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Characterization of the bird diversity of Conception Island National Park, The Bahamas

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Photo: Shelley Cant-Woodside



Characterization of the bird diversity of Conception Island National Park, The Bahamas

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Cover Page: A pair of Osprey (*Pandion haliaetus ridgwayi*) constructing a nest atop one of the higher cliffs on the north end of Booby Cay, The Bahamas, on 25 October 2015. Note the lighter head plumage characteristic of this subspecies. The breeding season for this subspecies begins with nest building in mid-October and continues into early spring when nestlings are present. The nest is constructed of driftwood branches and a large amount of blue-colored nylon rope and nets. Photograph by Shelley Cant-Woodside.

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Abstract

Over 300 species of birds have been recorded across the Lucayan Archipelago, a group of more than 700 islands and thousands of cays and islets. Conception Island National Park is a remote park administered by the Bahamas National Trust and comprises the larger Conception Island and the smaller Booby Cay and South Rocks. No comprehensive avifaunal surveys have been published for this island bank, although records are scattered throughout the primary and gray literature. We combined literature searches with six of our own survey expeditions (totaling 17 days between 1994 and 2017) to generate the first avifaunal list for this park. We compiled a list of 68 bird species, 14 of which are new records for Conception Island observed during our surveys. We documented an additional nesting species, bringing the total to 7 species known to breed there. We also characterized bird habitats in the park and discuss the species records as they relate to habitats and the three islands of the Bank, as well as emphasize the importance of Conception Island National Park to avifaunal diversity and conservation in the region.

Keywords

archipelago, avifauna, *Phaethon lepturus*, species richness, The Bahamas, White-tailed Tropicbird

Resumen

Caracterización de la diversidad de aves del Parque Nacional Isla Concepción, Bahamas • Se han registrado más de 300 especies de aves en el archipiélago de Lucaya, un grupo de más de 700 islas y miles de cayos e islotes. El Parque Nacional Isla Concepción es un parque remoto administrado por el Fideicomiso Nacional de Bahamas y comprende la isla Concepción, más grande, y los pequeños Booby Cay y South Rocks. No se han publicado estudios completos de avifauna para este banco de islas, aunque los registros están dispersos en la literatura primaria y gris. Combinamos búsquedas bibliográficas con seis de nuestras propias expediciones de estudio (con un total de 17 días entre 1994 y 2017) para generar la primera lista de la avifauna de este parque. Compilamos una lista de 68 especies de aves, 14 de las cuales son nuevos registros para la Isla Concepción observados durante nuestros censos. Documentamos una especie adicional que anida en esta región, elevando así a siete el total de especies conocidas que lo hacen. También caracterizamos los hábitats de las aves en el parque y discutimos los registros de especies en relación con dichos hábitats y las tres islas del banco, al mismo tiempo que enfatizamos la importancia del Parque Nacional Isla Concepción para la diversidad y conservación de la avifauna en la región.

Palabras clave

archipiélago, avifauna, Bahamas, *Phaethon lepturus*, riqueza de especies

Résumé

Caractérisation de la diversité de l'avifaune du Parc National de Conception Island, aux Bahamas • Plus de 300 espèces d'oiseaux ont été recensées dans l'archipel de Lucayan, un groupe de plus de 700 îles et de milliers de cayes et d'îlots. Le Parc national de Conception Island est un parc isolé administré par le Bahamas National Trust et comprend Conception Island, l'île principale, ainsi que Booby Cay et South Rocks, plus petites. Aucune étude exhaustive de l'avifaune n'a été publiée pour ces

îles, bien que des données soient éparpillées dans la littérature publiée et non publiée. Nous avons combiné des recherches bibliographiques avec six de nos propres expéditions (totalisant 17 jours de 1994 à 2017) pour générer la première liste de l'avifaune de ce parc. Nous avons compilé une liste de 68 espèces d'oiseaux, dont 14 observées au cours de nos relevés sont de nouvelles mentions pour Conception Island. Nous avons documenté une espèce nicheuse supplémentaire, ce qui porte le total à 7 espèces. Nous avons également caractérisé les habitats des oiseaux dans le parc et discuté de la présence des espèces en relation avec les habitats et les trois îles, tout en soulignant l'importance du Parc National de Conception Island pour la diversité et la conservation de l'avifaune dans la région.

Mots clés

archipel, avifaune, Bahamas, Phaéton à bec jaune, *Phaethon lepturus*, richesse spécifique

The Bahamas archipelago has long been regarded as a bird hotspot, with 31 Important Bird Areas (IBAs) identified (Moore and Gape 2009) and 323 bird species recorded. Of these, 109 species are known to breed, 169 are migrants, and 45 are vagrants or waifs (Murphy *et al.* 2004, Moore and Gape 2009). Several migrant species are summer breeders, particularly the seabirds that comprise at least 14 breeding species (Moore and Gape 2009). During the winter months, about half of the terrestrial birds present in the islands are Neotropical non-breeding migrants (Moore and Gape 2009).

Conception Island National Park (CINP) is an IBA (BS027) located in the central Bahamas (23°49'48"N, 75°06'36"W; Fig. 1). Of the 31 IBAs in the Bahamas, CINP is one of only three that are entirely protected within the bounds of a national park (Moore and Gape 2009). Established in 1978 and expanded in 2009, CINP encompasses Conception Island, Booby Cay, and the South Rocks as well as the oceanic platform surrounding these islands (Fig. 1). The island bank is also home to important seabird nesting areas for species such as Audubon's Shearwater (*Puffinus lherminieri*) and White-tailed Tropicbird (*Phaethon lepturus*) (Sprunt 1984); coppice that is the only remaining habitat of the endemic silver boa (*Chilabothrus argentum*); and mangrove habitats which serve as nurseries for green turtles (*Chelonia mydas*) as well as economically important fishery species (Bjorndal *et al.* 2003, Serafy *et al.* 2003, Mackin 2007, Reynolds *et al.* 2016, 2020). Conception Island is considered part of the southern Bahamas "faunal region" (Shattuck 1905) and receives about 1,000 mm of rainfall per year (Sealey 2006).

The first formal survey of the birds of Conception Island took place in 1886, when the U.S. Fish Commission visited on the steamship *Albatross* (Shattuck 1905). Early records of the avifauna from the bank are inconsistent, listing between 3 and 13 species (Ridgway 1891, Cory 1892, Shattuck 1905). The list of birds observed during the 1886 trip was given in Ridgway (1891; 13 species). Cory (1892) listed 11 species based on his own observations, with nine of these in common with Ridgway (Table 1). Cory's (1892) list added observations of American Redstart (*Setophaga ruticilla*) and Zenaida Dove (*Zenaida aurita zenaida*). Shattuck (1905) listed three species known to occur on Conception Island, two of which are on Ridgway's (1891) list and a third (*Zenaida zenaida*) probably obtained as a record from Cory (1892), although Shattuck (1905) missed the record of *Setophaga ruticilla* from Cory (1892).

Since the end of the 19th century, the only other published study on the avifauna of CINP documented six breeding species on the bank in 1981 (Table 1; Sprunt 1984). Here we provide the first avifauna checklist since the 13 species listed in Ridgway

(1891), cataloguing a total of 68 species of birds in CINP and comparing this community to nearby islands.

Methods

Site Description

Conception Island is about 820 ha in area with a maximum elevation of 24 m (Lands and Surveys Department, Bahamas Government 1972). Most of the habitat on Conception Island is coastal scrub (2–3 m tall) with abundant silver thatch palm (*Coccothrinax argentata*). The central portion of the island is covered by a shallow lagoon drained by a tidal creek to the south and surrounded by a well-developed, although narrow, red mangrove (*Rhizophora mangle*) and buttonwood (*Conocarpus erectus*) forest 3–5 m high. Coppice occurs on the surrounding dunes and hills, dominated by silver thatch palm, gum elemi ("gammalamme", *Bursera simaruba*), mastic (*Sideroxylon foetidissimum*), and poisonwood (*Metopium toxiferum*) with canopy heights up to about 5 m (Reynolds *et al.* 2022).

Two smaller islands are important areas for birds on the Conception Bank but have not been well described in the literature. Booby Cay (23°50'18"N, 75°05'18"W) has similar habitats to Conception Island, with the western end covered in coppice forest and the eastern end tapering to grasses interspersed with silver thatch palm. A small brackish pond is located on the east end (23°50'15.0"N, 75°05'14.3"W), which at full pool is about 0.46 ha. This pond does not permanently hold water but is seasonally filled, and it is close enough to the north beach that it can be overtopped by waves during storm surges. The channel between Booby Cay and Conception Island is about 250 m wide and comprises shallow patch reef and sand flats 3 m deep (Fig. 1). South Rocks (23°48'29.9"N, 75°05'00.6"W) is a small collection of rocky islets with little vegetation, encompassing a total area of 2.5 ha. A small beach is usually present on the lee (west) side of the central island. The islands are low-lying and therefore receive salt spray from the trade wind-driven waves most of the year and are susceptible to being overtopped during storms.

Data Collection

We compiled records from published and gray literature sources as well as museum records searched via VertNet (vertnet.org). This included searches of eBird (Sullivan *et al.* 2009) and iNaturalist (inaturalist.org) for records of birds (i.e., Akresh and King 2015, Bagwyn *et al.* 2020) up to 29 July 2022. Our literature searches included the use of Google Scholar and combinations of the keywords: "bird," "avifauna," "avian," "Conception Island Bahamas," "Little Island Bahamas," and "species list." We then examined all relevant publications for additional relevant cited

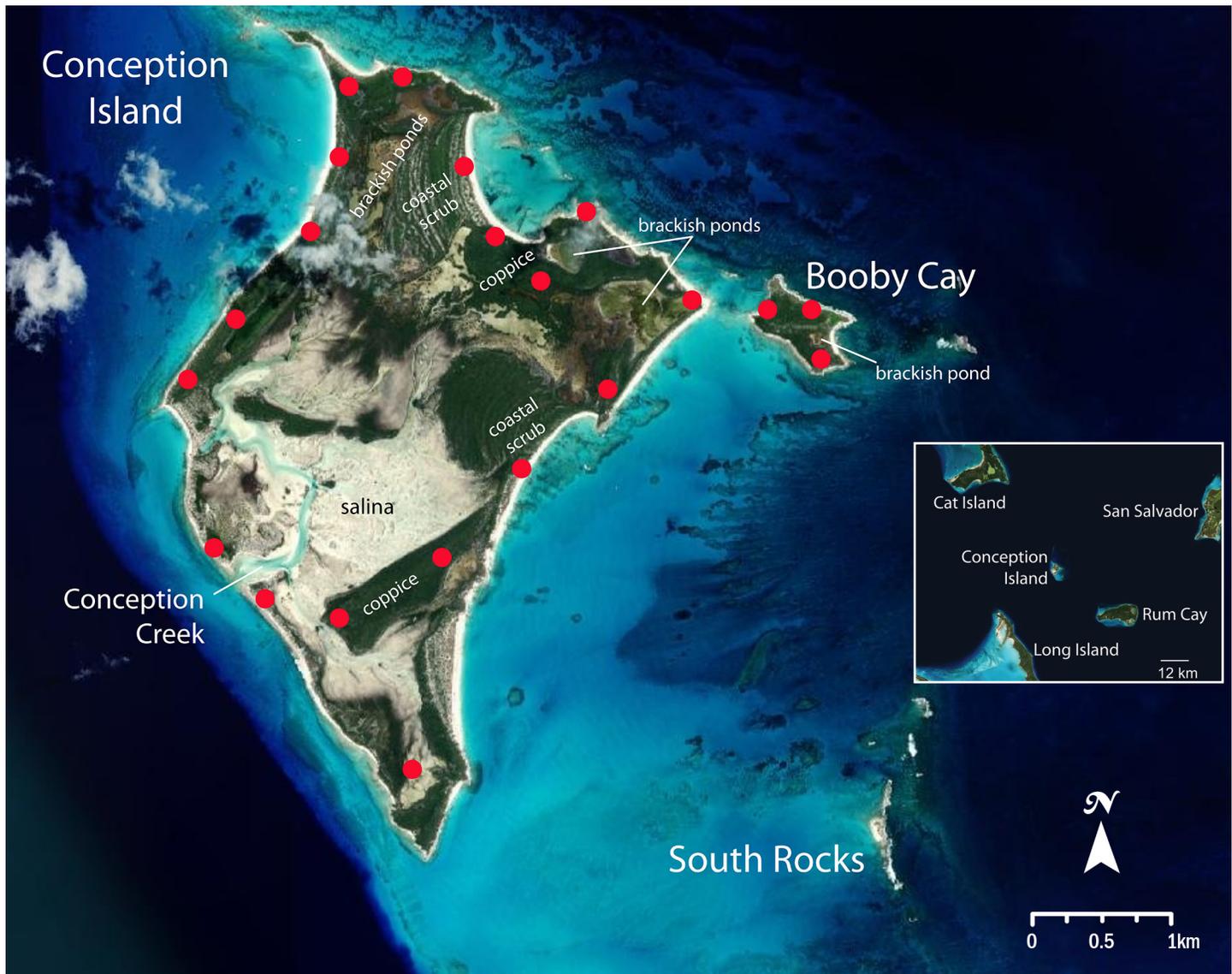


Fig. 1. Map of the Conception Island Bank, The Bahamas. The inset shows the location of Conception Island in the eastern Exuma Sound. Red circles indicate locations surveyed by the authors. Maps and map data from ArcGIS Pro v. 2.8.1 (Esri, Redlands, CA).

work to identify other potential sources of information, producing a database of 22 papers and two books.

We further added our own observations based on six expeditions to the islands. SB visited CINP during 7–8 June 1994 and 19–22 September 1996, while RGR visited four times (16 July and 23–24 October 2015, 8–10 March 2016, and 8–12 July 2017). During our visits, we attempted to observe birds at different periods of the day at different locations in CINP. Therefore, our observations do not include formal surveys but rather opportunistic sightings during naturalist work on the bank. Because of this, we take a conservative approach and only include species on our list of which we could be certain of their identity and their likelihood of occurrence. We visited the pond on Booby Cay on three occasions and observed that it was less than half full in September 1996, full in March 2016, and empty in July 2017 (Fig. 2).

Results

We documented 68 bird species in CINP, assembled from 38 literature species records from four publications, 42 citizen sci-

ence species records, 12 museum species records, and 44 of our own species observations (Table 1).

Citizen science records contributed 14 species to our list that were not previously documented in the literature. We found a total of 42 species on eBird and zero records on iNaturalist for CINP. Records from eBird included 28 species we had previously recorded at CINP. Of the 14 species added to the list from eBird, all are reasonable to expect in CINP and readily identifiable (Table 1).

We found 44 museum specimens of birds from the Conception Island Bank of 12 species, most of which were collected in March 1886 and are in the Smithsonian National Museum of Natural History (USNM). The record of Black-throated Blue Warbler (*Setophaga c. caerulescens*) from USNM is also from 1886 but collected in May, and the record lists the location as "Cat Island District, locality: Conception." Hence, it is not clear if the specimen came from what is now CINP, although this species was recorded there by Ridgway (1891), and it is common on San Salvador (Akresh and King 2015). The Museum of Comparative

Table 1. Checklist of the avifauna of Conception Island National Park, Bahamas. Multiple references are included for species that were documented by more than one record. An asterisk (*) denotes species known to be nesting in CINP. The VertNet and eBird records were compiled as of 29 July 2022. USNM = Smithsonian National Museum of Natural History. ROM = Royal Ontario Museum. UF = Florida Museum of Natural History. MCZ = Museum of Comparative Zoology. Taxonomy largely follows from Chesser *et al.* (2021) and Clements *et al.* (2021). Seasonality in the Bahamas Islands: S-Summer; F-Fall; W-Winter; M-Migrant; R-Resident; T-Transient; B-Breeding (Paterson 1972, Brudenell-Bruce 1975, White 1998, Raffaele *et al.* 2020). Abundance estimates are Rare (seen or expected to be seen only once or twice), Uncommon (seen or expected to be seen more than twice but less than daily), and Common (seen or expected to be seen daily) compiled from our observations or from reference material (Paterson 1972, Brudenell-Bruce 1975, White 1998, Raffaele *et al.* 2020).

Common Name	Scientific Name	Abundance	Seasonality	Reference
Blue-winged Teal	<i>Spatula discors</i>	Rare	WR	This study
Northern Shoveler	<i>Spatula clypeata</i>	Rare	FWR	This study
White-cheeked Pintail	<i>Anas b. bahamensis</i>	Common	RB	This study
Ruddy Duck	<i>Oxyura j. jamaicensis</i>	Rare	RB	This study
White-crowned Pigeon	<i>Patagioenas leucocephala</i>	Common	RB	This study, White 1998, eBird
Common Ground-Dove	<i>Columbina passerina bahamensis</i>	Common	RB	This study, Ridgway 1891, Cory 1892, Shattuck 1905, White 1998, eBird
Zenaida Dove	<i>Zenaida aurita zenaida</i>	Rare	RB	Cory 1892, Shattuck 1905, eBird
Antillean Nighthawk	<i>Chordeiles gundlachii vicinus*</i>	Common	SB	This study, White 1998
Bahama Woodstar	<i>Nesophlox evelynae</i>	Common	RB	This study, Ridgway 1891, Cory 1892, White 1998, USNM
Clapper Rail	<i>Rallus crepitans coryi</i>	Uncommon	RB	eBird
Sora	<i>Porzana carolina</i>	Uncommon	WR	eBird
Black-necked Stilt	<i>Himantopus m. mexicanus</i>	Uncommon	RB	This study
American Oystercatcher	<i>Haematopus p. palliatus</i>	Common	RB	This study, eBird
Killdeer	<i>Charadrius vociferus ternominatus</i>	Uncommon	RB	eBird
Black-bellied Plover	<i>Pluvialis squatarola</i>	Common	WR	This study, eBird
Semipalmated Plover	<i>Charadrius semipalmatus</i>	Uncommon	WR	This study, eBird
Piping Plover	<i>Charadrius melodus</i>	Uncommon	WR	This study, eBird
Wilson's Plover	<i>Charadrius w. wilsonia</i>	Common	RB	This study, Ridgway 1891, Cory 1892, Shattuck 1905, eBird, USNM
Snowy Plover	<i>Charadrius n. nivosus</i>	Rare	RB	eBird
Ruddy Turnstone	<i>Arenaria interpres morinella</i>	Uncommon	WR	This study
Semipalmated Sandpiper	<i>Calidris pusilla</i>	Uncommon	M	eBird
Willet	<i>Tringa s. semipalmata</i>	Uncommon	RB	This study
Greater Yellowlegs	<i>Tringa melanoleuca</i>	Uncommon	WR	This study
Black-legged Kittiwake	<i>Rissa t. tridactyla</i>	Rare	WR	White 2004
Laughing Gull	<i>Leucophaeus a. atricilla</i>	Rare	RB	eBird
Brown Noddy	<i>Anous s. stolidus*</i>	Common	SB	Sprunt 1984, White 1998
Sooty Tern	<i>Onychoprion f. fuscatus*</i>	Uncommon	RB	Sprunt 1984, White 1998, eBird
Bridled Tern	<i>Onychoprion anaethetus melanopterus*</i>	Common	SB	Sprunt 1984, White 1998, Carey <i>et al.</i> 2001
Common Tern	<i>Sterna h. hirundo</i>	Rare	M	White 2004
Royal Tern	<i>Thalasseus maximus*</i>	Uncommon	RB	This study, Sprunt 1984, eBird
White-tailed Tropicbird	<i>Phaethon lepturus catesbyi*</i>	Common	SRB	This study, Sprunt 1984, White 1998, eBird, UF
Audubon's Shearwater	<i>Puffinus l. lherminieri*</i>	Common	SRB	Sprunt 1984, White 1998, Carey <i>et al.</i> 2001, Mackin 2007, eBird

Table 1. Cont.

Common Name	Scientific Name	Abundance	Seasonality	Reference
Magnificent Frigatebird	<i>Fregata magnificens rothschildi</i>	Common	SRB	This study, eBird
Brown Booby	<i>Sula l. leucogaster</i>	Common	SRB	This study, eBird
Great Blue Heron	<i>Ardea herodias occidentalis</i>	Uncommon	WR	This study, eBird
Great Egret	<i>Ardea alba egretta</i>	Uncommon	RB	This study, eBird
Snowy Egret	<i>Egretta thula brewsteri</i>	Rare	RB	This study
Little Blue Heron	<i>Egretta caerulea</i>	Uncommon	RB	This study, eBird
Tricolored Heron	<i>Egretta tricolor ruficollis</i>	Uncommon	RB	This study, eBird
Reddish Egret	<i>Egretta r. rufescens</i>	Uncommon	RB	This study, eBird
Cattle Egret	<i>Bubulcus i. ibis</i>	Rare	RB	eBird
Green Heron	<i>Butorides virescens bahamensis</i>	Uncommon	RB	This study, eBird
Yellow-crowned Night-Heron	<i>Nyctanassa v. violacea</i>	Common	RB	This study, Ridgway 1891
Osprey	<i>Pandion haliaetus ridgwayi</i>	Common	RB	This study, White 1998, eBird
Belted Kingfisher	<i>Megaceryle alcyon</i>	Rare	WR	This study
American Kestrel	<i>Falco s. sparverius</i>	Uncommon	RB	eBird
Merlin	<i>Falco c. columbarius</i>	Uncommon	WR	This study, eBird
Peregrine Falcon	<i>Falco peregrinus anatum</i>	Rare	WR	eBird
Gray Kingbird	<i>Tyrannus d. dominicensis</i>	Common	SB	This study, eBird, White 1998
Thick-billed Vireo	<i>Vireo c. crassirostris</i>	Common	RB	Ridgway 1891, Cory 1892, Kirkconnell and Garrido 1991, USNM, eBird
Tree Swallow	<i>Tachycineta bicolor</i>	Common	TR	eBird
Barn Swallow	<i>Hirundo rustica erythrogaster</i>	Rare	TR	eBird
Bahama Mockingbird	<i>Mimus g. gundlachii</i>	Common	RB	This study, Ridgway 1891, Cory 1892, White 1998, eBird, USNM, MCZ
Northern Mockingbird	<i>Mimus polyglottos</i>	Common	RB	eBird
Northern Waterthrush	<i>Parkesia noveboracensis</i>	Rare	WR	This study
Black-and-white Warbler	<i>Mniotilta varia</i>	Rare	WR	This study
Prothonotary Warbler	<i>Protonotaria citrea</i>	Rare	M	This study
Common Yellowthroat	<i>Geothlypis trichas</i>	Uncommon	WR	Ridgway 1891, USNM
American Redstart	<i>Setophaga ruticilla</i>	Uncommon	WR	This study, Cory 1892
Cape May Warbler	<i>Setophaga tigrina</i>	Uncommon	WR	This study
Yellow Warbler	<i>Setophaga petechia gundlachi</i>	Common	RB	This study, Ridgway 1891, Cory 1892, White 1998, eBird, USNM, MCZ
Black-throated Blue Warbler	<i>Setophaga c. caerulescens</i>	Rare	WR	Ridgway 1891, Cory 1892, USNM
Palm Warbler	<i>Setophaga p. palmarum</i>	Rare	WR	This study, Ridgway 1891, Cory 1892, eBird, USNM
Yellow-rumped Warbler	<i>Setophaga c. coronata</i>	Rare	WR	eBird
Yellow-throated Warbler	<i>Setophaga d. dominica</i>	Uncommon	RB	eBird
Prairie Warbler	<i>Setophaga d. discolor</i>	Rare	WR	This study, Ridgway 1891, USNM
Bananaquit	<i>Coereba flaveola bahamensis</i>	Common	RB	This study, Ridgway 1891, White 1998, eBird, USNM, ROM, UF
Black-faced Grassquit	<i>Melanospiza b. bicolor</i>	Common	RB	This study, Ridgway 1891, Cory 1892, White 1998, eBird



Fig. 2. The brackish pond on the east end of Booby Cay. The image on the top shows the pond (the brown patch at the upper right behind the beach) when it was completely dry on 8 July 2017. The image on the bottom shows the pond at nearly full pool 10 March 2016. Photos by R. Graham Reynolds.

Zoology (MCZ; Cambridge, MA) has three bird specimens, the Royal Ontario Museum (ROM; Toronto, ON, Canada) has one specimen, and the University of Florida Museum of Natural History (UF; Gainesville, FL) has two specimens (Table 1).

Our surveys produced a total of 44 species observations over six expeditions to CINP. Thirty of our observations are duplicates of species that were recorded in other sources, while the remaining 14 were new observations (Table 1). The bulk of these new records are waterbirds and shorebirds from the pond on Booby Cay. One of our records includes a new breeding observation. On 7 June 1994, SB observed and photographed an Antillean Nighthawk (*Chordeiles gundlachii vicinus*) nesting with a single-egg clutch located in a silver thatch palm and sea grape (*Coccoloba uvifera*) clearing behind a dune. This represents the seventh species documented to breed in CINP (Table 1).

We recorded 10 species on the Booby Cay pond in September 1996: Little Blue Heron (*Egretta caerulea*), Green Heron (*Butorides virescens*), American Oystercatcher (*Haematopus palliatus*), Yellow-crowned Night-Heron (*Nyctanassa violacea*), Ruddy Turnstone (*Arenaria interpres*), Black-necked Stilt (*Himantopus mexicanus*), Semipalmated Plover (*Charadrius semipalmatus*), Belted Kingfisher (*Megasceryle alcyon*), Greater Yellowlegs (*Tringa melanoleuca*), and Willet (*Tringa semipalmata*). In March 2016, we recorded an additional four species: White-cheeked Pintail (*Anas bahamensis*), Northern Shoveler (*Spatula clypeata*), Ruddy Duck (*Oxyura jamaicensis*), and Blue-winged Teal (*Spatula discors*). We did not record any shorebirds on the pond in July 2017, as it was empty.

Discussion

Additional formal surveys of IBAs in the Bahamas, particularly CINP, are necessary for understanding the importance of protected areas for birds in the region (Moore and Gape 2009), and we encourage both researchers and citizen scientists to make records of species observed in CINP. Few research expeditions to Conception Island have produced vertebrate specimens for museums, hence we are not surprised that there are relatively few specimens from the bank.

The protection afforded to the avifauna of the CINP IBA is dependent upon the maintenance of habitat and ecological preservation, but there is evidence that problems are ongoing. For example, there is evidence that hunting has occurred recently on the island, and a pile of at least seven spent signal flares were found, which could pose a fire hazard (Reynolds *et al.* 2020). Invasive species are certainly of concern, and biosecurity for CINP is of utmost priority. Rats (*Rattus* spp.) have not been documented, although Mackin (2007) states that they are thought to be present. Murine (*Mus* spp.) evidence has been observed using tracking tunnels (Island Conservation pers. comm.), but no individuals have been captured, although surveys are planned for the near future. Invasive plants are present in CINP, with two potentially problematic species documented. The beaches around Conception Island have beach she-oak (*Casuarina equisetifolia*), a species known to be damaging to Caribbean coastal ecosystems by reducing native plant species richness (Hardman *et al.* 2012). In 2015, we also documented sisal (*Agave sisalana*) groves adjacent to gum elemi forest in CINP; sisal is damaging to native wildlife (Badano and Pugnaire 2004) and often grows in mono-

specific groves where it excludes native plants. Habitat loss is also occurring in CINP. Hurricane Joaquin (2015) brought sustained wave heights of 4–7 m and a surge > 1.5 m that lasted for at least three days (Sahoo *et al.* 2019). This storm caused significant coastal erosion and wrack deposition around Conception Island, especially Booby Cay (Reynolds *et al.* 2022). Hurricanes might prove more impactful to bird populations if they increase in intensity (Akresh *et al.* 2021). As CINP has a maximum elevation of 24 m, sea level rise will eventually cause the loss of several habitat types (Williams 2013).

Range-Restricted Species and those of Conservation Concern

Of the eight range-restricted species within the Bahamas Endemic Bird Area (EBA), three have been documented in CINP (Table 2), namely the Bahama Woodstar (*Nesophlox evelynae*), Thick-billed Vireo (*Vireo crassirostris flavescens*), and Bahama Mockingbird (*Mimus g. gundlachii*). There are no records yet of the Bahama Yellowthroat (*Geothlypis rostrata*) in CINP, despite records on Cat Island (Moore and Gape 2009). Similarly, the Pearly-eyed Thrasher (*Margarops fuscatus*) is not yet recorded in CINP but is known from most southern islands, is abundant on Rum Cay, and is likely to occur in CINP (Paterson 1972, Buden 1990, Raffaele *et al.* 2020). The remaining three species are unlikely in CINP. The Bahama Swallow (*Tachycineta cyaneoviridis*) might migrate through CINP, but it breeds in the pinelands of the northern islands (Paterson 1972) and is uncommon in the central Bahamas (Moore and Gape 2009). The Olive-capped Warbler (*Setophaga pityophila*) is almost entirely found in pinelands of the Little Bahamas Bank, and the Bahama Oriole (*Icterus northropi*) is restricted to Andros Island (Raffaele *et al.* 2020).

The White-crowned Pigeon (*Patagioenas leucocephala*) is common in CINP and is listed as Near Threatened on the IUCN Red List (BirdLife International 2020). We frequently observed the species flying between Conception Island and Booby Cay. However, the species was likely hunted at this flyover spot, at least historically if not presently, as we recorded many shotgun shells in a pile on Booby Cay in September 1996 near the beach looking across towards Conception Island (23°50'20.4"N, 75°05'27.6"W).

Table 2. Range-restricted species in the Bahamas Endemic Bird Area, which includes the entire Lucayan Archipelago. Species recorded in Conception Island National Park (CINP) are noted.

Common Name	Scientific Name	Recorded in CINP
Bahama Woodstar	<i>Nesophlox evelynae</i>	yes
Thick-billed Vireo	<i>Vireo crassirostris flavescens</i>	yes
Bahama Swallow	<i>Tachycineta cyaneoviridis</i>	no
Pearly-eyed Thrasher	<i>Margarops f. fuscatus</i>	no
Bahama Mockingbird	<i>Mimus g. gundlachii</i>	yes
Bahama Oriole	<i>Icterus northropi</i>	no
Bahama Yellowthroat	<i>Geothlypis rostrata</i>	no
Olive-capped Warbler	<i>Setophaga pityophila</i>	no

Conception Island is thought to have the largest White-tailed Tropicbird nesting colony in the Bahamas (White 1998). We found the species to be abundant during our surveys, but we are not aware of formal nesting counts. This could certainly be a priority for future work, as it is thought that there are fewer than 500 breeding pairs in the Bahamas (Walsh-McGehee *et al.* 1999, Walsh-McGehee 2000). If CINP is indeed free of rats, it might represent a significant breeding refuge for the species in the Lucayan Archipelago.

Other Bank Islands

White-tailed Tropicbirds routinely fly between the north and west ends of Booby Cay and Conception Island, and White-crowned Pigeons move daily between the two islands. Booby Cay is thought to have one of the largest Sooty Tern (*Onychoprion fuscatus*) and Brown Noddy (*Anous stolidus*) colonies in the Bahamas (White 1998). Audubon's Shearwater is known to breed on South Rocks (Sprunt 1984, Mackin 2007) and, based upon the data in Mackin (2015), we expect that around 250–500 breeding pairs could be supported. Fourteen pairs of Royal Terns (*Sterna maxima*) were observed nesting in May 1981 (Sprunt 1984). We have not yet been able to make a systematic survey of the rocks because they face a lee shore during most of the year, and navigation is made challenging by the numerous reef heads. A detailed survey would best be conducted via sea kayak or shallow-draft vessel on calm seas, and we have not had that equipment with us on expeditions thus far.

Conclusion

Conception Island Bank is the last island bank of the central Bahamas to have a robust avifaunal list compiled. Our list (Table 1) will provide opportunity for comparisons among the islands of the central Bahamas, which should yield a better regional understanding of the avifaunal diversity. Importantly, Conception Island National Park is unique in that it is an entire island bank free from development pressures and is preserved as a national park. Because numerous species of birds inhabit the bank (and probably many more to be recorded) and several species of concern have robust breeding colonies (Brown Noddy, White-tailed Tropicbird, Audubon's Shearwater), the bank is of tremendous importance to avifauna conservation. Finally, like other understudied areas of the Bahamas, it is crucial that additional support be extended to continue research both at CINP and elsewhere in the country.

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