded with certainty from St. Martin by DANFORTH (*l.c.*), who collected a female on 24.XII.1927 near Philipsburg.

We observed this species once, *viz.*, on 8.II.1952 on Pelican Key, to the southeast of St. Martin. The species was well known among the inhabitants of St. Martin, who regarded it highly as a game bird.

Distribution — This form of great blue heron is a breeding bird from North America and a common winter resident throughout the West Indies.

Protective measures — Protected by law (WESTERMANN 1946, p. 82).

9 **Egretta thula thula** (Molina)

Snowy Egret

Ardea thula MOLINA, Sagg. Stor. Nat. Chili, 1782, p. 235 — Chile.
"*Egretta Thula T.*", KRUYTHOFF 1939, p. 53 (St. Martin).

Native name — unknown.

ST. MARTIN. — Breeding not recorded.

No material.

Status — No trace has been found of any pertinent previous records of this species in the islands.

We observed one single individual on 11 and 13.II.1952 on St. Martin in the Saltpond behind Philipsburg and in the Simpson Bay Lagoon, respectively.

Biotope — Observed in shallow salt waters, in company with *Florida caerulea*.

Zoogeography — *Egretta t. thula* is a local, though rare breeding bird throughout the West Indies.

The species is a widely distributed breeding bird of subtropical and tropical America and seems to be the neotropical representative of the Eurasian lesser egret (*Egretta garzetta*), although the latter, however, is considerably larger.

Protective measures — Protected by law (WESTERMANN 1946, p. 82).

10 **Florida caerulea** (Linnaeus)

Little Blue Heron

Ardea caerulea LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 143 — South Carolina.
Ardea caerulea, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 90 (St. Eustatius).
Florida caerulea, HELLMAYR & CONOVER *1* (*2*), 1948, p. 191 (St. Eustatius).
"*Florida Caerulea C.*", KRUYTHOFF 1939, p. 51 (St. Martin).

Native name — unknown.

ST. MARTIN, ST. EUSTATIUS. — Breeding not recorded.

No material.

Status — Collected by WINCH in St. Eustatius in 1890 (CORY, *l.c.*). Other pertinent records are lacking. The record by KRUYTHOFF (*l.c.*) appears reliable, although his statement "very common" (St. Martin) does seem exaggerated.

We found this species on St. Martin only, where we observed it regularly between 2 and 13.II.1952 in the Great Saltpond behind Philipsburg and in the Simpson Bay Lagoon. A very striking fact was that we observed only white individuals. Not more than 5 specimens were seen at any one time.

Biotope — Observed in the shallow waters of saltponds and lagoons, close to the mangroves.

Zoogeography — *Florida caerulea* is a widely distributed species in subtropical and tropical America and a breeding bird throughout the West Indies. Breeding on St. Martin or St. Eustatius has not yet been recorded. The probability of the observed birds being wintering individuals from more northerly regions cannot be excluded. It is a typically American species.

Protective measures — Protected by law (WESTERMANN 1946, p. 82).

11 **Butorides virescens maculatus** (Boddaert)

Green Heron

Cancroma maculata BODDAERT, Tabl. Pl. Enl., 1783, p. 54 — Martinique.
Butorides virescens cubanus, OBERHOLSER, Proc. U.S. Nat. Mus., *42*, 1916, p. 559, 560 (Saba).
Butorides virescens maculatus, DANFORTH 1930, p. 45 (St. Martin).

Native name — *Gaulin* (St. Martin).

ST. MARTIN, SABA. — Resident.

ST. MARTIN: Pond near *Cupecoy* or *Long Bay*, 13.II.1952 (1 ♀ ad.).

Taxonomy — The specimen, which is in fully adult plumage, agrees with the statement by BOND (1950, p. 10) that its "sides of the head and neck are paler chestnut and not as strongly glossed with purple" than in North American specimens of the race *virescens*.

Iris yellow; bill blackish; legs and feet olive green, posterior side of tarsus and underside of toes chromate yellow.

Measurements — ST. MARTIN: ♀ ad., wing 168, exposed culmen 56.5, bill from forehead 69, tarsus 46. Said to be smaller than North American specimens.

Status — In his review of the subspecies of the green heron OBERHOLSER (*l.c.*) refers to a male collected by OBER in Saba. Afterwards the species seems to have been only recorded by DANFORTH (*l.c.*), who found it common on St. Martin in 1927 along Great Bay and Simpson Bay.

We met with the green heron regularly in the mangroves bordering Simpson Bay Lagoon and along small fresh water ponds in the Cul-de-Sac Valley. Neither seen nor heard on Saba and St. Eustatius.

Biotope — Found in mangroves and in other vegetation bordering shallow bays and lagoons. We also found it in the Cul-de-Sac Valley in the sparse vegetation of moist meadows and in the scrub near small fresh water ponds, as well as in a small sugar cane field.

Reproduction cycle — The only specimen collected was an adult female with the ovary active (follicles up to 2 mm diameter) and the oviduct swollen. It was apparently in breeding condition!

Food — The stomach of the specimen collected contained only small fish. DANFORTH (*l.c.*) mentions small fiddler crabs.

Zoogeography — *Butorides v. maculatus* is a breeding bird of the Lesser and Greater Antilles and of the eastcoast of Central America.

Green herons of the species *B. virescens* occur all over North and Central America; on the South American continent they are replaced by the closely allied *B. striatus*. *Butorides virescens* seems to be a nearctic offshoot of the almost cosmopolitan group of minute herons of the genus *Butorides*. The widely distributed West Indian race *maculatus* probably arose through clinal variation.

Protective measures — Protected by law (WESTERMANN 1946, p. 82).

12 **Nyctanassa violacea bancrofti** Huey

Yellow-Crowned Night-Heron

Nyctanassa violacea bancrofti HUEY, Condor *29*, 1927, p. 167 — Scammon Lagoon, Lower California.

Nyctanassa violacea jamaicensis, DANFORTH 1930, p. 45 (St. Martin).

Nyctanassa violacea bancrofti, WETMORE, Smiths. Misc. Coll. *106* (1), 1946, p. 17 (St. Eustatius).

"*Nycticorax Violacea V.*", KRUYTHOFF 1939, p. 55, 57 (St. Martin).

Native name — *Night Gaulin* (St. Martin; KRUYTHOFF), *Crab-eater* (St. Eustatius).

ST. MARTIN, ST. EUSTATIUS. — Resident?

We did not collect this species, but we obtained 2 "aigrettes" and 4 "scalps" with ornamental head plumes of birds shot on ST. EUSTATIUS some years ago. The subspecific identity of these fragments is of course unknown; the birds may as well have been migrants (*violacea*) as residents (*bancrofti*). WETMORE (*l.c.*) in his recent review of this species identified his material from St. Eustatius as belonging to the resident West Indian race *N. v. bancrofti*.

Status — DANFORTH (*l.c.*) observed one specimen in December 1927 in the saltponds near Philipsburg, St. Martin. KRUYTHOFF (*l.c.*) seems quite reliable when he states, "often seen on moonlight nights standing statue-like in the centre of a pond. Very much pursued as game". Study-material also exists from St. Eustatius (WETMORE *l.c.*).

We only observed these birds in the mangroves of Simpson Bay Lagoon, St. Martin, on 9 and 14.II.1952.

"Crab-eaters" were well known by most of the natives of St. Eustatius, but — in spite of our efforts — we were unable to find this species during our stay on the island.

Biotope — Found roosting in the mangrove vegetation throughout the day.

Said to occur in the dense sea-grape growths (*Coccoloba uvifera*) in the erosion "guts" along the northeast coast of St. Eustatius.

Zoogeography — *Nyctanassa v. bancrofti* is a breeding bird from the greater part of Central America and the West Indies. In the southeastern United States and in northeastern Mexico it is replaced by the closely resembling race *violacea*.

Nyctanassa is a monotypic genus, ranging throughout subtropical and tropical America. It is apparently autochthonous in the greater part of its present range.

Protective measures — Protected by law (WESTERMANN 1946, p. 82).

13 **Phoenicopterus ruber ruber** Linnaeus

American or Red Flamingo

Phoenicopterus ruber LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 139 — West Indies (= Bahama Islands; BERLEPSCH, Nov. Zool. *15*, 1908, p. 312).

Native name — *Flamingo.*

ST. MARTIN. — Straggler.

No material.

Status — The only record is that by KRUYTHOFF (1939, p. 53), who states that the last flamingo seen by him on St. Martin was in Orient Bay Ponds in November 1932. It is noteworthy, that one of the shallow creeks of Simpson Bay Lagoon, St. Martin, is still known as "Flamingo Pond".

We did not observe this species.

Zoogeography — The red flamingo is a breeding bird of the West Indies and adjacent countries, particularly in some of the Bahama Islands. It has been greatly reduced in numbers in recent years.

Protective measures — Protected by law (WESTERMANN 1946, p. 82).

14 **Buteo jamaicensis jamaicensis** (Gmelin)

Red-Tailed Hawk

Falco jamaicensis GMELIN, Syst. Nat. *1*, *1*, 1788, p. 266 — Jamaica.

Buteo jamaicensis jamaicensis, DANFORTH 1939, p. 506 (Saba); HELLMAYR & CONOVER, *1* (*4*), 1949, p. 102 (Saba, St. Eustatius); BOND 1950, p. 26 (St. Eustatius, Saba).

"Buteo Borealis Jamaicenes", KRUYTHOFF 1939, p. 52 (St. Martin, Saba, St. Eustatius).

Native name — *Chicken Hawk*; *Macaw* (Saba; DANFORTH *l.c.*).

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident to some extent.

No material.

Taxonomy — DANFORTH (*l.c.*) mentions that a juvenile male from Saba is rather small, having the following measurements: wing 317, tail 188, tarsus 76.3 mm. Measurements of 5 males from Jamaica, Haiti, and Porto Rico (FRIEDMANN, *11*, 1950, p. 262): wing 330–339, tail 189–201.5, tarsus 80.5–86 mm.

The buzzards which I saw on Saba had the tail uniform reddish brown, with hardly any black margin, the abdomen and tibial feathers whitish and the lower breast and flanks heavily marked with dark brown.

Status — DANFORTH (*l.c.*) collected a specimen of this buzzard on Saba and BOND informs me (*in litt.*) that he had received a "miserable specimen" from Saba, which, however, seems to have been rejected. KRUYTHOFF (*l.c.*) is perfectly right when he says: "Rapidly becoming extinct. Numerous yet in Saba, where on a clear day several may be seen soaring above Mt. Scenery. As chicken thief it is eagerly hunted" (p. 52).

The species was well known on St. Martin, where it was in ill repute as a chicken thief. We did not observe this hawk on St. Martin, but saw it twice on St. Eustatius. Once we observed it soaring high above the top of The Quill (18.II.1952); the second time a lonely buzzard sailed high in the air above the sea at Tumble Down Dick Bay, coming from the direction of Saba, which is well within sight of St. Eustatius at a distance of approximately 30 km. The latter observation seems to point towards a certain exchange of individuals between the various islands. On Saba we encountered this buzzard almost daily, but we did not see more than two individuals simultaneously. Local information would indicate, that at certain times of the year, some ten or more buzzards may be seen flying over the mountains surrounding the village The Bottom.

It seems to be a rare and somewhat irregular breeding bird on all three islands.

Biotope — Usually seen soaring high in the air along the mountainsides of Saba, where they were often attacked by a pair of kestrels (*Falco sparverius*). Hunting buzzards were also observed on the slightly undulating and drier slopes to the south of the island over xerophytic bush and a vegetation of low herbs. Here they hunted by sailing low over mountain slopes and ridges, sometimes "hanging" in the air on apparently motionless wings, flashing to the ground to seize their prey.

Food — Once we saw a buzzard catching a large rat (Saba). DANFORTH (*l.c.*) equally found a "large rat" in the stomach of a specimen from Saba. According to native inhabitants it usually hunts domestic fowl.

Zoogeography — *Buteo j. jamaicensis* is a breeding bird from Jamaica, Hispaniola, Porto Rico, and neighbouring islands, eastwards and southwards through the Virgin Islands to St. Kitts and Nevis, and possibly Montserrat (FRIEDMANN, *II*, 1950, p. 262).

The red-tailed hawk is a breeding bird throughout North and Central America, south to western Panama. It occurs in a number of subspecies differing only slightly from each other. As a species it has a nearctic distribution, though the group of buzzards to which it belongs is holarctic.

Protective measures — Not protected by law. In order to prevent its total extirmination in the islands immediate protective measures are necessary (WESTERMANN 1946, p. 83).

15 **Pandion haliaetus carolinensis** (Gmelin)

Osprey

Falco carolinensis GMELIN, Syst. Nat. *I*, *I*, 1788, p. 263 — South Carolina.

Pandion haliaetus, SCHLEGEL, Mus. Hist. Nat. Pays-Bas *2*, Monogr. 36, 1873 p. 125 (St. Martin).
Pandion haliaetus carolinensis, FRIEDMANN, *11*, 1950, p. 530 (Saba).
"*Pandion Haliaetus Carolinensis*", KRUYTHOFF 1939, p. 53 (St. Martin, Saba, St. Eustatius).

Native name — *Fish hawk* (KRUYTHOFF).

ST. MARTIN, SABA. — Migrant and winter visitor. No pertinent record from St. Eustatius.

ST. MARTIN: 1869 (imm., *sex inc.*; Leiden Mus.).

Taxonomy — The specimen in the Leiden Museum has a very broad black eye stripe; wing 482 mm.

Mr. JULIEN CONNOR (St. Martin) showed me a formaline specimen, caught on St. Martin, September 1951. It was a juvenile bird, apparently a female, with black streaks on the breast, forming something like a breast band. Wing about 515 mm.

The broad blackish eye stripe of the two specimens proved that they belong to the race *carolinensis*.

Status — Apart from the two specimens mentioned above and KRUYTHOFF's (*l.c.*) general notes on the osprey's occurrence during the winter months (Dec.-Jan.), the only other record is one by FRIEDMANN (*l.c.*) from Saba.

Ospreys with broad black eye stripes were seen by us regularly during our stay on St. Martin in February 1952. It was seen sailing along the rocky coast east of Great Bay and fishing in Simpson Bay Lagoon.

Biotope — We observed the osprey fishing in coastal seas as well as in shallow lagoons.

Food — Mr. JULIEN CONNOR (St. Martin) told me that he had observed an osprey first diving into Simpson Bay Lagoon unsuccessfully and then catching a chicken immediately afterwards near a house along Simpson Bay, March 1952.

Distribution — The American osprey is a breeding bird from North America, south to Mexico and Guatemala. A closely related sedentary race inhabits the Caribbean coast of British Honduras and Yukatan, and the Bahama Islands. Outside the breeding season the American osprey may be found throughout the greater part of Central and South America. It is a rather common winter resident in the West Indies.

Protective measures — Not protected by law. Shooting of this species should be prohibited, as there are too few of these birds to do any great harm.

16 **Falco sparverius caribaearum** Gmelin

Kestrel or Sparrow Hawk

Falco caribaearum GMELIN, Syst. Nat. *1*, *1*, 1788, p. 284 — Guadeloupe.
Falco caribbaearum, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 99 (St. Eustatius).
Falco sparverius, SCHLEGEL, Mus. Hist. Nat. Pays-Bas *2*, Monogr. 36, 1873, p. 45 (St. Martin).
Falco sparverius caribaearum, DANFORTH 1930, p. 45 (St. Martin, St. Eustatius);

DANFORTH 1939, p. 507 (Saba); HELLMAYR & CONOVER, *1* (*4*), 1949, p. 329 (St. Eustatius).

Cerchneis sparveria caribaearum, RILEY, Smiths. Misc. Coll. *47*, 1904, p. 284 (Saba, St. Eustatius).

"*Falco Sparverius Caribaearum*", KRUYTHOFF 1939, p. 54 (St. Martin, Saba, St. Eustatius).

Native name — *Killy-killy*; *killy* (Saba).

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident.

ST. MARTIN: 1869 (1 ♂ ad.; Leiden Mus.); *Philipsburg*, 10.II.1952 (1 ♀ ad.); *Lower Prince's Quarter*, 4.II.1952 (1 ♀ ad.); *Bellevue*, 2.II.1952 (1 ♀ imm.). SABA: *The Bottom*, 1.III.1952 (1 ♂ ad.). ST. EUSTATIUS: *Little Mountains*, 19.II.1952 (1 ♂ ad.); *English Quarter*, 21.II.1952, (1 ♀ imm.).

Taxonomy — A dark-coloured race, with a black-barred tail in both sexes and with broad black dorsal bars. Under parts heavily streaked or spotted with rounded or tear-shaped spots. In the males the chestnut patch on the crown is very small, whereas it is much extended in the adult females, covering almost the whole crown from forehead to nape. Immature females have broader and less sharply defined streaks on the under parts and also some brownish suffusion on the feathers of breast and flanks. Upper parts more broadly barred with black, chestnut crown patch smaller than in the adult females.

Topo-typical specimens were not available, but I rely upon recent authors, who claim that the species does not vary geographically in the Lesser Antilles.

Iris brown; bill bluish grey, becoming black near the tip, cere yellow; legs and feet bright yellow.

Measurements — ST. MARTIN: ♂ ad., wing 165, tail 119; ♀ ad., wing 177.5, 178, tail 126, 129, tarsus 43, 45; ♀ imm., wing 183.5, tail 137, tarsus 44. SABA: ♂ ad., wing 164, tail 120, tarsus 43. ST. EUSTATIUS: ♂ ad., wing 171, tail 125, tarsus 45; ♀ imm., wing 174, tail 128, tarsus 44.

Length of breast bone (*crista sterni*) in 2 females, 26 and 27 mm.

Status — The older specimens from Saba and St. Eustatius were collected by OBER, between 1870 and 1880, and by WINCH, in 1890, respectively. More recently, DANFORTH (*l.c.*) observed and collected the species on St. Martin and St. Eustatius, in 1927, and on Saba, in 1937.

We found it on St. Martin and Saba rather sparsely distributed, but it was extremely numerous on St. Eustatius, where DANFORTH (*l.c.*) also found it "astoundingly abundant".

Biotope — The favourite hunting grounds of this species were the undulating, open cattle pastures of St. Martin and the lower cultivated regions of St. Eustatius. On Saba it seemed to prefer the open, arid vegetation on the less steep slopes. However, we also found it in an old plantation of high mango- and sapodilla-trees on St. Martin, as well as at the top of the volcano on St. Eustatius, and in the densely wooded ravines on Saba.

Reproduction cycle — The gonads of all four adult specimens collected are in an inactive state. Still, one of the adult males was definitely paired (nr. 10870, Saba, 1.III.1952; testis 4½ × 4 mm) and courtship flights and copulations were observed on St. Eustatius on 23.II.1952 and on Saba on 5 and 11.III.1952. Some

reproduction at least seems to take place therefore during the months of February and March.

Food — The stomachs examined revealed a mixed diet of small rodents (2 ×), lizards (2 ×), and large insects (4 ×). Of the last named category grasshoppers and beetles seemed to predominate, but we also found some bluish green bugs and other insects. On St. Eustatius the species is said to attack small fowl and chickens occasionally, but we observed nothing to bear out such a habit.

Field observations — The most striking fact among our own field observations of the kestrel is the total absence of any indication of the habit of "hovering" while hunting. Some people on St. Eustatius maintain having seen hovering kestrels, but I am not sure whether these hovering individuals were not migrants from North America. On St. Eustatius especially, kestrels were a characteristic feature of the landscape, perched on an exposed limb of a tree along the roadside, on some stone or rocky boulder in open meadows, or flying at high speed over the massive ruins, uttering their high-pitched notes, kee-kee-kee... These birds were remarkably tame on St. Eustatius, where they were rarely seen alone; usually three or more were encountered close together. The courtship flight did not seem to differ from that of the European kestrel (*Falco tinnunculus*). They were regularly seen attacking the red-tailed hawk (*Buteo jamaicensis*) on Saba high along the steep slopes.

Zoogeography — *Falco s. caribaearum* inhabits Porto Rico, the Virgin Islands and the Lesser Antilles.

The American kestrel has a pan-American distribution, ranging from Alaska in the north to Tierra del Fuego in the south. The species probably originated in North America.

Protective measures — Not protected by law. Reckless shooting of this benificial species should be prohibited. However, the species is by no means so threatened in its existence, as was suggested by WESTERMANN (1946, p. 83).

17 **Porzana carolina** (Linnaeus)

Sora Rail

Rallus carolinus LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 153 — Hudson Bay.
Porzana carolina, DANFORTH 1930, p. 45 (St. Martin); FRIEDMANN, *9*, 1941, p. 139 (St. Martin).

Native name — unknown.

ST. MARTIN. — Winter visitor.

No material.

Status — DANFORTH (*l.c.*) collected one specimen on 24.XII.1927 in a very small pool of fresh water near Great Bay, St. Martin.

We did not observe this species.

Distribution — The sora rail is a breeding bird from North America. It winters from the southern United States southward to northern South America; it is a common winter resident in the West Indies (BOND).

Protective measures — Not protected by law.

18 **Charadrius vociferus vociferus** Linnaeus

Killdeer

Charadrius vociferus LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 150 — South Carolina.
Oxyechus vociferus rubidus, DANFORTH 1930, p. 45 (St. Martin).
Charadrius vociferus vociferus, DANFORTH, Journ. Agr. Univ. Puerto Rico *19*, 1935, p. 450 (St. Martin); BOND 1950, p. 40 (St. Martin).

Native name — *Soldier bird* (KRUYTHOFF).

ST. MARTIN. — Winter visitor.

No material.

Status — DANFORTH (1930) observed some 15 specimens at the salt ponds near Philipsburg, St. Martin, on 24.XII.1927 and collected a specimen, which he identified as the resident Greater Antillean from *rubidus* (*sive ternominatus*). In a subsequent paper the same author (1935) discussed the races of *Charadrius vociferus* and ultimately referred the specimen to the darker and larger North American migrant, *Charadrius v. vociferus*. Wing length of the St. Martin specimen (male) according to DANFORTH (1935), 162.8 mm.

We observed the species only once on the mud flats and wet meadows bordering Simpson Bay Lagoon, St. Martin, on 9.II.1952. There were two specimens which I did not succeed in collecting; so that I am uncertain about their racial status.

Distribution — *Charadrius v. vociferus* is a breeding bird from the greater part of North America; it winters in central and northern South America and is also known from various West Indian Islands. A sedentary race (*ternominatus*) breeds in the Greater Antilles.

Protective measures — Not protected by law.

19 **Pluvialis squatarola** (Linnaeus)

Grey or Black-Bellied Plover

Tringa squatarola LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 149 — Sweden.
Squatarola squatarola cynosurae, DANFORTH 1930, p. 45 (St. Martin).

Native name — unknown.

ST. MARTIN. — Winter visitor.

No material.

Status — Only recorded by DANFORTH (*l.c.*), who observed a flock of about 100 individuals in the salt ponds near Philipsburg and "lesser numbers" at other salt ponds on St. Martin in December 1927.

We did not observe this species.

Distribution — The grey plover is a breeding bird from arctic North America. It winters throughout Central and South America and is fairly common in the West Indies at all times of the year (BOND).

Protective measures — Not protected by law.

20 **Arenaria interpres morinella** (Linnaeus)

Turnstone

Tringa morinella LINNAEUS, Syst. Nat. ed. 12 *1*, 1766, p. 249 — coast of Georgia.
Arenaria interpres morinella, DANFORTH 1930, p. 45 (St. Martin).

Native name — unknown.

ST. MARTIN. — Winter visitor.

No material.

Status — DANFORTH (*l.c.*) observed a flock of about 80 individuals in the salt ponds near Philipsburg, St. Martin, in December 1927.
We did not observe this species.
Distribution — The American turnstone is a breeding bird from arctic North America. It winters throughout Central and South America and is not uncommon in the West Indies.
Protective measures — Not protected by law.

21 **Numenius phaeopus hudsonicus** Latham

Hudsonian Curlew or Whimbrel

Numenius hudsonicus LATHAM, Index Orn. *2*, 1790, p. 712 — Hudson Bay.
"*Phaeopus Hudsonicus*", KRUYTHOFF 1939, p. 52 (St. Martin).

Native name — unknown.

ST. MARTIN. — Migrant.

No material.

Status — The only record seems to be that by KRUYTHOFF (*l.c.*) of the casual occurrence of the species on St. Martin.
We did not see this species.
Distribution — The Hudsonian curlew is a breeding bird from northern North America. It winters in tropical South America and is an uncommon transient in the West Indies, being most numerous in the Lesser Antilles.
Protective measures — Not protected by law. Hunting of this and other species of waders should be prohibited.

22 **Tringa melanoleuca** (Gmelin)

Greater Yellowlegs

Scolopax melanoleuca GMELIN, Syst. Nat. *1*, *2*, 1789, p. 659 — Labrador.
Totanus melanoleucus, DANFORTH 1930, p. 45 (St. Martin).
"*Totanus Melanoleucus*", KRUYTHOFF 1939, p. 57 (St. Martin).

Native name — *Yellowlegs* (KRUYTHOFF).

ST. MARTIN. — Winter visitor.

No material.

Status — Only recorded by DANFORTH (*l.c.*), who observed one at Cul-de-Sac Pond, St. Martin, on 26.XII.1927.

We did not observe this species.

Distribution — The greater yellowlegs is a breeding bird from northern North America; it winters throughout tropical Central and South America south to Patagonia and is a not uncommon transient and winter resident in the West Indies (BOND).

Protective measures — Not protected by law. Hunting of this and other species of waders should be prohibited.

23 **Tringa flavipes** (Gmelin)

Lesser Yellowlegs

Scolopax flavipes GMELIN, Syst. Nat. *1*, *2*, 1789, p. 659 — New York.
Totanus flavipes, DANFORTH 1930, p. 45 (St. Martin).
"*Totanus Flavipes*", KRUYTHOFF 1939, p. 57 (St. Martin).

Native name — *Yellowlegs* (KRUYTHOFF); *pond bird.*

ST. MARTIN. — Winter visitor.

No material.

Status — Only recorded with certainty by DANFORTH (*l.c.*) from the salt ponds near Philipsburg, St. Martin, in December 1927.

We observed this species regularly during our stay on St. Martin in February 1952, both along the mangroves of the salt ponds and along Simpson Bay Lagoon. Also observed on Pelican Key on 8.II.1952.

Distribution — The lesser yellowlegs is a breeding bird from northern North America. It winters throughout tropical Central and South America south to Patagonia. It is a very common transient and winter visitor in the West Indies, where it has been observed at all times of the year (BOND).

Protective measures — Not protected by law. Hunting of this and other species of waders should be prohibited.

24 **Tringa solitaria** Wilson

Solitary Sandpiper

Tringa solitaria WILSON, Amer. Orn. *7*, 1813, p. 53, pl. 58, fig. 3 — Pennsylvania.

Native name — unknown.

ST. MARTIN. — Winter visitor.

No material.

Status — We observed two specimens in a fresh water pond near a dam in Cul-de-Sac Valley, St. Martin, on 5.II.1952. Previously unknown on these islands, as the record by KRUYTHOFF (1939, p. 56) is completely unreliable.

Distribution — The solitary sandpiper is a breeding bird of northern North

America. It winters in South America. According to BOND it is a common fall and spring transient, but only casual as a winter resident.

Protective measures — Not protected by law.

25 **Actitis macularia** (Linnaeus)

Spotted Sandpiper

Tringa macularia LINNAEUS, Syst. Nat. ed. 12 *1*, 1766, p. 249 — Pennsylvania.
Actitis macularia, DANFORTH 1930, p. 45 (St. Martin).

Native name — *Tip-up* (DANFORTH).

ST. MARTIN. — Winter visitor.

No material.

Status — Only recorded by DANFORTH (*l.c.*), who found it a common bird along the salt ponds of St. Martin in December 1927.

We did not observe this species.

Distribution — The spotted sandpiper is a breeding bird throughout North America and a common migrant and winter visitant in Central and South America. It is common in the West Indies (BOND).

Protective measures — Not protected by law.

26 **Capella gallinago delicata** (Ord)

Wilson's Snipe

Scolopax delicata ORD, in reprint, WILSON, Amer. Orn. *9*, 1825, p. ccxviii — Pennsylvania.
"Gallinago Delecata", KRUYTHOFF 1939, p. 56 (St. Martin).

Native name — *Snipe*.

ST. MARTIN. — Winter visitor.

ST. MARTIN: *Cul-de-Sac Valley*, 6.II.1952 (1 *sex inc.*); *Simpson Bay Lagoon*, 9.II.1952 (1 *sex inc.*).

Taxonomy — Both specimens were moulting their small feathers all over the body, particularly on the head and neck.

Iris brown; bill dark horn; legs and feet olive green.

Measurements — ST. MARTIN: *sex inc.*, wing 128, 130, exposed culmen 63, 64.

Status — Previously only rather vaguely recorded by KRUYTHOFF (*l.c.*).

During our stay it was not uncommon on St. Martin, but we failed to observe it on the other islands. According to Mr. JULIEN CONNOR it is a regular winter visitor to St. Martin.

Biotope — We found a party of some 8 snipes in the wet meadows (fresh water) of the Cul-de-Sac Valley close to the dam (5.II.1952). A few days later we saw a flock of about 10 specimens on the salt mud flats of the mangroves along

Simpson Bay Lagoon, where they moved around the pneumatophores of *Avicennia* (9.II.1952).

Distribution — Wilson's snipe is a breeding bird from North America. It winters in Central and South America and is a common winter visitor to the West Indies (BOND).

Protective measures — Not protected by law.

27 **Calidris pusilla** (Linnaeus)

Semipalmated Sandpiper

Tringa pusilla LINNAEUS, Syst. Nat. ed. 12 *1*, 1766, p. 252 — Hispaniola.
Ereunetes pusillus, DANFORTH 1930, p. 45 (St. Martin).

Native name — unknown.

ST. MARTIN. — Winter visitor.

No material.

Status — DANFORTH (*l.c.*) observed a flock of about 200 specimens and collected one on 24.XII.1927 in the salt ponds behind Great Bay, St. Martin.

We did not observe this species.

Distribution — The semipalmated sandpiper is a breeding bird from northern North America; it winters throughout South America. According to BOND only few individuals winter in the West Indian islands.

Protective measures — Not protected by law.

28 **Larus argentatus smithsonianus** Coues

Herring Gull

Larus smithsonianus COUES, Proc. Ac. Nat. Sci. Phi. *14*, 1862, p. 296 — North America.

Native name — unknown.

ST. MARTIN. — Winter visitor.

No material.

Status — We observed it once at Great Bay, St. Martin, where a single bird was seen flying along the beach, later turning towards the salt ponds to the north of Philipsburg (11.II.1952). It was a bird in what seemed to be a 2nd year plumage. Not previously recorded.

Distribution — The North American herring gull is a breeding bird from temperate North America; it is largely resident. Immature birds have been known wintering as far south as Panama. In the West Indies it has been recorded south to Barbados and Cuba (BOND).

Protective measures — Not protected by law.

29 **Larus atricilla** Linnaeus

Laughing Gull

Larus atricilla LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 136 — Bahama Islands.
Hydrocoloeus atricilla, DWIGHT, Bull. Am. Mus. Nat. Hist. *52*, 1925, p. 266–267 (St. Martin).
"*Larus Atricilla A*", KRUYTHOFF 1939, p. 54 (St. Martin).

Native name — *Laughing bird* (KRUYTHOFF).

ST. MARTIN. — Apparently winter visitor.

No material.

Status — Apart from DWIGHT's statement (*l.c.*) of having examined one or more specimens from St. Martin, I know of only one record by KRUYTHOFF (*l.c.*), which reads as follows: "Arrives in dense flocks in Sept. and Oct. They cover the ponds and become very disagreeable with their laughing cry". As KRUYTHOFF actually resided in St. Martin we may consider his record of the occurrence of this gull on St. Martin as trustworthy.

We did not see this species.

Distribution — *Larus atricilla* is a breeding bird from the coasts of North America south to northern South America. It is widely distributed in the West Indies, both as a breeding bird and as a passenger migrant and winter visitor.

Protective measures — Not protected by law.

30 **Sterna hirundo hirundo** Linnaeus

Common Tern

Sterna hirundo LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 137 — Sweden.

Native name — unknown.

SABA. — Passenger migrant.

No material.

Status — We did not observe this species, but Mr. L. DE HOOP, at that time Administrator of Saba, informed me that on 4.X.1952 a "grey-and-white sea bird" had been caught by Sabanese fishermen off the coast of Saba, with the band nr. 523–13016 from the Fish and Wildlife Service, Washington. The bird turned out to be the present species, which was banded on 9.VII.1952 at North Eastham, Cape Cod, Mass., U.S.A.

Distribution — The common tern is a wide-spread breeding bird of North America and an abundant passenger migrant throughout the West Indies. It winters apparently in South America.

Protective measures — Not protected by law. Protective measures have been proposed by WESTERMANN (1946, p. 83).

31 **Sterna fuscata fuscata** Linnaeus

Sooty Tern

Sterna fuscata LINNAEUS, Syst. Nat. ed. 12 *1*, 1766, p. 228 — Hispaniola.
Sterna fuliginosa, SUNDEVALL, Öfvers. K. Vetensk. Ak. Förhandl. 1869, p. 589 (St. Martin).
Sterna fuscata fuscata, DANFORTH 1930, p. 45 (St. Eustatius); DANFORTH 1939, p. 507 (Saba).
Sterna fuscata, WAGENAAR HUMMELINCK 1952, p. 25 (St. Martin).

Native name — unknown.

ST. MARTIN (breeding), SABA, ST. EUSTATIUS. — Apparently summer resident.

No material.

Status — SUNDEVALL (*l.c.*) mentions having examined several young birds collected by Dr A. VON GOËS in St. Martin on 10.VI.1865. Subsequently this species of tern was only recorded by DANFORTH (*l.c.*): one specimen was seen on 28.XII.1927 just off the north coast of St. Eustatius and a flock of about 25 birds was observed on 20.XII.1937, feeding at sea some 20 miles north of Saba. WAGENAAR HUMMELINCK informs me that he found a breeding colony of this species on Pelican Key, on 3.VIII.1949 (Plate IIa). This author (WAGENAAR HUMMELINCK *l.c.*) published some notes on the regular collection of the eggs of this species by native boys and showed me convincing photographs of these birds flocking above the rocky island.

We did not observe this species.

Zoogeography — *Sterna f. fuscata* is a local breeding bird throughout the West Indies and on other islands in the tropical and subtropical Atlantic Ocean. The species as a whole is pan-tropical; its zoogeographical origin is unknown.

Protective measures — Not protected by law. Protective measures have been proposed by WESTERMANN (1946, p. 83); the regulation of egg collecting seems particularly necessary.

32 **Sterna maxima maxima** Boddaert

Royal Tern

Sterna maxima BODDAERT, Tabl. Pl. Enl., 1783, p. 58 — Cayenne.
Thalasseus maximus maximus, DANFORTH 1930, p. 45 (St. Martin).

Native name — unknown.

ST. MARTIN, ST. EUSTATIUS. — Breeding not recorded.

ST. MARTIN: *Great Bay*, 9.II.1952 (1 ♂ ad.).

Taxonomy — Crown largely white, with a broad, black nuchal crest. Wings very short, caused by moult of outer primaries; also some moult of small feathers on the neck.

Iris brown; bill orange; legs and feet black, base of feet ochraceous.

Measurements — ST. MARTIN: ♂ ad., wing 321 (outer primaries moulting!), longest tail feathers 163, depth of furcation of tail 70, bill from forehead 79, exposed culmen 67.5, tarsus 32.5.

Status — Previously only recorded by DANFORTH (*l.c.*), who observed this species regularly along the salt ponds of St. Martin in December 1927.

We found small numbers of royal terns along the coasts of St. Martin and St. Eustatius, either singly, or in flocks of 2–5 birds.

Biotope and field characters — We only found royal terns fishing in the quiet waters of the protected bays and never observed them inland. In Great Bay, St. Martin, it was an almost daily occurrence to see a royal tern sitting on a very small buoy for hours and hours, sleeping, or preening its feathers, or quietly looking around: once we timed it for at least four hours in succession! This bird being finally shot, it appeared that moult of the outer wing quills had reduced the length of the wings considerably, a factor, which seems to have proved a handicap to normal flight.

Reproduction cycle — The gonads of the collected male were not enlarged (testes 5½ × 4½ mm). We observed nothing of any breeding activity.

Zoogeography — *Sterna m. maxima* ranges throughout most of the temperate and warm waters of North and South America. It is a breeding bird throughout the West Indies.

The species has mainly an Atlantic distribution, occurring both on the American and on the African side of the ocean. It is also known from the warmer parts of the American Pacific coasts. The zoogeographical origin of the species is unknown.

Protective measures — Not protected by law.

33 **Sterna sandvicensis acuflavida** Cabot

Sandwich Tern

Sterna acuflavida CABOT, Proc. Boston Soc. Nat. Hist. *2* (1847), 1848, p. 257 — Yucatan.

Thalasseus sandvicensis acuflavidus, BOND 1950, p. 55 (St. Martin).

Native name — unknown.

ST. MARTIN. — Passenger migrant.

No material.

Status — BOND's record of the occurrence of this species on St. Martin is based on a specimen sent by Dr H. E. VAN RIJGERSMA (St. Martin) to the Academy of Natural Sciences of Philadelphia before 1861 (BOND *in litt.*).

We did not observe this species.

Distribution — *Sterna s. acuflavida* ia s breeding bird from the southern Atlantic and Gulf States south to the Bahama Islands and Cuba. It migrates throughout the whole of the West Indies and winters along the coasts of South America.

The species is a breeding bird of the warmer coasts on both sides of the North Atlantic, as well as of those of southern Europe. Its zoogeographical origin is doubtful.

Protective measures — Not protected by law.

34 **Anoüs stolidus stolidus** (Linnaeus)

Noddy Tern

Sterna stolida LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 137 — Atlantic Ocean east of Barbados.
Anoüs stolidus, WAGENAAR HUMMELINCK 1952, p. 25 (St. Martin).

Native name — *Blackbird* (St. Martin; WAGENAAR HUMMELINCK).

ST. MARTIN (breeding). — Apparently summer resident.

No material.

Status — WAGENAAR HUMMELINCK (*l.c.*) found breeding colonies of this species on the rocky keys to the southeast of St. Martin (Pelican Key, Molly Beday) on 3.VIII.1949; he showed me a convincing photograph of noddy terns on these islands (Plate IIa).

We did not observe this species.

Zoogeography — *Anoüs s. stolidus* is the Atlantic and Caribbean representative of an almost pan-tropical and pan-subtropical species. It is a common breeding bird throughout the West Indies. The distributional origin of this species of sea tern is unknown.

Protective measures — Not protected by law. Protective measures proposed by WESTERMANN (1946, p. 83) are particularly desirable in view of the taking of eggs being legally regulated.

35 **Columba squamosa** Bonnaterre

Scaly-Naped Pigeon

Columba squamosa BONNATERRE, Tabl. Encycl. Méth. Orn. *1*, 1792, p. 234 — Guadeloupe.
Columba corensis, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 96 (St. Eustatius).
Columba squamosa, RIDGWAY, *7*, 1916, p. 314 (St. Eustatius); DANFORTH 1930, p. 46 (St. Eustatius); HELLMAYR & CONOVER, *1* (*1*), 1942, p. 433 (St. Eustatius).
"*Columba squamosa*", KRUYTHOFF 1939, p. 51 (St. Martin, Saba, St. Eustatius)

Native name — *Blue pigeon.*

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident (wholly or partly).

No material.

Status — Collected by WINCH on St. Eustatius in 1890 (CORY 1891) and observed by DANFORTH (*l.c.*) in 1927 along the slopes of The Quill, St. Eustatius. Detailed records from Saba are lacking, although KRUYTHOFF's records (*l.c.*) of the occurrence of this well known game bird "high up in the mountains" of all three islands and in "the crater" of St. Eustatius seem perfectly reliable.

We observed this species on all three islands, where it was apparently a rare, but well known and much too persecuted game bird. It was extremely rare on St. Martin. On 8.II.1952 I observed a solitary bird on Pelican Key; I also examined the wing and tail feathers of an individual which had been shot a short time prev-

iously high in the hills near Bellevue. On Saba single birds, which were usually extremely wild, were observed during every excursion through the mountain forest of the island. On St. Eustatius blue pigeons seemed to be restricted to the higher slopes and the crater forest of the volcano, where they could invariably be found.

Biotope — Owing to excessive hunting this species was confined to the undisturbed mountain forest, where it perched in the tallest trees, apparently feeding on tree fruits. Once I observed it on the barren and rocky islet called Pelican Key (St. Martin).

Field observations — In flight the elongated, slender neck and the long wings are very conspicuous. The long neck is also distinct when perched, as is beautifully illustrated by the photograph in *Ois. & Rev. Fr. Orn. 21*, 1951, pl. 4. The bare orbital skin was carefully noted on one occasion; it was bright red in colour (Saba, 29.II.1952). The call note closely resembled that of the European wood pigeon (*Columba palumbus*) and can be described as a very strong rúkukú.

Zoogeography — *Columba squamosa* is a breeding bird in most of the Greater and Lesser Antilles and also occurs on Bonaire and Curaçao. It is probably an autochthonous species of an almost cosmopolitan genus.

Protective measures — Not protected by law. If the survival of this eagerly hunted species is not immediately appreciated by local officials, nothing can save the blue pigeon from rapid extermination in the Netherlands Windward Islands (see also: WESTERMANN 1947, p. 211).

36 **Zenaida aurita aurita** (Temminck) Plate IV

Zenaida Dove

Columba aurita TEMMINCK, in KNIP, Les Pigeons, 1810, p. 60, pl. 25 — Martinique.
Zenaida castanea, CORY 1892, p. 97 (St. Eustatius).
Zenaida zenaida, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 97 (St. Eustatius).
Zenaida aurita, RIDGWAY, 7, 1916, p. 364 (Saba, St. Eustatius); WETMORE, Journ. Agr. Univ. Puerto Rico *21*, 1937, p. 12 (Saba, St. Eustatius).
Zenaida aurita aurita, DANFORTH 1930, p. 46 (St. Martin, St. Eustatius); HELLMAYR & CONOVER, *1* (1), 1942, p. 499 (St. Martin, St. Eustatius).
Zenaida aurita zenaida, DANFORTH 1939, p. 507 (St. Martin, Saba, St. Eustatius).
"*Zenaida Z. Z.*", KRUYTHOFF 1939, p. 55 (St. Martin, Saba, St. Eustatius).

Native name — *Mountain-dove.*

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident.

SABA: *Ladder Hills*, 29.II.1952 (2 ♀); *The Bottom*, 1.III.1952 (1, apparently ♂). ST. EUSTATIUS: *English Quarter*, 21.II.1952 (2 ♂, 1 ♀); crater of *The Quill*, 23.II.1952 (1 ♀).

Taxonomy — The series of collected specimens exhibits considerable individual variation. Apart from individuals of true *aurita*, with whitish abdomen and creamy white under tail coverts, there are some, which have a more vinaceous abdomen and vinaceous grey under tail coverts, similar to specimens of the race *zenaida* (particularly nr. 10778, ♂, from Saba). Evenso, none of the specimens matches true *zenaida* with regard to the deepness of the vinaceous red coloration

of abdomen and under tail coverts. For the sake of simplicity, therefore, I have treated all specimens under the name of *aurita*.

Several previous authors (PETERS, BOND) have noticed the existence of a similar amount of mixture of racial characters in the northern Lesser Antilles. DANFORTH (1939) mentions that of 9 captive specimens from St. Martin 3 were typical *aurita*, 2 were *zenaida*, and 4 were intermediates. PETERS (*3*, 1937, p. 87) described the situation apparently quite clearly by stating that "birds of the northern part of the range, Anguilla to Antigua, represent various stages of transition between *zenaida* and *aurita*".

Iris brown, eyelid pale yellow or yellowish buff; bill and cere dark horn; feet bright red.

Measurements — SABA: ♂, wing 157, tail 103, tarsus 28; ♀, wing 153, 155. tail 98, 99, tarsus 25.5, 26. ST. EUSTATIUS: ♂, wing 154.5, 156, tail 98, 103, tarsus 26, 28; ♀, wing 153, 155, tail 90, 97, tarsus 25, 26.

Status — The species has been found by all previous collectors on the three islands.

We also found it on all three islands, though it was noticeable rare on St. Martin, where it was moreover extremely shy, probably due to excessive hunting. It was most numerous on Saba, although by no means scarce on St. Eustatius.

Biotope — The mountain dove was found in dry scrub and low bushes on sunny hills, where most of its feeding is done on the ground. They have been frequently found roosting in the higher trees of the more luxurious forests of the Little Mountains and on the slopes of The Quill on St. Eustatius. They have been also found, probably nesting, in the upper layers of the high forest in the crater of The Quill, but they apparently did not descend to the darkness of the undergrowth. On Saba they were most numerous in the open, although rather high, scrub and were definitely absent in the forest of treeferns near the summit of The Mountain.

Reproduction cycle — Several of our specimens proved to have active gonads, the testes of 2 males from St. Eustatius (21.II.1952) measuring 11 × 6 and 11.5 × 8 mm, respectively; the egg follicles in the ovary of a female from the same date and place measuring up to 5 mm diameter, while another female (23.II. 1952) had follicles of 1½ mm diameter. In addition, 2 half-grown young were brought to us on St. Eustatius toward the end of February. From these notes it appears, that breeding was fairly prevalent at the time of our visit.

Food — Apparently restricted to fruits and seeds of various kinds.

Field observations — The presence of this species was readily noticed by its mournful, though melodious calls, heard throughout the day, but which were most pertinent early in the morning. A courtship flight — with a short sailing — in the manner of many species of doves, has been observed on St. Eustatius, 18.II.1952.

Zoogeography — *Zenaida a. aurita* inhabits the entire chain of Lesser Antilles, from Grenada to Anguilla; east and west of the Anegada Passage, between the northern Lesser Antilles and the Virgin Islands, it gradually merges into the race *zenaida*.

The species as a whole occurs throughout the West Indies, the coast of Yucatan and occasionally in southern Florida. Its present range seems to indicate that it is an autochthonous species of a Tropical North American origin.

Protective measures — Not protected by law. The species seems to be hunted too indiscriminately, particularly on St. Martin. Protective measures are

desirable (see also: WESTERMANN 1947, p. 211). This species is, however, much less seriously threatened with extinction than the blue pigeon (*Columba squamosa*).

37 **Columbigallina passerina nigrirostris** Danforth

Ground-Dove

Columbigallina passerina nigrirostris DANFORTH, Journ. Agr. Univ. Puerto Rico *19*, 1935, p. 483 — St. Kitts.

Chaemepelia passerina trochila, RIDGWAY, *7*, 1916, p. 413 (Saba, St. Eustatius); DANFORTH 1930, p. 46 (St. Martin, St. Eustatius).

Columbigallina passerina trochila, RILEY, Smiths. Misc. Coll. *47*, 1904, p. 282 (St. Eustatius).

Columbigallina passerina nigrirostris, DANFORTH 1935, p. 483 (St. Martin, St. Eustatius); PETERS, *3*, 1937, p. 106 (St. Martin); DANFORTH, 1939, p. 508 (Saba).

"*Chaemepelia Passerina*", KRUYTHOFF 1939, p. 53 (St. Martin, Saba, St. Eustatius)

Native name — *Ground-dove*.

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident.

ST. MARTIN: *Cul-de-Sac Valley*, 7.II.1952 (2 ♂); *St. John Estate*, 9.II.1952 (1 ♀); *Simpson Bay*, 13.II.1952 (1 ♀); Simpson Bay, 18.III.1953 (1 ♂, 1 ♀, collected by H. W. E. Croockewit; Amsterdam Mus.); Little Bay, 18.III.1953 (1 ♂, collected by Croockewit; Amsterdam Mus.). SABA: Spring Bay, 27.I.1937 (1 ♂, collected by Danforth; U.S. Nat. Mus.); *Ladder Hills*, 8.III.1952 (2 ♂). ST. EUSTATIUS: 28.XII.1927 and 23.I.1937 (2 ♀, collected by Danforth; U.S. Nat. Mus.); *Little Mountains*, 19 and 25.II.1952 (2 ♂, 1 ♀).

Taxonomy — These birds lack the orange red coloration at the base of the bill and at the cere, although in some single specimens the cere may be somewhat lighter horny brown than the rest of the bill.

There is a great variation among males in the intensity of the coloration of the whole plumage. The darkest ones are those from St. Martin, which have a dark vinaceous breast and rather dark olive brown upper parts, agreeing with "*Chaetura Drab*", rather than with "*Hair Brown*". Males from Saba and St. Eustatius are decidedly lighter, the upper parts almost matching "*Hair Brown*", but a single specimen from St. Martin is like the lightest individuals from St. Eustatius. The females from St. Martin are equally somewhat darker above than those from St. Eustatius.

In addition to the mentioned material I examined specimens from the following localities for comparison (on loan from the U.S. Nat. Museum): St. Kitts (1 ♂, 1 ♀), St. John (1 ♀), St. Croix (1 ♀), St. Thomas (2 ♂, 1 ♀), Porto Rico (7 ♂, 1 ♀).

Males from the Virgin Islands and from Porto Rico are more brownish grey above, less pale greyish, than those from Saba, St. Eustatius, and St. Kitts. Males from the latter islands have the head and neck a lighter bluish grey, whereas those from Porto Rico, the Virgin Islands, and St. Martin have the head and neck decidedly darker, more suffused with pinkish brown. The reddish brown coloration of the wing coverts in males from Porto Rico and the Virgin islands is conspicuous. The geographical variation of the females can be summarized by stating that those

from Porto Rico and the Virgin Islands are darker and more brownish throughout, less tinged with grey, than those from the other islands.

Iris cyclamen or pinkish, eyelid yellow; bill dark horn or blackish, cere usually somewhat lighter; feet flesh colour or rosy-red.

Weight of two males from St. Martin, 30 and 32 g, respectively.

Measurements — St. Martin: ♂, wing 82, 83.5, tail 56.5, 59.5; ♀, wing 77, 80.5, tail 58, 61. Saba: ♂, wing 80.5, 81, 84, tail 60, 61; ♀, wing 77.5. St. Eustatius: ♂, wing 78.5, 83, tail 58, 59; wing 80, 80.5, 81, tail 59, 61, 61.

Status — This species has been recorded by the majority of previous collectors, although it does not occur on the list of species collected on St. Eustatius in 1890 by Winch (Cory 1891, p. 47). Danforth (*l.c.*) found it common throughout the lowlands of St. Martin and St. Eustatius, but mentions only few individuals from Saba.

We found the ground-dove abundant in the lowlands of St. Martin and St. Eustatius; on Saba, however, it was found in small numbers only.

Biotope — Ground-doves were common in the open, xerophytic vegetation of the lowlands of St. Martin and St. Eustatius, preferring cultivated grounds and often being met with near human dwellings. On Saba we found them in dry, sunny places on the hills, preferably with some cactus scrub; we did not see them in the village of The Bottom, nor in the gardens of Windwardside.

Reproduction cycle — In nearly all of the specimens collected the gonads were markedly swollen, the largest testes measuring 9 × 4½ mm (8.III. 1952, Saba), the largest follicle in the ovary measuring 3 mm in diameter. In addition, we found two nests on St. Martin (9 and 14.II.1952) and one on St. Eustatius (19.II.1952), each nest containing two eggs. According to a note on the label of a male collected by Danforth on Saba on 27.I.1937, this specimen also possessed large gonads. We can be certain, therefore, that this species regularly breeds during the winter months.

Nest and eggs — The nests were similar in structure to the ordinary platforms of doves, but were rather large and carefully constructed. One nest was located at the top of an isolated shoot of *Rhizophora*, scarcely 70 cm long, standing in the water of Simpson Bay Lagoon (9.II.1952). Another nest was found on the ground behind the mangrove zone of the same lagoon (14.II.1952), hidden among the grass *Paspalum laxum*. The third nest was located once again under different situations, *viz.*, in a spiny *Opuntia*, with pale yellow flowers (19.II.1952).

The eggs are white, slightly glossy. Two eggs from St. Martin measure 20.6 × 16.4 and 21.7 × 16.4 mm; one from St. Eustatius measures 23.0 × 16.9 mm.

Food — The crops and stomachs of the collected specimens contained nothing but the remains of seeds, particularly small ones. I counted approximately 700 small blackish seeds of *Eugenia* in the crop of one specimen from Cul-de-Sac Valley, St. Martin.

Zoogeography — *Columbigallina p. nigrirostris* inhabits St. Croix and the northern Lesser Antilles south to Dominica.

The range of the species extends from the southern United States, southward through Central America and the West Indies, to large areas of northern South America. Hellmayr & Conover (*1* (*1*), 1942) recognize no less than 18 subspecies throughout the whole range. The species probably originated in Tropical North America, from whence it has spread to South America, where other, closely related species occur.

Protective measures — Protected by law (Westermann 1946, p. 82).

38 **Geotrygon mystacea** (Temminck) Plate IV

Bridled Quail-Dove

Columba mystacea TEMMINCK, in KNIP, Les Pigeons, 1811, p. 124, pl. 56 — "St. Domingue", but probably: Lesser Antilles.

Geotrygon sabae, RILEY, Proc. Biol. Soc. Wash. *16*, 1903, p. 13 (Saba).

Oreopeleia mystacea sabae, RIDGWAY, *7*, 1916, p. 476 (Saba).

Oreopeleia mystacea mystacea, DANFORTH 1939, p. 508 (Saba); HELLMAYR & CONOVER, *1* (*1*), 1942, p. 601 (Saba).

Oreopeleia mystacea, DANFORTH, Proc. Biol. Soc. Wash. *51*, 1938, p. 73 (Saba); BOND, Checkl. Birds West Ind. ed. 1, 1945, p. 57 (Saba).

Geotrygon mystacea, BOND 1950, p. 65 (Saba); BOND, Sec. Suppl. Checkl. Birds West Ind. 1952, p. 12 (St. Eustatius: record of the specimens collected by Voous).

Native name — *Wood hen* (Saba); *partridge* (St. Eustatius).

SABA, ST. EUSTATIUS. — Resident.

SABA: *Ladder Hills*, 29.II.1952 (1 ♀ ad.); *Saddle*, 1.III.1952 (1 ♂ ad.). ST. EUSTATIUS: crater of *The Quill*, 23.II.1952 (1 ♀ ad., 1 ♀ imm.).

Taxonomy — The specimens collected show some individual variation. The adult male from Saba is darkest above and below; the metallic gloss on the mantle is slightly brighter than in the adult females and extends towards the breast. The crown is rather dark greyish brown. — The adult female from St. Eustatius has the crown and the dark moustachial streak of a slightly lighter brown than the female from Saba. — The immature female has rufous brown edges to many of the feathers from the chest and to several of the upper wing coverts. Many feathers of the crown are rufous brown and belong to the juvenile plumage. The metallic gloss on the mantle is only slightly developed. The bird is changing from the juvenile plumage, described as "*Geotrygon sabae*", into the adult dress.

I examined the type of this species in the Leiden Museum. According to its label it originates from "St. Domingue", but this locality is generally considered to be erroneous. The type, which is unsexed, is slightly foxed, but as a whole does not differ from the adult females from St. Eustatius. It is, however, much larger, and may therefore be considered a male (wing 181, tail 105, bill from forehead 30).

For the suppression of the genus *Oreopeleia* and its inclusion with *Geotrygon*, see WETMORE, Proc. Biol. Soc. Wash. *63*, 1950, p. 173, and Auk *68*, 1951, p. 368.

Iris orange, eyelid red, naked orbital skin flesh-colour; bill pale flesh-colour, or ivory white, cere red; legs and feet flesh-colour.

Measurements — SABA: ♂ ad., wing 171.5, tail 101, bill (measured from forehead) 27.5, tarsus 36.5; ♀ ad., wing 165.5, tail 90, bill 27.5, tarsus 34. ST. EUSTATIUS: ♀ ad., wing 165, tail 94, bill 28, tarsus 36; ♀ imm., wing 165.5, tail 89, bill 28.5, tarsus 32.5.

Status — Previously only recorded from Saba, where it was collected by OBER about 1870 (RILEY *l.c.*), by BOND in 1928 (BOND *in litt.*) and by DANFORTH (*l.c.*) in 1937.

We found this species on Saba, where it was by no means abundant and on St. Eustatius, where it occurred exclusively near the summit and in the crater of The Quill.

Biotope — The shady undergrowth of damp forest. — On Saba, it was found as a terrestrial bird living on the ground below a protective plant cover. This could be either a thick bush, a low forest, the dense vegetation of the treefern growth, or the damp bottom-vegetation of a steep mountain gut. — On St. Eustatius it was practically restricted to the forest in the crater of The Quill, where it lived on or near the ground in the most shadowy places, where decayed trees, mosses and ferns were numerous. It was, however, also observed passing the sharp ridge of the crater wall and disappearing into the forest outside the summit of the volcano.

Reproduction cycle — The gonads of the male from Saba were enlarged, though probably not active, the testes measuring about 10 × 5 mm. The follicles in the ovary of the adult female from St. Eustatius were also slightly enlarged, but the oviduct was rather narrow, although conspicuously twisted. The gonads of the other adult female were not enlarged. Nothing can be said therefore about the reproduction cycle of this species.

Food — The stomachs of the specimens examined contained large seeds and some land snails.

Field observations — This terrestrial dove reminded me of the European woodcock (*Scopolax rusticola*) in its behaviour. Like this species, it was an inconspicuous bird haunting the bottom of dark and moist forest, not particularly shy, but, owing to its protective coloration, hard to find. Its flight was much less stiff and more elastic, than that of other doves and, like the woodcock, it could be seen flying silently, on owl-like wings, through the forest, making its way easily between the trunks of the trees.

Zoogeography — *Geotrygon mystacea* inhabits practically all of the Lesser Antilles, but it has not been recorded in the islands south of Santa Lucia; it also occurs in the Virgin Islands and on Culebra Island. A closely related form (*G. chrysia*), which is treated by BOND (*l.c.*) as a separate species, but considered a subspecies by HELLMAYR & CONOVER (*l.c.*), inhabits the Greater Antilles, excepting Jamaica; also the Bahama Islands.

HELLMAYR & CONOVER (*l.c.*) list one species of *Geotrygon* and 10 of *Oreopeleia*, all, except one, occurring in the West Indies or in Central America. All species are forest birds, which are often restricted to subtropical mountain zones. It seems likely that this genus is of a Tropical North American origin. *G. mystacea* may then represent an autochthonous relict.

Protective measures — Not protected by law. The species is highly esteemed by native hunters, both as a good game and for eating. It is, however, difficult to obtain. As the species is rare on most of the Lesser Antilles, where it occurs, total protection is highly recommended.

39 **Eulampis jugularis** (Linnaeus)

Garnet-Throated Hummingbird

Trochilus jugularis LINNAEUS, Syst. Nat. ed. 12 *1*, 1766, p. 190 — Cayenne, Surinam; *error* = Lesser Antilles (Martinique).

Eulampis jugularis, DANFORTH 1939, p. 509 (Saba); BOND 1950, p. 85 (Saba); BOND, Sec. Suppl. Checkl. Birds West Ind. 1952, p. 15 (St. Eustatius: record of the specimen collected by VOOUS).

Native name — *Doctor bird.*

SABA, ST. EUSTATIUS. — Resident.

SABA: northern slope of *The Mountain*, 6.III.1952 (1 ♀). ST. EUSTATIUS: near *Oranjestad*, 23.II.1952 (1 ♂).

Taxonomy — Up to now, no geographic variation has been found in this species. My specimens do not differ from six additional birds from Dominica, Martinique, and St. Vincent in the Leiden Museum. There is no sexual difference in coloration, but the bill of the male is shorter and slightly less curved than in the female.

Iris dark brown; bill, legs and feet black.

The genera *Eulampis* (monotypic) and *Sericotes* (monotypic) are morphologically closely related and have been provisionally united into one genus by BERLIOZ (Compte Rend. Somm. Séanc. Soc. Biogéogr. *196*, 1946, p. 24). Although I agree with this author in regarding the alleged generic differences (*e.g.* shape of tail, colour pattern) as inadequate, I feel that the very striking metallic gloss on the underside of the wing quills in *Eulampis* does indicate a degree of specialization worthy of being recognized by nominal generic differentiation.

Measurements — SABA: ♀, wing 74, tail 37.5, bill from forehead 34.5, from nostril 27 (long!). ST. EUSTATIUS: ♂, wing 79, tail 39.5, bill from forehead 31.5, from nostril 22.

DOMINICA: ♂, bill from forehead 29.5, from nostril 20.5. MARTINIQUE: ♂, bill from forehead 26, 29, 29, 29.5, from nostril 19,19.5, 20, 20. ST. VINCENT: (♀), bill from forehead 32, from nostril 24.

Individual variation in the length of the bill is considerable: BOND (*in litt.*) mentions the bill (measured from nostril) of a male from Saba as 22.5 and of an unsexed specimen from St. Lucia as 26 and of a female as 25.5; an unsexed specimen from Barbados in the Paris Museum has an exceedingly long bill, which I measured (from the forehead) as 36, but an equally unsexed specimen from Guadeloupe was still larger, *viz.* 37!

Status — Only recorded from Saba by BOND (*in litt.*) in 1928 and by DANFORTH (*l.c.*) in 1937. The latter author found this species in the treefern forest and banana plantation at the summit of The Mountain. Not previously recorded in St. Eustatius.

We found it a very rare bird on Saba (northern slope of The Mountain) and on St. Eustatius (caught by a native boy near Oranjestad and observed at the top of The Quill, 23.II.1952).

Biotope — Found only in the treefern forest on Saba at about 650 m altitude. On St. Eustatius, we found it in the rather high, though open forest at the summit of The Quill, where it occurred in the lower strata concurrently with other hummingbirds (*Sericotes holosericeus*, *Orthorhyncus cristatus*).

Reproduction cycle — The gonads of the St. Eustatius male were active: testes 5 × 3 mm. The ovary of the female from Saba was active, with follicles exceeding 1½ mm in diameter and the oviduct swollen and twisted. It is certain, therefore that some breeding of this species takes place in February and March.

Food — The oesophagus and the stomach of the female from Saba contained many large ants and a small beetle. DANFORTH (*l.c.*) found only spiders in the stomach of a bird from Saba.

Zoogeography — *Eulampis jugularis* occurs in the Lesser Antilles north to Saba and Barbuda and south to Grenada and Barbados.

Eulampis is an endemic Lesser Antillean genus of one species without any geographic variation. It is closely related to the sympatric species *Sericotes holosericeus* and to the big *Lampornis*- and *Anthracothorax*-complex from continental South America, which seems to represent its original stock. It is likely that the species originated within the limits of the West Indian region.

Protective measures — Protected by law (WESTERMANN 1946, p. 82).

40 **Sericotes holosericeus holosericeus** (Linnaeus)

Emerald-Throated Hummingbird

Trochilus holosericeus LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 120 — Martinique.
Eulampis holosericeus, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 106 (Saba, St. Eustatius).
Sericotes holosericeus, CORY, *2* (*1*), 1918, p. 227 (Saba, St. Eustatius).
Sericotes holosericeus holosericeus, RIDGWAY, *5*, 1911, p. 474, 475 (Saba, St. Eustatius); DANFORTH 1930, p. 46 (St. Martin, St. Eustatius); DANFORTH 1939, p. 509 (Saba).
"*Sericotes Holosericeus H.*", KRUYTHOFF 1939, p. 53 (St. Martin, Saba, St. Eustatius).

Native name — *Doctor bird.*

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident.

ST. MARTIN: *Great Bay*, 4 and 10.II.1952 (1 ♂), 1 (♀)). SABA: *Saddle*, 1.III, 1952 (1 ♂). ST. EUSTATIUS: 26 and 27.II.1922 (1 ♂, 1 ♀, collected by James L. Peters; Leiden Mus.); *Oranjestad*, 22.II.1952 (1 ♂, 1 ♀, 2 (♀)); *White Wall*, 18.II.1952 (1 ♂).

Taxonomy — Five specimens from Martinique and two from Barbados have been examined in addition to the series mentioned above. None of these birds differed in coloration except for the fact that there was a tendency among northern birds to have the purplish blue gloss of the under tail coverts more or less replaced by a bluish green or oily green. The purplish colour was very conspicuous in some specimens from Martinique and was particularly striking in a specimen of the race *chlorolaemus* from Grenada.

Iris brown; bill, legs and feet black.

For the relationship between *Sericotes holosericeus* and *Eulampis jugularis*, see under the latter species.

Measurements — ST. MARTIN: ♂, wing 63.5, tail 34, bill from forehead 26, from nostril 20; ♀, wing 63.5, tail 35, bill from forehead 29.5, from nostril 24.5. SABA: ♂, wing 63.5, tail 34.5, bill from forehead 25, from nostril 20. ST. EUSTATIUS: ♂, wing 63.5, 64, 65, tail 34.5, 35.5, 36, bill from forehead 25, 26, 27, from nostril 19, 19.1, 19.5; ♀, wing 64, 65.5, 66, tail 34.5, 35, 36, 37, bill from forehead 29.5, 30, 31, 31, from nostril 22, 23, 23.5, 23.5.

Status — The species has been recorded from Saba and St. Eustatius by all previous collectors; no pertinent records from St. Martin are available earlier than 1927, when this species was first observed by DANFORTH (*l.c.*).

We observed and collected this hummingbird on all three islands, where it was much less common than the small crested hummingbird (*Orthorhyncus cristatus*).

Biotope — We formed the impression that this species was not particularly confined to any special biotope. It was found from sea level up to the summit of The Quill (St. Eustatius) and up to about 400 m above sea level on Saba. The species was apparently equally at home in the mangroves of Simpson Bay Lagoon (St. Martin) and along the few flowering opuntias growing on the pebble beach of Tumble Down Dick Bay (St. Eustatius), as well as in the open lowlands and shadowless hills with xerophytic bush vegetation and the luxurious forests in the mountain guts of Saba. In the taller types of forest, such as in those on the slopes of The Quill, it appeared to keep more to the higher strata of the trees than the crested hummingbird. On Saba, we also observed it hovering in front of the flowers of low herbs on the wind-exposed slopes near St. Crispin.

Reproduction cycle — The gonads of the collected specimens were not enlarged, nor did we observe any sign of breeding activity.

Food — The stomachs of the specimens collected contained the remnants of minute insects. — We observed this hummingbird feeding upon the dull-orange flowers of the labiate herb, *Leonotis nepetaefolia*, which was rather common along the roads in the lowlands of St. Eustatius, and upon the yellow flowers of some species of *Opuntia*.

Zoogeography — *Sericotes h. holosericeus* ranges throughout all Lesser Antilles south to the Grenadines and west through the Virgin Islands to extreme eastern Porto Rico.

Sericotes is an endemic genus of one species and two slightly distinct subspecies, ranging virtually throughout the whole of the Lesser Antilles. It is one of those species of small land birds that have been observed in the open sea(*e.g.* between Montserrat and Antigua, CLARK, Proc. Boston Soc. Nat. Hist. *32*, 1905, p. 274), proving that there is a certain exchange of individuals between the various insular populations.

The genus is closely related to *Eulampis* and to the many continental South American species of the *Lampornis-Anthracothorax* complex, from whence it may have been derived. Whether it originated as a genus in the Lesser Antillean region or not is unknown, although I think it likely.

Protective measures — Protected by law (WESTERMANN 1946, p. 82).

41 **Orthorhyncus cristatus exilis** (Gmelin)

Antillean Crested Hummingbird

Trochilus exilis GMELIN, Syst. Nat. *1*, 1788, p. 484 — Guiana; *error* = St. Kitts (*cf.* CORY, Field Mus. Nat. Hist. Pub. 197, Zool. Ser. *13*, *2* (*1*), 1918, p. 305).
Bellona exilis, CORY, Auk *6*, 1889, p. 218 (Saba); CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 107 (Saba, St. Eustatius).
Orthorhyncus exilis exilis, RIDGWAY, *5*, 1911, p. 659 (Saba, St. Eustatius).
Orthorhynchos exilis exilis, DANFORTH 1930, p. 46 (St. Martin, St. Eustatius).
Orthorhynchos cristatus exilis, DANFORTH 1939, p. 509 (Saba).
"*Orthorhynchus Exiles E.*", KRUYTHOFF 1939, p. 53 (St. Martin, Saba, St. Eustatius).

Native name — *Doctor bird.*

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident.

ST. MARTIN: *Great Bay*, 10.II.1952 (1 ♀); *Simpson Bay Lagoon*, 14.II.1952 (1 juv. (♂)). SABA: *Ladder Hill*, 29.II.1952 (1 ♂), 6.III.1952 (1 ♂); *St. Johns*, 3.III.1952 (1 ♂ juv.); *Parish Hill*, 8.III.1952 (1 ♂). ST. EUSTATIUS, *White Wall*, 18.II.1952 (1 ♂); *Little Mountains*, 19.II.1952 (1 ♂).

Taxonomy — Racial variation is mainly confined to the colour of the crest in males. Our males have the crest a glistening green (seen *with* the light), with only a slight indication of some bluish at the tip; when seen against the light the crest is dark blue. Our birds agree with males from Martinique and Dominica examined for comparison.

There is some individual variation in the colour of the under parts of the males. The darkest bird is almost wholly sooty black below, with chin and throat a darker smoky grey; the lightest bird has a dull grey underside and a light grey chin and throat.

The juvenile males are like the female, but have the under parts a slightly lighter uniform greyish and the upper parts a duller green.

Iris brown; bill, legs and feet black.

Measurements — ST. MARTIN: ♀, wing 50, tail 31.5, bill (measured from forehead) 18.5. SABA: ♂ ad., wing 49.5, 50, 51, tail 29, 29, 30, bill 16.5, 17, 18. ST. EUSTATIUS: ♂ ad., wing 51, 51.5, tail 28, 29, bill 17.5, 17.5.

Status — This species has been collected by all previous collectors on Saba and St. Eustatius. DANFORTH (*l.c.*) seems to be the first to have collected it on St. Martin in 1927. This author found it common on St. Martin and extremely numerous on St. Eustatius. Commenting on its status on St. Eustatius DANFORTH writes: "I never saw any hummingbird anywhere quite so abundant as this species was there".

We found this species fairly widespread on all three islands, but nowhere abundant! Still, it seemed more numerous than its greater relative *Sericotes holosericeus*. The records by DANFORTH in 1927 and by myself in 1952 would seem to indicate that there is a considerable fluctuation in the local population-size of this species. Meanwhile, the crested hummingbird seems to be the commonest species of its family throughout all the Lesser Antilles.

Biotope — Like the emerald-throated hummingbird (*Sericotes holosericeus*) this little hummingbird does not seem to be confined to any kind of biotope. We found it on St. Martin in the forest and in the xerophytic bush on the hills, as well as in the mangroves. On Saba it was particularly plentiful in the luxurious tropic vegetation of the deep mountain guts, as well as in the treefern forest, alongside *Eulampis jugularis*. On St. Eustatius it was common both in the dry vegetation near sea level and in the forest of the Little Mountains and on the slopes of The Quill. In these forests with their lianas, air roots and epiphytic bromeliads this bird appeared to keep more strongly to the shady undergrowth, never ascending to the tops of the trees, as does *Sericotes holosericeus*.

Reproduction cycle — Enlarged gonads were only noted in two specimens: Saba, 6–8.III.1952, testes measuring 2½ × 2 mm. A nest with two incubated eggs was found on 19.II.1952 in a valley of the Little Mountains, St. Eustatius. Some breeding activity appeared to have taken place, therefore, during February and March.

Nest and eggs — The nest and eggs mentioned above were not taken. The nest was an admirably tiny, silky structure, built in a shady place, at the end of low-hanging branches of some scrub growing over a dry erosion bed, slightly above sea level. Eggs white.

Food — The stomachs examined invariably contained the remains of many tiny insects, as well as some viscous liquid. We observed the birds hovering in front of the flowers of *Stenolobium stans* (*Bignoniaceae*) and of *Agave.*

Field observations — Although not less agressive than any of its relatives, this tiny hummingbird seemed afraid of the large long-legged wasps, known as "Jack Spaniards", from which they invariably fled.

Zoogeography — *Orthorhyncus c. exilis* inhabits the greater part of the Lesser Antilles, from St. Lucia in the south to Anguilla and the Virgin Islands in the north.

The monotypic genus *Orthorhyncus* is confined to the Lesser Antilles and Tobago, where it occurs in 4 subspecies. Its autochthonous origin in the West Indies seems likely, but cannot be proved; the family is at all events South American by origin. The genus is closely related in structure, although differing in colour pattern, to *Chrysolampis* from northern South America.

Protective measures — Protected by law (WESTERMANN 1946, p. 82).

42 **Ceryle alcyon alcyon** (Linnaeus)

Belted Kingfisher

Alcedo alcyon LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 115 — South Carolina.
Megaceryle alcyon alcyon, DANFORTH 1930, p. 46 (St. Martin).
„S.reptoceryle Alcyon A.", KRUYTHOFF 1939, p. 53 (St. Martin, Saba, St. Eustatius).

Native name — *Kingfisher*; *whelkcracker?* (St. Martin; KRUYTHOFF).

ST. MARTIN. — Winter visitor.

ST. MARTIN: *Simpson Bay Lagoon*, 14.II.1952 (1 ♂ ad.).

Taxonomy —
Iris brown; bill black, base olive; legs and feet greyish brown, soles ochraceous.
Measurements — ST. MARTIN: ♂ ad., wing 164, tail 92, bill from nostril 53.

Status — The only pertinent previous record is that by DANFORTH (*l.c.*), who observed the kingfisher on many occasions on St. Martin in December 1927. KRUYTHOFF's records of the occurrence of this species in the other islands are not substantiated.

Our own records are restricted to St. Martin.

Biotope — Vegetative borders of coastal bays and salt ponds, as well as the edges of mangroves.

Field observations — Regularly seen on St. Martin, flying low at full speed over Great Bay and Simpson Bay. We observed it occasionally perching on the telephone wires along the road bordering the salt ponds behind Philipsburg. On such occasions it was extremely tame and we could approach it to within a few meters. All specimens observed were males; it is possible, of course, that all these observations refer to one single individual, which was finally shot.

Distribution — *Ceryle a. alcyon* is a breeding bird from the greater part of

eastern North America. It is an abundant winter visitor and migrant throughout the West Indies.

Protective measures — Not protected by law.

43A **Tyrannus dominicensis dominicensis** (Gmelin)

Grey Kingbird

Lanius dominicensis GMELIN, Syst. Nat. 1, 1, 1788, p. 302 — Hispaniola.

43B **Tyrannus dominicensis vorax** Vieillot

Large-Billed Kingbird

Tyrannus vorax VIEILLOT, Nouv. Dict. Hist. Nat. nouv. éd. *35*, 1819, p. 90 — Martinique.

Tyrannus dominicensis, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 108 (St. Eustatius).

Tyrannus dominicensis dominicensis, RIDGWAY, *4*, 1907, p. 708 (St. Martin, St. Eustatius); HELLMAYR, *5*, 1927, p. 111 (St. Eustatius); BRODKORB, Auk *67*, 1950, p. 340 (St. Martin, St. Eustatius).

Tyrannus dominicensis vorax, DANFORTH 1930, p. 46 (St. Martin, St. Eustatius); DANFORTH 1939, p. 509 (Saba?); BRODKORB, Auk *67*, 1950, p. 342 (St. Eustatius); BOND 1951, p. 13 (St. Eustatius).

"*Tyrannus Dominicensis*", KRUYTHOFF 1939, p. 54 (St. Martin, Saba, St. Eustatius).

Native name — *Chincherry* (St. Martin); *woodpecker* (Saba, St. Eustatius).

ST. MARTIN, SABA, ST. EUSTATIUS (*dominicensis*). — Resident; perhaps partly migratory.

ST. EUSTATIUS (*vorax*). — Casual straggler.

ST. MARTIN (*dominicensis*): *Cul-de-Sac Valley*, 5.II.1952 (1 ♂ ad.); *Lower Prince's Quarter*, 4.II.1952 (1 ♀ ad.); *Bellevue*, 2.II.1952 (1 ♂ ad., 1 ♂ imm.). ST. EUSTATIUS (*dominicensis*): near *White Wall*, 18.II.1952 (1 ♂ ad., 1 ♂ semi-ad., 1 ♂ imm., 1 ♀ imm., 1 imm.).

Taxonomy — Compared with 4 adult specimens from the southern Lesser Antilles (2 Dominica, 1 St. Vincent, 1 Barbados) belonging to the race *vorax* our birds are decidedly of a more pure grey above, almost matching "*Light Neutral Gray*", less tinged with brownish grey and the bill is generally definitely more slender and less swollen (see measurements). The colour of the upper parts of the adult birds from St. Martin and St. Eustatius almost matches RIDGWAY's "*Light Neutral Gray*".

Adult birds differ from juveniles by having strongly attenuated primaries, light grey edges to the brownish grey upper wing coverts (uniform brownish in juveniles), a sharply defined black ear stripe, a greater extension of the orange crown patch and generally lighter grey upper parts.

As individuals belonging to either the race *dominicensis* or *vorax* are easily distinguished I must assume that BRODKORB (*l.c.*), when referring to a single speci-

men of *vorax* from St. Eustatius, as against 7 of *dominicensis* from the same island, intended to indicate that the breeding population from St. Eustatius belongs to *dominicensis*, whereas *vorax* might be considered a casual straggler from one of the neighbouring islands such as Montserrat, Barbuda, or Antigua. The series collected by us on St. Martin and St. Eustatius confirms BRODKORB's statements.

Measurements — ST. MARTIN (*dominicensis*): ♂ ad., wing 117.5, 121, tail 96, 102, bill (measured from forehead) 29.5, 31, tarsus 19, 19; ♀ ad., wing 115.5, tail 95, bill 31, tarsus 19; ♂ imm., wing 113, tail 91.5, bill 31, tarsus 19. ST. EUSTATIUS (*dominicensis*): ♂ ad., wing 119, tail 97, bill 30, tarsus 19; ♂ imm., wing 114, 117, tail 91.5, 94, bill 32, tarsus 19, 19.5; ♀ imm., wing 111.5, tail 89, bill 30.5, tarsus 19.5.

The tail/wing ratio in adult birds varies between 80.3 and 85.2%, average 82.6%; in immature birds this ratio is 79.8–82.4%, average 80.9%.

The following is a comparison of the measurements of the bill in males of *dominicensis* (St. Martin, St. Eustatius) and *vorax* (Dominica, Barbados). Females would appear to be slightly smaller.

Length of bill, measured from forehead:

St. Martin — St. Eustatius	29.5–32	average	(5)	30.7
Dominica — Barbados	32.5–35.5	average	(3)	34.0

Width of bill at gape:

St. Martin — St. Eustatius	13 –14	average	(5)	13.7
Dominica — Barbados	16 –16.5	average	(3)	16.3

Status — The species has been found on St. Eustatius by all previous collectors; DANFORTH (*l.c.*) collected it on St. Martin in 1927. Published records from Saba do not seem to exist.

We found this species quite numerous on St. Martin, but rather scarce on St. Eustatius. On Saba, we observed only one pair, which appeared to be stationary in a quiet and small part of The Bottom.

Biotope — Open and particularly cultivated country at low elevations, with isolated high trees. The kingbird liked to perch on exposed branches of isolated trees and on fence posts, often quite close to human dwellings. We saw them regularly in the high tamarind trees in Philipsburg (St. Martin) and in the gardens of the village The Bottom (Saba). On St. Martin, it was the most conspicuous bird in the meadows, constantly uttering its aggressive call from the top of some isolated shade tree.

Reproduction cycle — None of the collected specimens had enlarged gonads, nor was any breeding activity observed.

Food — The contents of 7 stomachs examined can be classified as follows: insects (7 ×), including many great wasps (5 ×), beetles (2 ×), grasshoppers (1 ×), and a cicada (1 ×); also seeds and drupes (3 ×), among which the seeds of *Cassia bicapsularis*. DANFORTH (*l.c.*) also mentions a great wasp and grasshoppers.

Field observations — A very aggressive species, its sharp call attracting immediate attention ("peecherry"). If often occurred in loose flocks of 5 to 20 individuals, which apparently congregated regularly in the evening.

Zoogeography — *Tyrannus d. dominicensis* occurs throughout the Greater Antilles to the northwestern Lesser Antilles and south to St. Kitts and Nevis, where according to BRODKORB (*l.c.*) it is a permanent resident. In the Bahama

Islands and in the extreme southeastern United States it is replaced by an almost identical form (*fugax*) (BRODKORB).

Tyrannus d. vorax inhabits the Lesser Antilles from Barbuda and Antigua southwards; one straggler has been recorded from St. Eustatius (BRODKORB; see above).

The species breeds in the West Indies and adjacent countries (Florida, Trinidad, Bonaire, Curaçao, perhaps also in continental northern South America). It seems to be an autochthonous species of the West Indies.

Protective measures — Not protected by law. Protective measures have been proposed by WESTERMANN (1946, p. 83). It is a highly beneficial species.

44A **Elaenia martinica riisii** Sclater

Lesser Antillean Elaenia

Elainea riisii SCLATER, Proc. Zool. Soc. London *28*, 1860, p. 314 — St. Thomas.

44B **Elaenia martinica martinica** (Linnaeus)

Muscicapa martinica LINNAEUS, Syst. Nat. ed. 12 *1*, 1766, p. 325 — Martinique.

Elaenia pagana martinica, ALLEN, Bull. Am. Mus. Nat. Hist. *2*, 1889, p. 199 (Saba, St. Eustatius).

Elaenia martinica riisii, HELLMAYR, *5*, 1927, p. 409 (St. Martin); DANFORTH 1930, p. 46 (St. Martin); DANFORTH, Journ. Barbados Mus. Hist. Soc. *5*, 1938, p. 123, 125 (St. Martin, St. Eustatius); DANFORTH 1939, p. 509 (Saba); BOND 1950, p. 103 (St. Martin).

Elaenia martinica martinica, RIDGWAY, *4*, 1907, p. 428 (St. Eustatius); PETERS, Occ. Pap. Boston Soc. Nat. Hist. *5*, 1926, p. 198 (St. Eustatius); HELLMAYR, *5*, 1927, p. 407 (St. Eustatius); DANFORTH 1930, p. 46 (St. Eustatius); BOND 1950, p. 103 (Saba, St. Eustatius).

"*Elaenia Martinica Riisii*", KRUYTHOFF 1939, p. 52 (St. Martin).

Native name — *Cheery-cheer* (St. Martin; KRUYTHOFF), *whistler* (St. Martin).

ST. MARTIN (*riisii*). — Resident.
SABA, ST. EUSTATIUS (*martinica*). — Resident.

ST. MARTIN (*riisii*): Great Bay, 24.XII.1927 (1 ♀, collected by Danforth; U.S. Nat. Mus.); *Great Bay*, 10.II.1952 (1 ♂, 1 ♀); *Lowlands*, 13.II.1953 (1 ♂).
SABA (*martinica*): (1 ♂, collected by Ober; U.S. Nat. Mus.); Spring Bay Gut, 27 and 28.I.1937 (2 ♀, collected by Danforth; U.S. Nat. Mus.); *Ladder Hill*, 1.III.1952 (1 ♀). ST. EUSTATIUS (*martinica*): (1 ♂, 1 ♀, collected by Ober; U.S. Nat. Mus.); 19 and 27.II.1922 (1 ♂, 1 ♀, collected by James L. Peters; Leiden Mus.); *Oranjestad*, along the bay, 20.II.1952 (2 ♂, 1 ♀).

Taxonomy — When seen in a series specimens from Saba (4), St. Eustatius (7), St. Kitts (3) and Dominica (2) are darker olive grey above, particularly on the head and mantle, than birds from St. Martin (4), St. Barts (1), St. John (1), St. Thomas (3), and Vieques Island (1). Birds from this first group of islands (*martinica*) are also darker on the breast and flanks than those from the second group

(*riisii*) in which the olive grey tinge on the breast and flanks is practically lacking. No other differences between the two groups of island populations could be found. The distinction between the two races are very slight and of a clinal nature. There is therefore a good amount of overlap. The darkest individuals I have seen came from Dominica and Saba; the lightest ones from the Virgin Islands. Old specimens of this species seem to be subjected to "foxing" to a high degree.

Iris brown; bill dark horn, base of lower mandible lighter, more flesh colour; legs and feet dark horn or blackish.

Measurements — St. Martin (*riisii*): ♂, wing 72.5, 74.5, 75, tail 63, 66.5, bill (measured from forehead) 15, 15.5, 16; ♀, wing 72.5, tail 62, bill 15.

Saba (*martinica*): ♂, wing 76.5, tail 65, bill 15.5; ♀, wing 74.5, 75, 83, tail 64, 64, 71, bill 14.5, 15, 16.5. St. Eustatius (*martinica*): ♂, wing 79.5, 79.5, 80.5, 81, tail 62.5, 69, 71, 71, bill 15, 15, 15.5, 16; ♀, wing 70.5, 74.5, 81, tail 58, 63, 70.5, bill 15, 15, 15.5.

The following is a comparison of wing measurements:

Dominica (1♂, 1 ♀)	77.5–83.5	
St. Kitts (3 ♂)	79.5–82.5	average 81.0
St. Eustatius (4 ♂, 3 ♀)	70.5–81	average 78.1
Saba (1 ♂, 3 ♀)	74.5–83	average 77.3
St. Barts (1 unsexed)	74.5	
St. Martin (3 ♂, 1 ♀)	72.5–75	average 73.6
Virgin Islands (1 ♂, 1 ♀, 2 unsexed)	73 –80	average 78.0
Vieques Island (1 ♂)	76	

Status — The species was collected by Ober on Saba and St. Eustatius between 1870 and 1880, but was apparently not found on St. Eustatius by Winch in 1890. It was collected by Peters on St. Eustatius in 1922 and by Danforth on St. Martin in 1927 and on Saba in 1937.

We found it locally common on St. Martin and on St. Eustatius, but scarce on Saba.

Biotope — We encountered this species in dense scrub at low elevations, but on Saba it was also observed on the drier slopes up to at least 300 m above sealevel. It was particularly common in the manchioneel bushes along Great Bay, St. Martin, and along the beach below Oranjestad, St. Eustatius. We did not find it in the more luxuriant forest vegetations.

Reproduction cycle — We collected individuals with both enlarged gonads (♂ and ♀, Great Bay, St. Martin, 10.II.1952: testes 7 × 4 mm, largest egg follicle in ovary slightly over 1½ mm) as well as with very small gonads. Some breeding seemed to have taken place therefore in the winter months, although no indication of any breeding activity could be observed from the behaviour of the species.

Food — The stomachs of the specimens collected did not contain the remains of any insects; instead, we found various kinds of rather large seeds. On one occasion a specimen was shot while it was feeding upon the violet berries of a species of *Myrsia* (Saba).

Field observations — This is a very inconspicuous and timid bird, always keeping to dense foliage. It is not easily located unless by its cheerful call, which sounds somewhat like tswee - ee - ee twee - ee - ee.

Zoogeography — *Elaenia m. riisii* inhabits the drier islands of the outer chain

of the northern Lesser Antilles (Antigua, Barbuda, St. Barts, St. Martin, Anguilla, westwards through the Virgin Islands to the islands east of Porto Rico).

Elaenia m. martinica occurs throughout the whole of the Lesser Antilles, except in the northernmost islands inhabited by *riisii*.

The range of the species comprises the Lesser Antilles, Bonaire, Curaçao, and Aruba, as well as the islands of Old Providence and St. Andrews off the coast of Yucatan, providing material for many interesting speculations, while not permitting any definite scientific conclusion. It seems clear, however, that *E. martinica* is unable to withstand competition from any of its related species (*e.g. E. flavogaster*; see BOND 1948, p. 222–223), so that one would be justified in considering the present range of *martinica* as a relict range. Evenso, the distributional origin of the species is still unknown.

Protective measures — Not protected by law, but protection has been recommended by WESTERMANN (1946, p. 86), with whom I fully agree.

45 **Progne subis dominicensis** (Gmelin)

Purple Martin

Hirundo dominicensis GMELIN, Syst. Nat. *1*, *2*, 1789, p. 1025 — Hispaniola.
Progne dominicensis, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 114 (St. Eustatius); RIDGWAY, *3*, 1904, p. 39 (St. Martin, St. Eustatius).
Progne subis dominicensis, HELLMAYR, *8*, 1935, p. 15, 16 (St. Martin, St. Eustatius); BOND 1950, p. 107 ("not yet recorded from Saba").

Native name — unknown.

ST. MARTIN, SABA, ST. EUSTATIUS. — Probably breeding; migratory.

No material.

Status — The only collected specimens I know of are those taken by WINCH on St. Eustatius in 1890 (CORY *l.c.*).

We observed purple martins on Saba and St. Eustatius, but failed to collect any specimens. On 18.II.1952 we observed two individuals flying over the southwestern coast of St. Eustatius. On 2.III.1952 about five of these swallows were hunting low over the steep slopes near St. Johns, Saba; a solitary specimen was observed on Saba a few days later (5.III.1952). All these purple martins were glossy bluish black, except for a white lower breast and abdomen.

Zoogeography — *Progne s. dominicensis* is a breeding bird of the Greater and Lesser Antilles, with the exception of Cuba and neighbouring islands. Other races inhabit the greater part of North America. It is a typically American genus, but whether it is of a nearctic or of a South American origin is hard to say.

Protective measures — Not protected by law.

46 **Hirundo rustica erythrogaster** Boddaert

Barn Swallow

Hirundo erythrogaster BODDAERT, Tabl. Pl. Enl., 1783, p. 45 — Cayenne.

Hirundo rustica erythrogaster, DANFORTH 1930, p. 46 (St. Martin).
"Hirundo Erythrogaster", KRUYTHOFF 1939, p. 51 (St. Martin, Saba, St. Eustatius).

Native name — unknown.

ST. MARTIN. — Winter visitor (and migrant).

No material.

Status — The only pertinent record is by DANFORTH (*l.c.*), who observed a single barn swallow flying over the mangroves at Simpson Bay, St. Martin, on 23.XII.1927.

We did not observe this species.

Distribution — The American barn swallow is a breeding bird of North America. It winters all over Central and South America and is a common passenger migrant in the West Indies, where occasionally some individuals seem to spend the whole winter (BOND).

Protective measures — Not protected by law.

47 **Allenia fusca** (P. L. S. Müller) Plate IV

Scaly-Breasted Thrasher

Muscicapa fusca P. L. S. MÜLLER, Natursyst. Suppl., 1776, p. 170 — Martinique.
Allenia montana, CORY 1891, p. 42, 47 (St. Eustatius); CORY 1892, p. 121 (St. Eustatius).
Allenia apicalis, RIDGWAY, *4*, 1907, p. 263 (Saba, St. Eustatius); DANFORTH 1930, p. 46 (St. Eustatius).
Allenia fusca, HELLMAYR, *7*, 1934, p. 340 (St. Eustatius); DANFORTH 1939, p. 511 (Saba); BOND 1950, p. 113 (Saba, St. Eustatius).

Native name — *Thrush*; *Black-billed thrush* (Saba).

SABA, ST. EUSTATIUS. — Resident.

SABA: near *The Bottom*, 3, 5 and 8.III.1952 (5 ♂).

Taxonomy — As topotypical specimens from Martinique were not available I rely upon RIDGWAY and HELLMAYR for the statement that there is no appreciable geographical variation in the colour of the upper parts. Indeed, the colour of the upper parts (as well as the brown coloration of the breast) varies to quite a considerable extent in the small series from Saba. This variation seems partly due to different stages of wear and bleaching. For variations in measurements, see RIDGWAY *l.c.*, p. 263.

Iris pale or light yellow, with an outer circle of orange; bill black; legs and feet dark horn, soles pale yellow.

Measurements — SABA: ♂, wing 121, 125, 125.5, 125.5, 126, tail 97.5, 98, 100, 101, 103, bill from forehead 24, 24, 24.5, 25, 25.5.

Status — Apart from the older specimens, which were probably collected by OBER on Saba and by WINCH on St. Eustatius, the only other published records are those by DANFORTH, who observed the species on St. Eustatius in 1927 at the

base of the volcano; in 1937 the same author collected specimens on Saba at Spring Bay and on a wooded hillside near Windwardside. BOND (*in litt.*) collected a specimen of this thrasher on Saba in 1928.

We found it a rather common bird in all the well-wooded parts of Saba, but we have no pertinent observations from St. Eustatius, where — as on St. Martin — all the thrashers observed and collected had a long flesh-coloured bill and light eyes, proving that they belonged to *Margarops fuscatus* and not to the species now under discussion.

Biotope — Observed only in mesophytic forests and in gardens with a luxuriant growth. It was not seen in the more arid regions of bush or savanna vegetation. It seemed to prefer the dense foliage of high trees and was met with in almost every well-wooded ravine of Saba. The biotope is apparently the same as that preferred by *Margarops fuscatus*, but *Allenia* seems to keep to a denser foliage and to the tops of higher trees, than the other species. Still, *Allenia* has often been found in company with *Margarops*, particularly in fruit bearing mango trees. *Margarops* seems to be superior in habits to *Allenia*: we often observed *Margarops* chasing *Allenia*, but failed to see the reverse. Like *Margarops* the present species is strictly arboreal in its habits.

Reproduction cycle — The gonads of two of the males collected were enlarged, the testes measuring up to $8\frac{1}{2} \times 6$ mm (5.III.1952); the gonads of two other specimens collected on the same date were extremely small, measuring no more than 2×1 mm. It was probably not a coincidence that the birds with active gonads were in a freshly moulted plumage, whereas the feathers of the non-breeding birds were rather worn all over the body. One of the males with small gonads was collected while singing loudly (8.III.1952)! I am unable to form an opinion as to whether these data indicate that there is an irregular breeding season or whether the non-breeding males were still immature. According to BOND (Auk *58*, 1941, p. 371) the eggs of this species from Saba are somewhat darker than those from Dominica.

Food — Four stomachs examined contained nothing but the remains of fruits, including some violet berries, called "monkey berries" (*Myrsia*).

Field observations — In the field this thrasher closely resembles *Margarops fuscatus*, from which it could be positively distinguished by its bill being shorter and black, instead of being longer and yellowish horn. Its more slender appearance and darker colouring of the head and mantle were conspicuous, both when perched and in flight. It was less stealthy and more bulbul-like in habit, than *Margarops*. The call note was a high and fine squeak, different to that of *Margarops*. Its song was chattering and resembled that of *Margarops*, but was softer and higher pitched. When singing this thrasher flapped regularly with slightly lowered wings, in nearly the same way as the European starling (*Sturnus vulgaris*).

Zoogeography — *Allenia fusca* ranges in the Lesser Antilles, from Saba and Barbuda in the north to Grenada (accidental?) and Barbados in the south.

It is an endemic, monotypic genus of the Lesser Antilles, probably more or less autochthonous, of Tropical North American origin, like the majority of the members of the thrasher family. — It is not clear to me why the genus *Allenia* has been maintained by recent authors, instead of being lumped with *Margarops*.

Protective measures — Not protected by law.

48 **Margarops fuscatus fuscatus** (Vieillot)

Pearly-Eyed Thrasher

Turdus fuscatus VIEILLOT, Hist. Nat. Ois. Am. Sept. *2*, 1807, p. 1, pl. 57*bis* — Porto Rico.
Cichlherminia fuscata densirostris, CORY 1891, p. 43, 47 (St. Eustatius).
Margarops fuscatus densitrosris, CORY 1892, p. 121 (St. Eustatius).
Margarops fuscatus fuscatus, RIDGWAY, *4*, 1907, p. 266 (St. Martin, St. Eustatius); DANFORTH 1930, p. 46 (St. Martin, St. Eustatius); HELLMAYR, *7*, 1934, p. 341 (St. Martin, St. Eustatius); DANFORTH 1939, p. 510 (Saba); BOND 1950, p. 113 (St. Martin, Saba, St. Eustatius).
"*Margarops Fuscatus F.*", KRUYTHOFF 1939, p. 57 (St. Martin, Saba, St. Eustatius).

Native name — *Thrush.*

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident.

ST. MARTIN: *Cul-de-Sac Valley*, 6 and 7.II.1952 (5 ♂). SABA: *The Bottom*, 3.III.1952 (1 ♂); *Ladder Hill*, 29.II.1952 (1 ♂, 1 ♀); *The Ladder*, 8.III.1952 (1 ♀); *Saddle*, 1.III.1952 (1 ♂). ST. EUSTATIUS: *Little Mountains*, 19.II.1952 (1 ♀); slope of *The Quill*, 26.II.1952 (1 ♂).

Taxonomy — There is no geographical differentiation between the specimens collected on the various islands. There is a good deal of individual variation, however, in the intensity of the brown pigmentation of the upper parts, apparently the combined result of sunbleaching, wear and individual variation.

No topotypical specimens from Porto Rico were examined. I rely upon RIDGWAY (*l.c.*) and HELLMAYR (*l.c.*), therefore, that the birds from the northern Lesser Antilles do not belong to the darker race *densirostris*.

Iris creamy white; bill light horn, sometimes with the culmen darker; legs and feet light horn.

Measurements — ST. MARTIN: ♂, wing 136, 138, 139.5, 142, 143, tail 111, 117, 117, 118, 119, bill (measured from forehead) 31, 31.5, 32, 32.5, 33, tarsus 37, 37, 37, 38.5, 39. SABA: ♂, wing 139, 141.5, 142, tail 110, 116, 118, bill 32, 32.5, 33.5, tarsus 37, 38.5, 39; ♀, wing 137, 142, tail 113, 114, bill 32, 33.5, tarsus 38.5, 39. ST. EUSTATIUS: ♂, wing 143, tail 113, bill 33.5, tarsus 37; ♀, wing 132.5, tail 106, bill 34, tarsus 37.

Status — The species has been recorded by all previous collectors as a fairly common bird on all three islands. DANFORTH (*l.c.*) referred to it as the most common bird on Saba.

We also found it a common bird on St. Martin and especially on Saba. On St. Eustatius it was much less abundant and not met with in the vicinity of human habitations, as on the other islands. It was, however, the commonest bird in the forest down in the crater of The Quill.

Biotope — On St. Martin the "thrush" was observed in practically all kinds of scrub and forest vegetation, from the gardens in Philipsburg and the scattered trees along the roads, to the dense scrub on the higher hills. We did not see it in the manchioneel bushes bordering some of the bays, nor in mangroves. — On Saba it occurred in gardens, in dense scrub vegetation and in the mountain forests,

but we did not see it at altitudes exceeding 500 m above sealevel in the cloud-forest with large-leaved arums and treeferns, where it seemed to be replaced by *Cinclocerthia ruficauda*. — On St. Eustatius it was only found in the densest scrub and in the forest of the Little Mountains, on the slope of The Quill and in the high trees of the rain forest in the crater of the volcano. It is a strictly arboreal species.

Reproduction cycle — Males with both small and enlarged gonads have been collected. I am not sure, however, that those with tiny gonads are mature, as they include specimens with a rather heavy body-moult, whereas others do not show any moult at all. The males, with enlarged gonads (testes varying between 5 × 4 and 9 × 7 mm) did not show any sign of a body-moult which would seem to corroborate this point. None of the females showed signs of an active ovary or swollen oviduct. All these facts indicate that some breeding activity at least was taking place during the time of our visit.

According to BOND (Auk *58*, 1941, p. 372) "on Saba this thrasher is said to nest frequently on the side of a steep cliff".

Food — Bearing out DANFORTH'S (*l.c.*) findings reporting up to 73% of various fruits in 4 stomachs examined (Saba), we too, only found a trace of animal matter (a few insect shields) in one of the 11 stomachs opened for examination: all others contained the remains of several kinds of fruit: soursop (*Annona muricata*) 4 ×, myrtle berries (*Eugenia*) 3 ×, figs (*Ficus ?populnea*) 2 ×, mango 1 ×. In addition we also observed this species feeding on the berries of several other species of *Eugenia*, the fruits of guava (*Psidium guajava*), those of a species of fan-palm (*Licuala grandis*), as well as the sweet red fruits of some *Opuntia*. The birds often congregated in large flocks in fig trees and soursops bearing ripe fruits. The animal matter recorded by DANFORTH (*l.c.*) included a lizard (*Anolis*), caterpillars, and other insects.

Field observations — This is a rather shy species, which is easily located however, by its thrush-like calls. It is also thrush-like in its appearance and more robust than its relative *Allenia fusca*, from which it can be definitely distinguished in the field by its longer and yellowish bill and the whitish colour of the eye. Its illusive habits were replaced to a certain extent by more conspicuous activity in the short period of morning and evening twilight, the birds sometimes emitting quite a pleasant song from a conspicuous post at the top of a small tree. The song itself is very varied, not unlike that of the European starling (*Sturnus vulgaris*), but softer and more thrush-like. It was the only bird I heard singing after sunset. Its song was heard as late as 21.00 h. near Philipsburg (St. Martin). Its warning call was a very unpleasant and harsh scream and strongly reminded us to the querulous call of the European black-headed gull (*Larus ridibundus*).

Zoogeography — *Margarops f. fuscatus* ranges throughout the northwestern Lesser Antilles, from Antigua and Barbuda north to the Virgin Islands; it also inhabits Porto Rico and the southern Bahamas. Another race occurs in the southern Lesser Antilles and isolated insular populations live on the Hermanos Islands and Bonaire in the southern Caribbean Sea.

Margarops is a monotypic genus, endemic to the West Indies, where it probably occurs both as an autochthonous element and as a relict.

Protective measures — Not protected by law.

49 **Cinclocerthia ruficauda pavida** Ridgway Plate IV

Trembler

Cinclocerthia ruficauda pavida RIDGWAY, Smiths. Misc. Coll. *47*, 1904, p. 113 — St. Kitts (also mentioned from St. Eustatius and Saba).

Cinclocerthia ruficauda pavida, DANFORTH 1939, p. 510 (Saba); HELLMAYR, *7*, 1934, p. 344 (Saba, St. Eustatius); BOND 1950, p. 114 (Saba, St. Eustatius).

Native name — *Trembler* (Saba).

SABA, ST. EUSTATIUS. — Resident.

SABA: northern slope of *The Mountain*, 4 and 6.III.1952 (2 ♀).

Taxonomy — Comparative material was not available. Still, I feel confident in relying upon other authors, who maintain that birds from St. Kitts, St. Eustatius and Saba are indistinguishable.

Iris orange or orange yellow; bill black; legs and feet light horn colour, soles yellowish.

Measurements — SABA: ♀, wing 104, tail 83, 89, exposed culmen 39.5, 39.5, bill from forehead 42.5, 43.5, tarsus 31, 31.5.

DANFORTH (*l.c.*) gives the following measurements of birds from Saba: 2 ♂, wing 101.4, 103, tail 84, 87.1, culmen from base 34.9, 38.5, tarsus 29.2, 29.4; ♀, wing 99.8, tail 88.3, culmen from base over 40, tarsus 30.8.

Status — The specimens from Saba and St. Eustatius mentioned by RIDGWAY (*l.c.*) were collected by OBER between 1870 and 1880 (FRIEDMANN *in litt.*). I know of no recent record of the trembler from St. Eustatius, where BOND (*l.c.*) fears it might have been extirminated. Both BOND (*in litt.*) and DANFORTH (*l.c.*) found the species on Saba, the first author in 1928, the second in 1937. In addition, BOND (Auk *58*, 1941, p. 372) claims to have eggs of this species from Saba.

Not only did we find the trembler in very small numbers on the higher slopes of The Mountain on Saba, but I am also sure that the — at that time unknown — calls I heard in the isolated forest in the crater of The Quill on St. Eustatius on 23.II.1952 were uttered by this species: After hearing the trembler's call on Saba I immediately recognized the unknown voice from St. Eustatius.

Biotope — The tremblers on Saba frequented the shady undergrowth of the dense cloud-forest covering the steep slopes of The Mountain, in which treeferns, lianas, and arums with huge leaves abounded. We did not see the species below 450 m altitude. On St. Eustatius, we heard the trembler in the damp undergrowth of the tropical rain forest in the crater of The Quill. On Saba neither *Margarops fuscatus*, nor *Allenia fusca* were observed in the biotope of *Cinclocerthia*. In the crater forest of The Quill, however, both *Margarops* and *Cinclocerthia* occurred. *Cinclocerthia* seemed to favour the undergrowth, *Margarops* apparently preferred tree tops.

Reproduction cycle — In both specimens collected the ovary was inactive and the oviduct unswollen, though conspicuously twisted. Nothing is known about the breeding time. BOND (Auk *58*, 1941, p. 372) tells that eggs of this species from Saba are darker than those from Dominica.

Food — The stomachs of the specimens examined contained the remains of very large insects (beetle, grasshopper or cycada). DANFORTH (*l.c.*) examined the

contents of 3 stomachs and reports 90% land snails (*Helicina fasciata*), 7% beetles and 3% other insects.

Field observations — The tremblers were not particularly shy, but owing to their stealthy habits in dense undergrowth they were difficult to observe, although their call — once known — made their detection a simple matter. Their curious habit of "trembling" with slightly lowered wings was very striking.

Zoogeography — *Cinclocerthia r. pavida* is found throughout the northern Lesser Antilles, from Montserrat in the south to Saba in the north.

Cinclocerthia is an endemic Lesser Antillean genus with one species, occurring in 7 slightly distinct races from St. Vincent to Saba. It seems probable that it did not arise as a genus in the Lesser Antilles, but more likely originated in late tertiary Tropical North America, like so many other specialized forms of the thrasher family. Its range in the Lesser Antilles may indicate both a relict and a refuge area.

Protective measures — Not protected by law. Apparently a vanishing species, at all events very rare. Owing to its biotope of virgin forest it is not directly threatened by man, but the species would wholly disappear following any further extension of cultivation. Nature protection rather than bird protection would save this species.

50A **Vireo altiloquus altiloquus** (Vieillot)

Black Whiskered Vireo

Muscicapa altiloqua VIEILLOT, Hist. Nat. Ois. Am. Sept. *1*, 1807, p. 67, pl. 38 — Greater Antilles.

50B **Vireo altiloquus barbadensis** (Ridgway)

Vireosylvia calidris var. *barbadensis* RIDGWAY, in BAIRD, BREWER & RIDGWAY, Hist. North Am. Birds *1*, 1874, p. 359 — Barbados.

Vireo calidris, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 115 (St. Eustatius).
Vireosylva calidris calidris, RIDGWAY, *3*, 1904, p. 138 (Saba).
Vireo altiloquus altiloquus, HELLMAYR, *8*, 1935, p. 147 (Saba).
Vireosylva calidris barbadensis, RIDGWAY, *3*, 1904, p. 140 (St. Eustatius); CLARK, Proc. Boston Soc. Nat. Hist. *32*, 1905, p. 290 (St. Eustatius).
Vireo altiloquus barbadensis, HELLMAYR, *8*, 1935, p. 148 (St. Eustatius).

Native name — *Fowl bird* (St. Eustatius).

SABA (*altiloquus*). — Resident?
ST. EUSTATIUS (*barbadensis*). — Probably resident.

SABA (*altiloquus*): (1 ♀; U.S. Nat. Mus.).
ST. EUSTATIUS (*barbadensis*): *Little Mountains*, 19.II.1952 (3 ♂); slope of *The Quill*, 23.II.1952 (1 ♂).

Taxonomy — The only specimen from Saba (*altiloquus*), which has been first mentioned by RIDGWAY (*l.c.*), has the crown an olivaceous brown, not greyer than the mantle and remaining upper parts, which are greenish. There is hardly an indication of a dark line bordering the crown laterally. The superciliary line is

buffish brown and the ear coverts are buffish. The specimen has been directly compared with 2 *barbatulus* and 4 *barbadensis*.

The specimens from St. Eustatius (*barbadensis*) are very distinct from that from Saba. They have the crown a rather dark brownish grey, bordered laterally by a blackish line. The superciliary line and the sides of the head are tinged with buffish grey. Compared with 2 specimens from Dominica and 2 from St. Vincent (also considered to be *barbadensis*), they are less pure greenish above, more greyish olive, while the dark lines bordering the grey crown are narrower and less conspicuous. The sides of the breast are paler and less tinged with dusky olive. HELLMAYR (*l.c.*, p. 149, footnote), however, who also examined 11 specimens from St. Eustatius and several from the southern Lesser Antilles (Sa Lucia 10, St. Vincent 5), considers a subdivision of Lesser Antillean vireos impracticable. Having no further material at hand and bearing in mind CLARK's comments (*l.c.*, p. 291–292) on the great effect of feather wear and fading in this species, I think I must accept HELLMAYR's opinion.

Iris reddish brown; bill horn colour, base of lower mandible lighter; legs and feet bluish grey or lead-blue.

Measurements — SABA (*altiloquus*): ♀, wing 83, tail 56.5, bill broken.

ST. EUSTATIUS (*barbadensis*): ♂, wing 75, 80, 80, 85, tail 54, 57, 59, 60, bill from forehead 22, 22, 22.5, 23.

Status — Apart from the specimen from Saba in the United States National Museum, no information being available regarding its collector, the specimens obtained by WINCH on St. Eustatius in 1890 seem to represent the only previous records of the occurrence of this species in the Netherlands Lesser Antilles.

On Saba the vireo was rather scarce; we observed it on three separate occasions on the slopes of The Mountain, but failed to collect it (29.II.1952, 1 and 6.III.1952). On St. Eustatius, however, the vireo was not uncommon; we observed it in the centre of the small village Oranjestad, on the higher parts of the Little Mountains and on the slopes of the volcano.

Biotope — We invariably encountered the vireo on Saba in the upper strata of the luxuriant forests in the steep mountain guts, where it was very difficult to get a glance of it. On St. Eustatius we observed it in the large shade trees in the village of Oranjestad, as well as keeping to the dense foliage in the high trees in the forest.

Reproduction cycle — The gonads of the specimens collected were very small (testes not exceeding 2 × 2 mm). Although we frequently observed vireos singing and chasing each other, none of these birds on examination, appeared to be in breeding condition.

Food — Three stomachs examined contained a mixed assortment of animal and vegetable matter: green grasshoppers (1 ×), small black beetles (1 ×), fruits and seeds (2 ×).

Field observations — The song, as heard on St. Eustatius, was short, but very pleasant; it usually ended in a cheerful whistle, sounding somewhat like "John Stirrup", which is one of the local names for the species on other Lesser Antillean islands.

Zoogeography — *Vireo a. altiloquus* inhabits the Greater Antilles, except Cuba, east to the Virgin Islands; probably also including Saba, although the only specimen definitely known to have come from that island does not necessarily re-

present the breeding population of this migratory species and might be a straggler!

Vireo a. barbadensis inhabits St. Croix and the Lesser Antilles south to Trinidad (BOND). On Saba it is perhaps replaced by the previous race.

Vireo altiloquus is the Caribbean representative of the red-eyed vireo (*Vireo olivaceus*) from North and Central America and *Vireo chivi* of South America. Vireos are strictly American birds, which probably originated south of the Nearctic region.

Protective measures — Not protected by law.

51 **Coereba flaveola bartholemica** (Sparrman)

Bananaquit

Certhia bartholemica SPARRMAN, Mus. Carlson. *3*, 1788, pl. 57 — St. Barts.
Certhiola dominicana, RIDGWAY, Proc. U.S. Nat. Mus. *8*, 1885, p. 28 (Saba, St. Eustatius); CORY, The birds of the West Indies, 1889, p. 66 (Saba, St. Eustatius).
Coereba dominicana, CORY 1891, p. 39, 47 (Saba, St. Eustatius).
Coereba bartholemica, CORY 1892, p. 116 (Saba, St. Eustatius); DANFORTH 1939, p. 511 (Saba).
Coereba bartolemica, RIDGWAY, *2*, 1902, p. 419 (Saba, St. Eustatius); LOWE, Ibis, 1912, p. 520, 521 (St. Eustatius).
Coereba bartolemica bartolemica, DANFORTH 1930, p. 47 (St. Martin, St. Eustatius).
Coereba flaveola bartholemica, HELLMAYR, *8*, 1935, p. 307 (St. Martin, Saba, St. Eustatius); DANFORTH 1939, p. 511 (Saba); BOND 1950, p. 130 (St. Martin).
Coereba flaveola dominicana, BOND 1950, p. 130 (Saba, St. Eustatius).
"*Coereba Newtonia*", KRUYTHOFF 1939, p. 57 (St. Martin, Saba, St. Eustatius).

Native name — *Yellowbreast.*

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident.

ST. MARTIN: *Great Bay*, 4.II.1952 (1 ♂ ad., 1 ♂ juv.); *Cul-de-Sac Valley*, 6.II.1952 (4 ♀ ad.); *Lower Prince's Quarter*, 4.II.1952 (1 ♂ ad.). SABA: *The Bottom*, 6.III.1952 (1 ♂ ad.); *Ladder Hill*, 6 and 8.III.1952 (3 ♂ ad., 1 ♀ ad.); *Don Gut*, 6.III.1952 (1 ♂ ad.). ST. EUSTATIUS: 26.II.1922 (1 ♂ ad., 1 ♀ ad., collected by James L. Peters; Leiden Mus.); *Oranjestad*, 20.II.1952 (1 ♀ juv.); *Little Mountains*, 19.II.1952 (1 ♂ ad.); *English Quarter*, 21.II.1952 (1 ♀ ad.); crater of *The Quill*, 23.II.1952 (1 ♂ ad.).

Taxonomy — The specimens from St. Martin are slightly paler below than those from Saba and St. Eustatius, which are a deeper golden yellow. According to BOND, who regards birds from St. Martin as *bartholemica* and those from Saba and St. Eustatius as *dominicana*, "the long series of *Coereba* from the northern Lesser Antilles in the Museum of Comparative Zoology clearly shows that birds from north of the Saba-Montserrat chain have paler yellow under parts" (*in litt.*). The difference between the series from St. Martin, Saba and St. Eustatius is, however, extremely slight and only visible under favourable lighting conditions. Hence, I do not hesitate, therefore, in treating these birds under one subspecific name.

Bananaquits show a rather conspicuous individual variation. The birds collected by our party are commented on below:

Wing spot. This is formed by the white base of the primaries, which may or may not extend beyond the primary coverts.

(a) White bases are small and concealed; hence there is no wing spot visible: St. Martin (0%), Saba (17%), St. Eustatius (40%). (b) White bases are large, clearly visible beyond primary coverts, forming a well pronounced white wing spot: St. Martin (83%), Saba (0%), St. Eustatius (40%). The remaining specimens are intermediate.

Colour of upper parts. All specimens are in a comparatively fresh plumage; evenso, there is a great deal of variation in the colour of the upper parts, graduating from between *"Deep Mouse Gray"* and *"Dark Mouse Gray"* (St. Martin, nr. 10904) to between *"Blackish Mouse Gray"* and *"Black"* (Saba, nr. 10910).

Other characters showing individual, but no geographical variation are the amount of the anterior extension of the white superciliary stripe, the extension of the greyish white patch on the forehead and the amount of yellow feathers in the superciliary stripe (in most cases retention from juvenile plumage).

Young birds are much paler and duller throughout and have greenish yellow superciliaries.

Iris brown; bill black, gape fleshy red; legs and feet dark bluish grey or blackish.

Measurements — ST. MARTIN: ♂ ad., wing 63, 63; ♀ ad., 56, 57.5, 58.5, 61.5. SABA: ♂ ad., wing 61.5, 62, 63, 64, 64.5; ♀ ad., wing 59.5. ST. EUSTATIUS: ♂ ad., wing 61.5, 62, 64.5, ♀ ad., 56.5, 59.

Status — The species has been found on Saba and St. Eustatius by all previous collectors; the first authentic record from St. Martin was probably not made before 1927 by DANFORTH (*l.c.*).

We found it plentiful in all three islands, although least common on Saba — as also noticed by DANFORTH (*l.c.*).

Biotope — We found almost every kind of biotope inhabited by bananaquits, except perhaps the mangroves on St. Martin. Although commonest in the dry scrub vegetations and in the gardens of the small villages these birds were also met with in the more luxuriant forest of the Little Mountains and in the rain forest down in the crater of The Quill on St. Eustatius, where they were moving in the upper branches of the tallest forest trees, among the many epiphytic bromeliads, orchids, lianas and the large leaves of the breadfruit tree (*Artocarpus incisa*). On Saba they were rather scarce in the gardens of The Bottom, but they were met with more frequently on sunny patches on the mountain slopes, as well as in forest shades in deep ravines. They were remarkably abundant in certain parts of the treefern forest at about 650 m altitude, which was also the home of the trembler (*Cinclocerthia ruficauda*) and the garnet-throated hummingbird (*Eulampis jugularis*).

Reproduction cycle — Conspicuously enlarged gonads were found in 6 of the 9 males examined (67%), the testes measuring up to 5 × 4 mm. Definitely swollen and twisted oviducts and swollen egg follicles were present in 3 of the 6 females examined (50%), the follicles measuring up to 6 mm in diameter. In addition, the collecting of two very immature specimens (4 and 20.II.1952) and the observation of a nest with young on 13.II.1952 (Lowlands, St. Martin) and an occupied nest on 6.III.1952 (northern slope of The Mountain, Saba) indicate that there was a considerable breeding activity on all three islands at the time of our visit.

Food — The stomach, in 4 of the 6 instances, contained the remains of small insects (67%); vegetable matter, including small seeds of various kinds, however, was present in equally 4 cases (67%). Among the insects, we found many small *Diptera* and *Coleoptera*, as well as beetle-larvae of 4 mm in length and a large green caterpillar. Bananaquits have often been seen examining telephone wires, fences, posts, and the walls of houses, apparently in search of insects and small spiders. One specimen, which was shot, while feeding upon the large yellow blossom of a large agave, had many small insects in its stomach and a fresh dipteron in the oesophagus. On St. Martin we observed a bananaquit, seated on the trumpet-like yellow flowers of the yellow blossom (*Stenolobium stans*) and picking in the calices, apparently in search of both insects and nectar. On examination, it appeared that almost every one of the many flowers in that part of the scrub contained one or more holes at the bottom of the calyx, similar to those made in other countries by short-tongued bumble bees when extracting the nectar from certain kinds of flowers, without fertilizing them!

Zoogeography — *Coereba f. bartholemica* (including *dominicana*) inhabits the northern Lesser Antilles from Anguilla to Dominica.

This species of bananaquit is widespread in tropical Central and South America, where it occurs in a great many of subspecies. BOND (1950) lists as many as 17 insular races within the West Indies. The species is of South American origin and is as prolific in its distribution as it is ubiquitous in its choice of biotope.

Protective measures — Protected by law (WESTERMANN 1946, p. 82).

52 **Mniotilta varia** (Linnaeus)

Black-and-White Warbler

Motacilla varia LINNAEUS, Syst. Nat. ed. 12 *1*, 1766, p. 333 — Hispaniola.
Mniotilta varia, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 117 (St. Eustatius); DANFORTH 1930, p. 47 (St. Martin); HELLMAYR, *8*, 1935, p. 333 (St. Eustatius); BOND 1950, p. 132 (St. Martin, St. Eustatius).

Native name — unknown.

ST. MARTIN, ST. EUSTATIUS. — Winter visitor.

No material.

Status — This species was collected by WINCH on St. Eustatius in 1890 (CORY *l.c.*) and by DANFORTH (*l.c.*) on 24.XII.1927 on St. Martin in "thick manchineel thicket" (*Hippomane mancinella*).

We observed one or two single birds of this species in dense scrub in Cul-de-Sac Valley, St. Martin, on 6.II.1952 and one in the dry forest on the lower slopes of The Quill, St. Eustatius, on 26.II.1952.

Distribution — *Mniotilta varia* is a breeding bird of North America. It winters in Central America and northern South America, as well as in the West Indies, where it is a common winter resident, except in the Lesser Antilles, where it is rather rare (BOND).

Protective measures — Not protected by law.

53 **Parula americana pusilla** (Wilson)

Parula Warbler

Sylvia pusilla WILSON, Am. Orn. *4*, 1811, p. 17, pl. 28, fig. 3 — Pennsylvania.
Compsothlypis americana, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 117 (Saba).
Compsothlypis americana pusilla, DANFORTH 1930, p. 47 (St. Martin); HELLMAYR, *8*, 1935, p. 348 (St. Eustatius); DANFORTH 1939, p. 511 (Saba).
Parula americana pusilla, BOND 1950, p. 135 (St. Martin, Saba, St. Eustatius).

Native name — unknown.

ST. MARTIN, SABA, ST. EUSTATIUS. — Winter visitor.

ST. MARTIN: *Cul-de-Sac Valley*, 6.II.1952 (2 ♂), *Simpson Bay Lagoon*, 9.II.1952 (1 ♂). SABA: *St. Johns*, 3.III.1952 (1 ♀).

Taxonomy — The female is rather pale yellow on the chest, but the males are brightly coloured with a conspicuous reddish brown chest band, though most of the feathers still have yellow edges. Relatively large in size.

Iris brown; bill dark horn, basal half of lower mandible yellow; legs and feet yellowish brown.

Weight of two males from St. Martin, 6 grammes each.

Measurements — ST. MARTIN: ♂, wing 61.5, 64.5, 64.5, tail 42.5, 44.5, 46. SABA: ♀, wing 57, tail 40.

Status — This species was collected on Saba and St. Eustatius by OBER and by WINCH; it was also found subsequently by DANFORTH on St. Martin (1927) and by DANFORTH and BOND on Saba.

We found this species not uncommon on St. Martin and observed it twice on Saba; we did not see it on St. Eustatius.

Biotope — On St. Martin we found it in the rather dry scrub covering the hills. On Saba we twice observed a solitary bird in the thick and rather humid vegetation in the lower parts of the zone of treefern forest above 450 m altitude.

Food — The stomachs of two specimens collected on St. Martin contained the remains of many small insects; we also found some very small seeds in one of the stomachs.

Distribution — The parula warbler is a breeding bird from eastern North America. In the extreme southeastern part of the United States, the larger race *pusilla* is replaced by a slightly smaller and less brightly coloured form (*americana*). The northern form *pusilla* is a common winter visitor to the West Indies and Central America.

Protective measures — Not protected by law.

54 **Dendroica petechia bartholemica** Sundevall

Golden Warbler

Dendroica petechia a. bartholemica SUNDEVALL, Öfvers. Vetensk. Ak. Förhandl. *26* (1869), 1870, p. 607 — St. Barts.

Dendroica ruficapilla, CORY 1891, p. 47 (St. Eustatius).
Dendroica petechia ruficapilla, CORY 1892, p. 118 (St. Eustatius).
Dendroica petechia bartholemica, RIDGWAY, *2*, 1902, p. 519 (St. Eustatius); PETERS, Proc. Biol. Soc. Wash. *40*, 1927, p. 36 (St. Eustatius); DANFORTH 1930, p. 47 (St. Martin, St. Eustatius); BOND, Proc. Ac. Nat. Sci. Phi. *82*, 1930, p. 331 (St. Martin, St. Eustatius); HELLMAYR, *8*, 1935, p. 373 (St. Martin, St. Eustatius); BOND 1950, p. 136 (St. Martin, St. Eustatius).
"*Dendroica petechia Cruciana*", KRUYTHOFF 1939, p. 52 (St. Martin, Saba, St. Eustatius).

Native name — *Canary* (St. Martin), *goldfinch* (St. Martin); also *banana bird* (KRUYTHOFF).

ST. MARTIN, ST. EUSTATIUS. — Resident.

ST. MARTIN: *Simpson Bay Lagoon*, 9.II.1952 (1 ♂). ST. EUSTATIUS: *Oranjestad*, 20 and 25.II.1952 (1 ♂, 1 ♀); near *White Wall*, 18.II.1952 (1 ♂, 1 ♀); *Little Mountains*, 19.II.1952 (2 ♀).

Taxonomy — The males are a much brighter golden yellow than the females, both above and below. In the males there is a slight indication of an orange-rufous crown patch, which is absent in the females. The males have broad rufous streaks on both the chest and flanks; these streaks are absent in the females or only slightly developed. — No topotypical specimens from St. Barts were examined; instead, I had 4 specimens from Dominica for comparison. Males from Dominica (*melanoptera*) have the rufous of the crown darker and much more extended, forming almost a complete crown patch. Females from Dominica are a slightly darker olive above and show traces of golden brown edges on some of the feathers of the crown. All these birds, which are non-migratory, have the wing-tip (distance between longest primary and first, outermost, secondary) absolutely and relatively shorter than have breeding birds from North America (*aestiva*), which are migrants (*cf.* PETERS *l.c.*):

bartholemica	♂	wing-tip	12 –14	= 18–22% of wing length
	♀	,,	10.5–12.5	= 18–21% ,, ,, ,,
aestiva	♂	,,	17	= 17 % ,, ,, ,,
	♀	,,	14.5–16	= 23–26% ,, ,, ,,

Iris brown; bill blackish, cutting edge of lower mandible bluish grey; legs and feet ochraceous.

Measurements — ST. MARTIN: ♂, wing 66, tail 51. ST. EUSTATIUS: ♂, wing 64, 65, tail 50, 51, bill (measured from forehead) 15, 15.5; ♀, wing 59, 59.5, 60, 61, tail 46.5, 47, 49, 50, bill 14, 14.5, 15. 15.

Status — This species was collected on St. Eustatius by OBER and WINCH in the nineteenth century. Later DANFORTH (*l.c.*) found it on St. Martin (December 1927, along Great Bay and Simpson Bay), as well as on St. Eustatius.

We observed yellow warblers on St. Martin along Simpson Bay Lagoon and once in Cul-de-Sac Valley. It was rather rare. On St. Eustatius it was much more common, being observed all over the island. We did not observe it on Saba, where — in spite of KRUYTHOFF's statement — it seems likely that this species does not occur (*cf.* BOND 1950, p. 136).

Biotope — On St. Martin, yellow warblers were confined almost exclusively to the mangroves bordering Simpson Bay Lagoon. We only once observed a lonely

specimen in the low bushes growing in the grassy valley of Cul-de-Sac. It was much more ubiquitous on St. Eustatius, occurring in any kind of vegetation, from the more or less xerophytic bush to the well-wooded higher slopes of the volcano up to about 500 m altitude (not uncommon).

Reproduction cycle — The gonads of all the specimens collected were inactive. There was nothing in the behaviour of this species to indicate breeding activity, although we heard it singing on several occasions, both on St. Martin and on St. Eustatius.

Food — Four of the stomachs examined contained remnants of small insects (2 ×), green caterpillars (1 ×), and vegetable matter (3 ×).

Field observations — The yellow warblers of St. Martin and St. Eustatius appeared much wilder in the field than those occurring in Aruba, Curaçao, and Bonaire, which are very tame. To our ears the song of the yellow warblers from St. Martin and St. Eustatius was considerably more "rattling", less sweet, than that of the birds from the Netherlands Leeward Islands of the race *rufopileata*.

Zoogeography — *Dendroica p. bartholemica* occurs in the northern Lesser Antilles only, from Anguilla to Montserrat.

The yellow warbler has a wide range in North and Central America, the West Indies and along the Pacific coast of South America south to Peru. The West Indian and South American races form a definite subspecies group (*petechia sensu stricto*), which is subject to intensive subspecies-formation, no less than 16 West Indian insular races having been recognized by HELLMAYR (*l.c.*).

The *petechia*-group of yellow warblers is probably autochthonous in its West Indian range. As a whole the species seems to be of a Tropical North American origin.

Protective measures — Protected by law (WESTERMANN 1946, p. 82), but people seems to be unaware of this fact.

55 **Dendroica discolor discolor** (Vieillot)

Prairie Warbler

Sylvia discolor VIEILLOT, Hist. Nat. Ois. Am. Sept. *2*, 1807, p. 37, pl. 98 — Antilles.
Dendroica discolor, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 118 (St. Eustatius).
Dendroica discolor discolor, DANFORTH 1930, p. 47 (St. Martin); HELLMAYR, *8*, 1935, p. 409 (St. Eustatius); DANFORTH 1939, p. 511 (Saba); BOND 1950, p. 144 (Saba, St. Eustatius).

Native name — unknown.

ST. MARTIN, SABA, ST. EUSTATIUS. — Winter visitor.

SABA: *Ladder Hills*, 8.III.1952 (1 *sex inc.*). ST. EUSTATIUS: *Oranjestad*, 21.II.1952 (1 ♂); *Little Mountains*, 25.II.1952 (1 ♀).

Taxonomy — Our specimens did not differ from specimens from Michigan and New York State, nor from 2 late spring migrants from Cuba, with which I was able to compare them.

Iris brown; bill dark horn, cutting edges of mandibles lighter; legs and feet dark horn.

Measurements — SABA: *sex inc.*, wing 58, tail lost, bill (measured from forehead) 14. ST. EUSTATIUS: ♂, wing 57.5, tail 48, bill 14; ♀, wing 59.5, tail 48, bill 13.

Status — This species was collected on St. Eustatius by the older collectors, including CYRUS S. WINCH in 1891. There is, however, only one relevant record from St. Martin (24.XII.1927) and one from Saba (26 and 28.I.1937), both by DANFORTH (*l.c.*).

We found this species on Saba and St. Eustatius, but only in rather small numbers.

Biotope — High, but rather dry scrub on the hills.

Distribution — The prairie warbler is a breeding bird from eastern North America. It is a regular winter visitor to the West Indies.

Protective measures — Not protected by law.

56 **Seiurus aurocapillus aurocapillus** (Linnaeus)

Oven-Bird

Motacilla aurocapilla LINNAEUS, Syst. Nat. ed. 12 *1*, 1766, p. 334 — off the coast of Hispaniola.

Seiurus aurocapillus aurocapillus, DANFORTH 1930, p. 47 (St. Martin); BOND 1950, p. 147 (St. Martin).

Native name — unknown.

ST. MARTIN. — Winter visitor.

No material.

Status — Apparently only recorded by DANFORTH (*l.c.*), who collected a specimen in a "manchineel thicket" (*Hippomane mancinella*) along the beach of Great Bay, St. Martin, on 24.XII.1927.

We did not observe this species.

Distribution — The oven-bird is a breeding bird from northern North America. It winters in Central America, the extreme southeastern part of the United States and in the West Indies. It is an uncommon visitor to the Lesser Antilles.

Protective measures — Not protected by law.

57 **Seiurus noveboracensis noveboracensis** (Gmelin)

Northern Water-Thrush

Motacilla noveboracensis GMELIN, Syst. Nat. *1*, *2*, 1789, p. 958 — New York.
Seiurus noveboracensis noveboracensis, DANFORTH 1930, p. 47 (St. Martin).

Native name — unknown.

ST. MARTIN. — Winter visitor.

ST. MARTIN: *Simpson Bay Lagoon*, 9.II.1952 (1 ♀).

Taxonomy — The under parts are rather strongly tinged with yellow; the upper parts are very dark olive brown; slightly greyer than spring specimens from New York, Virginia, and Illinois. Hence, I feel quite justified, therefore, in referring the specimen from St. Martin to the race *noveboracensis*.

Measurements — St. Martin: ♀, wing 76.5, tail 50.5, bill from forehead 16.5.

Status — This species has only previously been mentioned by Danforth (*l.c.*), who collected two specimens and observed several more along small streams and in mangrove swamps on St. Martin in December 1927.

We saw it only once on St. Martin.

Biotope — We found it on the edge of mangrove vegetation.

Food — The stomach of the specimen collected contained many small insects, including beetles. Danforth (*l.c.*) also mentions a small lizard apart from small insects!

Distribution — The northern water-thrush is a breeding bird of temperate and northern North America and an abundant winter visitor to the West Indies.

Protective measures — Not protected by law.

58 **Wilsonia citrina** (Boddaert)

Hooded Warbler

Muscicapa citrina Boddaert, Tabl. Pl. Enl., 1783, p. 41 — Louisiana.

Native name — unknown.

Saba. — Winter visitor or migrant.

Saba: *Ladder Hills*, 6.III.1952 (1 ♂ ad.).

Taxonomy — The specimen collected is in bright spring plumage and shows no sign of any moult.

Iris brown; bill dark horn, base of lower mandible lighter; legs and feet fleshy horn.

Measurements — Saba: ♂, wing 68, tail 56.5, bill from forehead 14.

Status — Not previously recorded.

We observed one or more males and at least one female on Saba on 6.III.1952.

Biotope — This bird was found in the shady undergrowth of a high forest on the slope of a steep ravine. The birds were moving around and chasing each other in a tangle of lianas, bromeliads and large arums.

State of gonads — The testes of the collected male were very small. There was no subcutaneous fat.

Distribution — The hooded warbler is a breeding bird from the eastern United States. Its winter range is generally considered to be Central America south to Panama. According to Bond (1950, p. 151) it is a rare transient in the West Indies, whence it has been recorded from the Bahamas, Cuba, Jamaica, Porto Rico, and St. Croix, but not from the Lesser Antilles.

Protective measures — Not protected by law.

59A **Setophaga ruticilla ruticilla** (Linnaeus)

American Redstart

Motacilla ruticilla LINNAEUS, Syst. Nat. ed. 10 *1*, 1758, p. 186 — Virginia.

59B **Setophaga ruticilla tricolora** (Müller)

Motacilla tricolora MÜLLER, Vollst. Nat. Syst. Suppl. Reg., 1766, p. 175 — Cayenne.

Setophaga ruticilla, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 128 (St. Eustatius); DANFORTH 1930, p. 47 (St. Martin, St. Eustatius); HELLMAYR, *8*, 1935, p. 458 (St. Eustatius); DANFORTH 1939, p. 512 (Saba).

Setophaga ruticilla ruticilla, WETMORE, Journ. Wash. Ac. Sc. *39*, 1949, p. 139 (Saba)

Native name — *Little chee-chee bird* (Saba).

ST. MARTIN, SABA (*ruticilla*). — Winter visitor.
ST. MARTIN (*tricolora*). — Winter visitor.
ST. EUSTATIUS (subspec.). — Winter visitor.

ST. MARTIN (*ruticilla*): *Belle Plaine*, 2.II.1952 (1 ♀). SABA (*ruticilla*): *Ladder Hills*, 6.III.1952 (1 ♀).
ST. MARTIN (*tricolora*): *Cul-de-Sac Valley*, 6.II.1952 (1 ♀).
ST. MARTIN (subspec.): *Cul-de-Sac Valley*, 6.II.1952 (1 ♂ imm.); *Bellevue*, 11.II.1952 (1 ♂ ad.).

Taxonomy — The upper parts of one of the females (nr. 10986, Cul-de-Sac, St. Martin) is a darker olive brown, and less olive grey than in the other females; in addition it has the head a darker grey, contrasting considerably with the back. It agrees in all respects with an adult female from Haiti (19.IV.1931), which I obtained from Dr A. WETMORE as a reference specimen of the race *tricolora*. In the lighter coloured females the head is greyish brown, hardly, if at all, contrasting with the mantle and remaining upper parts. When considering the range of individual variation in these races I must rely entirely upon WETMORE's recent revision (1949) and I feel quite certain in referring the darker, grey-headed specimen to the race *tricolora*, while the paler, brown-headed individuals may belong to *ruticilla*. — Adult males belonging to either of these races seem indistinguishable; males in immature plumage appeared equally unidentifiable.

Iris brown; bill horn brown; legs and feet black.

Measurements — ST. MARTIN (*ruticilla*): ♀, wing 63.5, tail 54. SABA (*ruticilla*): ♀, wing 61, tail 54.

ST. MARTIN (*tricolora*): ♀, wing 63.5, tail 55.5.

ST. MARTIN (subspec.): ♂ ad., wing 66.5, tail 58; ♂ imm., wing 61.5, tail 53.5.

Status— Although recorded from St. Eustatius by most of the previous collectors, DANFORTH (*l.c.*) was the first to observe and collect a specimen of this species on St. Martin in 1927 and on Saba in 1937. WETMORE (*l.c.*) has referred a specimen from Saba to the race *ruticilla*.

We found this species not uncommon on all three islands, particularly on St. Martin, where it was one of the most abundant of passerine birds in dense scrub and bush vegetation.

Biotope — Found in all suitable localities containing trees or scrubs. It was most abundant in the dense scrub vegetation covering the hills of St. Martin, but it was equally common in the seasonal forests along the slopes of The Quill, as well as in the middle canopee of the high rain forest in the crater of this volcano (St. Eustatius). It was also seen in the gardens of Philipsburg (St. Martin) and Oranjestad (St. Eustatius), as well as in the dense vegetation in the shady "guts" of Saba.

Food — The stomachs contained nothing but the remains of insects of small and medium size.

Field observations — This species was easily located by its penetrating call-note. It was usually found in groups of from 4 to 10 birds, in which those in female plumage (♀, ♂ imm.) were more numerous. Males were often heard singing incessantly.

Distribution — *Setophaga r. ruticilla* is a breeding bird from the eastern United States. During migration and in winter it is known throughout the West Indies and in northern South America.

Setophaga r. tricolora is a breeding bird from northern North America, from the north-central part of the United States to Alaska. In winter it is known from Central America, the West Indies, and northern South America. In the northern Lesser Antilles it seems less numerous in winter than the previous race.

Protective measures — Not protected by law.

60 **Tanagra musica flavifrons** (Sparrman) Plate IV

Green Euphonia

Emberiza flavifrons SPARRMAN, Mus. Carlson *4*, 1789, pl. 92 — St. Barts (*cf.* HELLMAYR, *9*, 1936, p. 16).
Tanagra flavifrons flavifrons, DANFORTH 1939, p. 512 (Saba).
Tanagra musica flavifrons, BOND 1950 (Saba).

Native name — *Parrot.*

SABA. — Probably resident.

SABA: *St. Johns*, 3.III.1952 (1 ♂).

Taxonomy — No topotypical specimens have been examined. Compared with an adult male from Sa. Lucia — considered by HELLMAYR (*9*, 1936) to be *flavifrons* — the Saba specimen has the ear coverts less blackish, more dark bluish grey; the head is a slightly lighter cerulean blue. The upper parts are more plain dark olive green, less bluish.

Iris brown; bill bluish grey, tip black; legs and feet dark grey.

Measurements — SABA: ♂ ad., wing 66, tail 44, bill from forehead 10.5.

Status — The only previous record is a field observation by DANFORTH (*l.c.*) of a pair of these birds in Spring Bay Gut, Saba, on 1.II.1937.

We observed this species on Saba on two occasions, *viz.*, on 3.III.1952, when several birds were seen in a steep gut near St. Johns, and on 6.III.1952 in a well-wooded gut north of Ladder Bay. It is apparently a rare bird on Saba.

Biotope — We observed this species in well-wooded steep ravines only; it was not seen below 300 m altitude.

Reproduction cycle — The testes of the only male collected were small, measuring about 2 × 1 mm.

Food — The stomach and the intestines of the specimen collected were stained with an intense violet-blue colour, which was obviously due to the berries of the shrubs on which the birds were observed feeding.

Field observations — These tanagers were very inconspicuous owing to their quiet, parrot-like movements among the dense foliage and to the protective coloration of their plumage. The call is a melodious, short whistle.

Zoogeography — *Tanagra m. flavifrons* ranges throughout the Lesser Antilles, from Saba, St. Barts and Barbuda in the north to Grenada in the south.

The species is widely distributed in tropical America, from southern Mexico to northern Argentina; it does not occur in Cuba or Jamaica. It probably reached the northern Lesser Antilles from South America, *via* Trinidad.

Protective measures — Not protected by law.

61 **Tiaris bicolor omissa** Jardine

Black-Faced Grassquit

Tiaris omissa JARDINE, Ann. Mag. Nat. Hist. *20*, 1847, p. 332 — Tobago.
Euetheia bicolor, CORY 1891, p. 47 (St. Eustatius); CORY 1892, p. 113 (St. Eustatius).
Euetheia bicolor omissa, RIDGWAY, *I*, 1901, p. 539 (Saba, St. Eustatius).
Tiaris bicolor omissa, DANFORTH 1930, p. 47 (St. Martin, St. Eustatius); HELLMAYR, *II*, 1938, p. 125 (St. Eustatius); DANFORTH 1939, p. 512 (Saba).
"*Tiaris Bicolor Omissa*", KRUYTHOFF 1939, p. 56 (St. Martin, Saba, St. Eustatius).

Native name — *Tobacco seed* (St. Martin, Saba, St. Eustatius); *tobacco bird* (Saba); *sparrow* (St. Eustatius); *chee-chee bird* (KRUYTHOFF).

ST. MARTIN, SABA, ST. EUSTATIUS. — Resident.

ST. MARTIN: Philipsburg, 25.VI.1949 (1 ♀, collected by Wagenaar Hummelinck; Amsterdam Mus.); II.1952 (2 ♂ ad., 1 ♀); *Great Bay*, 4.II.1952 (1 ♂ ad.); *Cul-de-Sac Valley*, 7 and 12.II.1952 (1 ♂ ad., 1 ♀); *St. John Estate*, 9.II.1952 (1 ♂ ad.). SABA: *Saddle*, 1.III.1952 (1 ♂ ad.); *St. Johns*, 3.III.1952 (1 ♀); *Ladder Hill*, 6.III.1952 (1 ♂ ad., 2 ♂ imm., 1 ♀). ST. EUSTATIUS: *English Quarter*, 21.II.1952 (3 ♂ imm., 1 ♀).

Taxonomy — The adult males do not have the entire underside black, this colour being restricted to the throat and breast, where it gradually fades into a dark olive greyish on the flanks and lower abdomen. When working in the field in the three islands I made a determined attempt to find male grassquits with wholly black under parts, but only succeeded in seeing one or two (25.II.1952: St. Eustatius), although I was acquainted with these black-bellied males from previous field observations in the Netherlands Leeward Islands (*sharpei*) and in northern Venezuela (*omissa*). Incidentally I found the following statement by HELLMAYR (*II*, 1938, p. 125, foot note): "There is just a faint possibility that the birds from the northern Lesser Antilles, the Virgin Islands, and Porto Rico may be slightly different (from *omissa*), since the males of these islands appear to become

very rarely as black below as is the rule in the southern part of the range". Both my material and my field observations agree with these statements. However, as a series of specimens covering all seasons of the year is not available, I consider the separation of these northern populations from *omissa* as premature. Moreover, the situation is complicated by the fact that juvenile males are in the dull brownish female plumage, which only changes very gradually into the male dress with black under parts. In the mixed juvenile plumage the feathers of the abdomen are of various shades of light buff, similar to that of the female, in contrast to the full male plumage in which these feathers are olive greyish. A male specimen from Dominica (Amsterdam Mus.), said to be breeding, has the throat, breast, and a large part of the abdomen black, but some light buffish grey feathers are mixed among the blackish ones at the sides of the breast, on the flanks and the central abdomen. This plumage does not seem to be a fully adult one. Corresponding plumages, showing a similar variation in the extension of the black on the sides of the head, the crown, and the under parts, linking the plain juvenile and the black-bellied adult stages of plumage, seemed to occur on St. Martin, Saba, and St. Eustatius even more abundantly than either one of the pure stages. Males in either a pure, or a slightly advanced female plumage were frequently observed by us, while in full song. We obtained some evidence of males breeding in mixed plumage. A male in apparently fully adult plumage (nr. 10989, 12.II.1952, St. Martin) possessed rather enlarged gonads (testes 5½ × 4 mm); a male in mixed plumage (nr. 10994, 4.II.1952, St. Martin) had even larger gonads (6 × 4½ mm); finally, a male in fully juvenile dress (nr. 10998, 21.II.1952, St. Eustatius) possessed similarly enlarged gonads (6 × 3 mm); when collected the latter bird was singing loudly. Working in the field I wondered whether perhaps these birds might possess and eclipse plumage!

Iris brown; bill blackish or dark horn, slightly ligher in juvenile birds; legs and feet horn or light horn.

Weight of two males from St. Martin, 6 and 7 grammes, respectively.

Measurements — St. Martin: ♂, wing 51, 52, 52.5, 53, 54, tail 38, 39.5, 40, 41, 42; ♀, wing 51, 51.5, 52, tail 37.5, 39, 40. Saba: ♂, wing 50, 51.5, 52, 55, tail 40, 40, 40.5, 42; ♀, wing 50, 51.5, tail 38, 39.5. St. Eustatius: ♂, wing 48, 51.5, 53, tail 38, 39, 40.5; ♀, wing 52, tail 40.

Wing of 12 males, 48–55, average 52.0.

Wing of 6 females, 50–52, average 51.3.

Status — This species was recorded by all previous collectors from St. Martin, Saba, and St. Eustatius.

We found it a very common bird on all three islands, though least common on Saba.

Biotope — Mainly the xerophytic scrub at low elevations, but generally found in all cultivated areas, being most numerous near human dwellings. Grassquits were very abundant among the ruins of the once flourishing village of Oranjestad on St. Eustatius and were constantly singing, fighting and nesting in the big almond tree (*Terminalia catappa*) with its imposing growth of "old man's beard" (*Tillandsia*) in the garden of the gouvernment guesthouse. Contrasting with these facts, grassquits were conspicuously absent from the village of The Bottom on Saba, where the streets and the gardens were apparently too clean to provide the necessary amount of food. The birds did not occur in dense woods.

Reproduction cycle — Several of the males collected proved to be in breeding condition, the testes measuring up to 6 × 4½ mm. Some of the females too had swollen gonads, the follicles in the ovary measuring up to 4 mm in diameter. Singing and fighting males were regularly encountered. A nest containing 2 almost featherless young was found in a very small mangrove-tree (*Rhizophora*) along Simpson Bay Lagoon, St. Martin, on 13.II.1952. These notes indicate that these grassquits were at the height of their breeding season during our visit in February and March 1952.

Nest — A rather large, ovate, cup-shaped structure of grasses and plant stems, with a narrow entrance at the side. The nesting place varied in height from much less than one meter above the ground to over 4 metres (in a large almond tree).

Food — The examination of the contents of the stomach invariably showed the presence of very small seeds of various kinds, apparently chiefly *Gramineae*.

Field observations — The birds often occurred in small colonies or clans. Their song seemed thinner, higher pitched, and less varied than the song of the grassquits from Aruba, Curaçao, and Bonaire (*sharpei*), sounding like a rapid tsee-tsee-see seeseeseesee.

Zoogeography — *Tiaris b. omissa* inhabits Porto Rico and the Lesser Antilles; also northern Venezuela east to northeastern Colombia.

This grassquit is a West Indian species, absent only from Cuba and the surrounding islands, where it is replaced by a related species (*T. canora*); it also occurs on the adjacent coasts of northern South America. Several species of this genus occur in tropical America; the present species may be considered to be autochthonous, at least in its Lesser Antillean range, where other species of the genus are lacking.

Protective measures — Protected by law (WESTERMANN 1946 p. 82).

62A **Loxigilla noctis ridgwayi** (Cory)

Antillean Bullfinch

Pyrrulagra noctis ridgwayi CORY, Cat. West Ind. Birds, 1892, p. 150 — Antigua.

62B **Loxigilla noctis coryi** (Ridgway) Plate IV

Pyrrhulagra coryi RIDGWAY, Auk 15, 1898, p. 323 — St. Eustatius.

Loxigilla noctis, CORY 1891, p. 47 (St. Eustatius).
Pyrrhulagra noctis coryi, RIDGWAY, *I*, 1901, p. 559 (Saba, St. Eustatius).
Pyrrhulagra noctis ridgwayi, DANFORTH 1930, p. 47 (St. Martin).
Loxigilla noctis coryi, DANFORTH, Journ. Agr. Univ. Puerto Rico *21*, 1937, p. 226 (St. Martin, Saba, St. Eustatius); HELLMAYR, *II*, 1938, p. 164 (St. Martin, Saba, St. Eustatius); DANFORTH 1939, p. 512 (Saba); BOND 1950, p. 168 (St. Martin, Saba, St. Eustatius).
Loxigilla noctis ridgwayi, BOND, Sec. Suppl. Checkl. Birds West Ind. 1952, p. 23 (St. Martin: record of the specimens collected by Voous).

Native name — *Robin* (St. Martin, St. Eustatius).

ST. MARTIN (*ridgwayi*). — Resident.
SABA, ST. EUSTATIUS (*coryi*). — Resident.

ST. MARTIN (*ridgwayi*): *Great Bay*, 4 and 10.II.1952 (2 ♂); near *Philipsburg*, 5.II.1952 (1 ♀); *Simpson Bay*, 13.II.1952 (1 ♀).

SABA (*coryi*): *Ladder Hill*, 1 and 8.III.1952 (1 ♂ imm., 1 ♀); near *St. Johns*, 5.III.1952 (1 ♀); northern slope of *The Mountain*, 6.III.1952 (1 ♀). ST. EUSTATIUS (*coryi*): 26.II.1922 (1 ♂, collected by James L. Peters; Leiden Mus.); near *White Wall*, 18.II.1952 (1 ♂); *Little Mountains*, 19 and 25.II.1952 (2 ♂, 1 ♀); *The Quill*, 23.II.1952 (1 ♂ imm.).

Taxonomy — The adult males from St. Martin (*ridgwayi*) are a much lighter greyish black all over than the males from St. Eustatius (*coryi*), particularly on the lower under parts, which are dark grey, and not sooty black. The brown coloration of the throat and under tail coverts is also paler. Generally, however, the black plumage of the male shows a considerable variation in colour tone, due to seasonal bleaching of living individuals and "foxing" of cabinet specimens. Still, I could not see any material difference in coloration between a series of 12 adult males from Antigua, 4 from Barbuda and 2 from St. Martin, although the St. Martin birds are a slightly purer grey, presumably as a result of their freshness. Though generally sooty black, the males from St. Eustatius were still less intensely black than the single available male of the race *dominicana* from Dominica.

The females from St. Martin are conspicuously lighter than those from St. Eustatius and Saba, being much less olivaceous and more conspicuously tinged with isabelline grey. The upper parts are also lighter and greyer and less earthen brown in colour. Sides of the head, lores and throat are conspicuously lighter buffish brown. The females from St. Martin do not differ from 1 female from Antigua and 3 from Barbuda. Though rather dark, the under parts of the females from Saba and St. Eustatius appeared much lighter and less grey than those of the two females of the race *dominicana* from Dominica.

The immature males closely resemble the females; they exhibit a number of new adult feathers on the throat (rufous) and on the under parts (black).

It can be concluded from these remarks that the birds from St. Martin, Antigua and Barbuda can best be treated under one subspecies name (*ridgwayi*); they are lighter in both sexes than the birds from Saba and St. Eustatius (*coryi*). In referring St. Martin birds to the paler form *ridgwayi* I am at variance with DANFORTH (1937), who also recognizes "*chazaliei*" from Barbuda, and with BOND (*l.c.*), though PETERS (*fide* DANFORTH 1930, p. 47) was also of a similar opinion.

Iris dark brown; bill black or dark horn brown; legs and feet horn brown.

Measurements — ST. MARTIN (*ridgwayi*): ♂ ad., wing 66. 68, tail 48.5, 49.5, bill (measured from forehead) 14.5, 15; ♀, wing 63, 63.5, tail 47, 48, bill 14.5, 15.

SABA (*coryi*): ♀, wing 62, 64, 67.5, tail 45, 47.5, 51, bill 14, 14.5, 14.5. ST. EUSTATIUS (*coryi*): ♂ ad., wing 69, 69.5, 69.5, 71, tail 51, 52, 52, 52, bill 15, 15.5, 16.5, 17.

Wing measurements of adult males:

Wing measurements

adult males:				females:			
St. Martin	66 –68	average	(2) 67.0	St. Martin	63 –63.5	average	(2) 63.2
St. Eustatius	69 –71	,,	(4) 69.7	Saba	62 –67.5	,,	(3) 64.5
Antigua	68 –71	,,	(12) 69.5	St. Eustatius	63		
Barbuda	65.5–68.5	,,	(4) 67.1+	Antigua	63.5+		
				Barbuda	61 –63.5	,,	(3) 62.5

Status — This species is known from all three islands, where it has been observed or collected by all previous collectors, including JAMES L. PETERS in 1922. KRUYTHOFF (1939, p. 55) states that the species occurred all over the islands of St. Martin, Saba, and St. Eustatius; he calls it "a very cheerful bird", that "often nests around dwellings".

We found it a not uncommon bird all over St. Martin and St. Eustatius. It was, however, rather scarce on Saba, where the native people did not seem to know it.

Biotope — This bird has been found in all kinds of habitat, from sea level up to the very summit of The Quill on St. Eustatius and along the slopes of The Mountain on Saba at about 600 m altitude. It also inhabited dry scrub, as for example in the mangroves bordering bays and lagoons, in native gardens around houses, along roadsides, in the dense patches of forest in the Little Mountains on St. Eustatius, as well as in the damp treefern forest near the summit of The Mountain on Saba.

Reproduction cycle — With the exception of one male (10.II.1952) and one female (13.II.1952) from St. Martin, the gonads of the specimens collected were not conspicuously enlarged. Nothing was observed to indicate any breeding activity, although singing males were heard on all three islands. Thus, at all events some breeding seems to have taken place during February-March.

Food — The stomachs examined contained exclusively vegetable matter, mostly seeds of various kind and size. The birds have been often seen feeding upon the juicy fruits of trees and scrubs; on Saba they appeared particularly fond of the violet "monkey berries" (*Myrsia*), upon which also *Allenia fusca* and *Elaenia martinica* were regularly feeding. On one occasion a female was observed eating the fruit of an *Opuntia* (8.III.1952, Saba). DANFORTH (*l.c.*) records the contents of 5 stomachs from Saba as follows: seeds 80%, berries 20%.

Field observations — The habits of these birds were both terrestrial and arboreal. On St. Martin and St. Eustatius it was a not unfrequent visitor to the houses, picking small pieces of food from the table and insects from the windows and the walls. The song of this bird was a penetrating, rattling melody of swee-swee-swee-swee-swee.

Zoogeography — *Loxigilla n. ridgwayi* inhabits the islands of St. Martin, Barbuda and Antigua; probably also Anguilla.

Loxigilla n. coryi occurs on the islands of Saba, St. Eustatius, St. Kitts, Nevis, and Montserrat.

This is an endemic Lesser Antillean species, occurring north to Anguilla and south to Grenada and Barbados. Moreover, the genus *Loxigilla* is endemic to the West Indies, where it occurs in three closely related species between Jamaica, the Bahama Islands (Grand Bahama), and Grenada. The origin of the genus is unknown, but *L. noctis* is probably an autochthonous species of the Lesser Antilles.

Protective measures — Not protected by law. Legal protection has been proposed by WESTERMANN (1946, p. 83). The species seems to be neither particularly benificial, nor particularly harmful.

INDEX TO THE SPECIES AND THEIR DISTRIBUTION

Page	*Number*	Bird species occurring in St. Martin, Saba and St. Eustatius	*St. Martin*	*Saba*	*St. Eustatius*	*Neth. Leeward Islands:* Aruba Curaçao Bonaire (species)
17	1	*Podilymbus podiceps antillarum* Bangs	×	—	—	×
18	2	*Puffinus lherminieri lherminieri* Less.	×	×	×	—
18	3	*Phaëthon aethereus mesonauta* Peters	×	×	×	×
20	4	*Phaëthon lepturus catesbyi* Brandt	—	×	×	—
20	5	*Pelecanus occidentalis occidentalis* L.	×	×	×	×
22	6	*Sula leucogaster leucogaster* (Bodd.)	×	×	—	×
23	7	*Fregata magnificens* Mathews	×	×	×	×
23	8	*Ardea herodias herodias* L.	×	—	—	×
24	9	*Egretta thula thula* (Mol.)	×	—	—	×
24	10	*Florida caerulea* (L.)	×	—	×	×
25	11	*Butorides virescens maculatus* (Bodd.)	×	×	—	×
26	12	*Nyctanassa violacea bancrofti* Huey	×	—	×	×
27	13	*Phoenicopterus ruber ruber* L.	×	—	—	×
27	14	*Buteo jamaicensis jamaicensis* (Gm.)	×	×	×	—
28	15	*Pandion haliaetus carolinensis* (Gm.)	×	×	—	×
29	16	*Falco sparverius caribaearum* Gm.	×	×	×	×
31	17	*Porzana carolina* (L.)	×	—	—	×
32	18	*Charadrius vociferus vociferus* L.	×	—	—	×
32	19	*Pluvialis squatarola* (L.)	×	—	—	×
33	20	*Arenaria interpres morinella* (L.)	×	—	—	×
33	21	*Numenius phaeopus hudsonicus* Lath.	×	—	—	×
33	22	*Tringa melanoleuca* (Gm.)	×	—	—	×
34	23	*Tringa flavipes* (Gm.)	×	—	—	×
34	24	*Tringa solitaria* Wilson	×	—	—	×
35	25	*Actitis macularia* (L.)	×	—	—	×
35	26	*Capella gallinago delicata* (Ord)	×	—	—	×
36	27	*Calidris pusilla* (L.)	×	—	—	×
36	28	*Larus argentatus smithsonianus* Coues	×	—	—	—
37	29	*Larus atricilla* L.	×	—	—	×
37	30	*Sterna hirundo hirundo* L.	—	×	—	×
38	31	*Sterna fuscata fuscata* L.	×	×	×	×
38	32	*Sterna maxima maxima* Bodd.	×	—	×	×
39	33	*Sterna sandvicensis acuflavida* Cabot	×	—	—	—
40	34	*Anoüs stolidus stolidus* (L.)	×	—	—	×
40	35	*Columba squamosa* Bonn.	×	×	×	×
41	36	*Zenaida aurita aurita* (Temm.)	×	×	×	—
43	37	*Columbigallina passerina nigrirostris* Danforth	×	×	×	×
45	38	*Geotrygon mystacea* (Temm.)	—	×	×	—

Page	*Number*	Bird species occurring in St. Martin, Saba and St. Eustatius	*St. Martin*	*Saba*	*St. Eustatius*	*Neth. Leeward Islands:* Aruba Curaçao Bonaire (species)
46	39	*Eulampis jugularis* (L.)	—	×	×	—
48	40	*Sericotes holosericeus holosericeus* (L.)	×	×	×	—
49	41	*Orthorhyncus cristatus exilis* (Gm.)	×	×	×	—
51	42	*Ceryle alcyon alcyon* (L.)	×	—	—	×
52	43A	*Tyrannus dominicensis dominicensis* (Gm.)	×	×	×	×
52	43B	*Tyrannus dominicensis vorax* Vieill.	—	—	×	×
54	44A	*Elaenia martinica riisii* Scl.	×	—	—	×
54	44B	*Elaenia martinica martinica* (L.)	—	×	×	×
56	45	*Progne subis dominicensis* (Gm.)	×	×	×	×
56	46	*Hirundo rustica erythrogaster* Bodd.	×	—	—	×
57	47	*Allenia fusca* (P. L. S. Müll.)	—	×	×	—
59	48	*Margarops fuscatus fuscatus* (Vieill.)	×	×	×	×
61	49	*Cinclocerthia ruficauda pavida* Ridgway	—	×	×	—
62	50A	*Vireo altiloquus altiloquus* (Vieill.)	—	×	—	×
62	50B	*Vireo altiloquus barbadensis* (Ridgway)	—	—	×	×
64	51	*Coereba flaveola bartholemica* (Sparrm.)	×	×	×	×
66	52	*Mniotilta varia* (L.)	×	—	×	—
67	53	*Parula americana pusilla* (Wilson)	×	×	×	—
67	54	*Dendroica petechia bartholemica* Sundev.	×	—	×	×
69	55	*Dendroica discolor discolor* (Vieill.)	×	×	×	—
70	56	*Seiurus aurocapillus aurocapillus* (L.)	×	—	—	×
70	57	*Seiurus noveboracensis noveboracensis* (Gm.)	×	—	—	×
71	58	*Wilsonia citrina* (Bodd.)	—	×	—	—
72	59A	*Setophaga ruticilla ruticilla* (L.)	×	×	—	×
72	59B	*Setophaga ruticilla tricolora* (Müller)	×	—	—	—
72		*Setophaga ruticilla* subspec.			×	
73	60	*Tanagra musica flavifrons* (Sparrm.)	—	×	—	—
74	61	*Tiaris bicolor omissa* Jardine	×	×	×	×
76	62A	*Loxigilla noctis ridgwayi* (Cory)	×	—	—	—
76	62B	*Loxigilla noctis coryi* (Ridgway)	—	×	×	—

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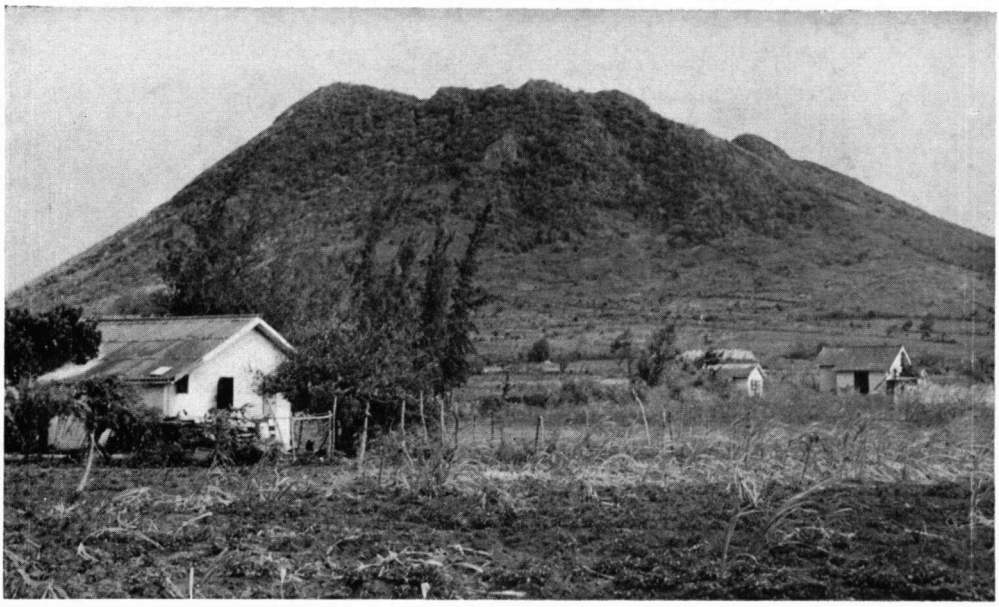
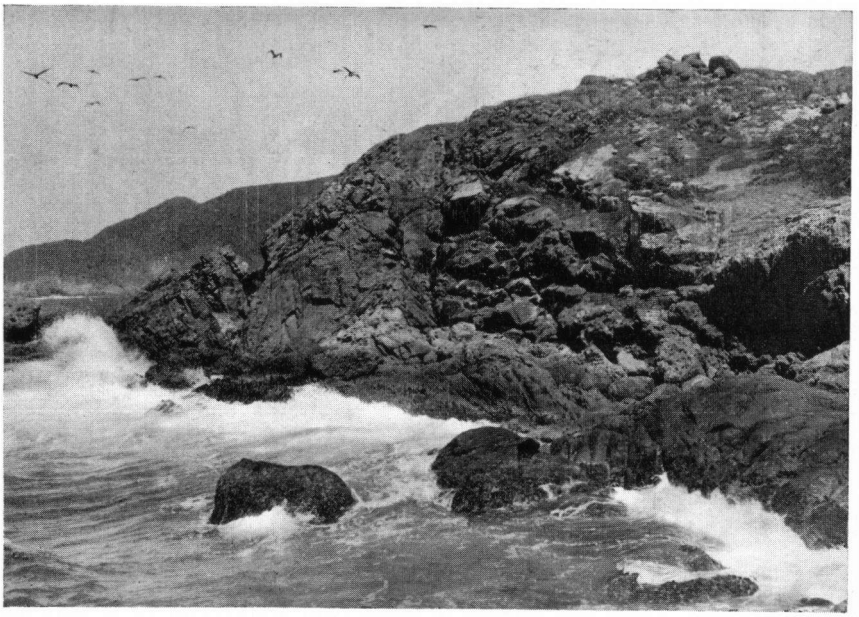


Ia. The extinct volcano of The Quill, 600 m high, on *St. Eustatius*, looking towards the East, with a part of the settlement of Concordia on the foreground.

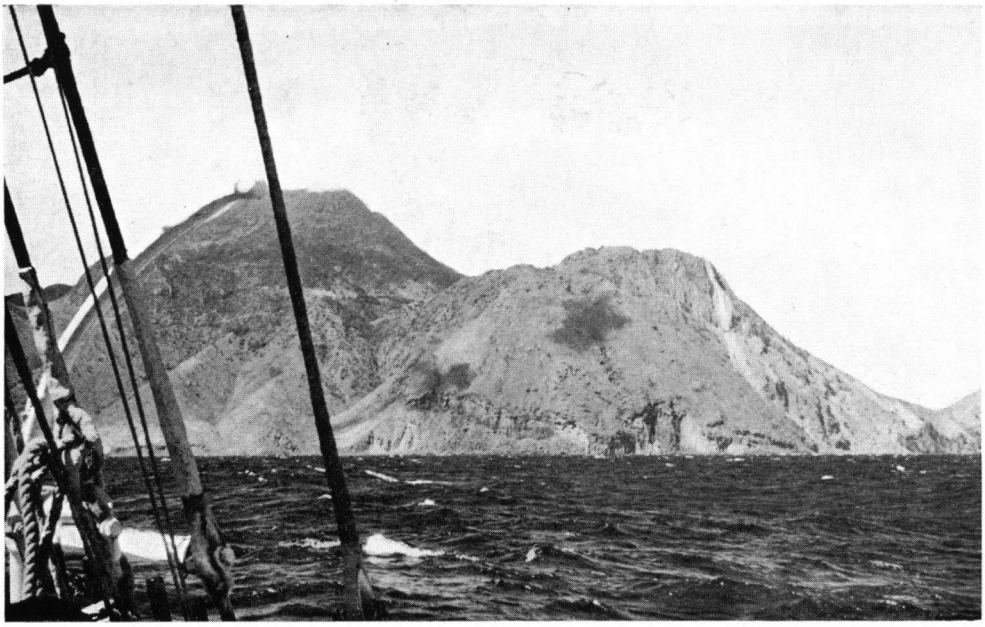
Ib. Tropical rain forest with Bursera, on the inner walls of the crater of The Quill on *St. Eustatius*.

PLATE II

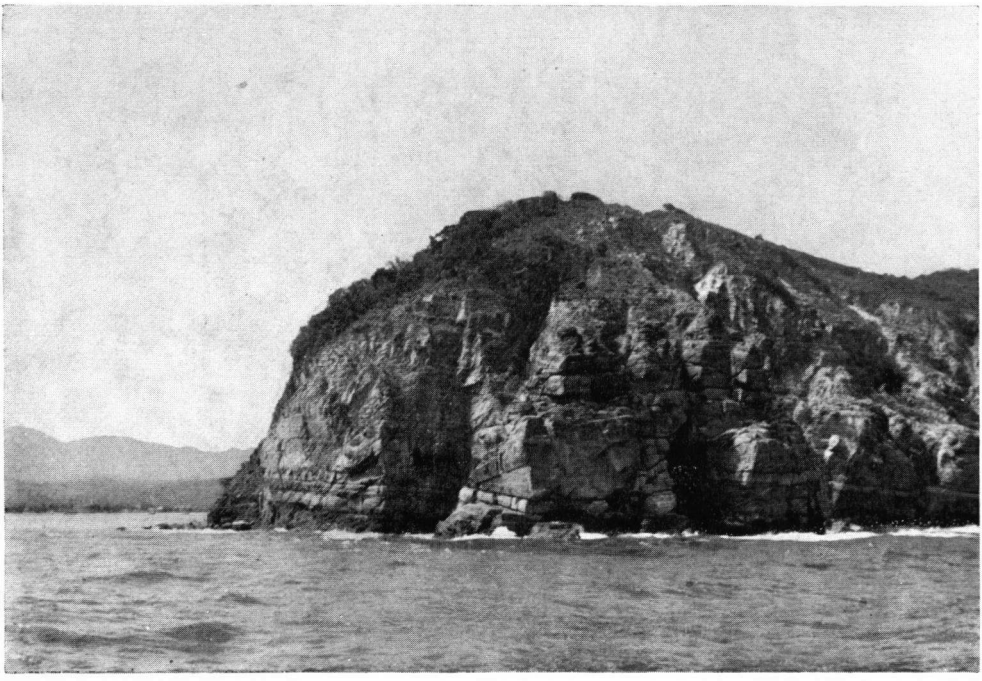


IIa. Pelican Cay; left background Point Blanche on the main island of *St. Martin.*

IIb. Pelican nests with young on Pelican Cay, near *St. Martin.*



IIIa. Approaching *Saba* from the East; Booby Hill on the foreground; the highest top of The Mountain, more than 900 m high.



IIIb. Point Blanche, the most southern point of *St. Martin*, looking towards the North; to the left Great Bay, with Philipsburg on the background.

IV. Some typical birds of the northern Lesser Antilles: (top left) Trembler, *Cinclocerthia ruficauda pavida*, nr 49, Saba and St. Eustatius; (left center) Green Euphonia, *Tanagra musica flavifrons*, nr 60, Saba; (bottom left) Antillean Bullfinch, *Loxigilla noctis coryi*, male (right) and female (left), nr 62B, Saba and St. Eustatius; (top right) Scaly-breasted Thrasher, *Allenia fusca*, nr 47, Saba and St. Eustatius; (right center) Zenaida Dove, *Zenaida aurita aurita*, nr 36, St. Martin, Saba and St. Eustatius; (bottom right) Bridled Quail-dove, *Geotrygon mystacea*, nr. 38, Saba and St. Eustatius.