

## CONTRIBUTIONS TO AVIAN BIOGEOGRAPHY FROM THE ARCHIPELAGO AND LOWLANDS OF BOCAS DEL TORO, PANAMA

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**ABSTRACT.**—New distributional information is summarized from avifaunal surveys conducted from 1987 to 1991 in the ornithologically unknown islands of the province of Bocas del Toro, Panama, and points on the adjacent mainland. These establish the region of the Laguna de Chiriquí to be of great biogeographic interest and complexity. New records include 3 species new to Panama, and 11 species and 3 subspecies new to Bocas del Toro. Two taxa of birds (*Platyrinchus cancrominus* and a form of *Chlorophanes spiza*) are relicts on islands and are not resident on the Panamanian mainland. Four pairs of species or subspecies (*Anthracothorax prevostii*/*A. veraguensis*, *Glaucis aenea*/*G. hirsuta*, *Gymnophis bicolor olivascens*/*G. b. bicolor*, and *Tangara inornata rava*/*T. i. languens*) are shown for the first time to change abruptly over a narrow distance along the southern shore of the Laguna de Chiriquí. Received 6 January 1992, accepted 22 April 1992.

THE PROVINCE of Bocas del Toro occupies the western quarter of the Caribbean coast of Panama. Its most distinctive physiographic feature is a large embayment (Laguna de Chiriquí/Bahía de Almirante) encompassing many islands, some quite large (Fig. 1). Along the southern shore of this embayment, lowland habitats are very restricted because of the proximity of mountains to the sea. Other factors that may have biogeographic significance are the presence of a deep channel (20 to 30 fathoms) between the Valiente Peninsula and Cayo Agua, and an extensive area of swamp at the southeastern corner of the Laguna de Chiriquí.

Systematic ornithological collecting in Bocas del Toro began in 1926 (Kennard and Peters 1928) and continued actively for a few years, but then fell off for a quarter century (Eisenmann 1957). Alexander Wetmore made substantial collections for the Smithsonian Institution in 1958, but with minor exceptions almost exclusively near Almirante. In the 1960s, the Gorgas Memorial Laboratory operated hundreds of mist nets near Almirante in connection with epidemiological research, which added considerably to ornithological knowledge of the region.

Although Bocas del Toro thus would seem to have been fairly well sampled, ornithological activity was confined mainly to the more settled regions around the towns of Almirante and Changuinola. With the exception of Escudo de Veraguas, the islands of the Bocas archipelago

were virtually untouched, and the eastern regions of the Laguna de Chiriquí and the Valiente Peninsula were sampled only desultorily. For this reason, in 1987 the Smithsonian Institution initiated a series of annual expeditions to Bocas del Toro in order to survey the vertebrate fauna. Base camps were established on all of the major islands and on the mainland at Tierra Oscura, Punta Alegre (at the end of the Valiente Peninsula), and near Chiriquí Grande. Day trips were made to smaller islands, as well as to various points on the mainland.

Numerous new distributional records, many with biogeographic and systematic importance, resulted from these concerted efforts. Manakins of the genus *Manacus* exhibit extremely complex variation in Bocas del Toro, with five recognizable populations occurring over a distance not much more than 100 km, and with a related species just over the mountains on the Pacific slope (the morphology and genetics of this complex is under study and will be treated elsewhere). In this and two other instances, it appears that the islands have functioned as a refugium, harboring relictual populations of taxa that are absent, or nearly so, on the adjacent mainland (a pattern even more evident in mammals). Also documented was an abrupt faunal break separating certain species or subspecies pairs of birds on the eastern and western sides of the Laguna de Chiriquí. This pattern had previously been known, though poorly documented, in other species pairs (e.g. Crimson-

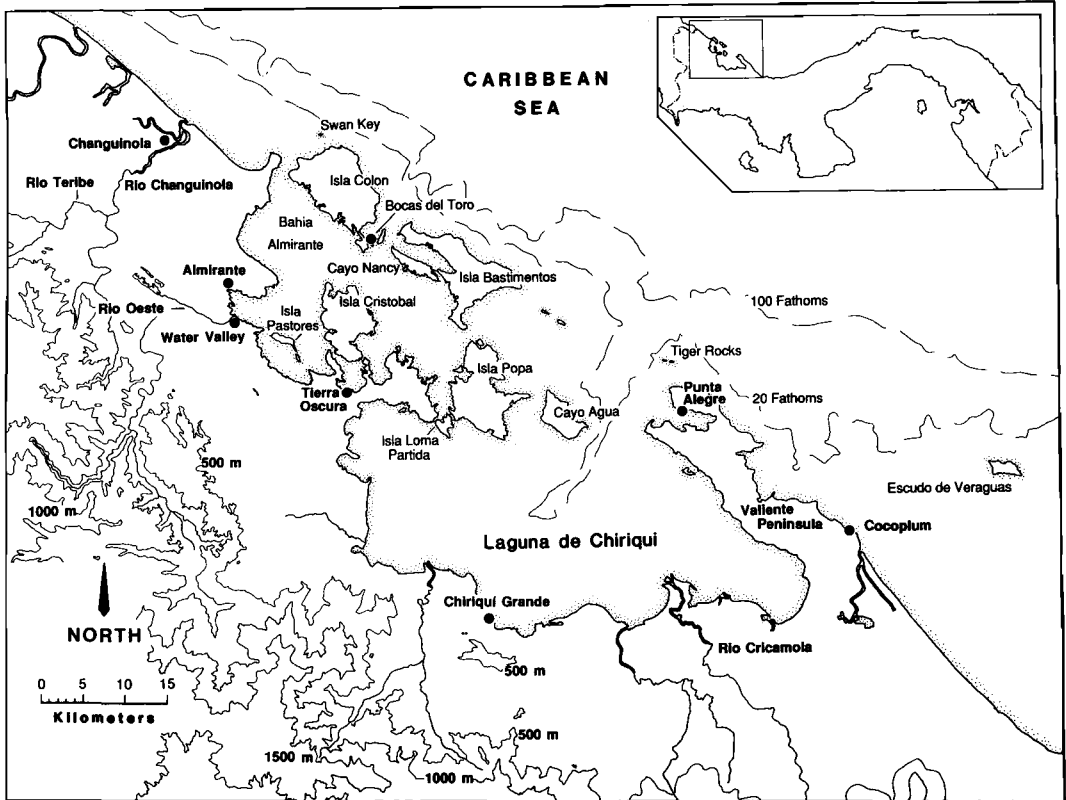


Fig. 1. Map of the Laguna de Chiriquí region of Bocas del Toro, Panama, showing localities mentioned in text. Contour intervals at 500 m. Two bathymetric contours (20 and 100 fathoms) shown by broken lines. Inset: locator map of isthmus of Panama, showing area enlarged.

crested/Pale-billed woodpeckers, *Campephilus melanoleucos*/C. *guatemalensis*; Yellow-rumped/Scarlet-rumped tanagers, *Ramphocelus icteronotus*/R. *passerini*). The new surveys extended the ranges of several other taxa not previously known west of the Canal area or the province of Coclé, which in large measure reflects the almost complete lack of biological reconnaissance along the Caribbean coast of Panama between the Valiente Peninsula and the Canal. In addition, our surveys documented numerous incidental distributional records of the sort expected from intensive field work in a relatively poorly known area.

In this paper, I include only new distributional information for timely incorporation into more general works. A complete analysis of the avifauna of the region is projected for a later monographic study. The Smithsonian Bocas Expeditions conducted from 1987 to 1991 are abbreviated SBE. All specimens are held in the collections of the National Museum of Natural

History, Smithsonian Institution (USNM), with exception of a representative selection returned to Panama. Records not documented by specimens are bracketed.

#### SPECIES ACCOUNTS

[*Phaethon lepturus*, White-tailed Tropicbird.—An individual of this species was observed by T. J. Parsons and me from the R.V. *Benjamin* on 29 March 1990 at a point (9°8.34'N; 81°19.52'W) about 20 km east of Isla Escudo de Veraguas, within sight of the island. This bird, which had molted the middle rectrices, was viewed at very close range with binoculars. The greenish-yellow bill, black scapular patches, and lack of any barring in the dorsum were all easily discerned. Later, at a point almost beyond the range of vision, the first bird was joined by another white bird of the same size. Although the Red-billed Tropicbird (*P. aethereus*) breeds at Swan Key, off the north coast of Isla Colón (Wetmore 1965), this is the first report of *P. lepturus* for the Republic of Panama (Ridgely and Gwynne 1989).]

[*Eudocimus albus*, White Ibis.—On 5 March 1991,

Charles O. Handley, Jr., and E. P. Nelson observed an immature individual in mangrove mudflats on the NE shore of Isla Loma Partida along the Sumwood Channel separating that island from Isla Popa. This is the first record of the species for Bocas del Toro, the only others for the Caribbean coast of Panama being a few recent reports from Galeta Island just east of the Canal (Ridgely and Gwynne 1989).]

[*Cairina moschata*, Muscovy Duck.—One individual was observed 1 March 1991 by M. J. Braun and J. A. Blake as it perched high in a tree in a swampy impoundment area beneath the oil storage tanks 4 km W of Chiriquí Grande. A few days later, Sr. Carlos Jurado of Petroterminal Panamá told us that he knew the wild muscovy well from his duck-hunting activity in the area. Although not unexpected, the only previous records of the Muscovy Duck from the Caribbean side of Panama have been from the Chagres River valley (Wetmore 1965, Ridgely and Gwynne 1989), so that this is the first indication of the species from Bocas del Toro.]

*Chondrohierax uncinatus*, Hook-billed Kite.—A melanistic female was obtained 20 February 1988 at La Gruta, Isla Colón. This is the only confirmed record of the species for Bocas del Toro or anywhere on the Caribbean side of Panama outside the Canal area (Ridgely and Gwynne 1989).

*Stercorarius* spp., jaegers.—Although jaegers have seldom been collected in Panama and had not been reported previously from Bocas del Toro, SBE found both Parasitic and Pomarine jaegers (*S. parasiticus* and *S. pomarinus*) to be common in the protected waters of Bahía Almirante and Laguna de Chiriquí at all times during our periods of observation (January–April), even in the nearly landlocked Laguna de Tierra Oscura. They are the scourge of the large numbers of Royal Terns (*Sterna maxima*) that winter in these waters and, likewise, harass Laughing Gulls (*Larus atricilla*) and Magnificent Frigatebirds (*Fregata magnificens*), although the terns are their principal victims. Jaegers of one or both species were almost always in attendance on the birds that gathered on the sandbars exposed at low tide between the north end of the town of Bocas del Toro and Cayo Carenero, where SBE observed them many times. The five specimens of jaegers obtained by SBE in Bocas del Toro are all *S. parasiticus*.

*Larus argentatus*, Herring Gull.—This is a rare visitor to Panama, hitherto known only from sight records mainly from December to April (Ridgely and Gwynne 1989). SBE obtained a female at the mouth of the Río Oeste on 28 February 1989 and observed another individual on 6 March 1989 perched on a building on the waterfront in the town of Bocas del Toro. The specimen, which is the first for Panama, is in heavily worn plumage that most closely corresponds to the “first-summer” plumage of Grant (1986).

*Aratinga nana*, Olive-throated Parakeet.—Bocas del Toro is the southernmost limit of this species, which

has been considered rare and perhaps only a wanderer to Panama (Ridgely and Gwynne 1989), where it was previously known from only six specimens. Two groups of these birds were observed along the eastern side of Isla Colón on 12 March 1987, and a pair was seen here in 1989. On Isla Cristobal we were fairly confident of seeing and hearing an *Aratinga* other than *A. finschi*, which latter was present in low numbers. Although we never had a good view of one, two specimens of *A. nana astec* obtained by a native with a slingshot on 24 February 1989 confirmed these impressions. These records are the first for Panama outside the period from April to October and indicate that the species is probably of more regular occurrence in Bocas del Toro than has hitherto been indicated.

*Coccyzus minor*, Mangrove Cuckoo.—Two specimens, a female and a male, were obtained on 2 and 3 March 1988, respectively, among mangroves on Cayo Nancy. The Mangrove Cuckoo is known as an uncommon bird of uncertain status on the Pacific slope of western and central Panama, with “a few reports from Caribbean slope in Canal area” (Ridgely and Gwynne 1989:182 [this statement was based on two sight records, R. Ridgely pers. comm.]). The species has not otherwise been found on the Caribbean coast anywhere between northernmost Costa Rica and Venezuela, except for “Bogotá” skins presumably from Colombia. The birds from Cayo Nancy were not in breeding condition and are probably migrants from elsewhere in the range. Although many subspecies of *C. minor* have been recognized in the past, a recent reanalysis concluded that there was no consistently recognizable geographic variation in the species (Banks and Hole 1991), so it is not possible to determine the origins of the specimens from Bocas del Toro.

*Chaetura pelagica*, Chimney Swift.—Although specimens from Bocas del Toro were the first of the species to be recorded south of Mexico (Chapman 1931, Wetmore 1968), the status of Chimney Swifts as spring and fall migrants in Panama has been uncertain due to the paucity of specimen records and the unreliability of sight observations. *Chaetura* swifts, presumably migrants of this species, were in evidence practically throughout the expedition of 1990 (which took place later in the year than the others), beginning with a few seen 1 April on Escudo de Veraguas and lasting until our departure from the Valiente Peninsula on 30 April, when numerous swifts appeared among the many Barn Swallows (*Hirundo rustica*) that passed over during the rain storm that accompanied our return voyage to Isla Colón. Five specimens collected on Cayo Agua in the evenings of 9 and 10 April are referable to *C. pelagica*. These records are not unexpected, as the species is reported to be a common spring migrant on the Caribbean coast of Costa Rica (Stiles and Skutch 1989).

*Glaucis hirsuta*, Rufous-breasted Hermit, and *Glaucis*

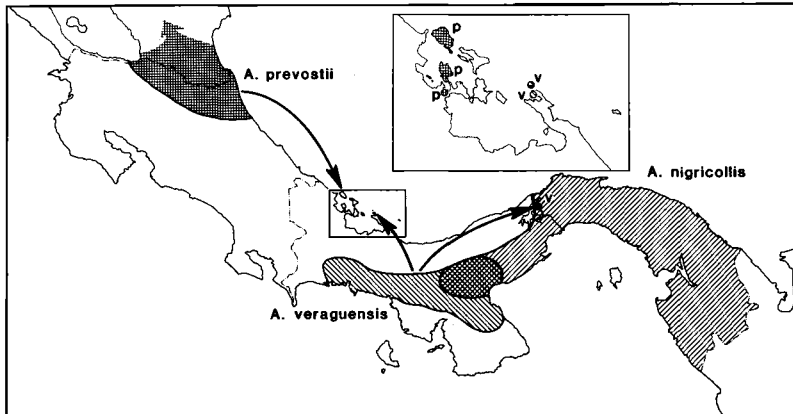


Fig. 2. Generalized distributions of forms of *Anthracothorax* in Costa Rica and Panama. *Anthracothorax prevostii* indicated by square hatching, *A. veraguensis* by left diagonals, and *A. nigricollis* by right diagonals. Approximate area of overlap of last two indicated by crosshatching (with an apparent extralimital record from Canal area). Inset shows details of known distribution of *A. prevostii* (p) and *A. veraguensis* (v) in Bocas del Toro.

*aenea*, Bronzy Hermit.—Species-level systematics in the genus *Glaucis* has been subject to varying interpretation. Peters (1945), for example, referred all taxa in the genus to a single species, whereas it is now customary to recognize two. The Bronzy Hermit (*G. aenea*), which is smaller and has a bronzy dorsum, a deep buff breast and belly, and a dark mandible, occurs in Nicaragua, Costa Rica and western Panama, and disjunctly in the Pacific lowlands of Colombia and Ecuador. The intervening areas of northern South America and eastern Panama are occupied by the species *G. hirsuta*, which is larger and has a greenish dorsum, a whitish or grayish chest and belly, and a yellow mandible with a black tip. *Glaucis hirsuta* is known in Panama as far west as western Panamá province on the Pacific slope, and Coclé Province on the Caribbean slope. *Glaucis aenea* is known on the Pacific side in Chiriquí and Veraguas, and on the Caribbean side in Bocas del Toro, where it has been taken mainly in the Almirante area (Wetmore 1968).

Specimens of *Glaucis* obtained by SBE on Isla Colón (5), Isla Cristobal (6), Isla Popa (1), and on the mainland at Tierra Oscura (3) are all referable to *G. aenea*. In second-growth forest 4 km W of Chiriquí Grande, a male perfectly typical of *G. hirsuta* was taken in a mist net on 8 March 1991 and, on the next day, a female of *G. aenea* was captured in the same net. At Punta Alegre, at the end of the Valiente Peninsula, SBE preserved six specimens of *Glaucis* in 1990, of which four are referable to *G. hirsuta* and two to *G. aenea*. These are the first records of *G. hirsuta* for Bocas del Toro and are the westernmost for the species.

The preliminary indication is that the two species of *Glaucis* are sympatric at least over a distance encompassing the eastern side of the Laguna de Chiriquí. It is not known how far east this sympatry may

extend along the Caribbean coast. The disjunct distribution of *Glaucis aenea* could have arisen when a single population was invaded and replaced by *G. hirsuta*, leaving relictual populations at the northern and southern ends of a formerly continuous range. The opportunity exists to study in detail just how these two species interact where they come together in Bocas del Toro.

*Anthracothorax prevostii*, Green-breasted Mango, and *A. veraguensis*, Veraguan Mango.—Although the systematics and distribution of this complex of hummingbirds is confusing and poorly understood, our discoveries in Bocas del Toro add significantly to previous information (Fig. 2). The genus *Anthracothorax* is represented in eastern Panama by the Black-throated Mango (*A. nigricollis*), which extends west to the Canal area on the Caribbean slope, and to southern Veraguas on the Pacific slope. A second form, *A. veraguensis*, in which the throats of adult males are entirely iridescent green, is endemic to Panama, having been recorded only on the Pacific slope from Chiriquí east to Herrera and southern Coclé, with two immature males recorded from the Caribbean side of the Canal area at Gatún (Wetmore 1968). Thus, it is rather widely sympatric with *A. nigricollis* and, therefore, not part of the same superspecies.

*Anthracothorax veraguensis* has often been considered a distinct species. From the province of Herrera, Wetmore (1968) reported a male with black on the throat and two others that seemed to have blackish at the bases of the throat feathers. This he regarded as sufficient grounds to list *A. veraguensis* as a subspecies of *A. prevostii*, a species ranging from Mexico to Costa Rica, with disjunct populations in South America. The last two specimens do not appear to me to be appreciably different from *A. veraguensis*, where-

as the one that has a decided amount of black on the throat was considered by R. C. Banks (label annotation) to be a hybrid with *A. nigricollis*.

In Costa Rica, *A. prevostii* occurs in the northern part of the country on the Pacific slope around the Golfo de Nicoya and on the Caribbean only to the Río Frio region and south to La Selva and Guápiles, although it is believed to be spreading southward with deforestation (Stiles and Skutch 1989). Because *A. prevostii* was not known to make a close approach to Panama, its appearance in Bocas del Toro came as somewhat of a surprise. Two males and a female were obtained by SBE in February 1988 at the edge of primary forest at La Gruta, Isla Colón. On Isla Cristobal, five more specimens were taken in February 1989; a female netted in a cutover area of grass and shrubs, and four males shot nearby from high in a flowering laurel tree (*Cordia alliodora* [R. & P.] Cham.) in a cattle pasture. D. A. Wiedenfeld observed individuals of *Anthracothorax*, most likely of this species, feeding high in flowering trees at Tierra Oscura in February / March 1989. The males obtained all have decidedly black throats, with the black extending to the chest or even the belly in some individuals. The black is never as extensive as in *A. nigricollis*, however, and the blue border along the black throat of that species is lacking. These specimens, therefore, are referable to *A. prevostii*, presumably the subspecies *gracilirostris* (type-locality Bolsón, Costa Rica), although the characters (shorter bill and less bronzy upperparts) given by Ridgway (1911) for distinguishing that taxon from the nominate race do not appear to me to be consistent.

Even more surprising was the discovery that individuals of *Anthracothorax* were abundant in the low, dense vegetation clothing the tiny islets known as Tiger Rocks, off the tip of the Valiente Peninsula, the only known breeding locality for the subspecies of Audubon's Shearwater described by Wetmore (1959) as *Puffinus lherminieri loyemilleri*. On Middle Tiger Rock, which is nearly divided into three separate islands, SBE obtained two males and two females on 24 April 1990. The males have green throats with no black and are clearly identifiable as *A. veraguensis*. After considerable searching, we succeeded in obtaining a specimen from the adjacent mainland, a male taken from a large tree in a pasture at Punta Alegre, Valiente Peninsula, on 28 April 1990. This is also referable to *A. veraguensis*.

The above specimens document the first records for the genus *Anthracothorax* in Bocas del Toro, the first occurrence of *A. prevostii* in Panama, and the first indication of the species *A. veraguensis* on the Caribbean slope, apart from the early record from Gatún. Only about 35 km separate the nearest occurrences of *A. prevostii* and *A. veraguensis* in Bocas del Toro, and the potential exists to determine what happens if these two taxa come in contact.

*Hylocharis eliciae*, Blue-throated Goldentail.—Al-

though found along both the Pacific and Caribbean slopes in Costa Rica, where it is rare on the latter (Stiles and Skutch 1989), this beautiful little hummingbird was known in Panama only on the Pacific slope, with the exception of individuals that cross the divide in the Canal area (Ridgely and Gwynne 1989). On 27 February 1989, I observed a hummingbird with a bright red bill feeding in a dead, vine-covered tree that projected above scrubby vegetation near our camp at Tierra Oscura. A few days later on 2 March, a male *H. eliciae* was netted in heavy second-growth forest several hundred meters from the original observation. Another male was taken 21 April 1990 in a mist net on a forested ridge at Punta Alegre, Valiente Peninsula. These are the first records of this species for Bocas del Toro.

*Campephilus melanoleucos*, Crimson-crested Woodpecker, and *C. guatemalensis*, Pale-billed Woodpecker.—This is another species pair with an abrupt transition in Bocas del Toro. *Campephilus melanoleucos* is known in the province on the basis of a specimen taken by von Wedel at "Cricamolá" (Peters 1931; also, see account of *Ramphocelus* below), and *C. guatemalensis* is known as far west as Chiriquicito on the Río Guarumo, near Chiriquí Grande (Wetmore 1968). Unfortunately, the data collected by SBE provide little further information on the point of contact between these species. *Campephilus guatemalensis* was obtained on Isla Popa, Isla Cristobal, and on the mainland as far west as Tierra Oscura. Woodpeckers heard giving a two-note tap at Chiriquí Grande were presumably *C. guatemalensis*, as the tapping of *C. melanoleucos* consists of more notes (Ridgely and Gwynne 1989).

*Gymnopithys bicolor*, Bicolored Antbird.—Two subspecies are known in Central America that differ subtly but consistently. *Gymnopithys b. olivascens*, which has the forecrown brown, concolorous with the rest of the dorsum, extends from Honduras south to Panama on both slopes in Chiriquí and Bocas del Toro. The nominate form is known from Veraguas eastward into Colombia and has the forecrown gray. A series of four obtained by SBE at Tierra Oscura is referable to *G. b. olivascens*, whereas one taken at Punta Alegre on the Valiente Peninsula has the forecrown distinctly gray and is definitely referable to *G. b. bicolor*. Thus, even though the subspecific differences are not great, the geographic break is apparently as marked as in full species such as the two *Campephilus* woodpeckers.

Wetmore (1972:226) considered the few specimens he saw from Bocas del Toro to be "slightly intermediate toward typical *bicolor* in somewhat grayish forehead, but are best placed with *olivascens*." Intermediacy is not evident in any of the specimens I examined, including those seen by Wetmore, with the exception of one of the four birds from Tierra Oscura, which shows a few grayish feathers at the base of the bill. Any zone of intergradation must be very narrow, occurring between Tierra Oscura and the Valiente Peninsula.

*Cnipodectes subbrunneus*, Brownish Flycatcher.—A female with an enlarged ovary (largest follicle 8 mm) and a brood patch was netted 20 April 1990 at Punta Alegre, Valiente Peninsula. This is the first record for Bocas del Toro and is the westernmost occurrence of the species, which hitherto was known only as far west as El Uracillo, northern Coclé Province (Ridgely and Gwynne 1989). Intensive collecting, including mist netting, has failed to reveal the Brownish Flycatcher in the vicinity of Almirante, so this species must be counted among those taxa whose distribution ends rather abruptly along the Laguna de Chiriquí.

*Elaenia flavogaster*, Yellow-bellied Elaenia.—This species had not been recorded from the province of Bocas del Toro until Ridgely and Gwynne (1989:286) reported "small numbers found in lower Río Changuinola area in April 1980, likely spreading in from adjacent Costa Rica." The spread must have been rapid, as SBE obtained specimens from Isla Colón (1988), Isla Bastimentos (1987), Cayo Agua (1990), and at Punta Alegre on the Valiente Peninsula (1990). There is considerable habitat for the species on Isla Cristobal, where it may simply have been overlooked. This species now probably occurs throughout the settled parts of Bocas del Toro. The specimens collected that are in fresh plumage appear somewhat darker than those from the rest of Panama and, therefore, tentatively can be assigned to the northern race *subpagana*, which would accord with their presumed Costa Rican origin.

*Platyrrinchus cancrominus*, Stub-tailed Spadebill.—Of the discoveries made by the SBE, the least expected was that populations of the Stub-tailed Spadebill (*P. cancrominus*) occur on each of the major islands of the Bocas archipelago. This species was hitherto unknown in Panama. Its nearest approach is on the Pacific slope of northwestern Costa Rica (Fig. 2), from where the species ranges north into Mexico (AOU 1983).

*Platyrrinchus cancrominus* belongs to the *P. mystaceus* species complex, which I believe actually consists of at least three distinct species (unpubl. manuscript). True *P. mystaceus* (type locality Paraguay) has a pale mandible, a large crown patch in males, and ranges in lowlands from Argentina to Venezuela. Another species, also with a large crown patch but with a dark mandible, occurs at middle elevations in the montane regions of Venezuela and in the Andes from Bolivia north into Panama and Costa Rica. The earliest name available for this taxon is *Platyrrinchus albobularis* Sclater, 1860 (type locality Pallatanga, Ecuador). Finally, there is *P. cancrominus*, which differs from *P. albobularis* in having a light colored mandible and the crown patch greatly reduced or absent, and also in habitat and vocalizations (Slud 1964, Stiles and Skutch 1989).

Specimens of *P. cancrominus* were obtained by SBE in mist nets placed in primary to moderately disturbed lowland evergreen rain forest. All of the birds caught were preserved, and the length and intensity of netting efforts were approximately equal at each

of the Smithsonian camps. Thus, specimen numbers may provide a rough indication of the relative abundance of the species at each locality, although exceptionally rainy weather greatly impaired collecting activity on Isla Popa. *Platyrrinchus cancrominus* occurred on each of the following islands (number of specimens in parentheses): Isla Colón (2); Cayo Nancy (15); Isla Bastimentos (13); Isla Cristobal (5); Isla Popa (6); and Cayo Agua (8). The abundance of this species on Cayo Nancy is interesting because the forests of this island were entirely supplanted by banana plantations about 1900. Presumably, the spadebills recolonized the island following the regrowth of forest, which suggests that the species can disperse over water. Vocalization of birds recorded on Cayo Agua by T. J. Parsons agree with those described for *P. cancrominus* (Stiles and Skutch 1989).

There is a single unrecognized mainland record of *P. cancrominus* from Bocas del Toro. This specimen (USNM 468966) was previously identified as *P. mystaceus* (Wetmore 1972). It was obtained by Alexander Wetmore at Water Valley, near Almirante (Fig. 3), on 22 January 1958. Originally, it was sexed as a male, but on his measurement sheets and in publication Wetmore (1972:505) recorded the specimen as a female. No doubt this is because it lacks the large, yellow crown patch characteristic of males of *P. mystaceus/albobularis*. SBE did not obtain *P. cancrominus* at any mainland camps, nor has it been found in the heavily collected Almirante region apart from Wetmore's specimen. If there were a resident population of *P. cancrominus* on the mainland, it could hardly have escaped notice. Thus, this specimen may have been a vagrant from one of the islands.

Despite the isolation of the Panamanian populations, specimens of *P. cancrominus* from Bocas del Toro do not differ in pattern or color from those of the nominate form to the northwest. I concur with Hellmayr (1927) that the supposed southern subspecies *P. cancrominus dilutus* Miller and Griscom (1925), from El Salvador, Nicaragua, and Costa Rica, is not recognizable, even though it was retained by Traylor (1979). The Panamanian populations must represent relicts from a time when the range of *P. cancrominus* was more extensive and presumably continuous through Costa Rica.

As now realized, the range of *P. cancrominus* is bisected by an allied species, *P. albobularis*. The latter has a disjunct range in Middle America, extending from northwestern Costa Rica to Cerro Campana in western Panama Province, and from the highlands of San Blas and Darién into South America (Fig. 3). In Middle America it is a montane bird, occurring in wet, cool, subtropical forest at middle elevations (Slud 1964:261), which explains its absence in the lowlands of central Panama.

There is a single supposed lowland record of *P. albobularis* in Panama, from Garachiné, Darién (Bond and Meyer de Schauensee 1944:38). I have examined

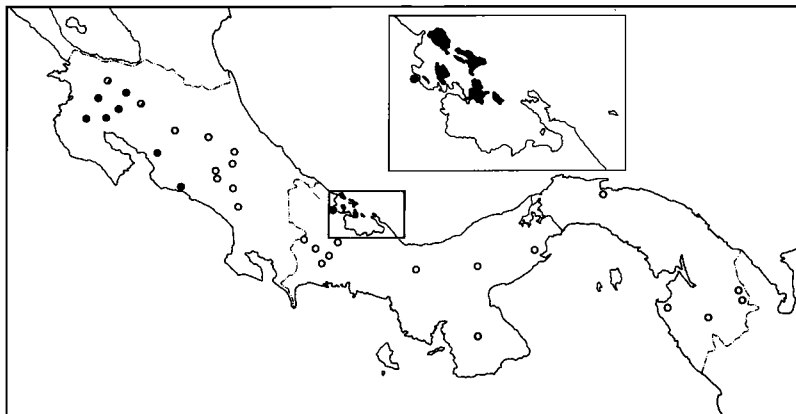


Fig. 3. Map of Costa Rica and Panama showing distribution of *Platyrinchus cancrominus* (solid dots and black) and *P. albogularis* (open circles). Two half-shaded dots indicate localities on Costa Rica from which both species are represented, although they were probably taken at different elevations. Inset shows details of distribution of *P. cancrominus* in Bocas del Toro. Distributions shown based on specimens in museums listed in the Acknowledgments, with the exception of sightings on Cerro Brewster, province of San Blas, Panama, reported by Ridgely and Gwynne (1989).

this specimen (ANSP 150196, male, 2 May 1941) and found it to be correctly identified (i.e. it is not *P. cancrominus*). However, the specimen was most likely taken at a higher elevation, on nearby Cerro Sapo, and simply mislabeled. It was obtained on the fifth George Vanderbilt expedition, during which the expedition's schooner *Pioneer* was anchored at Garachiné from 17 April to 9 May 1941, where it was used as a base of operations for collecting forays into the highlands of Cerro Sapo. When trails had been cut, runners were used to send specimens down from Cerro Sapo for freezing and eventual preparation on board ship (Vanderbilt in Bond and Meyer de Schauensee 1944:26). Thus, there would appear to have been ample opportunity for a mislabeling error of this sort.

*Platyrinchus cancrominus* would probably have long been considered conspecific with *P. mystaceus/albogularis*, as indeed it was treated by Zimmer (1939), were it not for the fact that the two are narrowly sympatric in northwestern Costa Rica (Carriker 1910, Slud 1964, Stiles and Skutch 1989). The existence in Bocas del Toro of populations of *P. cancrominus* some 300 km disjunct from those in Costa Rica, thus bracketing the intervening montane populations of *P. albogularis*, provides further evidence that these taxa are distinct species.

*Progne subis*, Purple Martin.—One female with light fat was obtained on Cayo Agua on 11 April 1990. A male was taken at Punta Alegre on 21 April, and a pair the following day at the same spot. None of these birds was fat. The Purple Martin is poorly known in Panama in spring migration, most of which takes place in February and March, so these birds were all rather late, although Purple Martins are also known in Costa Rica as late as April (Stiles and Skutch 1989).

*Turdus assimilis*, White-throated Robin.—A single female of the subspecies *T. a. cnephosus* was netted on 7 March 1991 in second-growth lowland forest 4 km W of Chiriquí Grande, nearly at sea level. Except for an endemic subspecies on Isla Coiba on the Pacific side, this is ordinarily an upland bird in Panama. The western subspecies *T. a. cnephosus* extends in the mountains and foothills east to Cerro Campana in western Panama Province, but has been known to disperse to lower elevations on both slopes in the Canal Area (Ridgely and Gwynne 1989). The present record is apparently the first at any elevation in the Province of Bocas del Toro.

*Vireo griseus*, White-eyed Vireo.—This species is only a casual winter visitor in Panama, being known previously only from two specimens from Bocas del Toro (Almirante and Isla Bastimentos) and a sight record in the Canal area (Ridgely and Gwynne 1989). A fourth record is provided by a female of the subspecies *V. g. noveboracensis* (USNM 696538) taken 18 February 1988 at La Gruta, on Isla Colón.

*Chlorophanes spiza*, Green Honeycreeper.—The grass-green subspecies *C. s. arguta* is doubtfully distinct from *C. s. guatemalensis*. The combined ranges of these forms extend from southern Mexico throughout Panama to northwestern Colombia. The species was encountered on only two of the main islands of the Bocas archipelago, but may have been overlooked on others. A specimen from Isla Cristobal is typical of *C. s. arguta*, but two from Isla Bastimentos are entirely different, being blue-green rather than grass-green. The latter specimens would not appear out of place in a series of *C. s. subtropicalis*, the subspecies occurring throughout the subtropical zone of the Andes of Colombia and western Venezuela, except that the bills appear

longer and more slender. More material is needed to determine the status and distribution of this form. If not restricted entirely to Bastimentos, it would most likely also be found on Isla Colón. It either constitutes an extraordinary example of a relictual distribution or a striking instance of convergence.

*Tangara inornata*, Plain-colored Tanager.—The very distinct subspecies *T. i. rava*, distinguished by its deep buff rather than whitish underparts, was originally known only from the vicinity of Almirante, Bocas del Toro (Wetmore 1963). Subsequently, the species has been recorded all along the Caribbean coast of Costa Rica (Stiles and Skutch 1989) and specimens exist that are referable to *T. i. rava* (F. G. Stiles pers. comm.). SBE obtained *T. i. rava* on Isla Cristobal and observed it at Tierra Oscura. Therefore, the collection on 18 April 1990 of two specimens at Punta Alegre on the Valiente Peninsula that clearly are referable to *T. i. languens*, the subspecies found in the rest of Panama, was surprising. Once again, the break between these two forms must be a very narrow one somewhere along the southeastern shore of the Laguna de Chiriquí.

*Ramphocelus icteronotus*, Yellow-rumped Tanager, and *R. passerinii*, Scarlet-rumped Tanager.—It has been known for many years that the contact between these two very distinct species occurs somewhere along the shore of Chiriquí Lagoon, as von Wedel sent specimens of both species to Harvard labelled "Cricamola" (Peters 1931:341). I suspect this designation was used by von Wedel to cover any place that he reached via the Río Cricamola. We still do not know exactly where the abrupt transition between these species takes place, however, nor whether any intergradation occurs in this area. SBE obtained typical specimens of *R. passerinii* from Chiriquí Grande westward, including all of the islands of the lagoon (Bastimentos, Popa, Colon, Cristobal, and Cayos Agua, Nancy, and Roldan). Just across the narrow strait between Cayo Agua and the Valiente Peninsula, *R. icteronotus* was abundant at Punta Alegre. Of the many individuals netted there, a single male had the rump with a decidedly orange tinge, but this may be only an individual variant rather than an intergrade with *R. passerinii*, as none of the females showed any indication of introgression.

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