

# Records of Rare and Uncommon Birds from Recent Surveys on St. Croix, United States Virgin Islands

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## Abstract

This paper contains data from the first long-term avifaunal surveys on St. Croix conducted since the 1980s, supplemented by observations of other individuals and a rigorous assessment of the literature. The observations of 62 species included here span 2002 through July 2004 and emphasize site-specific breeding information of 23 locally rare or uncommon species (16 species of waterbirds and seven of landbirds). This includes the first and second confirmed breeding records of Least Grebe (*Tachybaptus dominicus*) and the first confirmed breeding records of White-winged Dove (*Zenaidura macroura*) and Antillean Nighthawk (*Chordeiles gundlachi*). Breeding information on all 23 species is essential for establishing conservation priorities, for both species and sites, especially at manmade freshwater ponds, which had never been sampled ornithologically. Many vagrants and scarce transients are also documented herein, including one new verified species, Connecticut Warbler (*Oporornis agilis*), and the first report of Eurasian Wigeon (*Anas penelope*) in the U. S. Virgin Islands. The status of many breeding and nonbreeding species was frequently reliably assessed by examining material in museum collections, which is essential for documentation of avian biodiversity on small subtropical islands like St. Croix, where habitat loss from development and other human uses is a continued threat.

## Introduction

Avifaunal surveys in the U. S. Virgin Islands (USVI), in the northern USVI, and on St. Croix began in the late 1850s (Newton and Newton 1859a-d; Cassin 1860, Newton 1860, Wetmore 1927). Like most subsequent visiting naturalists', the Newton brothers' studies on St. Croix were sporadic, although their efforts (confined to parts of two consecutive years) were greater than most other short-term studies that followed them (e.g., Cory 1890, 1891). Until the work of Norton (1979, 1981) and Sladen (1988, 1992) from the late 1970s through the 1980s, the only earlier long-term studies were conducted in the northern USVI by Nichols (1943), who was director at the Agricultural Experiment Station, and on St. Croix by Harry A. Beatty and George A. Seaman, resident naturalists, sportsmen, scientific collectors, and in the case of Seaman an employed wildlife biologist for 22 years (Seaman 1980, 1993; Sladen 1988). This paper documents rare and uncommon birds of St. Croix from the first comprehensive avifaunal surveys conducted since the 1980s, especially for waterbirds, which are the dominant group there (Raffaele 1989, Leck and Norton 1991). New information on critical species such as White-cheeked Pintail (*Anas bahamensis*) and Wilson's Plover (*Charadrius wilsonia*) that have previously lacked summaries of their breeding (and nonbreeding) status will be documented more fully else-



Figure 1. One of two West Indian Whistling-Ducks that rested on a log on one of the lower freshwater ponds at the Carambola Golf Resort on 25 October 2002. This record was the first documented occurrence of this species in the U.S. Virgin Islands since 1941. Photograph by Floyd E. Hayes.

where. The focus is on documentation of breeding information, which has been neglected on St. Croix.

## Methods

Avifaunal surveys were conducted from February 2002 through July 2004, supplemented by observations of other individuals acknowledged herein; unattributed records are by McNair (DBM). Information is included on one fairly common species, Ruddy Turnstone (*Arenaria interpres*), for which there are sightings of marked birds. Recent observations are supplemented with documentation for selected unpublished observations since the period of Norton and Sladen (from the 1980s to the present). This includes undocumented details of breeding information for several species by Sladen (FWS) and information in Division of Fish and Wildlife [DFW] files. Finally, verified records (e.g., photographs by Carol Cramer-Burke; hereafter CCB) are emphasized. This includes documentation of historical specimens in museum collections that are essential to reliable assessment of species status (for vagrants or rare and uncommon birds), especially when adequate summaries are lacking. Future studies will include avifaunal comparisons of species composition and abundance between freshwater and saltwater (including brackish) sites.

The emphasis throughout is on site-specific information in salt- and freshwater (and terrestrial) environments that is critical to conservation of scarce species that may be declining (or increasing) on small islands, where threats to even a few sites may seriously diminish avian biodiversity. This includes manmade freshwater wetlands that have never been systematically sampled before in the USVI. Confirmed (e.g., active nests, adults with flightless young) and probable breeding evidence (e.g., adults on territory for over 10 days; Hayes and Samad 2002) are emphasized to distinguish breeding from nonbreeding birds unambiguously. The latter may outnumber the former at some breeding sites (e.g., Black-necked Stilt, *Himantopus mexicanus*), so this approach avoids the problem of incomplete documentation of breeding evidence that has characterized some avifaunal surveys in the USVI (e.g., Dammann and Nellis 1992). Other than nest data, data on abundance were based on counts of birds at each site, which included general observations and mapping of territories for some species. Material evidence (specimens, photographs) are archived at the following institutions: ANSP (Philadelphia Academy of Natural Sciences), DFW (St. Croix, USVI), FMNH (Field Museum of Natural History, Chicago), NMNH (National Museum of Natural History, Smithsonian Institution), PUC (Pacific Union College, California), SEA (St. Croix

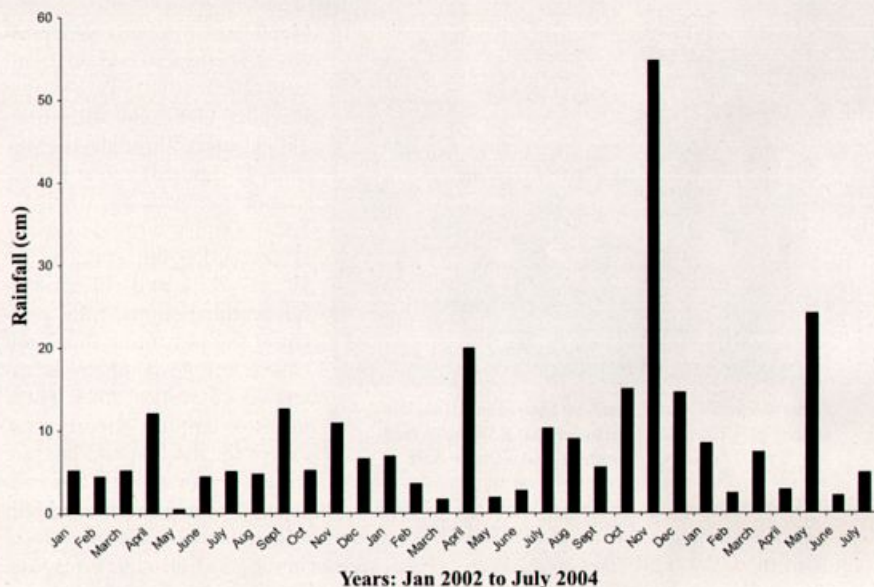


Figure 2. Monthly rainfall (cm) at St. Croix from January 2002 through July 2004 (data from the United States Department of Agriculture Experimental Station at Kingshill).

Environmental Association, Gallows Bay), UMMZ (University of Michigan Museum of Zoology, Ann Arbor), UMZC (University Museum of Zoology, Cambridge, UK), and ZMUC (Zoological Museum of the University of Copenhagen, Denmark).

Site names follow McGuire (1925), Scott and Carbonell (1986), and Imsand and Philibosian (1987). A site is a discrete geographic entity (e.g., Southgate Pond, Great Pond) that may include adjacent habitat (e.g., associated beach berm). Several sites are occasionally subdivided where pertinent for a particular species (especially at the Buccaneer Hotel, which has several important discrete salt- and freshwater sites for birds). Sites not listed in the above references, which only list three freshwater ponds on St. Croix (Castle Burk Pond, Creque Reservoir, Fredensborg Pond), are listed in Appendix I. The UVI Wetlands Reserve cited herein is also called French Pond (actually two ponds; Imsand and Philibosian 1987). Rainfall data (January 2002 through July 2004, U.S. Department of Agriculture Agricultural Research Station at Kingshill; Figure 2) included a 50-year rainfall event during mid-November 2003 (means of 40-55 cm depending on exact location on St. Croix) that followed a year-and-a-half drought. The rainfall data at Kingshill understate the severity of the drought, which was more severe at most other locations on St. Croix.

## Results

### SPECIES ACCOUNTS

West Indian Whistling-Duck  
*Dendrocygna arborea*—Two

adults resting on a log at one of the lower freshwater ponds on the Carambola Golf Resort on 25 October 2002 (DBM, F. E. Hayes; PUC 1, Figure 1) was the first documented occurrence of this West Indian endemic in the USVI since 1941. Later sightings have been reported (e.g., Seaman 1955, Rodrigues 2002), but adequate documentation is lacking (but see Seaman 1973, 1993).

West Indian Whistling-Ducks were formerly resident in mangrove swamp forest on St. Croix and St. Thomas, although precise data are lacking for St. John (Newton and Newton 1859d, Beatty 1930, Nichols 1943, Seaman 1993). Newton and Newton (1859d) stated this species was pretty common on St. Croix in 1857-1858 and collected two specimens (whereabouts unknown), although its breeding status was not documented. Beatty (1930) and Nichols (1943) stated that West Indian Whistling-Ducks were very rare throughout the USVI, although Beatty added that 15 years earlier it used to breed on St. Croix, when it was very common. Nichols (1943) added that it was formerly common and still occasionally



Figure 3. Two Fulvous Whistling-Ducks that remained at Southgate Pond until 16 May 2004 provided the first verified record for the U.S. Virgin Islands. Photograph by Carol Cramer-Burke.



Figure 4. A female Hooded Merganser lingered on St. Croix into summer 2004. This molting bird was present at Southgate Pond as late as 3 July (here). Photograph by Carol Cramer-Burke.

seen on Water Island and on the St. James cays off St. Thomas. The last verified records in the USVI until 2002 were seven specimens collected on St. Croix from 1939-1941 (FMNH 414023, 414694-414699). Two of these specimens were downy chicks collected on 15 January 1941, the only confirmed breeding record in the USVI.

Nichols (1943) stated that an adult West Indian Whistling-Duck with seven nestlings was seen on a pond at Sprat Bay, Water Island on 29 May (year unknown) and reported second-hand information that it nested in hollow butts of dead agaves (*Agave* spp.) on Great St. James Island. Seaman (1973, 1993) stated that a pair nested on Green Cay off St. Croix; the nest and clutch of 13 eggs were discovered on the ground underneath a cactus and a bush on 16 September 1956. West Indian Whistling-Ducks are known to nest on offshore cays elsewhere (e.g., Antigua), and it is possible this was a whistling-duck nest (although possibly also a nest of White-cheeked Pintail, which nests regularly on Green Cay). Seaman (1957b) also stated that West Indian Whistling-Ducks formerly nested at Southgate Pond, which may have occurred, but documentation is lacking.

Re-introduction of West Indian Whistling-Duck would be a high priority for the USVI (cf., BVI, Lazell 2002) if suitable wetlands exist (cf. St. Kitts and Nevis, where only one wetland contains suitable habitat for this species; Childress and Hughes 2001). Great Pond, where this species used to occur on St. Croix (Seaman 1973) and where mangroves have increased for over the past decade, would probably be the best re-introduction site for this nocturnal species in the USVI. West Indian Whistling-Ducks prefer nesting in cavities, and placement of artificial cavity structures at Great Pond would be a prerequisite for re-introduction efforts.

**Fulvous Whistling-Duck *D. bicolor***—One bird was present at the VI Agricultural Station Middle Pond on 18 November 2003, during the mid-November rainfall event.

Much later, two birds were present at Southgate Pond on 2 January 2004 (CCD, L. Yntema; hereafter LDY) and again from 25 February through 16 May (SEA 1, Figure 3) and at Krause Lagoon Remnant on 3 January 2004; a single bird was present at Granard South Pond on 10 January 2004, and one adult in full breeding plumage was present at the Buccaneer Hotel golf course link #8 pond (fresh water) on 13-31 July 2004. These non-overlapping occurrences, except for the first and last, are treated herein as one. Thus con-

sidered, these are the third, fourth, and fifth occurrences (and first verified record) of this species in the USVI, all at St. Croix. The first two occurrences were a flock of nine at Southgate Pond from 31 March to 10 April 1976 (Bond 1977; E. Roebuck, FWS; whereabouts of photograph unknown) and shortly thereafter (19 April) a single bird at Prosperity Marsh (FWS, E. Sladen, P. Sladen) and another single bird at Fredensborg Pond on 25 October 1983 (Norton 1984a; FWS, pers. comm.).

**Eurasian Wigeon *Anas penelope***—One rufous-morph female that associated with a male American Wigeon (*A. americana*) at Windsor South Pond on 15 November 2003 represented the first occurrence of the species in the USVI.

**White-cheeked Pintail**—This species breeds at fresh- and saltwater sites, although until recently, only breeding at saltwater sites or on cays had been documented. White-cheeked Pintails nested at or near at least three freshwater sites in the interior of St. Croix during April and May 2002, twice during June 2003, and on at least twelve sites since mid-November 2003, including Southgate Pond, where at least 10 families fledged young. The number of documented breeding sites has approximately quadrupled. New information on the nonbreeding status of White-cheeked Pintails in the USVI was also obtained at freshwater (and saltwater) ponds, where birds had been overlooked (or inadequately documented). As many as 350 birds in a single flock have been present since February 2002 at link #8 pond on the Buccaneer Hotel golf course where pintails are fed, a pronounced change from the high count of 23 at the Buccaneer Hotel (apparently one pond) in 1972 (Leck 1975). Pintails are also fed at two sites on St. Thomas where birds congregate. Full details

on the historical and current status of White-cheeked Pintails in the USVI will be published elsewhere (DBM and E. E. Hayes, in prep.).

**Hooded Merganser *Lophodytes cucullatus***—One female was seen at Rust-op-Twist Salt Pond on 27 January 2004 (DBM, S. Fromer) during the passage of a cold front. Single females were seen later at Fredensborg Pond on 2 March (S. Fromer, LDY), at Coakley Bay Salt Pond on 11-17 March (LDY), at Schuster Lower Pond on 28 April (LDY), and at Southgate Pond from 29 April to 3 July (SEA 2, Figure 4). Treating all these recent reports as one occurrence, this constitutes the fourth occurrence for St. Croix and fifth for the USVI. All birds have been females. Beatty (1945) collected one bird (FMNH 156719) out of a flock of three at Rust-op-Twist Salt Pond on 18 December 1944. W. Gladfelter (pers. comm.) saw another flock of three at Prosperity Marsh in the late 1970s, and FWS and E. Roebuck saw one bird at Prosperity Marsh on 14 December 1981.

**Ruddy Duck *Oxyura jamaicensis***—This species is an irregular winter visitor in small numbers to St. Croix, but Ruddy Ducks rarely occur here during summer. An adult male in full breeding plumage and an adult female were present at Fredensborg Pond on 24 June 2002 and 1 June 2003, respectively; one female or immature bird was seen at Granard South Pond from 13 July to 2 September 2002; and again at Granard South Pond, one female and up to three males in full breeding plumage were present from 3 April through 10 July 2004 (female last seen 23 June), but these birds did not breed (SEA 3, Figure 5). These summer birds were probably of the nominate West Indian subspecies.

**Least Grebe *Tachybaptus dominicus***—One pair nested in the northwestern hills at Creque Reservoir, where they successfully raised two broods from 3 February through 2 June 2002 (Rodriguez 2002; DBM, unpubl. data). Three young of the first brood were first seen on 7 March. Least Grebes



Figure 5. This pair of Ruddy Ducks at Granard South Pond on 6 April 2004 was later joined by two adult males, also in full breeding plumage, but these birds did not breed. Photograph by Carol Cramer-Burke.

were last seen on 26 April (three young, first brood), 23 May (adult pair), and 2 June (two young, second brood). Eggs (second clutch) incubated on a low mound of dead vegetation 2 m from shore on 28 March had hatched by 16 April, when both broods were attended by adults. The pair and second brood presumably left in response to rapidly falling water levels with the onset of a prolonged drought; Creque Reservoir dried out completely by mid-June. This breeding record is the first for St. Croix. Creque Reservoir re-filled during mid-November 2003. An adult Least Grebe in breeding plumage was detected on 22 January 2004 and thereafter through 15 June (with occasional absences) but remained unmated. However, a pair raised four consecutive broods (from four nests) at Windsor North Pond from February through July 2004; one, four, three, and four young successfully fledged, respectively (LDY, S. Fromer, DBM; SEA 4, Figure 6). This pair also built a fifth nest in late July, in preparation for another breeding attempt. This breeding record is the second for St. Croix.

Otherwise, Least Grebes have only been reported on St. Croix during Christmas Bird Counts from 1999–2002 ( $\leq 6$  birds; a count of 20 at Fredensborg Pond is erroneous) apart from some recent reports of nonbreeding birds. This includes one adult seen by LDY away from Creque Reservoir at nearby Annaly Pond on 17–18 December 2000. Other recent reports include single adults in breeding plumage at Hermitage Pond on 5–14 October 2003 and at Williams Pond on 6–19 January 2004 (LDY, DBM), but these birds were unmated (the latter bird may have moved to nearby Creque Reservoir). At Windsor South Pond, a single immature (probably from the first brood) was seen from 20 May through 23 July 2004, whereas one to two adults in nonbreeding plumage were present 14–29 July. Also on 14 July, an immature (probably from the second brood) was at Longford Lower Pond, the only occurrence from outside the northwestern hills. Reports earlier than 1999 have not been substantiated (*contra* Bond 1984, Raffaele 1989; also see Bond 1986), except for one adult ca. 1998–1999 that was retrieved from a small pond at Grove Place (*vide* LDY), also outside the northwestern hills.

In the northern USVI, Least Grebes recently bred at several sites on St. Thomas and St. John (F. E. Hayes, unpubl. data). Least Grebes also nested on St. Thomas and St. John more than 60 years ago (Nichols 1943). The recent spate of Least Grebes since 1999 and confirmed nest records on all three large islands suggest that this species is re-occupying breeding range in the USVI (DBM and F. E. Hayes, in prep.), as breeding at some sites (e.g., Creque Reser-

voir on St. Croix) would not have been overlooked in the 1980s.

**Pied-billed Grebe *Podilymbus podiceps***—A nest with five eggs located by DBM (DFW 1, Figure 7) was found placed at the pond surface over a crotch of dead twigs and branches of a tree that had fallen into one of the lower ponds at the Carambola Golf Resort in mid-December 2002, but this breeding attempt failed. At the same site, a new nest with four eggs was discovered during May 2003, and four small young with parents were later seen in June. A new nest with one egg discovered on 1 November 2003, at the same site, failed because of rising waters from the mid-November rainfall event. Pied-billed Grebes also nested in the smaller pool at the Buccaneer Hotel Wastewater Treatment Ponds during January 2004, when three of four eggs hatched and the young fledged. These nests with eggs are the first to be documented in the USVI. Other nests with eggs and family groups with recently hatched young have been seen on at least 12 other freshwater ponds on St. Croix. The breeding status of the Pied-billed Grebe will be fully documented elsewhere (McNair et al., in prep.).

**White-tailed Tropicbird *Phaethon lepturus***—Two pairs nested in low limestone crevices (1–2 m above sea level) at Canegarden Cliff, where they successfully raised one young each in 2002. In 2003 and 2004, one pair fledged one young from the same crevice; all birds departed by May (CDL; T. Lance, pers. comm.). Birds may remain into June, and two to four pairs have nested here since before 1980 (Seaman 1980, 1993; Norton 1988a; R. Philibosian, FWS, and T. Lance, unpubl. data), the only breeding site on St. Croix. Seaman (1980, 1993) reported about 10 breeding pairs at Canegarden Cliff before 1980. Imsand and Philibosian (1987) reported this species nesting nearby at Watchho (Vagthus Point) peninsula, but this report has been retracted (R. Philibosian, pers. comm.). In the nineteenth century, Newton and Newton (1859d) stated that they sometimes observed tropicbirds on St. Croix, probably this species.

**Brown Pelican *Pelecanus occidentalis***—The only confirmed breeding site of this federally listed endangered species at St. Croix before 2000 was along the north slope of Buck Island (Seaman 1961, Seaman and Randall 1962, Collazo et al. 1998, 2000, Witmer et al. 2002). More recent data on Buck Island include seven pairs nesting in trees on 7 August 2002 (adults incubating eggs; P. A. Mayor, DBM), although larger

numbers (ca. 35 pairs) have nested here. The National Park Service (NPS) claimed that as many as 100 pairs have recently (April 2001) nested at Buck Island (Witmer et al. 2002), but this figure has never been confirmed, and supporting data are lacking. A set of two eggs was collected on St. Croix as early as 10 March 1924 (whereabouts unknown), probably from Buck Island but perhaps from Green Cay (see below), because Brown Pelicans do not nest on St. Croix proper (*contra* Beatty 1930).

On Green Cay, about 50 pairs of Brown Pelicans nested from May through September 2000 (during successful rat eradication conducted from June 2000 to February 2001; CDL). In the Caribbean, Brown Pelicans are one of only two seabirds that commonly nest on cays occupied by rats (Campbell 1991). Brown Pelicans again formed a breeding colony on Green Cay in 2003, when censuses were conducted by CDL and DBM from 23 April through September, when ca. 48 pairs nested (DFW 2, Figure 8), and in 2004, when over 60 pairs nested (nest-building began as early as 5 December 2003 and egg-laying began in February and March). Nest success was high in both seasons (CDL and DBM, in prep.).

Reliable information on fledgling success of Brown Pelicans has never been obtained before on either of these two cays off St. Croix except on Green Cay in 2003 and 2004. Long-term monitoring of colonies at Buck Island, Green Cay, and elsewhere in the northern USVI and BVI is strongly recommended (Comprehensive Wildlife Conservation Plan; Hayes et al. 2005).

**American Bittern *Botaurus lentiginosus***—One bird was flushed at the margin of Schuster Lower Pond on 15 November 2003. This marks the third occurrence for St. Croix and the fifth in the USVI. The first bird (adult female) on St. Croix was collected by Seaman (1954b; USNM 599682) at Anguilla on 7 October 1953, and S. Fromer flushed another bird from the margin of the upper pond at the Carambola Golf Resort



Figure 6. This adult Least Grebe (with its mate) successfully raised four consecutive broods at Windsor North Pond from January through July 2004. The pair was building a nest in preparation for their fifth breeding attempt on 24 July (here). Photograph by Carol Cramer-Burke.

on 17 December 2000.

**Great Blue Heron** *Ardea herodias*—Previously undocumented at St. Croix was one pair that nested with Great Egrets (*A. alba*) (and Black-crowned Night-Herons [*Nycticorax nycticorax*]) at UVI Wetlands Reserve on 28 April 1985, when a nest in a Black Mangrove (*Avicennia germinans*) contained three downy young (FWS). Also, two adult Great Blue Herons were on an empty nest at Green Cay on 2 June 1985, from which one juvenile with pinfeathers on its head seen on 11 May at nearby Southgate Pond may have been raised (FWS). The only documented historical breeding record was at Mangrove Lagoon on St. Thomas, where two pairs nested, low in mangroves, near a single pair of Great Egrets (Nichols 1943). One Great Blue Heron clutch was collected on 21 April 2005 (WFVZ 155641).

**Great Egret**—This species is not known to breed in the USVI except on St. Croix (Raffaele 1989; DFW, unpubl. data), other than one pair that purportedly nested at Mangrove Lagoon, St. Thomas, where three large young were seen in a nest on 21 April (year not given; Nichols 1943). This record was not verified, and the nest, among mangrove roots, was only 75 cm above water, which would be unusual. Leck and Norton (1991) stated Great Egrets had nested on St. John, but we can find no basis for this statement. All breeding records have heretofore been from coastal environments, including the only upland nest records. A single pair (with young) nested in a large Tamarind (*Tamarindus indica*) on the berm of Great Pond on St. Croix on 26 July 1983 (FWS). At least two pairs again nested in this tree on 30 April 1988. Unusual, therefore, was a colony of five pairs on nests, again in a large Tamarind, but in the interior at Castle Burk Pond from March through May 2004. This constitutes the first confirmation of breeding at a freshwater wetland in the USVI.

**Tricolored Heron** *Egretta tricolor*—Two pairs nested during April and May 2002 at a mixed heronry in a large isolated clump of Red Mangroves (*Rhizophora mangle*) 5 m tall along Alucroix Channel, St. Croix. Both nests were 2-3 m above water; the one nest examined on 21 April contained two eggs. At least one pair again nested at this colony site during April and May 2004. At Great Pond, three adults were present (two building a nest) at a mixed heronry in Red Mangroves 8 m tall on 20 March 2004, and on 27 March one adult was feeding three large



Figure 7. This Pied-billed Grebe nest was built over a foundation of dead twigs and small branches of a tree that had fallen into one of the lower ponds at the Carambola Golf Resort. The eggs in the nest are difficult to see in this photograph (20 December 2002). Photograph by W. Coles.

fledglings in another nest (LDY, DBM, CCB). The only other confirmed breeding records on St. Croix, in May–June 1985 and on 15 June 1988, consisted of single pairs at mixed heronries that nested in xeric woodland on Green Cay and in a Red Mangrove at Southgate Pond, respectively (FWS, unpubl. data). The only confirmed breeding record in the northern USVI was a nest with three eggs 1.2 m high in a small mangrove on Steven Cay, off St. John on 21 April (Nichols 1943; WFVZ 155647, year unknown).

The first Tricolored Heron in the USVI was observed by Danforth (1930) at Benders (= Benner) Lagoon, St. Thomas on 4 January 1927. Seaman (1993) observed Tricolored Herons only three times on St. Croix, where the first bird was collected at Krause Lagoon in 1941 on 20 (not 21) September (Beatty 1944; FMNH 156303, adult male). Tricolored Herons have remained generally scarce in the northern USVI but are uncommon on St. Croix. Nonetheless, breeding records remain scarce even here.

**Green Heron** *Butorides virescens*—Two to three pairs nested aseasonally (December 2003 through February 2004) at Southgate Pond, probably an indirect response to the mid-November 2003 rainfall event. The five active nests (eggs and young) were built in White Mangroves (*Laguncularia racemosa*) in the same area used by breeding coots *Fulica* spp. At Manning Bay Lagoon, a single fresh Green Heron egg was found floating on the water among Red Mangroves on 10 January 2004, and at least 12 “drop” eggs were seen along the western shoreline of Great Pond during the latter half of March (LDY, DBM, CCB).

**Black-crowned Night-Heron**—The first confirmed breeding records in the USVI occurred in 1982, when FWS discovered 13 nests in White Mangroves (7-10 m tall) at

the southeastern corner of Southgate Pond on 24 April. Black-crowned Night-Herons nested in the same White Mangroves in 1984 and 1988, when 10 nests (3-7 m high) were active on 11 March and 30 April, respectively. Some 22 nests were built in 1984 (by 18 April, when some nests had eggs, although some young had already fledged from other nests; Norton 1984b, Sladen 1992, FWS, unpubl. data). Other reports of breeding on St. Croix at the former Krause Lagoon and the UVI Wetlands Reserve (Scott and Carbonell 1986, Rodrigues 2002) have not been substantiated (although at the latter

site on 28 April 1985, adults were on two nests that lacked eggs or young). The only documented breeding record of Black-crowned Night-Herons on St. Croix since the 1980s was a colony of about 15 pairs (with small numbers of Great Egrets) at a small mixed mangrove swamp in Estate Longford along the south shore at Halfpeny Bay in 2003. Many of the 12 large Black-crowned Night-Heron young seen at some of the low, well-hidden nests were about to fledge in late March; all but about three young had fledged by early May. Twenty years earlier, on 26 March 1983, 25 birds roosted at this site, although breeding was not documented (FWS).

Black-crowned Night-Herons remain scarce in the northern USVI, although the first confirmed breeding record recently occurred at St. Thomas (Hayes et al., in prep.). Black-crowned Night-Herons have nested in freshwater swamps on Puerto Rico (Raffaele 1989) but not in the USVI. Nonetheless, on St. Croix, Black-crowned Night-Herons occur in greater numbers and at proportionally more freshwater than saltwater sites compared to Yellow-crowned Night-Herons (*Nyctanassa violacea*).

**American Flamingo** *Phoenicopterus ruber*—Europeans are responsible for the extirpation of this species from St. Croix and possibly from St. Thomas (Newton and Newton 1859d, Wetmore 1918), although substantial numbers may have remained on St. Croix into the early nineteenth century, as they did in the BVI (mainly at Anegada Island; Lazell 2001, 2002). Three of only four reports of flamingos in the USVI since the 1960s have been one bird at Krause Lagoon Remnant on 3 November 1967 (Seaman 1973, 1993), three birds at West End Salt Pond in 1995 (M. Evans), and an immature at Ruth Island on 25 September 1996 (later in October at West End Salt

Pond; W. C. Knowles and M. Evans, unpubl. data). The earliest bird was probably an escaped captive flamingo from St. Thomas; the provenance of the later birds was unknown. In addition, a flock of 6-12 American Flamingos that included some immatures was present at the West End Salt Pond from December 1992 to June 1993 (M. Evans, L. E. Yntema). These birds may have wandered from Anegada Island, where they were successfully re-introduced in 1992 (flamingos were once abundant on Anegada Island; Lazell 2001, 2002), or from elsewhere such as Hispaniola. An earlier (1987) trial restoration effort to Guana Island, BVI failed, but efforts are underway again to re-introduce the species there (Lazell 1987, 1996, 2001, 2002).

**Osprey *Pandion haliaetus***—Although the West Indian race *ridgwayi* has not bred in the Virgin Islands (Wiley 1984, Norton 1989b, *contra* Nellis 1979), a few immatures (including some of the continental race *carolinensis*; Leck 1975, Wiley 1984, Norton 1989c) may remain through the summer (e.g., at Manning Bay from 2002-2004). A similar situation has prevailed in Puerto Rico, where since the 1990s several pairs (including a pair on 30 March 2003; R. Rodriguez, pers. comm.) have built nests but not laid eggs (J. A. Colon and A. G. Tossas, pers. comm.). An ill Osprey at Fortuna Bay, St. Thomas on 15 September 2002 (found dead on 17 September) had been banded as a nestling near Barnegat Light, New Jersey, on 2 July 1994.

**American Coot *F. americana* and Caribbean Coot *F. caribaea***—A colony of seven to eight pairs of both species nested in manglars of White Mangroves from winter 2003 through spring 2004 at Southgate Pond, their most suitable breeding site in the USVI. One to three pairs of coots have also nested on St. Croix at five freshwater farm ponds since 2002. Full details will be presented elsewhere on the historical and current breeding status of coots in the USVI (and eastern Caribbean; McNair 2006) as well as on their breeding ecology at Southgate Pond (McNair and Cramer-Burke, in press).

**American Golden-Plover *Pluvialis dominica***—Late during autumn migration was one juvenile resting on the beach berm at Manning Bay on 14 December 2002. One bird was also seen on St. Croix in early December 1984 (Norton 1985a), and one or two birds each were seen in late December 1985 on the St. Croix, St. Thomas, and St. John Christmas Bird Counts. Beatty (1930) stated that he shot a male from a flock of three at Krause Lagoon on 29 December 1921, but we have been unable to locate any specimen. American Golden-Plovers occur regularly though rarely in eastern North America during December (Paulson and Lee 1992).

**Snowy Plover *C. alexandrinus***—One juvenile was loosely associated with other shorebirds at a small roost on the beach beside a temporary tidal pool at Coakley Bay, St. Croix on 14 October 2002. Single Snowy Plovers on St. Croix were detected eight times between February 1989 and September 1996, although published details are lacking. Gorman and Haig (2002) also cite other occurrences in the USVI, where Snowy Plover is not a resident species and has never been proven to breed. It breeds nearby in BVI on Anegada Island, which has extensive, wide sandy beaches (Gorman and Haig 2002). The one purported historic egg set in the USVI, at St. Croix (Beatty 1930, Seaman 1993, Gorman and Haig 2002), was probably that of a Wilson's Plover, although Snowy Plovers may have nested on saline flats in Jerusalem (part of the former Krause Lagoon).

**Wilson's Plover**—Forty to forty-five pairs breed at ca. 15 sites at which over 35 nests have been discovered. The most suitable site is Great Pond, where up to 10 pairs occur and where nonbreeding numbers are highest year-round. Full details will be published elsewhere (DBM, in prep.). Unusual at this latitude was a nest with four eggs at Krause Lagoon Remnant from 14 June through 3 July 2004.

**American Oystercatcher *Haematopus palliatus***—Oystercatchers nest annually off St. Croix on two nearshore cays (Green Cay, Ruth Island), where they have been confirmed breeding (Yntema and Sladen 1987; FWS, unpubl. data). At Ruth Island, two pairs nested during May 2002 (when one pair was seen with one dependent juvenile), and one pair each nested during spring 2003 and 2004. At Green Cay, one pair nested during April and May 2002 through 2004



Figure 8. Two healthy nestling Brown Pelicans were still not yet large enough to stray from their nest at Green Cay (11 May 2003). Photograph by T. Lance.

(clutch of two eggs each year and one young fledged in 2003; CDL, DBM). One to occasionally two pairs of oystercatchers have nested along the northeastern and northwestern shores of Green Cay for over 20 years (FWS, CDL, and DBM, unpubl. data).

Along the rocky exposed northwestern shore of St. Croix, A. Mackay and J. Rebbholz discovered a pair at a nest with three eggs at a small cove (in Sweet Bottom Estate) just west of Davis Bay on 17 April 1996. Another pair at a nest with one egg was discovered on 7 May 2003 at Judith Fancy (just outside Salt River Bay), but this nest failed. These two reports are the first confirmation of breeding oystercatchers on St. Croix proper.

**Black-necked Stilt**—The first confirmed freshwater breeding records in the USVI occurred on St. Croix in short grass at the margin of Granard South Pond (nest with one egg discovered on 4 May, but nest failed), at the golf course link #9 pond of the Buccaneer Hotel (pair with three downy young ca. four days old on 11 May), and at Teagues Bay Pond (pair with one pre-fledged young on 14 June) in 2004. Black-necked Stilts nest at many sites in saltwater wetlands.

**Willet *Catoptrophorus semipalmatus***—This species used to nest at Krause Lagoon, where Beatty (1943) first confirmed breeding on 11-21 May 1942 (downy chicks two days old collected on 1 June 1942; FMNH 415953-415954). The last nests on St. Croix proper were discovered by FWS during 1985-1986. At Krause Lagoon Remnant (in a large open area between Hovensa and Alucroix Channel), one nest contained 4 eggs on 18 May 1985, and the same nest had one chick and three eggs (two pipped, one crushed) on 26 May; three territorial adults were at this location during mid-June 2004. At the former Alumina plant (now St. Croix Renaissance Park) from 5-9 May 1986, one nest with four eggs was located between the main plant and the large settling pond. Two pairs nested at Hovensa in 1986. One pair with two chicks 4-6 days old were seen in the southeastern corner near the sludge farms on 9 June. Another nest with four eggs was found nearby, inside a machinery and equipment scrap yard south of the sludge farms on 11 June; three chicks (probably from this nest) 3-4 days old were seen there on 30 June. Ruth Island, where nests and young have been found during May and early June (Yntema and Sladen 1987), is the only current documented breeding site in the USVI. Two pairs of Willets nested on Ruth Island in 2002, when on 29 May two nests with three and four eggs, respectively, were found by DBM on the sandy beach near the northern tip and at the southern tip near the top of mounded coral rubble (DFW 3-4, Figures 9a, 9b). In 2003, one nest with two eggs was again found on the beach near

the northern tip and was active from 1-27 May. In 2004, CDL found one nest with four eggs on 23 May, again near the top of the coral dome at the southern tip, but no eggs or adults were present on 29 May. Willets, probably local breeding birds, are most frequently seen foraging east or west of Ruth Island at six other sites along the south shore from West End Salt Pond to Great Pond.

Beatty (1943) stated that Willets were regular winter visitors to St. Croix, and he collected a female Western Willet (subspecies *inornatus*) at Hammer Pond (a brackish salt pond severely altered by development on the eastern side of Salt River Bay at Judith Fancy) on 24 October 1933 (Danforth 1935; USNM 354058). Seaman (1973), in addition to Krause Lagoon, also stated that Willets were found most regularly at Judith Fancy, although we do not know if they ever nested there. FWS (unpubl. data) found that 2-8 Willets regularly occurred year-round on St. Croix, most frequently with Whimbrels (*Numenius phaeopus*) at Great Pond during winter (although only reported on 4 out of 21 years on St. Croix Christmas Bird Counts). Currently, Willets have mainly been seen on St. Croix during the breeding season from 14 April through July, although single birds were also seen during autumn 2003 at Great Pond (23 October) and Manning Bay Lagoon (4-11 November).

**Whimbrel**—Unlike in the northern USVI (Hayes et al., in prep.), small numbers of Whimbrels are regularly reported in mangrove lagoons on St. Croix (and less frequently on the beach or on open headlands), especially at Great Pond (Sladen 1992). Numbers have declined (maximum of seven birds), probably because Red and Black Mangroves have rapidly increased at Great Pond and less open mudflat is available.

**Marbled Godwit** *Limosa fedoa*—One bird at the large cooling pond of St. Croix Renaissance Park on 25 September 2002 represented the fourth occurrence on St. Croix (and the USVI). Earlier autumnal vagrants were two birds at Krause Lagoon on 11 November 1921 (one shot, whereabouts unknown; Beatty 1930), one female collected on 9 October 1939 (FMNH 127032), and one individual at Long Point from 14 September through 5 October 1988 (Norton 1989a; FWS).



Figures 9a, 9b. One of two Willet nests found on Ruth Island on 29 May 2003 contained four eggs and was placed near the top of a scantily vegetated coral rubble dome. The nest and clutch are difficult to see in the middle of the barren habitat (Figure 9a), easy to see from close up (Figure 9b). Photographs by W. Coles.

**Ruddy Turnstone**—At least seven birds originally captured, banded, and color-marked during migration in late spring (May to early June) 1999-2002 at Delaware Bay, Delaware (one bird) and New Jersey (six birds; Kathy Clark, Endangered & Nongame Species Program, New Jersey Division of Fish & Wildlife, pers. comm.) were resighted at four sites on St. Croix (Frederiksted Harbor, Batist Point, Green Cay, Protestant Cay) from January 2002 through March 2004.

From 7 January through 9 May 2002, up to three birds in the same flock were observed by F. E. Hayes and DBM at Frederiksted Harbor. These birds fed among a flock of as many as 50 turnstones along the waterfront on an exposed limestone shelf (less frequently on the sandy beach) and opportunistically on fish and other food left by humans on the pier as well as on food left on the grassy lawn of a park. Turnstones also roosted on new and abandoned pier pilings. DBM also saw one other marked bird on 29 March along the south-central coast

at Batist Point, where it was roosting with six other turnstones on tidal wrack. Two more marked Ruddy Turnstones were seen the following winter at Protestant Cay, one from 10 October 2002 through 5 March 2003 (roosting at the old east dock with 20 other turnstones on the latter date), the other bird on 10 January and 26 February 2003. One of the three birds at Frederiksted Harbor and the bird at Batist Point in 2002, from different cohorts in 2001 (9-18 May and 29 May through 4 June, respectively), may have returned to St. Croix in 2003-2004, although individuals from the same cohort could not be distinguished from each other. One turnstone in a flock of eight was seen by DBM and CDL foraging in tidal wrack on the windward side of Green Cay on 23 April 2003, and two more birds, in full breeding plumage and basic plumage, respectively, were seen at Frederiksted Harbor on 1 June and 11 November 2003. Thus, six of the minimum number of seven marked Ruddy Turnstones remained for long periods at two of the most favorable sites on St. Croix (Frederiksted Harbor, Protestant Cay), where both anthropogenic and natural habitats (rocky coasts, sandy beaches) provided foraging and roosting

sites, including an apparent plentiful supply of food from human refuse. In the nearby Lesser Antilles, single Ruddy Turnstones banded in New Jersey and Virginia have been recovered in Martinique during August and September (Buden and Wetenkamp 1993).

**Red Knot** *Calidris canutus*—Most knots in the USVI have been reported at Krause Lagoon Remnant, or before then at Krause Lagoon (Scott and Carbonell 1986, Sladen 1988; FWS, unpubl. data). This included the first occurrence on 11 December 1921 (Beatty 1930) and the only known specimens (male, female) collected in the USVI on 19 August 1939 (FMNH 158094-158095). Knots were not recorded in the USVI during spring migration until the 1980s, which include our only June reports on 17-29 June 1982 and 9-30 June 1986 (Krause Lagoon Remnant: the large cooling pond of St. Croix Renaissance Park; Norton 1982, 1986c; Sladen 1988; FWS). Still scarce in spring, one bird was seen on 4 May 2002 by DBM and A. S. L. Rodrigues, this

time at nearby Manning Bay Lagoon, where other Red Knots have been seen recently.

**White-rumped Sandpiper** *C. fuscicollis*—One adult in partial breeding plumage was observed by DBM and CDL with other small sandpipers at Great Pond on 24 April 2003. The only other spring reports in the USVI (also at St. Croix) were a flock of 12 at Krause Lagoon on 5 June 1933, five birds at Sandy Point National Wildlife Refuge sand flats on 13 May 1982, one each in 1983 at the Alumina plant (now St. Croix Renaissance Park) and Great Pond on 21 and 28 April, respectively, and one bird at Sandy Point on 8 May 1986 (Beatty 1936, Norton 1986b; FWS). The report of five birds at Great Pond on 5 April 2002 (Rodrigues 2002) was not substantiated. Reports of White-rumped Sandpipers in the USVI on Christmas Bird Counts have also not been substantiated.

**Pectoral Sandpiper** *C. melanotos*—One bird was roosting with other shorebirds on 14 April 2003 at Manning Bay Lagoon. The only other spring reports in the USVI (also at St. Croix) were at Southgate Pond, one bird on 2 May 1982 and a flock of 10 on 6 May 1984 (FWS; not 12 May, *contra* Norton 1984b). The report of one bird at St. Croix on a Christmas Bird Count was not substantiated.

**Ruff** *Philomachus pugnax*—One male, mainly in nonbreeding plumage and loosely associating with Greater (*Tringa melanoleuca*) and Lesser (*T. flavipes*) Yellowlegs, was present on 5-6 April 2004 at the largest settling pond (for red bauxite tailings) on St. Croix Renaissance Park next to the Anguilla Landfill. This is the second report for St. Croix. The first was one bird in flooded fields at Prosperity on 9 October 1985 (Norton 1986a; FWS). Raffaele (1989) stated one other report exists for St. Croix, but it has not been located. The species has also been reported once during autumn at St. Thomas (Norton 1981; Leck and Norton 1991).

**Wilson's Phalarope** *Phalaropus tricolor*—One adult of this rare species on St. Croix (Sladen 1988) was seen in 2002 at Great Pond on 4 August, our earliest report during autumn migration.

**Ring-billed Gull** *Larus delawarensis*—Up to two first-year birds were present at Frederiksted Harbor from 1-21 December 2003 and later at St. Croix Renaissance Park beside the Anguilla Landfill on 13 January 2004.

**Lesser Black-backed Gull** *Larus fuscus*—An adult was noted with several Laughing Gulls (*L. atricilla*) in Christiansted Harbor on 4 August 2003 (C. Faanes). The only other report of this species on St. Croix (and the USVI) was also an adult at Sandy Point on 8 May 1986 (not 8 March, Leck and Norton

1991; FWS, pers. comm.).

**Gull-billed Tern** *Sterna nilotica*—One to two adults associated with other species of terns in 2002 at several sites in the West End (especially the salt pond, a favorite site; Leck 1975) from 7-25 May and at the large cooling pond of St. Croix Renaissance Park from 15 July through 25 September. Gull-billed Terns are a regular though generally scarce vernal and autumnal migrant on St. Croix, where the first reports occurred in 1933-1934 (Beatty 1936), not 1954 (*contra* Leck 1975). The only specimens from St. Croix were collected in 1940-1942 (April-June; August-September; FMNH 127861-127862, 158803-158809; UMMZ 124893), which may have been pre- and post-breeding birds from the former colony at Cockroach Cay off St. Thomas (Beatty 1941, Nichols 1943).

**Roseate Tern** *S. dougallii*—This tern was only seen during autumnal migration, flying east between Green Cay and the mainland (one bird, 19 August; flock of seven, 30 August) or just north of Green Cay (flock of 70, 27 September) in 2002. The species is rarely reported from St. Croix, where it was not reliably documented (Newton [1859b] presumably misidentified this species) until 1972 (Leck 1975), *contra* Beatty (1930) and Nisbet (1980), even though Roseate Terns are common to abundant summer residents in the northern USVI.

**Common Tern** *Sterna hirundo*—One

adult in breeding plumage roosted with other terns at Ruth Island on 29 May 2002. The only other spring occurrences on St. Croix were birds associating with other terns at the West End Salt Pond, from mid-June through 7 July 1983 (maximum of 13 Common Terns, including eight adults in breeding plumage) and two pairs from 7 June through 12 July 1985 (Norton 1983, 1985b; FWS). Birds reported at St. Croix on three Christmas Bird Counts were not substantiated.

**Bridled Tern** *Sterna anaethetus*—Three adults were seen by DBM and P. A. Mayor in the vicinity of several other seabirds on 21 May 2003 at the FAD A buoy (1200 m water depth), 5.5 km northwest of Buck Island, St. Croix. This report is one of few of this pelagic species off St. Croix (FWS, unpubl. data), where it has undoubtedly been overlooked. The only specimen known to us is a juvenile collected off St. Croix on 24 September 1944 (USNM 121845).

**Sooty Tern** *Sterna fuscata*—The only extant specimen (juvenile) collected on St. Croix was in the interior at Estate Granard on 14 August 1986 (UMMZ 228335), although Beatty (1930) stated he shot a male (whereabouts unknown) on the rocks along the coast at Hams Bluff on 20 March 1924. An injured bird was also given to the St. Croix Animal Shelter on 23 September 1986 (whereabouts unknown; FWS).

**Brown Noddy** *Anous stolidus*—An adult with an injured wing that landed in a boat just off Buck Island, St. Croix on 2 May 2003 was retrieved by NPS personnel and eventually sent to rehabilitator T. Lance, but the bird never recovered from its injuries and died in July (specimen not saved). The only specimens were collected off St. Croix from July through October in 1939-1940 (FMNH 158950-158952). Thus, the bird photographed on a seawall near Frederiksted during May 1973 (Leck 1975) was not the first record for St. Croix. The only other reports of Brown Noddy for St. Croix are several in the 1980s (FWS, unpubl. data).

**White-crowned Pigeon** *Patagioenas leucocephala*—The only documented breeding site on St. Croix after Hurricane Hugo in 1989 was Ruth Island (Knowles 1997, 1999; McNair, in prep.). This species continues to breed there, but population surveys in 2002-2004 also documented ca. 15 other breeding sites in mangrove and littoral habitats on St. Croix, including all four cays. All sites contain low numbers of breeding pairs (<12 pairs/site), except at Ruth Island and Great Pond, where an estimated 40-100 pairs nest at each of these two sites. White-crowned Pigeons typically breed from April through September (when adults with two recently fledged young on



Figures 10a, 10b. This single Antillean Nighthawk egg (representing a complete clutch) was laid on caliche rubble in an abandoned industrial area at the St. Croix Renaissance Park (Figure 10a). A young chick was present seven days later on 22 July 2002 (Figure 10b). Photographs by M. A. Mahoney.



Green Cay were observed as late as the 27th), but J. W. Wiley, CDL, and DBM also discovered three active nests on Green Cay in January (2003), when breeding is ordinarily rare. Following the mid-November rainfall event of 2003, White-crowned Pigeons nested during winter in mangrove wetlands and littoral woodland on at least four sites (Buccaneer Hotel, Great Pond, Sugar Bay, UVI Wetlands Reserve). Full details of recent population surveys on St. Croix will be published elsewhere (DBM, in prep.). In the northern USVI, breeding was confirmed in 2003 at Mangrove Lagoon, St. Thomas (Hayes et al., in prep.).

**White-winged Dove *Zenaida asiatica***—Apart from a small population introduced in 1965 that did not persist (Seaman 1963, 1964, 1965), this species was formerly a casual spring and summer vagrant on St. Croix (Bond 1960, Norton 1989c). White-winged Doves have recently established themselves there as a permanent resident (since 1999; L. LeBlanc, unpubl. data). However, birds are generally less numerous during winter (suggesting continued movement between the USVI and Puerto Rico, which is the presumed origin of these birds and where this species has greatly increased; Rivera-Milan 2001, pers. comm.). White-winged Doves have been seen on St. Croix on at least 23 sites since 2002, all sites but one (Carambola Golf Resort) in the dry zone (the same habitat preference the species has in Puerto Rico). White-winged Doves have not nested at all sites. Breeding is concentrated at Ruth Island (14 nests discovered in 2003) and several sites in the East End (breeding confirmation includes one bird that had just fledged at the St. Croix Yacht Club). The number of adult birds on St. Croix during the main breeding season (March-July) is small (ca. 75-100), and although increasing, White-winged Doves occupy rather restricted habitat, where they may remain local and uncommon. Birds have also occupied the northern USVI (Hayes et al., in prep.). Full details on their rapid range expansion throughout the USVI will be published elsewhere (DBM and F. E. Hayes, in prep.).

**Bridled Quail-Dove *Geotrygon mystacea***—This West Indian endemic was thought to have possibly been extirpated from St. Croix following Hurricane *Hugo* (Wauer and Wunderle 1992), but Bridled Quail-Doves have persisted or new birds have re-established a small population in guts of the northwestern hills (Rodriguez 2002; DBM, unpubl. data). This columbid is closely associated with dense understory



Figure 11. This probable first-year Connecticut Warbler landed on the deck of a boat halfway between Virgin Gorda, BVI, and St. Croix, USVI on 8 October 2002. Photograph by G. Kunkel.

of moist, closed forest along guts where permanent or temporary streams used to flow more frequently. Bridled Quail-Doves will always be generally uncommon because of their exacting habitat requirements, but improved watershed management and regrowth and expansion of forests will increase

their prospects. Singing males (and other birds) were present from 2002-2004 in at least 18 sites, with a maximum of six males per site (Mt. Eagle north slope). The most accessible location, with about five pairs, is along Creque Dam Road, where the pair at the lowest elevation (ca. 100 m) was tending one fledgling (that had just left the nest and was almost captured) on 2 June 2002. The apparent southwestern limit of their range in the northwestern hills is a gut alongside Mahogany Road, which contains a temporary pool next to a USGS gage station at Estate Jolly Hill. This area contains two pairs of quail-doves (including adults with two juveniles on 3 April 2003; LDY, unpubl. data), and the temporary pool frequently provides them with fresh water. One adult was poached there in April 2002. Nearby in Prosperity, one bird was shot in the late 1960s, an adult male was collected at Prosperity Garden on 19 May 1938 (USNM 354229), and another bird was seen at Prosperity in 1926 (Danforth 1930, Seaman 1968). It is uncertain if Bridled Quail-Doves still occur at Prosperity. The only extralimital site for Bridled Quail-Doves ever reported on St. Croix was east of Christiansted at Estate Mount Welcome about 0.6 km east of Spring Gut Road, where R. O'Reilly heard two birds singing ca. 1995.

Bridled Quail-Doves used to be not uncommon in the western part of St. Thomas (Nichols 1943), where the one egg collected by Nichols is now in the WFVZ (155672). This species remained locally fairly common on St. Thomas until at least the mid- to late 1950s (Seaman 1955, 1957a). Recent reports have been scarce. Three birds were detected in 2003 by F. E. Hayes at Perseverance Bay during January and February, while one bird was heard singing in a ravine above Charlotte Amalie by DBM on 5 February.

**Yellow-billed Cuckoo *Coccyzus americanus***—This species is generally uncommon during autumn migration in the USVI, including St. Croix (McNair et al. 2002). Thus, somewhat unusual was a modest "fallout" of 12 birds (10 at the St. Croix Yacht Club) seen by DBM and F. E. Hayes on 24 October 2002.

**Mangrove Cuckoo *Coccyzus minor***—This cuckoo is generally much less numerous in the USVI in mangrove wetlands than in xeric forest and thorn scrub, as well as moist forest (Robertson 1962, Askins and Ewert 1991; DBM, pers. obs.). At St. Croix, Wauer and Sladen (1992) reported Mangrove Cuckoos in mangrove swamp forest at Sugar Bay in 1987, and remnant swamp forest there after Hurricane *Hugo* still supports some birds (up to three singing during surveys from October 2002 through April 2003). Mangrove Cuckoos breed in mangrove wetlands during the winter (e.g., in January at Anegada Island, BVI; LaBastille and Richmond 1973), so observers should be alert to document breeding during this period (Beatty 1930). The only other records of birds in mangrove wetlands on St. Croix from 2002 through July 2004 were single singing males at Coakley Bay Salt Pond (19 September 2002) and St. Croix Renaissance Park (27 May 2003) and one bird at Prosperity Marsh on 10 April 2004 (LDY). While Hurricane *Hugo* in September 1989 decimated mangrove forest on St. Croix (much less damage in the northern USVI), Mangrove Cuckoos may always have been generally scarce in mangrove wetlands except mature swamp forest (e.g., they are currently absent from immature mangrove wetlands at Great Pond, which has recently become one of the largest mangrove tracts on St. Croix).

**Antillean Nighthawk *Chordeiles gundlachi***—The first confirmed nest records on St. Croix, where Antillean Nighthawks are near the eastern limit of their breeding range (at Anegada Island, BVI and recently at Guadeloupe; A. Levesque, pers. comm.), were discovered at St. Croix Renaissance Park. Females were flushed off three clutches of one egg each placed on caliche rubble in an abandoned industrial area between the main plant and largest cooling pond. The first nest, co-discovered by P. F. Mahoney on 15 July 2002, was photographed by M. A. Mahoney (DFW 5-6, Figures 10a,b). Two nests 400 m apart in 2003 were active from 23-27 May and 23 May to 9 June, respectively; the latter nest may have been successful. In 2004, two downy chicks from one nest were discovered by CDL and J. Wakefield in the same area at St. Croix Renaissance Park on 24-27 May. At a second site (Hovenssa), they discovered three nests. The first nest, which was later abandoned, had one egg on 30 May. Two downy chicks were observed at the second nest in June. The third nest had two young fledge in late June. All nests were in tank fields in the vicinity of storage tanks. Antillean Nighthawk is a locally uncommon summer resident from mid-April to mid-August on the south side from the West End eastward to Estate Canegarden, and its status appears

to have been stable since ca. 1985, when the first birds (three individuals) discovered since before 1970 (*vide* G. A. Seaman) were seen at Golden Grove on 14 July 1985 (FWS). Maximum counts have been 10 birds during June 1988 and on 4 August 1986 (Norton 1987a, 1988b) and nine birds at La Reine on 20 August 2002, the last date birds have been heard calling. Recent reports on St. Thomas (no confirmed nest records) are summarized by Hayes et al. (in prep.). The clutch of two eggs collected on St. Thomas (Nichols 1943) is now in the collections of WFVZ (155634).

**Nighthawk sp.** *Chordeiles* sp.—One silent bird was flying along the waterfront at Frederiksted on 3 November 2003, the latest occurrence in the USVI.

**Black Swift** *Cypseloides niger*—One bird was observed on 12 August 2002, flying northward above a pasture at Prosperity. The only previous reports for the USVI were single birds at Frederiksted on 23 July 1933, at Sprat Hall Beach on 23 March 1983, at Sprat Hall Estate on 6 June 1985, and on 9 May 1990 (Danforth 1934, Norton 1990; FWS). Several of these birds were with Caribbean Martins (*Progne dominicensis*).

**Purple-throated Carib** *Eulampis jugularis*—One bird was seen foraging in a bougainvillea along the waterfront at Frederiksted on 29 July 2002 by CDL, A. Mackay, and three other individuals. The only other occurrence on St. Croix was one photographed by FWS at a feeder in Bellevue Estate on 3 May 1987, although the photographs are not diagnostic (Norton 1987b; DBM, pers. exam.). The long, decurved bill suggests the bird was a female. The only other occurrence in the USVI, also at a feeder during spring 1987, was at St. John in Cruz Bay on 30 March (Norton and Hobbs 1987; not 17 April, *contra* Raffaele 1989). This bird was also probably a female.

**Yellow-bellied Sapsucker** *Sphyrapicus varius*—One individual was seen foraging in Black Mangroves on 13 December 2002 at Sugar Bay, St. Croix. On St. Thomas, one immature female was seen by B. Hayes and F. E. Hayes at Turpentine Run on 28 February through 8 March 2003. These two reports are the only documented occurrences of the rare Yellow-bellied Sapsucker in the USVI since the 1980s, although the first bird was reported long ago at St. Croix (Newton 1860), and four other birds were collected on St. Croix and St. Thomas from 1859 through 1866 (UMZC 26/Pic/33/b/13, 26/Pic/33/b/17; two specimens in ZMUC). Most birds reported in the USVI, when distinguishable, have been immatures, usually females (Newton 1860, Beatty 1930, Seaman 1954a; specimen data).

**Caribbean Martin**—This martin occurred at ten salt- and freshwater sites from 10 February through 27 September

(2002–2004) but regularly only at three of these (Frederiksted Harbor, Fredensborg Pond, Hovenssa). The largest daily numbers were noted at Fredensborg Pond and the Carambola Golf Resort during mid-April through mid-May (18 birds) and late August through early September (23 birds), which presumably included vernal and autumnal migrants. Autumnal timing coincided with the departure of four birds (including one female) from the Frederiksted Pier after 27 August (2002). Three pairs nested there in lateral brackets affixed to the tip of the pier from May through July, 2002 through 2004 (and earlier; Raffaele 1989, based on FWS, unpubl. data). At least two pairs nested at Hovenssa on the east side of the refinery in 2004 (5–10 birds seen regularly), where CDL observed them from May through July in pipes at openings to fire water lines on top of two tanks of two emergency process units which have not been used for several years (W. Bradford, pers. comm.; CDL). Two pre-fledged chicks at one nest were observed in July. Reports of Caribbean Martins at St. Croix on three Christmas Bird Counts have not been substantiated.

Caribbean Martins also nested at the tip of the Frederiksted Pier (one or 2 pairs) and at Hovenssa (6–8 pairs) in the 1980s. At Hovenssa (e.g., May–June of 1985–1986), birds nested in drain pipes of oil barges along the dock, in lighters, and in other structures (FWS, unpubl. data). Birds also nested at two other locations the latter half of the twentieth century, in 1975–1976 along the northwestern coast in caves under low-lying rock above the beach just west of Davis Bay (4–6 pairs; FWS) and from 1981–1983 at Canegarden Cliff (3–5 pairs), where as many as five birds have been seen since 2002 (CDL). Martins also may have nested in mooring bits (of the former Alumina plant) at Alucroix Harbor from 5–14 June 1983 (FWS). Otherwise, no other information on confirmed breeding sites in the USVI exists since the first half of the twentieth century (Beatty 1930, Nichols 1943; Seaman 1973, 1980).

**Bank Swallow** *Riparia riparia*—One bird was seen at Southgate Pond from 22 May through 1 June 2004 (DBM, LDY), the first spring occurrence for St. Croix.

**Yellow-rumped (Myrtle) Warbler** *Dendroica coronata coronata*—This species has been an infrequent winter resident in the USVI (Pashley 1988, Raffaele 1989, Askins et al. 1992) since it was first seen by Beatty (1936) in 1935 (not 1933, *contra* Pashley 1988), who soon thereafter collected a male at the West End Salt Pond, St. Croix on 27 December 1937 (USNM 355750). Recent reports strongly suggest Myrtle Warblers are associated with fresh- and saltwater environments in the USVI (cf., Beatty 1936). These reports include two birds seen by F. E. Hayes

on 19 January 2003 at Francis Bay, St. Thomas. On St. Croix, birds (all females when noted) have been seen each year since 2002 at a total of seven sites: up to three birds in Black Mangroves at Great Pond from 18 February through 22 March 2002 (DBM, A.S.L. Rodrigues), one in pondside vegetation at Mountain Mint Dairy Farm at Estate Petronella on 24 February 2002, one in large shade trees along the waterfront at Frederiksted on 26 April 2002 (latest spring report in the USVI), one at a pond on the Reef Condos golf course on 3 March 2003, one at Fredensborg Pond from 27 January through 25 February 2004, two at Windsor South Pond on 27 January 2004 (one remaining until 18 March; LDY), and three at Granard South Pond on 25 February 2004.

**Palm Warbler** *Dendroica palmarum*—This warbler has been an infrequent winter resident in the USVI (Pashley 1988, Raffaele 1989, Askins et al. 1992; although see Beatty [1930] who was the first individual to report Palm Warblers in the USVI, at St. Croix). The only reports on St. Croix since the 1980s have been single birds in scrub beside Great Pond on 16 January 2002 (Rodrigues 2002) and 23 October 2003, in a pasture beside the VI Agricultural Station Middle Pond from 23 February through 28 March 2002, and in low beach scrub at the northern tip of Ruth Island on 1 May 2003. Hayes et al. (in prep.) also recently reported a single bird at St. Thomas.

**Connecticut Warbler** *Oporornis agilis*—G. Kunkel photographed a probable immature that landed on the deck of a boat located about halfway between Virgin Gorda, BVI, and St. Croix, USVI on 8 October 2002 (DFW 7, Figure 11). This bird and other individuals in a small flock that probably were Connecticut Warblers were observed at night as they were illuminated by the deck lights of the east-bound cruise ship *M/V Century*. This furnishes the first verified record (and second occurrence) of Connecticut Warbler in the USVI. The first was one immature at the former Alumina plant (now St. Croix Renaissance Park) on 30 October 1988 (FWS, R. Wauer).

**Common Yellowthroat** *Geothlypis trichas*—This warbler has been an infrequent winter resident in the USVI (Pashley 1988, Raffaele 1989, Askins et al. 1992, Wauer and Sladen 1992) since an immature male was first reported in 1958 at St. Croix (Seaman 1959; ANSP 169929). Some reports on Christmas Bird Counts at St. Thomas and St. Croix are probably not credible. Recent valid reports of single birds at freshwater wetlands on St. Croix in 2002 were on 15 February, 23 February, and 28 March at Prosperity Marsh, at the VI Agricultural Station Middle Pond, and at Fredensborg Pond, respectively, in 2003 at Cruzan Rum Pond on 21 December, and in brackish wetlands in 2004 at South-

gate Pond from 21 January through 11 February.

**Lesser Antillean Bullfinch** *Loxigilla noctis*—This bullfinch was first reported in southeastern St. John in 1971 (Raffaele and Roby 1977) and is now widely distributed over the entire island (Norton 1979, 1981; F. E. Hayes, unpubl. data). It is generally common to abundant in xeric forest (Askins and Ewert 1991) but remains generally scarce in moist forest on St. John (e.g., one male seen by F. E. Hayes at 215 m; cf., Norton 1979).

Lesser Antillean Bullfinches were first reported at St. Croix in 1979, in moist forest at New Canaan, where one pair was present until at least 1984, when a nest with abandoned eggs was discovered on 28 July (Norton 1984c, 2000; not 1983, *contra* Leck and Norton 1991). Thereafter, only two other sites were discovered at St. Croix during the 1980s, in 1985 (Norton 1985b), and one bird was seen on one date at Salt River in the late 1980s (Wauer 1988). Since 1997, at least one bird was detected at the USDA Experimental Forest in Estate Thomas from 12–15 May (E. Garcia, R. Garcia), and one pair at Belvedere Estate on the north-facing slope of the northwestern hills has built or attempted to build nests most years in a yard where its occurrence has nonetheless been erratic (S. Fromer, unpubl. data). In 1997–1998, single young were noted in nests in small Turpentine (*Bursera simaruba*) trees during October and November. Bullfinches have also been detected at nearby residences in Belvedere Estate, where its occurrence has also been erratic, and not too distant at Betzys Jewell Estate (adult male on 14 May 2004) and Little Fountain Estate (pair in yard during early April 2004; *vide* S. Fromer). Recently, up to 15 birds were reported in moist forest along Creque Dam Road at and near the reservoir (Rodrigues 2002; DBM, unpubl. data), which is probably the primary current site (some reports of other birds on recent Christmas Bird Counts from lowland areas of St. Croix are probably incorrect). Single birds (female or male) were also reported in moist forest in 2002 on 21 July and 17 August at and near a permanent spring in a gut on the north slope of Mt. Eagle. A female was also seen in mangrove forest at Sugar Bay on 3 January 2003. One pair was present in thick vegetation along the north coast between Cane and Davis Bays on 25 October 2003, and another bird was nearby on the same date. All of these aforementioned sites are in northwestern St. Croix. The only reliable report from the East End of St. Croix

**Table 1. Estimated area (ha<sup>a</sup>) for five wetland types on each main island (St. Thomas<sup>b</sup>, St. John, St. Croix) in the United States Virgin Islands.**

Wetland Type	St. Thomas		St. John		St. Croix		All Islands	
	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)
Freshwater ponds	31	7.5	8	1.6	199	43	238	52.2
Mixed swamps <sup>c</sup>	2	7.8	1	0.3	7	9.1	10	17.1
Salt flats	7	4.1	26	6.7	31	54.5	64	65.3
Salt ponds	35	16.8	33	43.8	42	228.8	110	289.3
Mangrove wetlands <sup>d</sup>	76	73.3	46	38.6	92	145.7	214	257.6
All Wetlands	151	109.5	114	91	371	481.1	636	681.6 <sup>e</sup>

<sup>a</sup> Calculated from data in CDC (2001). The minimum surface area for each wetland is 0.014884 ha (= 1600 square feet).

<sup>b</sup> Includes Water Island but none of the other islands or cays off St. Thomas.

<sup>c</sup> A type of saltwater wetland.

<sup>d</sup> Includes all four types of mangroves (forest, woodland, shrubland, fringing) listed by CDC (2001).

<sup>e</sup> Difference of rounding error of 0.2 ha from the five wetland types.

was one female at a feeder on 30 January 2002 (Rodrigues 2002).

Lesser Antillean Bullfinches on St. Thomas have recently been seen at three sites, at Red Hook, where F. E. Hayes observed two females on 27 March 2003 (for the preceding month one pair had apparently been present here, where a female had once flown out of a Bananaquit [*Coereba flaveola*] nest, *vide* F. E. Hayes), and during August 2003, when D. Spencer saw a pair on a hillside near Havensight and several pairs in northeastern St. Thomas.

The origin and status of the Lesser Antillean Bullfinch in the USVI is puzzling. It primarily occupies xeric habitats on St. John, where it is numerous, moist forest on St. Croix, where it is rare and local, and has perhaps only recently established itself in xeric habitat at several sites on St. Thomas. Only one bird has been collected, at St. John (Raffaele and Roby 1977), which is one subspecies (*ridgwayi*) from the northern Lesser Antilles. Lesser Antillean Bullfinch has still not been documented from BVI (except for unconfirmed reports from Norman and Peter islands in 1972 [Raffaele and Roby 1977] but even if correct bullfinches did not persist there [Mirecki et al. 1977]). Thus, bullfinches are unknown between source populations in the Lesser Antilles and the USVI.

Raffaele and Roby (1977) argued that hurricane transport of birds from the northern Lesser Antilles was probably the most likely mode of origin for birds at St. John. Norton (1984b) later invoked a similar argument for the arrival of birds at St. Croix, albeit from a different hurricane (*David* in 1979 rather than *Donna* in 1960). Hurricane transport of bullfinches could possibly account for the species' current distribution and abundance in the USVI, based on the paths of these two hurricanes and proximity to source populations, *L. n. ridgwayi* in

the northern Lesser Antilles and *L. n. coryi* at Saba (closest to St. Croix). The abundance and rarity of *ridgwayi* and *coryi* at St. John and St. Croix, respectively, would also correspond to the abundance and rarity of these two subspecies at their nearest source to the USVI. However, the timing of Hurricane *Donna*, 11 years before birds were first reported in southeastern St. John (although they were already locally fairly numerous), and the rarity of *coryi* at Saba, from where it would hence be unlikely to disperse to St. Croix (where the subspecies is unconfirmed), suggests that hurricane transport to the USVI is unlikely. Hurricane transport

of birds only to St. John, then later to St. Croix—without transport of birds to intervening islands in the BVI given that similar habitats exist on these islands—appears to be unlikely (Bond 1972, 1974, 1978).

Lesser Antillean Bullfinches may have had a natural range expansion to the USVI, unaided by hurricane transport. The apparent range expansion to St. Thomas may represent recent arrivals from nearby St. John, where bullfinches are numerous and occur in similar habitat. However, bullfinches should then have occurred earlier on St. Thomas, not much later than on St. Croix (although hurricane transport to St. Croix could account for this difference in the timing of their arrival at the two islands). Bullfinches may have possibly arrived simultaneously on St. John and St. Croix, because unlike St. John, birds on St. Croix could have been overlooked earlier because they are rare and local here. If simultaneous arrival occurred, later movement to St. Thomas may represent a continuation of a natural range expansion unaided by hurricane transport.

Lesser Antillean Bullfinches also may have been introduced to all three main islands in the USVI, or have arrived on these islands as the result of a combination of a natural range expansion (by hurricane transport or unaided by hurricanes) and introduction of birds. Raffaele and Roby (1977) documented that caged birds were released at nearby Tortola in 1971, but they did not persist there (or on Norman and Peter islands; Mirecki et al. 1977). The Puerto Rican Bullfinch (*L. portoricensis*) on St. John also did not persist (Bond 1964, Raffaele 1989). Thus, the two inadvertent introductions of bullfinches to the Virgin Islands of which we are aware did not result in establishment of populations of either species. However, Lesser Antillean Bullfinches have

not occupied the larger cays that contain appropriate habitat or expanded their range east- or westward from the USVI (as predicted by Raffaele 1989), which is highly inconsistent with a natural range expansion for Lesser Antillean landbirds, where their distributions are otherwise continuous through the BVI thence to the USVI (Robertson 1962). Regardless, the origin and status of the Lesser Antillean Bullfinch in the USVI remains puzzling, including the primary restriction of birds on St. John to xeric forest but on St. Croix to moist forest. Lesser Antillean Bullfinches from all three main islands in the USVI must be collected to perform morphometric and genetic analyses to determine the most likely origin of this polytypic species and to elucidate whether the range expansion was by natural means, introduction by humans, or a combination thereof.

**Rose-breasted Grosbeak** *Pheucticus ludovicianus*—An adult male in breeding plumage was seen at the Carambola Golf Resort, St. Croix on 30 March 2002. The only other reports of Rose-breasted Grosbeaks in the USVI have also been during spring, an adult male at St. John on 25-26 April 1964 (Bond 1964) and one bird at St. Croix on 31 March 1968 (Bond 1968). Single birds have also been reported at St. John on three Christmas Bird Counts, but further details are lacking. Raffaele (1989) stated that Rose-breasted Grosbeak had been reported from St. Thomas, but documentation for this claim has not been located.

**Bobolink** *Dolichonyx oryzivorus*—Single males were seen at Schuster Lower Pond (LDY, CCB) and flying over Fredensborg Pond on 28 April and 6 May of 2004, respectively. The only other spring occurrence of a Bobolink on St. Croix is one male collected by G. A. Seaman on 9 May 1959 (Bond 1966; ANSP 169933).

**Shiny Cowbird** *Molothrus bonariensis*—Recent reports by S. Fromer, LDY, and CCB at feedlots and animal pens on Windsor Farm included two males on 22 December 2002, and in 2004 one male on 4 March, six birds on 18 March, two females on 4 May, one male on 22 June, and a pair on 24 July. As well as being rare on St. Croix, Shiny Cowbirds are rare in the northern USVI (*contra* Leck and Norton 1991; although see Norton 1981).

**House Sparrow** *Passer domesticus*—Raffaele (1989) states this species inhabited the area of Miller Manor Hotel in Charlotte Amalie, St. Thomas in the early 1950s. House Sparrows were not reported thereafter in Charlotte Amalie except by Robertson (1962), who stated they were established on St. Thomas, and by Norton (1993, 1995), who reported that one entered a ceiling cavity of a building in an urban district in 1981, though otherwise House Sparrows did not reappear in the capital until 1984. Apparently, a residual population remained in Charlotte Amalie, although no other details are available.

House Sparrows reached all three main islands in the USVI during the mid-1990s, although this range expansion is poorly documented. Their presumptive arrival was from Puerto Rico, where House Sparrows were established by 1972 and have since increased, especially in the early 1990s (Moreno 1997). House Sparrows reached the Culebra archipelago, just west of St. Thomas, by 1993. The first two birds reached St. John at Cruz Bay on 12-15 July 1993 (Norton 1993), and W. Henderson first observed House Sparrows at Coral Bay ca. 1993. House Sparrows reached Tortola,

BVI in 1995 (Petrovic 2003). House Sparrows also reached two islands in the Lesser Antilles (St. Martin and Guadeloupe) in 1999, where House Sparrows are now at the southeastern limit of their range in the West Indies and where breeding was confirmed on both islands in 2002 (Levesque and Clergeau 2003). The simultaneous arrival of House Sparrows in the USVI and the timing and path of their subsequent range expansion in the eastern Caribbean suggest that birds did not arrive on boats shipping grain, as suggested earlier by Raffaele (1989) and Norton (1995), but that their range expansion was natural.

On St. Croix, House Sparrows are now widely distributed and numerous in urban areas, at industrial sites including rural or semi-rural areas, and at many agricultural areas with livestock such as the equine race-track across from Henry E. Rohlsen Airport or (formerly) Mountain Mint Dairy Farm at Estate Petronella. Large numbers (>75) formerly feeding in now defunct livestock yards at Mountain Mint Dairy Farm often roosted nearby in mangroves at Great Pond.

## Discussion

Observations of 62 species on St. Croix emphasized site-specific confirmed breeding evidence of 23 locally rare or uncommon species, especially for 16 waterbirds. This includes the first and second breeding records of Least Grebe, full documentation of the first breeding records of Great Blue Heron, Tricolored Heron, and Black-crowned Night-Heron in the 1980s, plus subsequent confirmation of breeding of the latter two species since 2002, the first breeding records of White-cheeked Pintail, Great Egret, and Black-necked Stilt in freshwater environments (manmade ponds), and the first breeding records of American Oystercatcher from St. Croix proper. Also, additional breeding information for Pied-billed Grebe, White-tailed Tropicbird, Brown Pelican, Green Heron, American Coot, Caribbean Coot, Wilson's Plover, and Willet is documented. The tiny White-tailed Tropicbird colony at Canegarden Cliff will probably soon naturally disappear from St. Croix. Documentation of breeding information for eight species cited herein (White-cheeked Pintail, Pied-

**Appendix 1. Site numbers, names and geographic coordinates on St. Croix for sites not listed in McGuire (1925), Scott and Carbonell (1986), or Imsand and Philibosian (1987).**

Site Number	Site Name	Site Coordinates N Lat° / W Long°
<b>Freshwater Ponds</b>		
1	Annaly Pond	17.74646 / 64.85276
2	Buccaneer Hotel: golf course link #8 pond	17.75208 / 64.67507
3	Buccaneer Hotel: golf course link #9 pond	17.75277 / 64.67736
4	Buccaneer Hotel: Wastewater Treatment Pond	17.75312 / 64.67333
5	Carambola Golf Resort Lower Ponds	17.74278 / 64.81641
6	Carambola Golf Resort Upper Pond	17.74984 / 64.82368
7	Cruzan Rum Pond	17.70555 / 64.82808
8	Granard South Pond <sup>b</sup>	17.71056 / 64.70720
9	Hermitage Pond	17.74967 / 64.80918
10	Longford Lower Pond	17.71060 / 64.69569
11	Reef Condos Golf Course Pond # 2	17.75339 / 64.61003
12	Schuster Lower Pond	17.75373 / 64.65785
13	Schuster Upper Pond	17.75132 / 64.65691
14	Teagues Bay Pond	17.75909 / 64.61368
15	VI Agricultural Station Middle Pond	17.72312 / 64.80725
16	Williams Pond	17.73382 / 64.88170
17	Windsor North Pond	17.76125 / 64.77360
18	Windsor South Pond	17.75775 / 64.77155
<b>Other Sites</b>		
1	St. Croix Renaissance Park <sup>c</sup>	17.69584 / 64.76728

<sup>a</sup> Coordinates given using decimal system.

<sup>b</sup> Named Manchenil Pond in Rodrigues (2002).

<sup>c</sup> Formerly the Martin Marietta Alumina Corporation plant (old alumina refinery); part of Krause Lagoon Remnant.

billed Grebe, Great Egret, Green Heron, American Coot, Caribbean Coot, Wilson's Plover, Black-necked Stilt) and some other waterbirds not cited herein (e.g., Least Tern [*Sterna antillarum*]) requires more extended treatment (e.g., Cattle Egret [*Bubulcus ibis*]: McNair et al., in prep.; American and Caribbean Coots: McNair 2006). Of the total of 24 species of waterbirds that have been proven to nest on St. Croix since the late 1850s (excluding three species extirpated since approximately the middle half of the twentieth century: West Indian Whistling-Duck, Least Bittern [*Ixobrychus exilis*], Clapper Rail [*Rallus longirostris*]), we failed to confirm only one species that has previously nested at least once on St. Croix (this study; DBM, in prep.), that being Ruddy Duck (one breeding record at Rust-op-Twist during the early twentieth century; Seaman 1993). However, Ruddy Ducks have subsequently nested at Southgate Pond (in 2005; McNair et al., in prep.).

Long-term surveys of wetland birds, coupled with rigorous assessment of historical data (since the 1850s) and wetland status can provide major impetus for their protection and conservation. The field work of Norton and Sladen was performed after the partial or complete loss (degradation or destruction) of some saltwater (and brackish) wetlands in the northern USVI and on St. Croix. This loss accelerated over the past 40-50 years because of development. In all, ca. half of the mangrove wetlands have either been degraded or destroyed on St. Croix, where only about 150 ha is now left (Table 1). Unfortunately, we cannot infer exactly what wetland birds were lost at many sites because supporting data are limited. Our most important saltwater wetland today, Great Pond, has virtually no avian information before the 1980s. In addition, lack of site specificity of some bird reports has also reduced our ability to assess site effects of habitat loss (or gain). Nonetheless, salt ponds and mangrove wetlands are still the dominant wetland types in the USVI, including St. Croix (CDC 2001; Table 1). Mangrove wetlands are obviously still important for waterbirds, but our observations also document the value of manmade ponds, which had been previously overlooked except for a few ponds such as the largest (2.95 ha), Fredensborg Pond. The loss (or gain) of specific salt- and freshwater wetlands should be tracked closely in future, such as the creation of ponds on the three golf courses of St. Croix since the 1960s.

Freshwater ponds in the USVI were first constructed during the second quarter of the twentieth century, and most are on St. Croix, which has over 125 viable ponds (CDC 2001, Table 1; DBM, LDY, and CCB, pers. obs.). St. Croix has freshwater ponds

important to wetland birds other than the 18 listed (Appendix 1). The creation of man-made freshwater ponds, now 10% of the total amount of wetland habitat on St. Croix, has helped offset the loss of saltwater wetlands, at least for species not restricted to salt water, and led to a pronounced increase of some species (e.g., Common Moorhen [*Gallinula chloropus*]; DBM, unpubl. data).

Freshwater ponds or brackish sites that lack appreciable tidal inflow have water levels that may fluctuate greatly, on either a seasonal or annual basis, which affects habitat availability and quality for wetland birds (such as their ability to occupy or breed at a site). Saltwater wetlands without tidal inlets, such as Southgate Pond in the semi-arid eastern end of St. Croix, regularly dry out during spring and summer unless rainfall is plentiful (Sladen 1992). By mid-summer 2002, water levels in most freshwater ponds and some brackish sites were low (and some salt- and freshwater ponds dried out completely). The large cooling pond at St. Croix Renaissance Park, which had been one of the three most favorable sites for many species of wetland birds (especially shorebirds) on St. Croix (Sladen 1988), was flushed with hypersaline water then drained after autumn 2002. Consequently, wetland birds other than breeding Least Terns and a few other species rarely occurred at these sites until the heavy rainfall of mid-November 2003.

We also documented breeding information for seven species of landbirds (White-crowned Pigeon, White-winged Dove, Bridled Quail-Dove, Antillean Nighthawk, Caribbean Martin, Lesser Antillean Bullfinch, and House Sparrow). This includes the first confirmed breeding records of White-winged Doves and Antillean Nighthawks. The current breeding distribution and abundance of White-crowned Pigeons and the dynamic range expansion of the White-winged Dove require more extended treatment than presented herein. Bridled Quail-Doves appear to have recovered from any decline wrought by Hurricane Hugo, whereas the influence of hurricane transport on the range expansion of the Lesser Antillean Bullfinch, though probably less likely than previously suggested, is still unsolved. As for wetland birds, our breeding information on landbirds is essential in prioritizing species and sites.

We have also documented herein one new verified species (Connecticut Warbler) plus the first (unverified) occurrence of Eurasian Wigeon in the USVI in addition to records or reports of many other vagrants and scarce transients, such as West Indian Whistling-Duck and American Flamingo, which have not recovered from past human persecution. Other than avifaunistic infor-

mation for individual species accounts cited herein, the significance of occurrences of these species is better assessed at a regional level, e.g., the eastern Caribbean (cf. McNair et al. 1999, 2002).

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