



Colonial Nesting Birds in Biscayne National Park

2019-2020 Nesting Year Summary

Natural Resource Data Series NPS/SFCN/NRDS—2022/1351



ON THE COVER

Photograph of a great egret (*Ardea alba*) and great blue heron (*Ardea herodias*) guarding their respective nests on Jones Lagoon.

Photograph by: Robert Muxo, National Park Service, South Florida / Caribbean Network.

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Contents

	Page
Figures	iv
Tables	v
Abstract	vi
Introduction	1
Methods	2
Results and Discussion	4
Focal Species Results	5
Divers—Double-crested Cormorants	12
Stalk and Strike—Great Blue Heron, Great White Heron, and Great Egret	16
Tactile Feeders—Roseate Spoonbill and White Ibis	20
Colony Results	22
Conclusion	25
Literature Cited	26
Appendix A. Photographed and Observed Nest Data 2009–2020	27

Figures

	Page
Figure 1. Locations of the nine nesting colony locations currently monitored.	3
Figure 2. Number of double-crested cormorant nests per month.	13
Figure 3. Annual nesting index across colonies by focal species.	14
Figure 4. For the 2019-2020 season both Jones Lagoon and Mangrove Key had the highest number of species (five) nesting.	15
Figure 5. Number of nesting colony locations by species in Biscayne National Park.	18
Figure 6. The number of nests by month for selected stalk and strike species: great blue heron, great egret, and great white heron.	19
Figure 7. Total of peak nest counts across all colonies for the six focal species.	20
Figure 8. The number of nests by month for two tactile feeder species: roseate spoonbills and white ibises.	21
Figure 9. Peak nest counts by colony for the six focal species.	23
Figure 10. Annual nesting index across colonies by focal species.	24

Tables

	Page
Table 1. List of species detected in 2019–2020 nesting season.	5
Table 2. Percent nesting by month and species.	6
Table 3. Nest counts (left side) and percentages (right side) of nests occupied by birds, nests with eggs, nests with chicks, and empty nests.	9
Table 4. Peak nest counts of the last three nesting seasons for double-crested cormorants in Biscayne National Park.	12
Table 5. Comparison of peak nest numbers and nesting index for 2019–2020 nesting season to all previously monitored years.	16
Table A-1. Photographed nests data by year, colony, and species. Bold numbers indicate totals (by year or location).	28
Table A-2. Observed bird data by year, colony, and species. Bold numbers indicate totals (by year or location).	49

Abstract

The habitats within Biscayne National Park consist of rocky coast lines, Biscayne Bay (a shallow water bay), over 40 mangrove islands, and coral reefs. This ecosystem lies near the large metropolitan area of Miami, suburban development, a nuclear power plant, and has several canals that drain from the mainland into the park or close to park boundaries. The proximity to a large population also results in the park's heavy usage. The park is a popular destination for fishers and boaters. These are all stressors on the park ecosystem.

The South Florida / Caribbean Network has developed a long-term monitoring program that focuses on the colonial

nesting birds that use park resources for foraging, roosting, and nesting. The South Florida / Caribbean Network uses monthly helicopter flights to survey nine nesting colonies in or near the park. The nine colonies monitored are: Kings Road, Mangrove Key, West Arsenicker Key, Arsenicker Key, Jones Lagoon, Ragged Key 5, Ragged Key 4, Soldier Key, and Kings Bay. We focus on six species of birds: double-crested cormorants (*Phalacrocorax auritus*), great egrets (*Ardea alba*), great white herons (*Ardea herodias occidentalis*), great blue herons (*Ardea herodias*), white ibises (*Eudocimus albus*), and roseate spoonbills (*Platalea ajaja*).

Introduction

Nesting colonies of wading birds and seabirds are important indicators of ecosystem health as they respond to changes in food abundance, food quality, contaminants, invasive species, and disturbances. The acts of selecting mates, building nests, laying eggs, and rearing chicks are energy intensive. If the habitat is insufficient to support these activities, nesting success will suffer and may indicate a problem in the ecosystem. The South Florida / Caribbean Inventory and Monitoring Network of the National Park Service is monitoring colonial nesting birds in Biscayne National Park (BISC) and this report summarizes the results for the nesting year July 2019 through June 2020.

The specific objectives of this monitoring program are to determine status and long-term trends in:

- The number and locations of active colonies of colonial nesting birds with a special focus on double-crested cormorants (*Phalacrocorax auritus*), great egrets (*Ardea alba*), great white herons (*Ardea herodias occidentalis*), great blue herons (*Ardea herodias*), white ibises (*Eudocimus albus*), and roseate spoonbills (*Platalea ajaja*; referred to as focal species).
- The annual peak active nest counts of colonial nesting birds in Biscayne National Park for the focal species.
- An annual nesting index (sum of monthly nest counts) for the focal species.
- The timing of peak nest counts for the focal species.

Methods

The monitoring process in 2019–2020 consisted of an annual park-wide survey via helicopter to locate new nesting colonies. The census was completed over two months, January and February, and was incorporated into the routine monthly surveys. Two SFCN staff, a photographer and an observer, participated in each survey. As the helicopter circled each island colony, the colonies were photographed, and the observer recorded the number of visible nesting and non-nesting birds. Approximately 400 photographs were taken during each survey. The photographs were downloaded to a computer for processing and analyzed to identify active nests by species. The identified nests were circled on the photographs and then counted from the processed photographs.

Peak nest counts were identified for each colony and then summed across colonies to calculate the peak nesting year total across the park for each species. “Year” refers to nesting year defined as July through June of the next year. In addition, an annual nesting index is calculated, which is the sum of monthly nest counts for the entire nesting year. The nesting estimates for months with no sampling are calculated as the average of the months before and after the missing month. The South Florida / Caribbean Network uses the annual nesting index as well as peak nest counts as some species such as double-crested cormorants nest in all months

and peak nest counts alone were considered insufficient to describe the nesting effort. Trying to estimate the true number of nest starts is not feasible at this time. This year’s peak nest counts and nesting index are compared to the previous nesting years (July through June) mean, maximum, and minimum. Complete methods are described in the protocol “Colonial Nesting Bird Monitoring Protocol in Biscayne National Park” (Muxo et al. 2015).

Colony surveys were conducted December 5, 2019; and January 15, February 18, and March 13 of 2020. The October survey did not occur because of a helicopter issue and the November survey did not occur because most of the SFCN staff was away for training. The nine colonies surveyed during the routine monthly flights are: Kings Road, Mangrove Key, West Arsenicker, Arsenicker Key, Jones Lagoon, Ragged Key 5, Ragged Key 4, Soldier Key, and Kings Bay (Figure 1). Although the Kings Bay colony is located north of the park boundary, it is being monitored because of its proximity to the park. The birds nesting at Kings Bay most likely use the park for resources and monitoring this colony provides a more complete picture of the colonial nesting birds using Biscayne Bay.

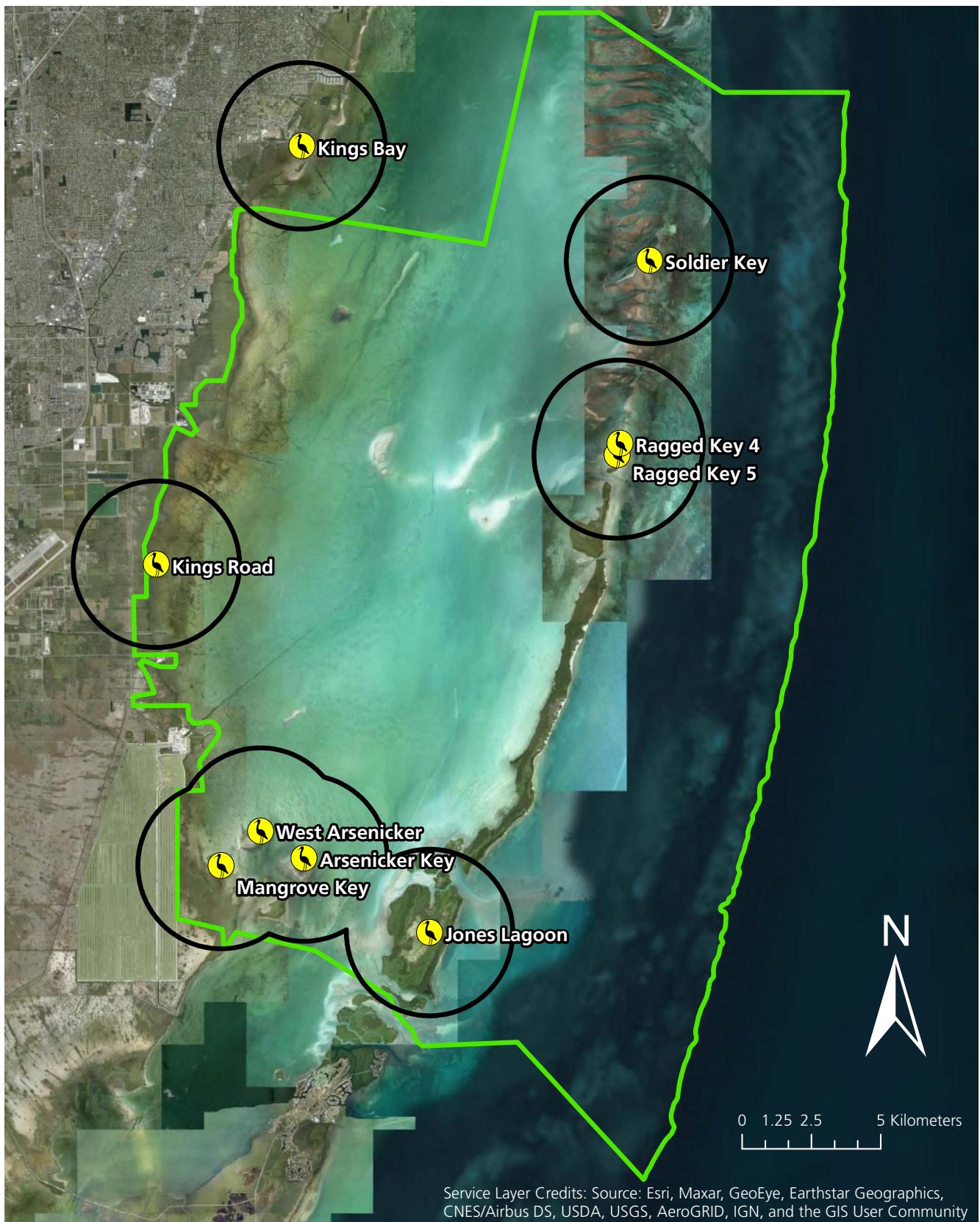


Figure 1. Locations of the nine nesting colony locations currently monitored. The black circles represent a three-kilometer (1.9-mile) radius foraging area. Studies of double-crested cormorants in other states have shown their average foraging distance is within 3 kilometers (1.9 miles) of their colonies (Custer and Bunck 1992; Coleman et al. 2005; Seefelt and Gillingham 2006). The park boundary is shown in green.

Results and Discussion

With the 2019–2020 nesting year, the South Florida / Caribbean Network completed the 10th full nesting year of monitoring colonial nesting birds in Biscayne National Park (BISC). This monitoring season was unusual because the COVID-19 pandemic forced us to cancel our surveys scheduled for April through June due to safety concerns.

A list of the species detected either through field observations or photographs of nests is provided in Table

1. For the 2019–2020 nesting year, there were eight species photographed nesting and 18 species visually observed using the colonies. As previously seen, more species were observed than photographed nesting. This suggests colony locations function not only for reproduction but also for roosting and refugia for the additional species. Table 1 also provides the species codes used in subsequent tables and graphs.

Table 1. List of species detected in 2019–2020 nesting season. Numbers in this table should not be used as true abundance estimates as nests and birds were likely observed during more than one sample period. Common names with an asterik (*) were not counted as species.

Common Name	Species Code	Photographed Nests	Field Observed Birds
Anhinga	ANHI	2	9
Black vulture	BLVU	–	1
Brown pelican	BRPE	–	161
Double-crested cormorant	DCCO	1728	1173
Great blue heron	GBHE	22	17
Great egret	GREG	4	14
Great white heron	GWHE	92	173
Herring gull	HERG	–	3
Laridae family gull	LARI	–	18
Little blue heron	LBHE	–	2
Magnificent frigatebird	MAFR	–	2
Osprey	OSPR	–	1
Ring-billed gull	RBGU	–	3
Roseate spoonbill	ROSP	3	14
Snowy egret	SNEG	–	28
Tricolored heron	TRHE	–	26
Turkey vulture	TUVU	–	35
Unidentified*	UNID	31	–
Unidentified white bird*	UNWH	15	–
White ibis	WHIB	18	19
White-crowned pigeon	WCPI	–	1
Wurde mann's heron	WUHE	2	–
Grand Total	–	1,917	1,700

Focal Species Results

The monitoring results yielded valuable nesting data for documenting species-specific nesting patterns and trends. We broke down survey results by grouping bird species according to their feeding method: diver, stalk and strike, and tactile. Species-specific information is presented with a focus on double-crested cormorants, great egrets, great white herons, great blue herons, roseate spoonbills, and

white ibises. Although the double-crested cormorants nest year-round, the other focal species do not. Table 2 shows the nesting percentages by month throughout the survey period for the six focal species. Additionally, Table 3 displays the active occupied nests and the active empty nests. The active occupied nests are broken down into nests with adult birds, chicks, or eggs present.

Table 2. Percent nesting by month and species. The “0” entries represent no nests located. NF= No Flight. Note, the nesting season is the last six months of a year followed by the first six months of the next year.

Species	Nesting Season	July 2019	Aug. 2019	Sept. 2019	Oct. 2019	Nov. 2019	Dec. 2019	Year	Jan. 2020	Feb. 2020	March 2020	April 2020	May 2020	June 2020	Total Birds
Double-Crested Cormorant	Monthly mean	15.8	14.3	8.9	3.8	4.3	5.7	–	43.4	8.7	10.3	11	60.2	13.3	4837.4
	2010	9	10	8	5	1	2	2011	5	5	15	14	14	12	5,307
	2011	10	18	11	4	6	8	2012	0	12	10	7	0	12	4,137
	2012	16	0	15	0	7	4	2013	0	14	15	10	10	10	4,156
	2013	12	9	7	0	0	4	2014	9	9	16	21	4	9	5,658
	2014	13	13	7	0	0	5	2015	10	6	8	8	13	16	4,927
	2015	16	13	5	2	3	10	2016	13	9	10	0	0	18	5,423
	2016	16	12	10	4	6	8	2017	7	9	5	7	0	16	6,763
	2017	16	8	1	1	1	2	2018	16	12	NF	13	17	14	5,127
	2018	13	14	11	7	6	8	2019	NF	7	NF	8	13	13	5,148
	2019	37	32	14	NF	NF	6	2020	4	4	3	NF	NF	NF	1,728
Great Blue Heron	Monthly mean	1.2	0	0	1.5	9.8	12.2	–	14	19.9	22	19	11.2	10.7	28.7
	2010	0	0	0	3	5	11	2011	13	18	18	16	13	3	38
	2011	0	0	0	0	11	0	2012	NF	22	22	11	NF	33	9
	2012	0	0	0	NF	6	25	2013	NF	14	17	14	19	6	36
	2013	5	NF	0	NF	NF	0	2014	0	23	50	18	0	5	22
	2014	0	0	0	NF	NF	9	2015	13	4	0	52	17	4	23
	2015	4	0	0	0	12	12	2016	4	31	31	NF	NF	8	26
	2016	0	0	0	0	9	15	2017	18	15	15	15	NF	12	33
	2017	0	0	0	0	12	19	2018	23	16	NF	9	7	14	43
	2018	3	0	0	6	14	17	2019	NF	20	NF	17	11	11	35
	2019	0	0	0	NF	NF	14	2020	27	36	23	NF	NF	NF	22

Table 2 (continued). Percent nesting by month and species. The “0” entries represent no nests located. NF= No Flight. Note, the nesting season is the last six months of a year followed by the first six months of the next year.

Species	Nesting Season	July 2019	Aug. 2019	Sept. 2019	Oct. 2019	Nov. 2019	Dec. 2019	Year	Jan. 2020	Feb. 2020	March 2020	April 2020	May 2020	June 2020	Total Birds
Great Egret	Monthly mean	53.5	0.8	0.2	0	5.1	0.3	–	3	202.3	120.1	148.4	88.2	177.6	355.4
	2010	11	0	0	0	0	0	2011	0	0	32	18	14	25	44
	2011	0	0	0	0	0	3	2012	NF	3	17	34	NF	41	29
	2012	0	NF	0	NF	11	0	2013	NF	25	14	9	16	25	64
	2013	21	4	2	NF	NF	0	2014	0	0	7	23	35	9	57
	2014	0	0	0	NF	NF	0	2015	14	0	0	50	18	18	22
	2015	0	0	0	0	0	0	2016	0	21	41	NF	NF	38	29
	2016	14	3	0	0	0	0	2017	3	42	6	14	NF	19	36
	2017	0	0	0	0	0	0	2018	4	39	NF	3	31	23	70
	2018	75	0	0	0	25	0	2019	NF	0	NF	0	0	0	4
	2019	0	0	0	NF	NF	0	2020	0	75	25	NF	NF	NF	4
Great White Heron	Monthly mean	1.9	0	1.6	5.2	11.6	14.5	–	20.9	21.3	122.3	106.6	7.8	6.3	897.2
	2010	0	0	1	12	14	13	2011	23	16	10	5	4	3	108
	2011	0	0	6	2	16	18	2012	NF	29	8	10	NF	12	51
	2012	0	NF	8	NF	10	12	2013	NF	27	21	13	8	3	78
	2013	6	0	0	NF	NF	22	2014	19	19	25	7	1	0	68
	2014	0	0	0	NF	NF	19	2015	10	17	8	27	14	5	59
	2015	2	0	0	7	13	10	2016	23	18	17	NF	NF	10	96
	2016	2	0	0	3	7	11	2017	19	20	24	11	NF	3	131
	2017	1	0	0	2	7	12	2018	26	19	NF	21	8	5	160
	2018	4	0	0	5	14	17	2019	NF	15	NF	17	12	16	137
	2019	4	0	1	NF	NF	11	2020	26	33	25	NF	NF	NF	92

Table 2 (continued). Percent nesting by month and species. The “0” entries represent no nests located. NF= No Flight. Note, the nesting season is the last six months of a year followed by the first six months of the next year.

Species	Nesting Season	July 2019	Aug. 2019	Sept. 2019	Oct. 2019	Nov. 2019	Dec. 2019	Year	Jan. 2020	Feb. 2020	March 2020	April 2020	May 2020	June 2020	Total Birds
Roseate Spoonbill	Monthly mean	0	0	0	0.7	2.3	16.1	–	30.3	37.9	12.1	2.4	0	1.4	9
	2010	0	0	0	4	16	8	2011	48	12	8	4	0	0	25
	2011	0	0	0	0	0	50	2012	NF	50	0	0	NF	0	6
	2012	0	NF	0	NF	0	13	2013	NF	88	0	0	0	0	8
	2013	0	0	0	NF	NF	9	2014	27	36	18	9	0	0	11
	2014	0	0	0	NF	NF	0	2015	0	0	0	0	0	0	0
	2015	0	0	0	0	0	0	2016	25	25	38	NF	NF	13	8
	2016	0	0	0	0	0	14	2017	29	57	0	0	NF	0	7
	2017	0	0	0	0	0	17	2018	50	28	NF	6	NF	0	18
	2018	0	0	0	0	0	50	2019	NF	50	NF	0	0	0	4
	2019	0	0	0	NF	NF	0	2020	33	33	33	NF	NF	NF	3
White Ibis	Monthly mean	50.7	9.8	0.1	0	0	0	–	0	0	0	3.6	4.2	38.7	74.2
	2010	21	0	0	0	0	0	2011	0	0	0	19	10	50	110
	2011	10	0	0	0	0	0	2012	NF	0	0	0	NF	90	31
	2012	27	NF	0	NF	0	0	2013	NF	0	0	0	0	73	67
	2013	73	27	0	NF	NF	0	2014	0	0	0	0	0	0	82
	2014	62	3	0	NF	NF	0	2015	0	0	0	0	0	34	61
	2015	88	4	0	0	0	0	2016	0	0	0	NF	NF	8	25
	2016	55	4	1	0	0	0	2017	0	0	0	0	NF	40	172
	2017	36	0	0	0	0	0	2018	0	0	NF	0	15	48	137
	2018	85	0	0	0	0	0	2019	NF	0	NF	10	0	5	39
	2019	50	50	0	NF	NF	0	2020	0	0	0	NF	NF	NF	18

Table 3. Nest counts (left side) and percentages (right side) of nests occupied by birds, nests with eggs, nests with chicks, and empty nests. Occupied nest numbers include nests with chicks and nests with eggs. Total active nest numbers are comprised of occupied nests (includes chicks and eggs categories) plus empty nests [DCCO=double-crested cormorants; GBHE=great blue herons; GREG=great egrets; GWHE=great white herons; ROSP= roseate spoonbill; WHIB=white ibises].

Species Code	Nesting Season	Occupied Nests (Bird, Chick, and/or Egg Visible)	Nests With Visible Chicks	Nests With Visible Eggs	Empty Nests (No Bird, Egg, or Chick)	Total Active Nests	% Occupied Nests (Bird, Chick, and/or Egg Visible)	% Nests With Visible Chicks	% Nests With Visible Eggs	% Empty Nests (No Bird, Egg, or Chick)
DCCO	2010–2011	4,734	724	152	573	5,307	89	14	3	11
	2011–2012	3,768	220	87	369	4,137	91	5	2	9
	2012–2013	3,708	258	97	448	4,156	89	6	2	11
	2013–2014	5,123	455	133	537	5,660	91	8	2	9
	2014–2015	4,274	446	172	653	4,927	87	9	3	13
	2015–2016	4,879	593	202	544	5,423	90	11	4	10
	2016–2017	5,671	601	189	1,092	6,763	84	9	3	16
	2017–2018	4,676	574	147	451	5,127	91	11	3	9
	2018–2019	4,650	280	132	498	5,148	90	5	3	10
	2019–2020	1431	131	51	297	1728	83	8	3	17
GBHE	2010–2011	37	5	4	1	38	97	13	11	3
	2011–2012	9	3	1	–	9	100	33	11	–
	2012–2013	35	8	3	1	36	97	22	8	3
	2013–2014	21	7	2	–	21	100	33	10	–
	2014–2015	23	10	5	–	23	100	43	22	–
	2015–2016	26	8	5	–	26	100	31	19	–
	2016–2017	33	6	4	–	33	100	18	12	–
	2017–2018	43	12	9	–	43	100	28	21	–
	2018–2019	35	9	3	–	35	100	26	9	–
	2019–2020	22	4	4	–	22	100	18	18	–

Table 3 (continued). Nest counts (left side) and percentages (right side) of nests occupied by birds, nests with eggs, nests with chicks, and empty nests. Occupied nest numbers include nests with chicks and nests with eggs. Total active nest numbers are comprised of occupied nests (includes chicks and eggs categories) plus empty nests [DCCO=double-crested cormorants; GBHE=great blue herons; GREG=great egrets; GWHE=great white herons; ROSP= roseate spoonbill; WHIB=white ibises].

Species Code	Nesting Season	Occupied Nests (Bird, Chick, and/or Egg Visible)	Nests With Visible Chicks	Nests With Visible Eggs	Empty Nests (No Bird, Egg, or Chick)	Total Active Nests	% Occupied Nests (Bird, Chick, and/or Egg Visible)	% Nests With Visible Chicks	% Nests With Visible Eggs	% Empty Nests (No Bird, Egg, or Chick)
GREG	2010–2011	33	3	4	11	44	75	7	9	25
	2011–2012	29	3	–	–	29	100	10	–	–
	2012–2013	64	8	7	–	64	100	13	11	–
	2013–2014	57	13	1	–	57	100	23	2	–
	2014–2015	22	5	1	–	22	100	23	5	–
	2015–2016	29	3	1	–	29	100	10	3	–
	2016–2017	36	2	4	–	36	100	6	11	–
	2017–2018	68	4	16	2	70	97	6	23	3
	2018–2019	4	3	1	–	4	100	75	25	–
	2019–2020	4	–	1	–	4	100	–	25	–
GWHE	2010–2011	107	21	11	1	108	99	19	10	1
	2011–2012	50	10	7	1	51	98	20	14	2
	2012–2013	74	21	4	4	78	95	27	5	5
	2013–2014	68	19	7	–	68	100	28	10	–
	2014–2015	58	15	5	1	59	98	25	8	2
	2015–2016	96	28	8	–	96	100	29	8	–
	2016–2017	130	28	7	1	131	99	21	5	1
	2017–2018	160	44	13	–	160	100	28	8	–
	2018–2019	135	44	22	2	137	99	32	16	1
	2019–2020	92	18	13	–	92	100	20	14	–

Table 3 (continued). Nest counts (left side) and percentages (right side) of nests occupied by birds, nests with eggs, nests with chicks, and empty nests. Occupied nest numbers include nests with chicks and nests with eggs. Total active nest numbers are comprised of occupied nests (includes chicks and eggs categories) plus empty nests [DCCO=double-crested cormorants; GBHE=great blue herons; GREG=great egrets; GWHE=great white herons; ROSP= roseate spoonbill; WHIB=white ibises].

Species Code	Nesting Season	Occupied Nests (Bird, Chick, and/or Egg Visible)	Nests With Visible Chicks	Nests With Visible Eggs	Empty Nests (No Bird, Egg, or Chick)	Total Active Nests	% Occupied Nests (Bird, Chick, and/or Egg Visible)	% Nests With Visible Chicks	% Nests With Visible Eggs	% Empty Nests (No Bird, Egg, or Chick)
ROSP	2010–2011	25	5	–	–	25	100	20	–	–
	2011–2012	6	1	–	–	6	100	17	–	–
	2012–2013	8	3	–	–	8	100	38	–	–
	2013–2014	11	4	–	–	11	100	36	–	–
	2014–2015	–	–	–	–	–	–	–	–	–
	2015–2016	8	–	1	–	8	100	–	13	–
	2016–2017	7	–	1	–	7	100	–	14	–
	2017–2018	18	3	–	–	18	100	17	–	–
	2018–2019	4	1	–	–	4	100	25	–	–
	2019–2020	3	–	–	–	3	100	–	–	–
WHIB	2010–2011	109	14	6	1	110	99	13	5	1
	2011–2012	31	1	1	–	31	100	3	3	–
	2012–2013	67	–	5	–	67	100	–	7	–
	2013–2014	82	11	6	–	82	100	13	7	–
	2014–2015	61	1	8	–	61	100	2	13	–
	2015–2016	24	2	3	1	25	96	8	12	4
	2016–2017	166	9	14	6	172	97	5	8	3
	2017–2018	136	12	14	1	137	99	9	10	1
	2018–2019	37	7	2	2	39	95	18	5	5
	2019–2020	18	–	1	–	18	100	–	6	–

Divers—Double-crested Cormorants

We detected a drastic reduction in double-crested cormorant nesting in the December 2019 through March 2020 surveys (Table 4 and Figure 2). Unfortunately, we were unable to collect results for the final three months of the nesting season, thus making it difficult to determine if this indicates a trend or was an anomaly in nesting behavior. The double-

crested cormorant remains the most prominent nesting bird species in our survey, cormorant nests comprised 95% of the peak nest counts (for focal species) and 93% of the total nest counts in the nesting index summed across all months (Figure 3). This year double-crested cormorants were present at eight of the nine colony sites, West Arsenicker being the exception (Figure 4).

Table 4. Peak nest counts of the last three nesting seasons for double-crested cormorants in Biscayne National Park. The reduction in nesting from September 2017 through December 2017 was a result of Hurricane Irma's impact on south Florida (Sept. 10, 2017). Note the rebound in nesting for January 2018.

Species	Year	Jul	Aug	Sep	Oct	Nov	Dec	Year	Jan	Feb	Mar	Apr	May	Jun
DCCO	2017	717	379	10	23	36	111	2018	835	593	NS	460	881	633
DCCO	2018	632	707	499	206	221	407	2019	NS	239	NS	389	666	623
DCCO	2019	568	514	231	NS	NS	61	2020	26	12	12	NS	NS	NS

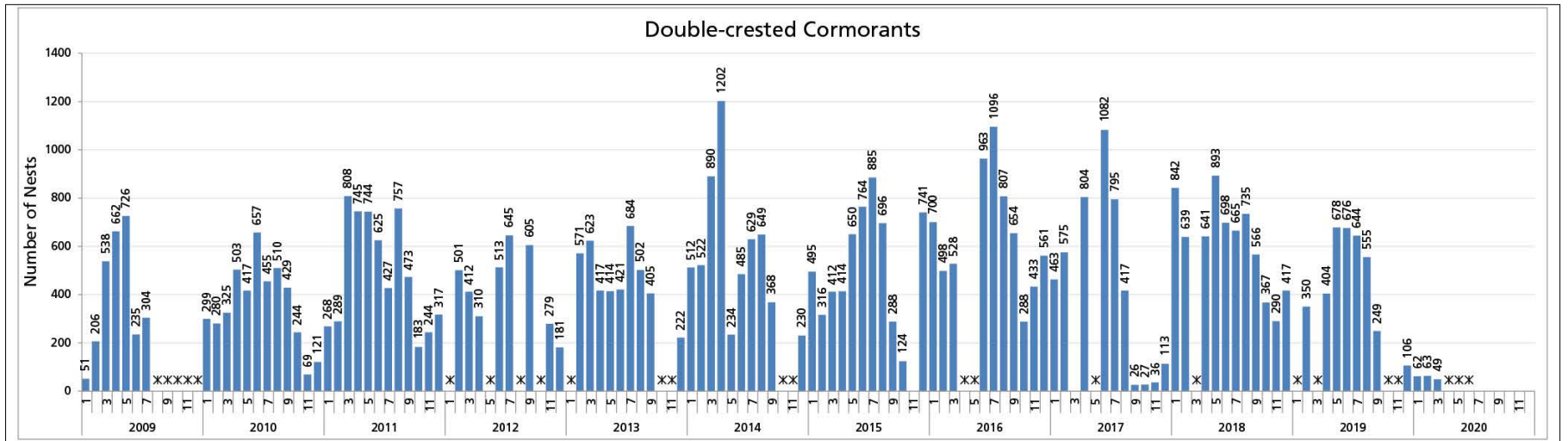


Figure 2. Number of double-crested cormorant nests per month. An asterisk (*) indicates months not sampled.

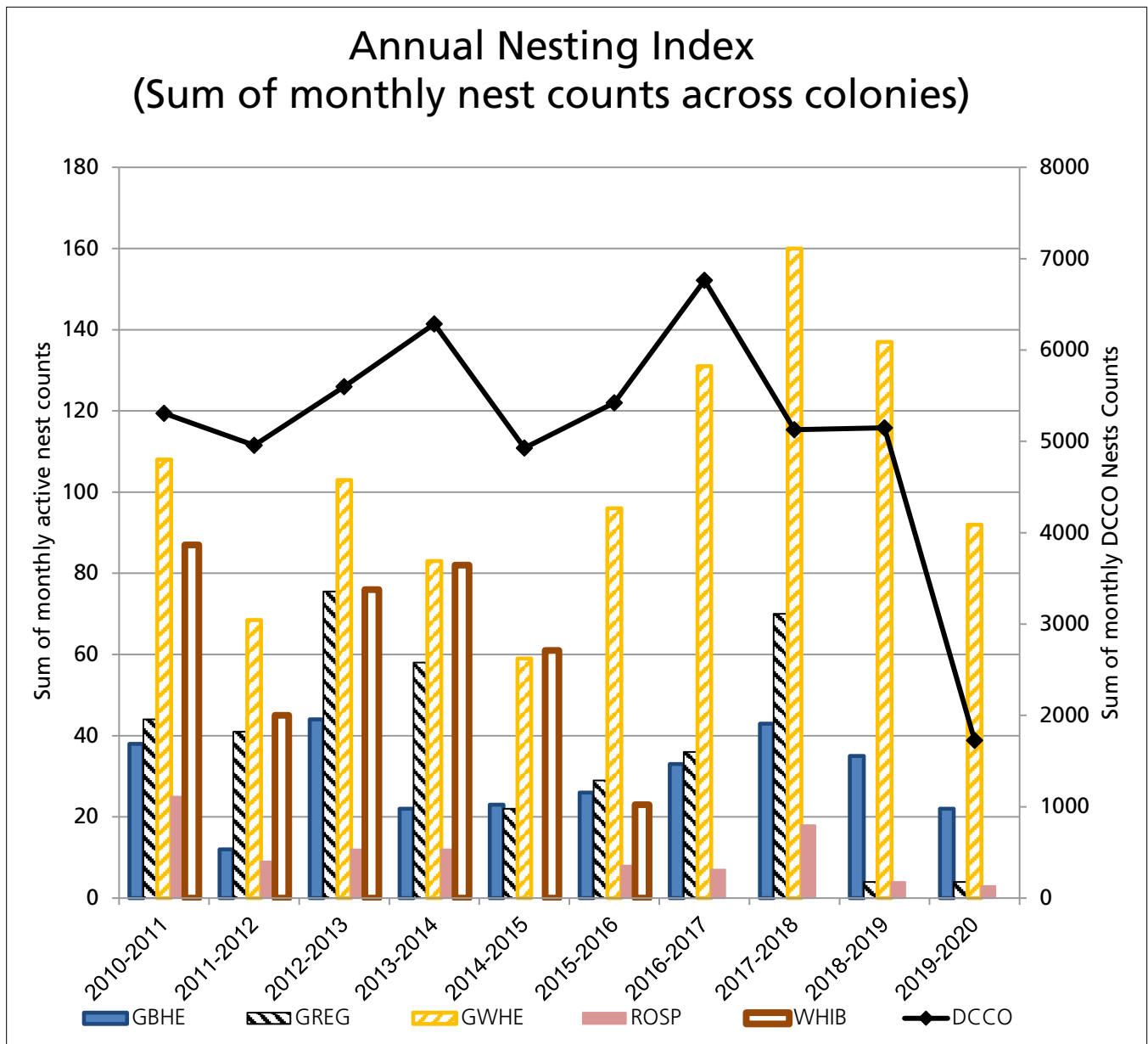


Figure 3. Annual nesting index across colonies by focal species. The number of nests counted at each colony during each month was summed to create an annual nesting index across all colonies for the six focal species. This number exceeds the actual number of nest starts as a single nest could be counted during two or more monthly visits.

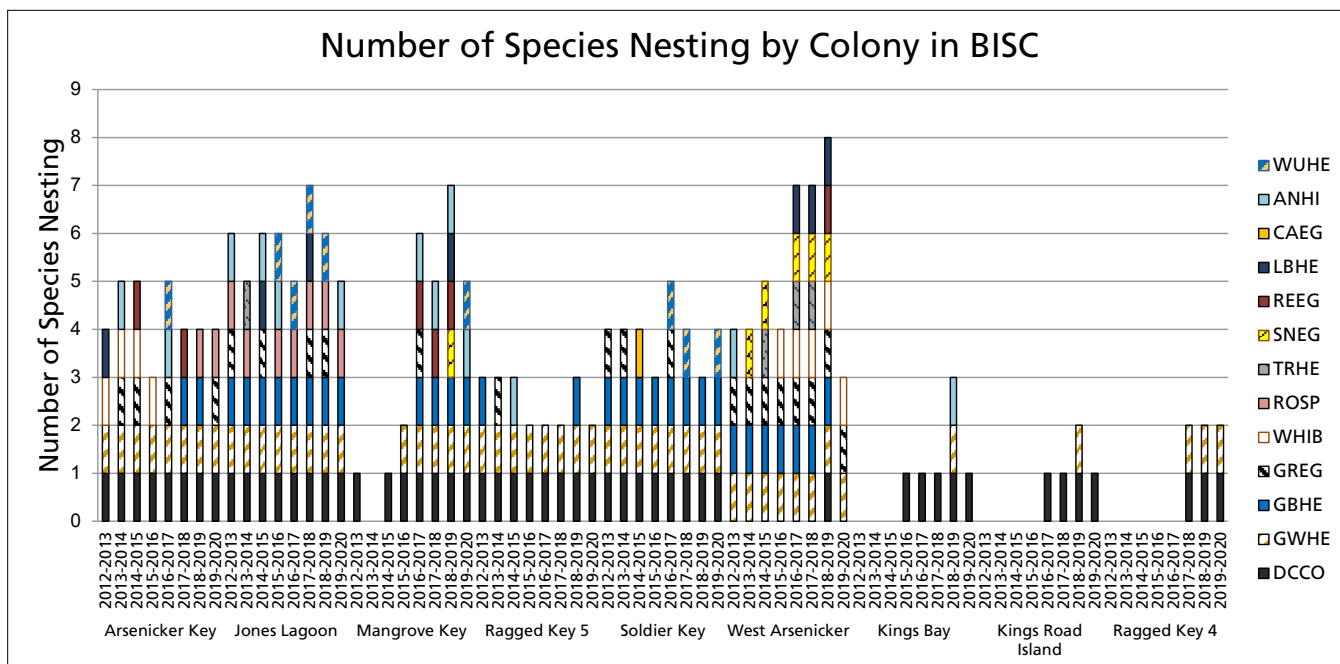


Figure 4. For the 2019-2020 season both Jones Lagoon and Mangrove Key had the highest number of species (five) nesting. It is important to note, the last season is most likely reduced because of the missed surveys. To allow for legibility, results are displayed for the last eight nesting seasons.

Stalk and Strike—Great Blue Heron, Great White Heron, and Great Egret

Great blue herons were detected nesting on three colonies this year compared to six colonies last year (Figure 4). Great blue herons were detected nesting on three colonies; Jones Lagoon, Mangrove Key, and Soldier Key. Both the peak nest and nesting index measures fell within the range of previous monitoring years for Great blue herons (Table 2 and Figures

5 and 6). Great egrets were detected nesting at one colony, West Arsenicker, down from three colonies last year (Figure 4). The minimum nest count of three is one lower than any previous year (Table 5). This year we located great white herons nesting on seven of the nine colonies (Figure 4). The great white heron peak nest count of 38 was under the previous high of 46 and over the average of 30.1. (Table 5 and Figure 7).

Table 5. Comparison of peak nest numbers and nesting index for 2019–2020 nesting season to all previously monitored years. Peak nest numbers in this table should not be used as true abundance estimates as nests and birds were likely observed during more than one sample period. The peak nest values are on the left side of the table and the nesting index values are on the right side of the table. The asterisk (*) indicates colonies with fewer survey periods.

Colony	Species	2019-2020 Peak Nest Values	Mean	Max	Min	2019-2020 Nesting Index Values	Mean	Max	Min
Biscayne National Park	DCCO	657.0	1038.7	1336.0	792.0	1728.0	5504.1	6763.0	4927.0
	GBHE	11.0	11.9	16.0	6.0	22.0	30.7	44.0	12.0
	GREG	3.0	16.1	29.0	4.0	4.0	42.2	75.5	4.0
	GWHE	38.0	29.2	46.0	18.0	92.0	105.1	160.0	59.0
	ROSP	2.0	5.0	12.0	0.0	3.0	10.6	25.0	0.0
	WHIB	9.0	52.3	95.0	24.0	0.0	41.6	87.0	0.0
Arsenicker Key	DCCO	49.0	146.7	257.0	56.0	108.0	627.4	983.5	254.0
	GBHE	0.0	0.4	2.0	0.0	0.0	0.8	5.0	0.0
	GREG	1.0	0.6	2.0	0.0	1.0	1.3	5.0	0.0
	GWHE	5.0	5.4	13.0	2.0	15.0	20.2	46.0	11.0
	ROSP	1.0	0.5	1.0	0.0	1.0	0.5	1.0	0.0
	WHIB	0.0	31.5	60.0	0.0	0.0	41.6	87.0	0.0
Jones Lagoon	DCCO	53.0	103	135.0	55.0	172.0	516.1	905.0	287.0
	GBHE	6.0	6.2	10.0	2.0	16.0	18.9	30.0	6.5
	GREG	0.0	1.0	2.0	0.0	0.0	1.0	2.0	0.0
	GWHE	14.0	9.2	14.0	6.0	33.0	34.7	48.0	18.0
	ROSP	1.0	4.9	12.0	0.0	2.0	10.4	25.0	0.0
	WHIB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mangrove Key	DCCO	29.0	31.3	115.0	0.0	70.0	96.4	309.0	0.0
	GBHE	3.0	1.8	4.0	0.0	4.0	3.3	9.0	0.0
	GREG	0.0	0.3	1.0	0.0	0.0	0.4	2.0	0.0
	GWHE	3.0	1.9	8.0	0.0	6.0	5.9	29.0	0.0
	ROSP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WHIB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ragged Key 5	DCCO	198.0	410.8	706.0	294.0	490.0	2513.7	3568.0	1774.0
	GBHE	0.0	0.4	1.0	0.0	0.0	0.4	2.0	0.0
	GREG	0.0	0.2	1.0	0.0	0.0	0.2	1.0	0.0
	GWHE	4.0	4.7	8.0	2.0	10.0	16.9	29.0	9.0
	ROSP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WHIB	0.0	0.0	0.0	0.0	0.0.0	0.0	0.0	0.0

Table 5 continued. Comparison of peak nest numbers and nesting index for 2019–2020 nesting season to all previously monitored years. Peak nest numbers in this table should not be used as true abundance estimates as nests and birds were likely observed during more than one sample period. The peak nest values are on the left side of the table and the nesting index values are on the right side of the table. The asterisk (*) indicates colonies with fewer survey periods.

Colony	Species	2019-2020 Peak Nest Values	Mean	Max	Min	2019-2020 Nesting Index Values	Mean	Max	Min
Soldier	DCCO	160.0	206.7	342.0	140.0	415.0	1177.8	1531.0	752.0
	GBHE	2.0	1.1	2.0	1.0	2.0	2.8	9.0	1.0
	GREG	0.0	0.5	1.0	0.0	0.0	0.4	1.0	0.0
	GWHE	10.0	4.2	9.0	2.0	24.0	14.6	33.0	5.0
	ROSP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WHIB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Arsenicker	DCCO	0.0	1.4	10.0	0.0	0.0	1.8	13.0	0.0
	GBHE	0.0	2.8	5.0	1.0	0.0	5.2	15.0	1.0
	GREG	2.0	14.1	27.0	3.0	3.0	39.2	73.0	3.0
	GWHE	1.0	3.2	6.0	1.0	1.0	11.9	29.5	4.0
	ROSP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WHIB	9.0	24.3	95.0	0.0	0.0	0.0	0.0	0.0
Kings Bay*	DCCO	106.0	275	357.0	250.0	290.0	1122.0	1578.0	212.0
	GBHE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	GREG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	GWHE	0.0	0.0	1.0	0.0	0.0	0.3	1.0	0.0
	ROSP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WHIB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kings Road*	DCCO	39.0	54.0	66.0	33.0	99.0	124.3	209.0	0.0
	GBHE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	GREG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	GWHE	0.0	0.0	1.0	0.0	0.0	0.5	1.0	0.0
	ROSP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WHIB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ragged Key 4*	DCCO	23.0	25.0	38.0	12.0	84.0	79.0	137.0	16.0
	GBHE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	GREG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	GWHE	1.0	1.5	2.0	1.0	3.0	2.7	3.0	2.0
	ROSP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WHIB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

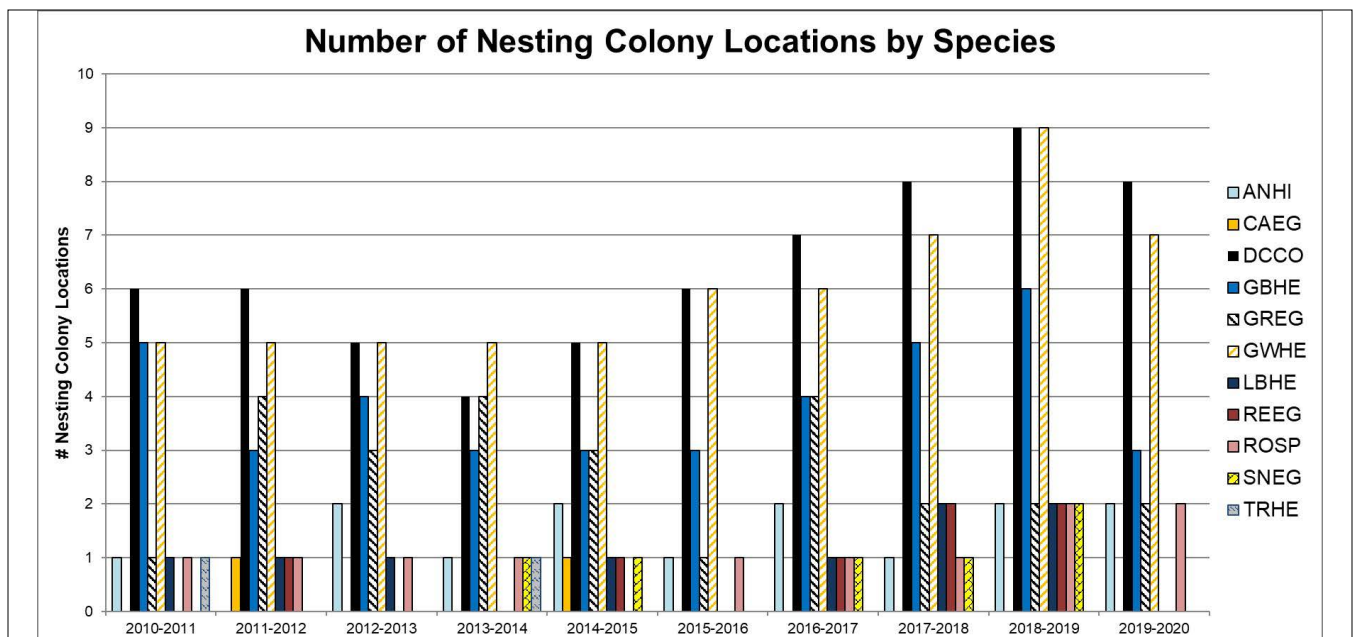


Figure 5. Number of nesting colony locations by species in Biscayne National Park. Includes all egrets, ibises, spoonbills, and herons.

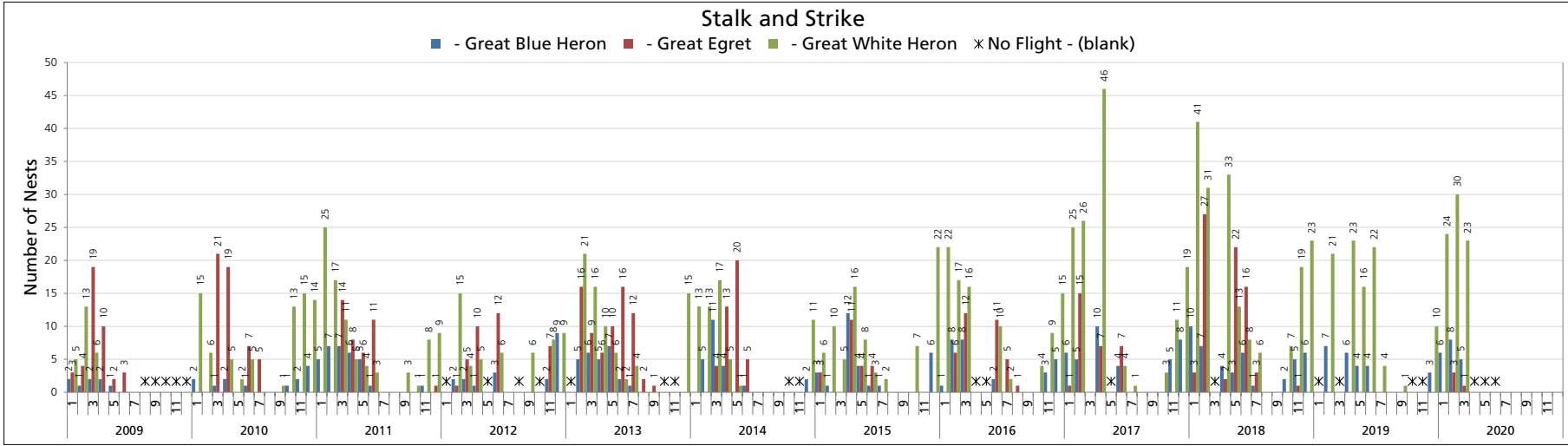


Figure 6. The number of nests by month for selected stalk and strike species: great blue heron, great egret, and great white heron.

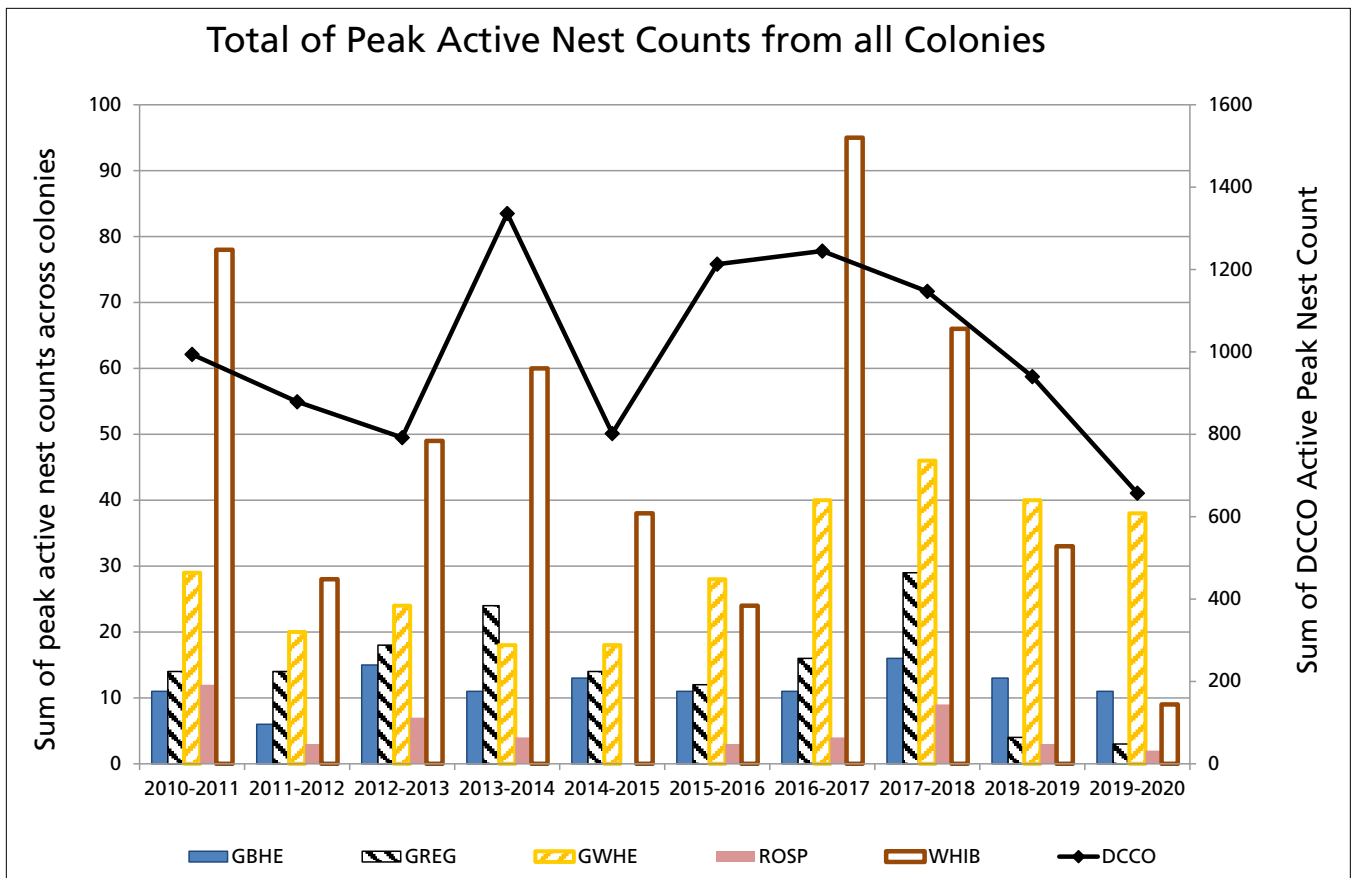


Figure 7. Total of peak nest counts across all colonies for the six focal species. The maximum number of nests detected per colony was summed to create a total of peak nest counts across all colonies.

Tactile Feeders—Roseate Spoonbill and White Ibis

Roseate spoonbill were detected nesting on Arsenicker Key and Jones Lagoon colonies (Figure 4). The peak nest number of two is above the previous minimum of zero but below the mean of 5 (Table 3). This nesting year we detected White Ibis nesting on only one colony, West Arsenicker (Figure 4). White Ibises have consistently nested at West Arsenicker

(Figure 4) for the past five years. The white ibis peak nest count of nine (Table 3) is a new low as well as the nesting index of zero equals the low for nesting index. Figure 8 shows number of nests by month for two tactile feeder species: roseate spoonbills and white ibises. This graph shows that roseate spoonbills nest in the dry season and white ibises nest in the wet season.

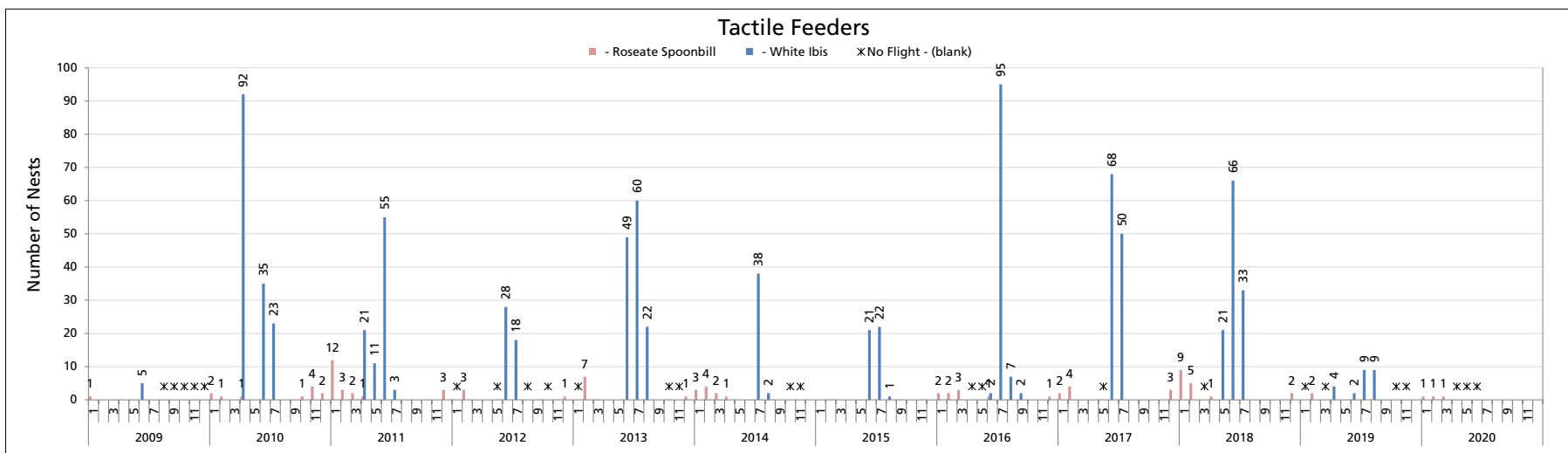


Figure 8. The number of nests by month for two tactile feeder species: Roseate Spoonbills and White Ibises. This graph shows that roseate spoonbills nest in the dry season and white ibises nest in the wet season. An asterisk (*) indicates months not sampled.

Colony Results

The 2019–2020 nesting year showed double-crested Cormorants nesting on eight of the nine colonies (Figure 4). Arsenicker Key and Jones Lagoon were the only colonies that had roseate spoonbills nesting. Because of the missed surveys, there were nesting events we were not able to document and are evident in the charts and tables in this report.

There were no new colonies detected on our census flight and all currently surveyed colonies maintained some nesting. Six of the nine colonies showed a reduction in the quantity of species nesting from the previous season (Figure 4). West Arsenicker had eight species last nesting season compared

with three species this season and Jones Lagoon went from six to five species. Mangrove Key and Kings Bay lost two species each while Ragged Key 5 and Kings Road colonies each lost one. We cannot determine if the reduction in the number of species on existing colonies is a result of missing surveys. Arsenicker Key and Ragged Key 4 maintained the same levels of species with four and two respectively. The peak nest counts and peak nesting indexes for individual colonies are shown in Figures 9 and 10 respectively. Soldier Key was the only colony with an increase in species going from three to four species. Jones Lagoon and Mangrove Key had the highest number of species with five each.

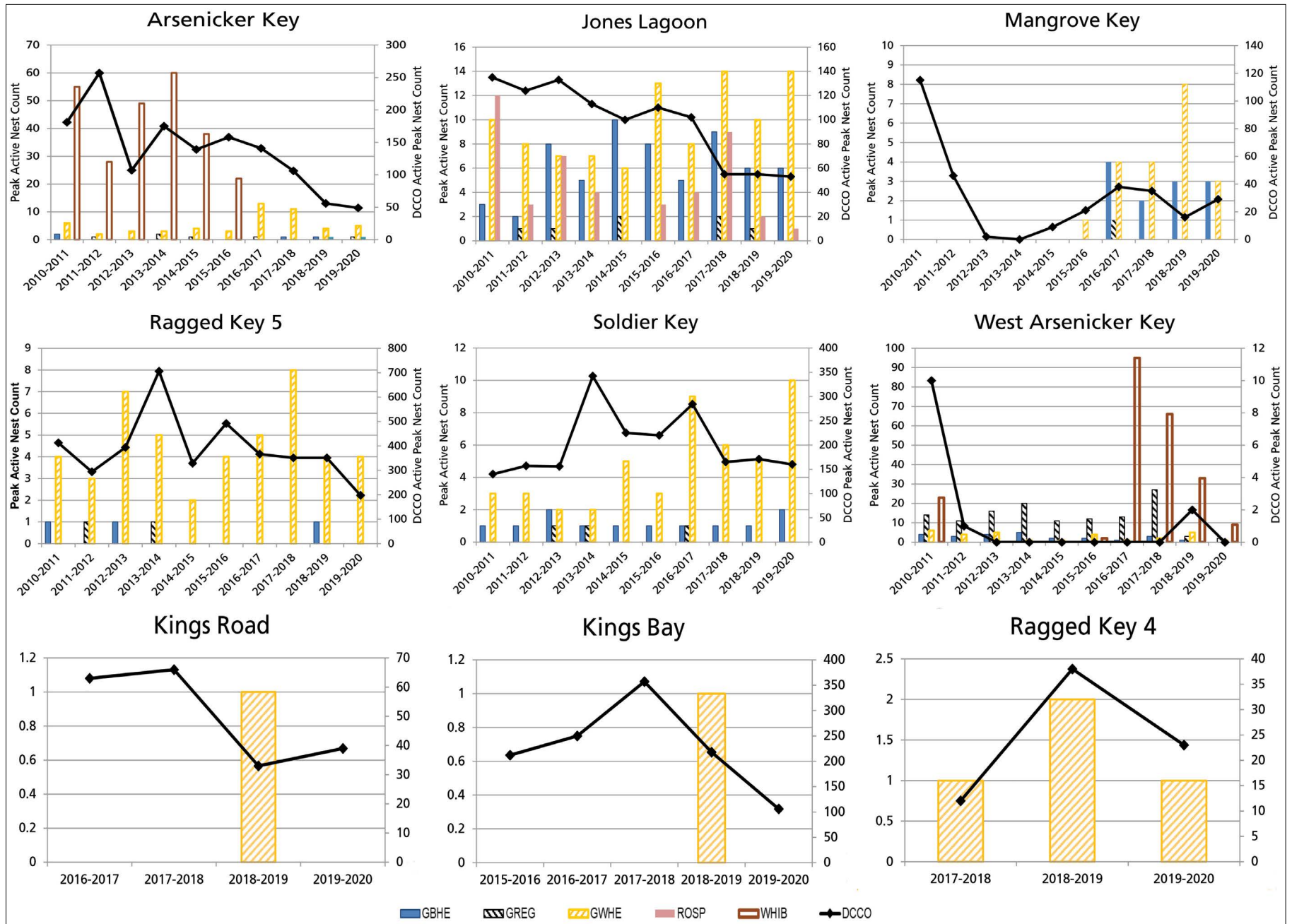


Figure 9. Peak nest counts by colony for the six focal species.

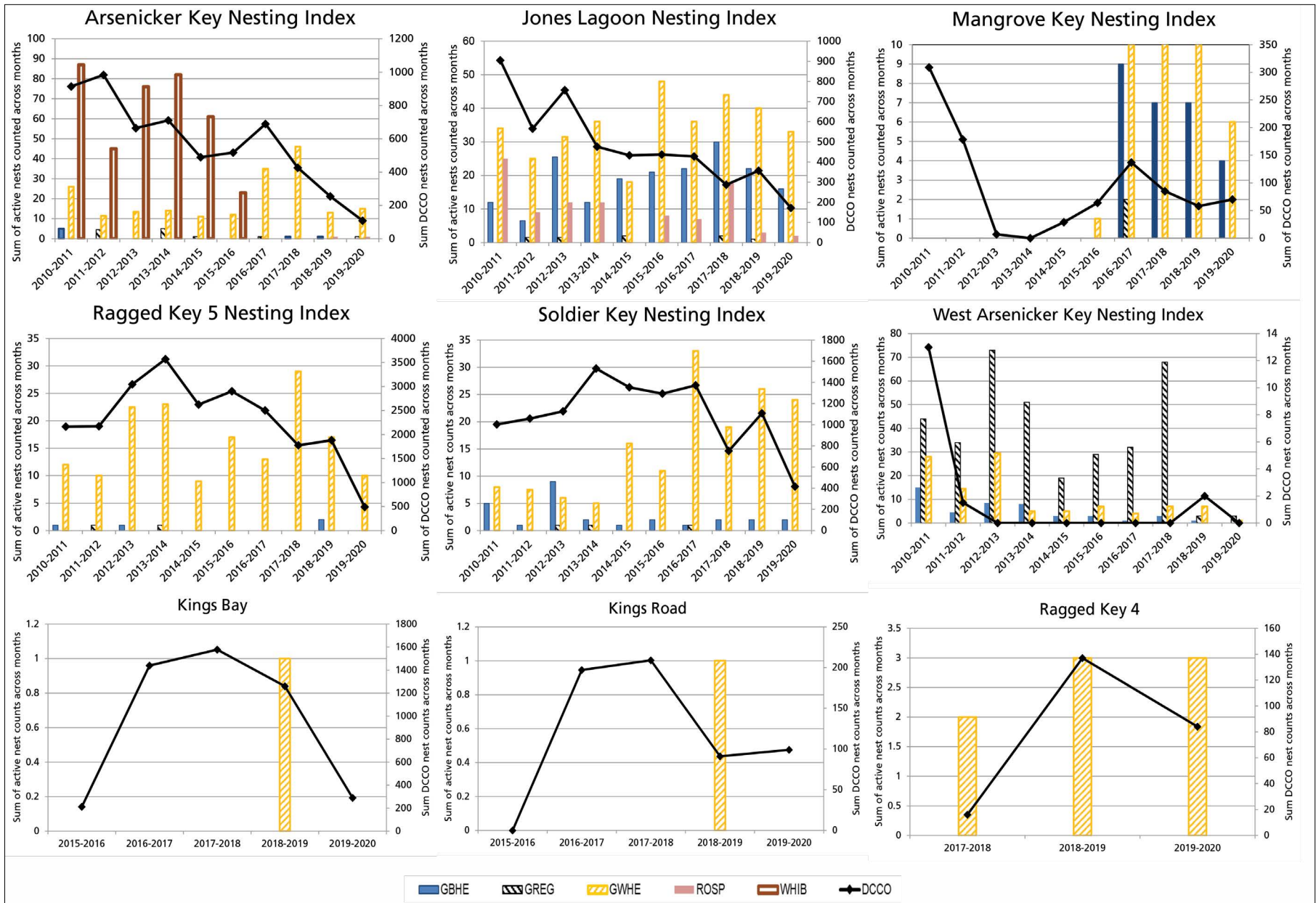


Figure 10. Annual nesting index across colonies by focal species. The annual nesting index is defined as total nests counted across all months and colonies.

Conclusion

Because of COVID-19 we were unable to survey from April to June. The lack of data makes it difficult to compare annual trends in the monitoring data. However, the 2019–2020 nesting data have shown a drastic reduction in double-crested cormorant nesting over the winter months, December through March (Table 2). This reduction in nesting is greater than the reduction detected in the September through December time period of 2017. The reduction at the end of 2017 was a result of Hurricane Irma that impacted south Florida September 10, 2017. The 2019–2020 nesting season proved challenging for drawing conclusions because of the number of months that were not surveyed. It is difficult to know if many of the reductions in nest counts or the nesting index are real or just a result of the missed surveys.

Currently, we do not know the cause of this reduction in nesting but have informed park resource managers of the data. We hope to begin monthly surveys when covid mitigations allow the safe resumption of the flights. We have not detected any obvious reason (e.g. wind damage, water quality, fish die offs etc.) for lower nest counts.

Great egrets, great blue herons, roseate spoonbills, and White Ibis also show reductions in peak nests and nesting indexes (Table 3). The reduction of nests for roseate spoonbills and white ibis may be because of the timing of their nesting seasons that correspond with the months not surveyed. The reduction of species nesting on six out of nine individual colonies may also be a result of the missed surveys. We feel the reduction in these species is not of concern compared to the dramatic reduction in double-crested cormorant nesting.

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Appendix A. Photographed and Observed Nest Data 2009–2020

Tables A-1 and A-2 are photographed nests and observed bird data by year, colony, and species.

Table A-1. Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009 Totals	69	229	571	678	736	243	310	NS	NS	NS	NS	NS
Arsenicker Key Totals	22	34	169	75	118	60	72	NS	NS	NS	NS	NS
Double-crested cormorant	20	30	167	74	114	55	67	–	–	–	–	–
Great blue heron	–	–	1	–	–	–	–	–	–	–	–	–
Great white heron	2	4	1	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	1	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	4	–	5	–	–	–	–	–
White ibis	–	–	–	–	–	5	–	–	–	–	–	–
Jones Lagoon Totals	39	87	129	150	98	20	33	NS	NS	NS	NS	NS
Double-crested cormorant	31	78	126	149	97	20	33	–	–	–	–	–
Great blue heron	2	1	1	1	–	–	–	–	–	–	–	–
Great White heron	3	8	2	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	1	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	1	–	–	–	–	–	–	–
Unidentified white bird	2	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	–	–	53	148	217	7	25	NS	NS	NS	NS	NS
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	53	148	217	7	25	–	–	–	–	–
Ragged Key 5 Totals	–	86	166	217	205	85	74	NS	NS	NS	NS	NS
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	84	163	215	205	85	74	–	–	–	–	–
Great blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Great white heron	–	1	3	–	–	–	–	–	–	–	–	–
Little blue heron	–	1	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	1	–	–	–	–	–	–	–	–
Soldier Key Totals	–	14	29	76	90	68	103	NS	NS	NS	NS	NS
Double-crested cormorant	–	14	29	76	90	68	103	–	–	–	–	–
Great white heron	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	6	6	23	12	8	3	3	NS	NS	NS	NS	NS
Bald eagle	1	1	1	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	3	–	2	–	–	–	–	–
Great blue heron	–	–	–	–	1	–	–	–	–	–	–	–
Great egret	3	4	19	10	2	3	–	–	–	–	–	–
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	1	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	2	1	3	2	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	1	–	1	–	–	–	–	–
2010 Totals	318	292	352	641	423	715	485	511	431	262	91	141

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Arsenicker Key Totals	90	54	50	145	144	124	79	116	53	4	6	13
American white pelican	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	86	52	50	142	141	122	79	116	52	–	–	9
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	4	2	–	1	–	2	–	–	1	2	6	4
Green heron	–	–	–	–	–	–	–	–	–	–	–	–
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	1	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	1	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	2	1	–	–	–	–	2	–	–
Jones Lagoon Totals	96	88	96	64	32	64	81	58	83	57	28	51
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	85	85	96	58	29	61	81	58	83	49	17	42
Great blue heron	–	–	–	2	–	–	–	–	–	1	1	3
Great white heron	9	–	–	2	2	2	–	–	–	6	6	4
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	2	1	–	1	–	–	–	–	–	1	4	2
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	1	–	–	–	–	–	–	–	–
Unidentified white bird	–	2	–	–	1	1	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	–	–	–	–	1	93	27	37	17	–	–	–
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	1	93	27	37	17	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Ragged Key 5 Totals	103	86	131	257	190	300	172	183	206	156	35	58
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	103	84	130	255	190	299	172	183	206	154	35	56
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	2	–	2	–	–	–	–	–	2	–	2
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	1	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	1	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	25	59	50	48	56	82	95	114	71	41	17	15
Double-crested cormorant	25	59	49	48	56	82	95	114	71	41	17	14

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Great blue heron	–	–	1	–	–	–	–	–	–	–	–	1
Great white heron	–	–	–	–	–	–	–	–	–	–	–	–
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	4	3	22	127	–	52	31	3	1	4	5	4
Anhinga	–	–	–	–	–	–	–	–	1	–	–	–
Bald eagle	–	1	1	1	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	1	2	–	–	–	–
Great blue heron	2	–	–	–	–	1	–	–	–	–	1	–
Great egret	–	–	21	19	–	7	5	–	–	–	–	–
Great white heron	2	2	–	–	–	1	–	–	–	3	3	4
Green heron	–	–	–	–	–	–	–	–	–	–	–	–
Little blue heron	–	–	–	–	–	1	1	–	–	–	–	–
Tricolored heron	–	–	–	3	–	3	1	1	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	1	–	–	–	–	–	–
Unidentified dark bird	–	–	–	2	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	10	–	3	–	–	–	1	1	–
White ibis	–	–	–	92	–	35	23	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
2011 Totals	314	316	845	790	774	695	438	757	477	185	255	336
Arsenicker Key Totals	58	26	125	179	192	183	124	257	78	2	17	23
American white pelican	–	–	–	–	–	–	–	–	–	–	–	–
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	51	21	121	157	181	127	121	257	77	1	15	20
Great blue heron	1	2	1	1	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	1
Great white heron	6	3	3	–	–	1	–	–	1	–	1	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	1	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	1	2
White ibis	–	–	–	21	11	55	3	–	–	–	–	–
Jones Lagoon Totals	134	89	143	91	85	78	40	124	14	8	50	111
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	110	82	135	87	83	78	40	124	14	7	47	101

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Great blue heron	1	1	1	2	2	–	–	–	–	–	1	–
Great white heron	10	3	5	–	–	–	–	–	–	1	2	4
Roseate spoonbill	12	3	2	1	–	–	–	–	–	–	–	3
Unidentified	–	–	–	1	–	–	–	–	–	–	–	–
Unidentified white bird	1	–	–	–	–	–	–	–	–	–	–	3
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	–	–	2	42	69	115	32	46	44	2	9	5
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	2	42	69	115	32	46	44	2	8	5
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	1	–
Ragged Key 5 Totals	34	135	415	309	275	198	138	188	237	120	158	154
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	29	133	413	309	275	198	138	188	237	120	157	151
Great blue heron	1	–	–	–	–	–	–	–	–	–	–	–
Great white heron	4	2	2	–	–	–	–	–	–	–	1	3
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	84	57	139	142	136	107	96	142	101	53	17	39
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	78	53	137	140	136	107	96	142	101	53	17	39
Great blue heron	1	1	1	1	–	–	–	–	–	–	–	–
Great white heron	3	3	1	1	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	1	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	1	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	4	9	21	27	17	14	8	–	3	–	4	4
American white pelican	–	–	–	–	–	–	–	–	–	–	–	–
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Bald eagle	–	–	1	1	–	–	–	–	–	–	–	–
Black vulture	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	–	–	8	–	–	–	–	–
Double-crested cormorant	–	–	–	10	–	–	–	–	–	–	–	1
Great blue heron	1	3	4	2	3	1	–	–	–	–	–	–
Great egret	–	–	14	8	6	11	–	–	–	–	–	–
Great white heron	2	6	–	4	4	2	–	–	2	–	4	2
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Unidentified	1	–	–	2	4	–	–	–	1	–	–	–
Unidentified white bird	–	–	2	–	–	–	–	–	–	–	–	1
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
2012 Totals	NS	525	427	331	NS	574	663	NS	612	NS	303	202
Arsenicker Key Totals	NS	109	41	15	NS	210	118	NS	55	NS	16	45
American white pelican	–	–	–	–	–	–	–	–	–	–	–	–
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	–
Belted kingfisher	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	108	37	10	–	179	100	–	52	–	15	44
Great Blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	1	–	1	–	–	–	–	–	–
Great white heron	–	1	2	2	–	2	–	–	3	–	–	1
Little blue heron	–	–	1	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	1	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	1	–	–	–	–	–	–	–	1	–
Unidentified white bird	–	–	–	1	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	28	18	–	–	–	–	–
Jones Lagoon Totals	NS	60	25	18	NS	48	133	NS	64	NS	75	47
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	43	23	16	–	47	133	–	63	–	72	33
Great blue heron	–	2	1	1	–	–	–	–	–	–	–	8
Great egret	–	1	–	–	–	–	–	–	–	–	1	–
Great white heron	–	8	1	1	–	1	–	–	–	–	2	4
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	–	3	–	–	–	–	–	–	–	–	–	1
Unidentified	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified white bird	–	3	–	–	–	–	–	–	1	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	NS	–	–	–	NS	26	–	NS	2	NS	1	1
Belted kingfisher	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	26	–	–	2	–	1	1
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ragged Key 5 Totals	NS	275	297	127	NS	141	310	NS	394	NS	154	66
Belted kingfisher	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	272	294	127	–	141	310	–	394	–	151	66
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	1	–	–	–	–	–	–	–	–	–
Great white heron	–	3	–	–	–	–	–	–	–	–	3	–
Laughing gull	–	–	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	2	–	–	–	–	–	–	–	–	–
Soldier Key Totals	NS	81	59	158	NS	122	102	NS	94	NS	44	39
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	78	58	157	–	120	102	–	94	–	40	37
Great blue heron	–	–	1	–	–	–	–	–	–	–	2	1
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	3	–	1	–	1	–	–	–	–	–	1
Herring gull	–	–	–	–	–	–	–	–	–	–	–	–
Laughing gull	–	–	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	1	–	–	–	–	2	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	NS	–	5	13	NS	27	–	NS	3	NS	13	4
American white pelican	–	–	–	–	–	–	–	–	–	–	–	–
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	1
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great blue heron	–	–	–	–	–	3	–	–	–	–	–	–
Great egret	–	–	4	9	–	11	–	–	–	–	6	–
Great white heron	–	–	1	1	–	2	–	–	3	–	3	3
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Osprey	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	3	–	11	–	–	–	–	4	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Yellow-crowned night-heron	–	–	–	–	–	–	–	–	–	–	–	–
2013 Totals	NS	628	667	444	443	500	770	534	406	NS	NS	249
Arsenicker Key Totals	NS	91	49	16	22	159	239	187	81	NS	NS	16
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	89	46	14	21	107	175	160	80	–	–	13
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	1	–	–	–
Great white heron	–	2	1	–	1	1	1	–	–	–	–	2
Little blue heron	–	–	–	–	–	1	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	1	–	–	–	–	–	–	–	–	–
Unidentified	–	–	1	–	–	1	–	4	–	–	–	1
Unidentified dark bird	–	–	–	1	–	–	1	1	–	–	–	–
Unidentified white bird	–	–	–	1	–	–	2	–	–	–	–	–
White ibis	–	–	–	–	–	49	60	22	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Jones Lagoon Totals	NS	35	78	70	84	49	44	56	38	NS	NS	17
Anhinga	–	–	–	–	2	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	13	72	63	72	47	40	56	38	–	–	4
Great blue heron	–	3	1	1	5	2	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	7	4	5	3	–	2	–	–	–	–	6
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	–	7	–	–	–	–	–	–	–	–	–	1
Tricolored heron	–	–	–	–	–	–	1	–	–	–	–	–
Unidentified	–	3	1	–	–	–	–	–	–	–	–	2
Unidentified white bird	–	2	–	1	2	–	1	–	–	–	–	4
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	NS	–	–	–	–	–	–	–	–	NS	NS	–
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
Ragged Key 5 Totals	NS	356	394	214	165	181	347	194	227	NS	NS	136
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	350	385	211	165	180	347	194	227	–	–	131
Great blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	6	7	2	–	–	–	–	–	–	–	5
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Royal tern	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	1	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Unidentified white bird	–	–	1	–	–	1	–	–	–	–	–	–
Soldier Key Totals	NS	121	122	132	158	88	124	94	60	NS	NS	78
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	119	120	129	156	87	122	92	60	–	–	74
Great blue heron	–	1	1	–	2	–	–	–	–	–	–	–
Great egret	–	–	1	–	–	–	1	–	–	–	–	–
Great white heron	–	1	–	2	–	1	1	–	–	–	–	1
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Laughing gull	–	–	–	–	–	–	–	–	–	–	–	–
Royal tern	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	1	–	–	–	2	–	–	–	3
West Arsenicker Totals	NS	25	24	12	14	23	16	3	–	NS	NS	2
Anhinga	–	–	–	–	–	2	–	–	–	–	–	–
Bald eagle	–	–	1	–	–	–	–	–	–	–	–	–
Black-crowned night-heron	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great blue heron	–	1	4	3	–	–	1	–	–	–	–	–
Great egret	–	16	8	6	10	16	11	2	–	–	–	–
Great white heron	–	5	4	1	2	–	–	–	–	–	–	1
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	1	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	1	3	1	1	1	2	–	–	–	–	1
Unidentified white bird	–	2	4	1	1	4	1	1	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
2014 Totals	534	546	933	1254	261	504	671	652	371	NS	NS	246
Arsenicker Key Totals	8	6	15	46	43	89	161	115	34	NS	NS	1
American white pelican	–	–	–	–	–	–	–	–	–	–	–	–
Anhinga	–	–	–	–	–	1	–	–	–	–	–	–
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	6	3	11	41	41	87	123	113	32	–	–	–
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	2	–	–	1	–	–	–	–	–	–
Great white heron	2	3	2	2	–	–	–	–	–	–	–	1
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	1	2	–	–	–	2	–	–	–
Unidentified white bird	–	–	–	2	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	38	2	–	–	–	–
Jones Lagoon Totals	33	36	104	128	30	29	100	75	45	NS	NS	22
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	24	23	85	113	28	23	100	75	45	–	–	14
Great blue heron	–	2	5	4	–	1	–	–	–	–	–	2
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	5	6	7	3	1	–	–	–	–	–	–	5
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	3	4	2	1	–	–	–	–	–	–	–	–
Unidentified	–	–	4	6	1	5	–	–	–	–	–	1
Unidentified dark bird	–	1	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	1	–	1	1	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	–	–	–	–	–	–	–	9	6	NS	NS	2
American white pelican	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	9	6	–	–	1
Great white heron	–	–	–	–	–	–	–	–	–	–	–	–
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	1
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Ragged Key 5 Totals	371	340	532	709	84	295	267	292	194	NS	NS	111
Anhinga	–	–	–	–	–	–	–	–	1	–	–	–
Belted kingfisher	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
double-crested cormorant	366	337	527	706	83	292	267	292	193	–	–	109
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	1	–	–	–	–	–	–	–	–
Great white heron	5	3	5	–	–	–	–	–	–	–	–	2
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	1	2	–	–	–	–	–	–
Unidentified dark bird	–	–	–	1	–	1	–	–	–	–	–	–
Unidentified white bird	–	–	–	1	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Yellow-crowned night-heron	–	–	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	121	160	272	342	82	83	139	161	92	NS	NS	108
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	116	159	267	342	82	83	139	160	92	–	–	106
Great blue heron	–	1	1	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	–	2	–	–	–	–	–	–	–	–	2
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Osprey	–	–	–	–	–	–	–	–	–	–	–	–
Red-winged blackbird	–	–	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	4	–	2	–	–	–	–	–	–	–	–	–
Unidentified dark bird	1	–	–	–	–	–	–	1	–	–	–	–
West Arsenicker Totals	1	4	10	29	22	8	4	–	–	NS	NS	2
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Bald eagle	–	1	1	–	1	–	–	–	–	–	–	1
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great blue heron	–	2	5	–	–	–	–	–	–	–	–	–
Great egret	–	–	2	12	20	4	–	–	–	–	–	–
Great white heron	1	1	1	–	–	–	–	–	–	–	–	1
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	10	–	3	2	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	1	–	–	–	–	–
Unidentified white bird	–	–	1	7	1	1	1	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
2015 Totals	512	344	436	479	678	816	921	701	289	137	178	559
Arsenicker Key Totals	1	10	5	28	60	164	159	91	22	9	1	–
American white pelican	–	–	–	–	–	–	–	–	–	–	–	–
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Belted kingfisher	–	–	–	–	–	–	–	–	–	–	–	–
Black vulture	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	25	57	139	132	87	22	8	–	–
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	1	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Great white heron	–	4	1	2	2	1	–	–	–	1	1	–
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	1	1	–	–	1	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	5	–	–	1	2	4	3	–	–	–	–
Unidentified white bird	–	–	3	1	–	–	1	–	–	–	–	–
White ibis	–	–	–	–	–	21	22	1	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Yellow-crowned night-heron	–	–	–	–	–	–	–	–	–	–	–	–
Jones Lagoon Totals	40	28	13	29	83	67	112	77	37	13	7	21
Anhinga	–	–	–	1	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	32	19	5	4	75	64	110	76	37	9	–	14
Great blue heron	3	1	–	10	2	1	1	–	–	–	3	1
Great egret	2	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	2	3	6	2	–	1	–	–	3	4	6
Little blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Roseate spoonbill	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	2	6	3	6	3	–	–	1	–	–	–	–
Unidentified white bird	1	–	2	1	1	2	–	–	–	1	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	–	–	–	–	6	7	21	16	1	3	–	–
American white pelican	–	–	–	–	–	–	–	–	–	–	–	–
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	6	7	21	16	1	3	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	–	–	–	–	–	–	–	–	–	–	–
Ragged Key 5 Totals	305	203	298	312	325	330	402	358	115	57	91	372
Black vulture	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	303	200	297	309	323	329	402	358	114	50	87	370
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	1	2	–	2	1	1	–	–	–	2	4	2
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Laughing gull	–	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Osprey	–	–	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	1	–	1	1	–	–	–	1	5	–	–
Unidentified white bird	1	–	1	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	164	100	115	86	192	228	221	159	114	55	79	164
Black-crowned night-heron	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	1	–	–	–	–	–	–	–	–
Double-crested cormorant	160	97	110	76	189	225	220	159	114	54	76	162
Great blue heron	–	–	–	1	–	–	–	–	–	–	–	1
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	4	1	–	5	3	1	1	–	–	1	3	1
Laughing gull	–	–	–	–	–	–	–	–	–	–	–	–
Osprey	–	–	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	2	2	3	–	1	–	–	–	–	–	–
Unidentified white bird	–	–	3	–	–	1	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	2	2	5	24	12	20	6	–	–	–	–	2
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Bald eagle	–	1	1	1	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great blue heron	–	–	–	1	2	–	–	–	–	–	–	1
Great egret	–	–	–	11	4	4	–	–	–	–	–	–
Great white heron	1	1	1	1	–	–	–	–	–	–	–	1
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	2	1	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	1	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	1	2	12	6	–	–	–	–	–
Unidentified white bird	1	–	3	7	2	4	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
2016 Totals	733	542	583	NS	NS	795	934	642	479	261	375	428
Arsenicker Key Totals	6	17	96	NS	NS	163	145	73	32	4	2	4
American white pelican	–	–	–	–	–	–	–	–	–	–	–	–
Anhinga	–	–	–	–	–	–	2	–	–	–	–	–
Black-crowned night-heron	–	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	11	94	–	–	158	141	73	32	1	–	1
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	3	3	1	–	–	3	–	–	–	1	1	2
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Osprey	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	3	–	1	–	–	2	1	–	–	2	1	1
Unidentified dark bird	–	–	–	–	–	–	1	–	–	–	–	–
Unidentified white bird	–	3	–	–	–	–	–	–	–	–	–	–
Jones Lagoon Totals	50	83	96	NS	NS	44	105	69	65	7	36	56
Anhinga	1	2	3	–	–	–	–	–	–	–	–	–
Double-crested cormorant	34	61	62	–	–	33	102	69	61	6	30	42
Great blue heron	1	7	8	–	–	–	–	–	–	–	3	5
Great white heron	9	9	13	–	–	3	–	–	–	1	3	8
Roseate spoonbill	2	2	3	–	–	1	–	–	–	–	–	1
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	1	1	5	–	–	7	3	–	4	–	–	–
Unidentified dark bird	–	–	1	–	–	–	–	–	–	–	–	–
Unidentified white bird	2	1	1	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	–	–	–	NS	NS	23	41	34	36	5	2	3
Anhinga	–	–	–	–	–	–	1	–	–	–	–	–
Black vulture	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	21	38	33	36	4	1	–
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	–	–	–	–	1	1	–	–	–	–	–
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	–	–	1	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	1	1	3
Unidentified dark bird	–	–	–	–	–	1	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	1	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Ragged Key 5 Totals	495	361	331	NS	NS	325	367	315	209	97	230	228
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Double-crested cormorant	492	357	329	–	–	324	367	315	209	96	225	223
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	3	4	1	–	–	1	–	–	–	1	5	1
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Laughing gull	–	–	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	1	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	3
Soldier Key Totals	178	73	46	NS	NS	216	159	142	134	148	105	136
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	174	69	43	–	–	215	159	142	134	146	105	133
Great blue heron	–	1	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	3	1	1	–	–	–	–	–	–	1	–	3
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Laughing gull	–	–	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	1	2	1	–	–	1	–	–	–	1	–	–
Unidentified white bird	–	–	1	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	4	8	14	NS	NS	24	117	9	3	–	–	1
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	–
Black vulture	–	–	–	–	–	–	–	–	–	–	–	–
Black-crowned night-heron	–	–	–	–	–	–	3	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great blue heron	–	–	–	–	–	2	–	–	–	–	–	–
Great egret	–	6	12	–	–	11	5	1	–	–	–	–
Great white heron	4	–	–	–	–	2	1	–	–	–	–	1
Little blue heron	–	–	–	–	–	–	1	–	–	–	–	–
Royal tern	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	1	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	5	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	1	–	–	–	3	5	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	1	–	1	–	–	–
Unidentified white bird	–	1	2	–	–	4	–	1	–	–	–	–
White ibis	–	–	–	–	–	2	95	7	2	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
2017 Totals	369	512	NS	697	NS	924	551	251	30	30	49	93

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Arsenicker Key Totals	63	137	–	153	–	134	95	40	–	5	4	7
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	48	128	–	131	–	134	95	40	–	2	–	5
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	1	–	–	–	–	–	–	–	–	–	–
Great white heron	13	8	–	10	–	–	–	–	–	3	3	2
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Osprey	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	2	–	–	10	–	–	–	–	–	–	1	–
Unidentified white bird	–	–	–	2	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Yellow-crowned night-heron	–	–	–	–	–	–	–	–	–	–	–	–
Jones Lagoon Totals	29	43	NS	50	NS	60	49	23	1	21	37	44
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Belted kingfisher	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	15	21	–	24	–	58	49	23	1	21	29	26
Great blue heron	5	3	–	6	–	–	–	–	–	–	5	7
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	4	8	–	11	–	1	–	–	–	–	2	8
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	2	4	–	–	–	–	–	–	–	–	–	3
Unidentified	2	5	–	8	–	1	–	–	–	–	1	–
Unidentified white bird	1	2	–	1	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	2	7	NS	22	NS	20	11	20	1	–	–	2
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	1	–	11	–	13	9	20	1	–	–	–
Great blue heron	–	2	–	3	–	4	–	–	–	–	–	1
Great egret	1	1	–	–	–	–	–	–	–	–	–	–
Great white heron	–	–	–	6	–	3	1	–	–	–	–	1
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	1	3	–	2	–	–	1	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ragged Key 5 Totals	201	254	NS	280	NS	343	228	87	16	3	4	32
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	197	248	–	277	–	343	228	87	11	3	–	30
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	2	2	–	2	–	–	–	–	–	–	4	2
Herring gull	–	–	–	–	–	–	–	–	–	–	–	–
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	1	4	–	1	–	–	–	–	5	–	–	–
Unidentified white bird	1	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	74	54	NS	181	NS	285	117	81	12	1	3	6
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	66	41	–	163	–	284	117	81	12	1	2	1
Great blue heron	1	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	1	–	–	–	–	–	–
Great white heron	6	7	–	16	–	–	–	–	–	–	1	5
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Laughing gull	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	1	6	–	2	–	–	–	–	–	–	–	–
West Arsenicker Totals	–	17	NS	11	NS	82	51	–	–	–	1	2
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	1
Belted kingfisher	–	–	–	–	–	–	–	–	–	–	–	–
Black vulture	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Great egret	–	13	–	7	–	6	–	–	–	–	–	–
Great white heron	–	1	–	1	–	–	–	–	–	–	1	1
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Osprey	–	–	–	–	–	–	–	–	–	–	–	–
Royal tern	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	1	–	2	–	8	1	–	–	–	–	–
Unidentified white bird	–	2	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
White ibis	–	–	–	–	–	68	50	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
2018 Totals	551	518	NS	577	676	561	458	596	416	309	273	399
Arsenicker Key Totals	118	45	NS	60	54	69	26	27	27	–	9	18
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Black Vulture	–	–	–	–	–	–	–	–	–	–	–	–
Brown Pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested Cormorant	106	35	–	32	47	64	25	25	24	–	7	16
Great Blue Heron	–	–	–	1	–	–	1	–	–	–	–	–
Great Egret	–	–	–	–	–	–	–	–	–	–	–	–
Great White Heron	11	8	–	9	5	5	–	–	–	–	2	1
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Magnificent Frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Reddish Egret	–	–	–	–	1	–	–	–	–	–	–	–
Roseate Spoonbill	–	–	–	–	–	–	–	–	–	–	–	1
Snowy Egret	–	–	–	–	–	–	–	–	–	–	–	–
Turkey Vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	2	–	17	1	–	–	2	3	–	–	–
Unidentified White Bird	1	–	–	1	–	–	–	–	–	–	–	–
Jones Lagoon Totals	57	32	NS	46	45	56	59	32	29	32	46	40
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	25	5	–	17	36	55	55	30	26	26	32	20
Great blue heron	9	6	–	1	1	1	–	–	–	1	5	6
Great egret	–	–	–	–	2	–	–	–	–	–	1	–
Great white heron	14	9	–	11	–	–	–	–	–	5	6	6
Little blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Roseate spoonbill	9	5	–	1	–	–	–	–	–	–	–	1
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	7	–	15	6	–	4	2	3	–	2	7
Mangrove Key Totals	6	8	NS	13	46	21	18	10	4	2	5	8
Anhinga	–	–	–	–	1	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	7	35	13	16	10	4	–	3	1
Great blue heron	1	1	–	2	1	1	–	–	–	1	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	3	4	–	2	2	–	–	–	–	1	2	7
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	2	2	–	1	1	1	1	–	–	–	–	–
Roseate spoonbill	–	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	1	–	–	5	5	1	–	–	–	–	–
Unidentified white bird	–	–	–	1	1	1	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
Ragged Key 5 Totals	357	317	NS	295	311	159	168	352	215	188	163	196
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	351	309	–	288	308	159	168	351	213	185	158	193
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	6	8	–	7	2	–	–	–	–	1	4	3
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	1	–	–	1	2	2	1	–
Soldier Key Totals	9	86	NS	156	169	137	136	171	141	87	50	137
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	3	85	–	152	165	133	131	171	140	87	45	131
Great blue heron	–	–	–	–	1	1	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	6	–	–	4	2	1	4	–	–	–	5	5
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	1	–	–	1	2	1	–	1	–	–	1
West Arsenicker Totals	4	30	NS	7	51	119	51	4	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	2	–	–	–	–
Great blue heron	–	–	–	–	–	3	–	–	–	–	–	–
Great egret	3	27	–	2	20	16	3	–	–	–	–	–
Great white heron	1	2	–	–	1	1	1	–	–	–	–	–
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Little blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	4	–	–	–	–	–	–
Tricolored heron	–	–	–	–	5	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	1	–	1	1	4	6	2	–	–	–	–
Unidentified dark bird	–	–	–	–	1	2	–	–	–	–	–	–
Unidentified white bird	–	–	–	3	2	23	8	–	–	–	–	–
White ibis	–	–	–	–	21	66	33	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
2019 Totals	NS	338	NS	259	452	462	509	409	189	NS	NS	70
Arsenicker Key Totals	NS	26	NS	30	53	62	49	43	14	NS	NS	5
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	23	–	27	51	56	49	43	14	–	–	2
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	1	–	3	2	4	–	–	–	–	–	3
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	1	–	–	–	–	–	–
Unidentified dark bird	–	1	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	1	–	–	–	1	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
Jones Lagoon Totals	NS	58	NS	55	54	43	56	43	53	NS	NS	11
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	41	–	45	46	36	53	43	53	–	–	5
Great blue heron	–	3	–	3	2	2	–	–	–	–	–	3
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	10	–	7	4	2	1	–	–	–	–	3
Roseate spoonbill	–	2	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	2	–	–	2	3	2	–	–	–	–	–
Mangrove Key Totals	NS	13	NS	12	5	28	32	30	12	NS	NS	1
Anhinga	–	–	–	–	–	1	1	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	7	–	3	1	13	29	29	9	–	–	–
Great blue heron	–	3	–	–	1	2	–	–	–	–	–	–
Great white heron	–	1	–	8	3	7	–	–	1	–	–	–
Little blue heron	–	–	–	–	–	1	–	–	–	–	–	–
Reddish egret	–	–	–	1	–	–	–	–	–	–	–	–
Snowy egret	–	1	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	2	2	1	2	–	–	1
Unidentified dark bird	–	–	–	–	–	1	–	–	–	–	–	–
Unidentified white bird	–	1	–	–	–	1	–	–	–	–	–	–
Ragged Key 5 Totals	NS	140	NS	117	194	180	198	156	59	NS	NS	27
Brown Pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested Cormorant	–	136	–	113	188	176	198	156	59	–	–	25
Great blue heron	–	–	–	1	1	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Great white heron	–	4	–	3	1	1	–	–	–	–	–	1
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	3	3	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	1	–	–	–	–	–	–	1
Soldier Key Totals	NS	100	NS	38	146	136	162	127	51	NS	NS	26
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	94	–	35	142	133	160	127	51	–	–	23
Great blue heron	–	1	–	1	–	–	–	–	–	–	–	–
Great white heron	–	4	–	1	4	3	2	–	–	–	–	3
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	1	–	1	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	NS	1	NS	7	–	13	12	10	–	NS	NS	–
Black vulture	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	1	–	–	–	5	1	–	–	–	–	–
Little blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	1	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	1	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	1	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	4	2	1	–	–	–	–
White ibis	–	–	–	4	–	2	9	9	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	–	–	–	–
2020 Totals	83	109	64	NS	NS	NS	–	–	–	–	–	–
Arsenicker Key Totals	5	10	5	NS	NS	NS	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	1	–	–	–	–	–	–	–	–	–	–
Great white heron	4	5	3	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	1	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	3	1	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	1	1	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
Jones Lagoon Totals	25	33	16	NS	NS	NS	–	–	–	–	–	–

Table A-1 (continued). Photographed nests data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Anhinga	–	–	1	–	–	–	–	–	–	–	–	–
Double-crested cormorant	6	6	6	–	–	–	–	–	–	–	–	–
Great blue heron	6	5	2	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	10	14	5	–	–	–	–	–	–	–	–	–
Roseate spoonbill	–	1	1	–	–	–	–	–	–	–	–	–
Unidentified	2	3	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	1	4	1	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	2	10	3	NS	NS	NS	–	–	–	–	–	–
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	2	1	–	–	–	–	–	–	–	–	–	–
Great blue heron	–	3	1	–	–	–	–	–	–	–	–	–
Great white heron	–	3	2	–	–	–	–	–	–	–	–	–
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	1	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	2	–	–	–	–	–	–	–	–	–	–
Ragged Key 5 Totals	10	39	15	NS	NS	NS	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	6	35	11	–	–	–	–	–	–	–	–	–
Great white heron	4	3	2	–	–	–	–	–	–	–	–	–
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	1	2	–	–	–	–	–	–	–	–	–
Soldier Key Totals	41	15	24	NS	NS	NS	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	35	8	11	–	–	–	–	–	–	–	–	–
Great blue heron	–	–	2	–	–	–	–	–	–	–	–	–
Great white heron	5	4	10	–	–	–	–	–	–	–	–	–
Herring gull	–	–	–	–	–	–	–	–	–	–	–	–
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	1	2	1	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	1	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	–	2	1	NS	NS	NS	–	–	–	–	–	–
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	2	1	–	–	–	–	–	–	–	–	–
Great white heron	–	–	–	–	–	–	–	–	–	–	–	–
Osprey	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–

Table A-2. Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009 Totals	23	219	414	555	457	–	–	NS	NS	NS	NS	NS
Arsenicker Key Totals	–	21	109	93	73	–	–	NS	NS	NS	NS	NS
Double-crested cormorant	–	12	100	45	60	–	–	–	–	–	–	–
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	9	3	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	6	36	1	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	12	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	12	–	–	–	–	–	–	–
Jones Lagoon Totals	17	86	86	106	75	–	–	NS	NS	NS	NS	NS
Double-crested cormorant	12	40	80	100	75	–	–	–	–	–	–	–
Great blue heron	–	1	–	–	–	–	–	–	–	–	–	–
Great white heron	2	9	6	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	12	–	6	–	–	–	–	–	–	–	–
Roseate spoonbill	2	24	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	1	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	–	–	22	80	40	–	–	NS	NS	NS	NS	NS
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	–	22	80	40	–	–	–	–	–	–	–
Ragged Key 5 Totals	–	71	125	200	150	–	–	NS	NS	NS	NS	NS
Brown pelican	–	9	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	60	120	200	150	–	–	–	–	–	–	–
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	1	5	–	–	–	–	–	–	–	–	–
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	1	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	–	30	50	60	101	–	–	NS	NS	NS	NS	NS
Double-crested cormorant	–	30	50	60	100	–	–	–	–	–	–	–
Great white heron	–	–	–	–	1	–	–	–	–	–	–	–
West Arsenicker Totals	6	11	21	15	18	–	–	NS	NS	NS	NS	NS
Bald eagle	1	1	1	3	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	6	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	–
Great blue heron	–	–	–	–	2	–	–	–	–	–	–	–
Great egret	5	10	–	–	4	–	–	–	–	–	–	–
Little blue heron	–	–	–	–	1	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	1	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	2	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	2	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	20	12	–	–	–	–	–	–	–	–
2010 Totals	–	–	–	–	998	–	–	–	–	–	–	330

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Arsenicker Key Totals	–	–	–	–	167	–	–	–	–	–	–	54
American white pelican	–	–	–	–	–	–	–	–	–	–	–	3
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	2
Double-crested cormorant	–	–	–	–	150	–	–	–	–	–	–	36
Great blue heron	–	–	–	–	2	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	2
Great white heron	–	–	–	–	2	–	–	–	–	–	–	6
Green heron	–	–	–	–	5	–	–	–	–	–	–	–
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	4
Magnificent frigatebird	–	–	–	–	6	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	2	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
Jones Lagoon Totals	–	–	–	–	57	–	–	–	–	–	–	37
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	1
Double-crested cormorant	–	–	–	–	50	–	–	–	–	–	–	20
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	1
Great white heron	–	–	–	–	2	–	–	–	–	–	–	6
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	6
Roseate spoonbill	–	–	–	–	–	–	–	–	–	–	–	2
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	5	–	–	–	–	–	–	–
Mangrove Key Totals	–	–	–	–	150	–	–	–	–	–	–	2
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	1
Double-crested cormorant	–	–	–	–	150	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	1
Ragged Key 5 Totals	–	–	–	–	203	–	–	–	–	–	–	131
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	8
Double-crested cormorant	–	–	–	–	200	–	–	–	–	–	–	100
Great egret	–	–	–	–	–	–	–	–	–	–	–	2
Great white heron	–	–	–	–	3	–	–	–	–	–	–	3
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	15
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	2
Soldier Key Totals	–	–	–	–	153	–	–	–	–	–	–	91
Double-crested cormorant	–	–	–	–	150	–	–	–	–	–	–	70
Great blue heron	–	–	–	–	1	–	–	–	–	–	–	–

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Great white heron	–	–	–	–	–	–	–	–	–	–	–	2
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	18
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified white bird	–	–	–	–	2	–	–	–	–	–	–	–
West Arsenicker Totals	–	–	–	–	268	–	–	–	–	–	–	15
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	1
Cattle egret	–	–	–	–	75	–	–	–	–	–	–	–
Double-crested cormorant	–	–	–	–	–	–	–	–	–	–	–	9
Great blue heron	–	–	–	–	2	–	–	–	–	–	–	1
Great egret	–	–	–	–	5	–	–	–	–	–	–	2
Great white heron	–	–	–	–	10	–	–	–	–	–	–	2
Green heron	–	–	–	–	5	–	–	–	–	–	–	–
Little blue heron	–	–	–	–	2	–	–	–	–	–	–	–
Tricolored heron	–	–	–	–	89	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	20	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	50	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	10	–	–	–	–	–	–	–
2011 Totals	549	422	616	137	475	516	147	409	182	212	377	335
Arsenicker Key Totals	15	5	57	30	73	102	56	99	25	201	73	80
American white pelican	5	–	–	–	–	–	–	–	–	–	–	19
Bald eagle	1	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	4	–	6	–	–	3	10
Double-crested cormorant	1	–	55	24	60	16	45	30	20	200	65	45
Great blue heron	1	–	–	–	–	–	–	–	1	–	–	–
Great egret	–	–	–	–	–	2	1	1	–	–	–	–
Great white heron	7	5	2	–	–	3	–	–	4	1	5	5
Magnificent frigatebird	–	–	–	–	–	4	–	–	–	–	–	–
Reddish egret	–	–	–	–	1	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	3	–	50	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	6	12	70	10	12	–	–	–	–
Jones Lagoon Totals	32	43	51	13	91	42	15	48	12	5	48	54
Anhinga	–	–	–	–	–	2	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	1
Double-crested cormorant	12	15	45	12	90	40	15	48	12	–	40	45
Great blue heron	–	1	–	–	1	–	–	–	–	1	1	1
Great white heron	6	3	4	1	–	–	–	–	–	4	7	4

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Roseate spoonbill	14	24	2	–	–	–	–	–	–	–	–	3
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	–	–	1	24	36	4	14	10	6	–	1	6
Brown pelican	–	–	–	–	–	–	–	–	–	–	1	–
Double-crested cormorant	–	–	1	24	36	4	12	10	6	–	–	6
Great blue heron	–	–	–	–	–	–	1	–	–	–	–	–
Great white heron	–	–	–	–	–	–	1	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Ragged Key 5 Totals	292	204	251	36	100	67	7	112	41	4	114	94
Brown pelican	40	–	–	–	–	–	–	–	1	4	12	24
Double-crested cormorant	250	200	250	36	100	67	6	110	40	–	100	65
Great blue heron	–	–	–	–	–	–	1	–	–	–	–	–
Great white heron	2	4	1	–	–	–	–	2	–	–	2	4
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	1
Soldier Key Totals	203	154	246	29	152	133	40	50	56	–	124	88
Brown pelican	–	–	–	–	–	1	–	–	–	–	–	–
Cattle egret	–	–	12	–	–	–	–	–	–	–	–	–
Double-crested cormorant	200	150	200	24	150	125	40	50	55	–	120	85
Great blue heron	–	2	2	–	1	1	–	–	–	–	1	1
Great white heron	3	2	12	5	1	6	–	–	1	–	3	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	2
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	20	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	7	12	10	5	23	168	15	90	42	2	17	13
American white pelican	–	–	–	–	–	–	–	–	–	–	–	1
Anhinga	–	–	–	–	–	3	–	–	–	–	–	–
Bald eagle	–	–	–	2	–	–	–	–	–	–	2	1
Black vulture	–	–	–	–	–	–	–	12	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	2
Cattle egret	–	–	–	–	–	–	15	–	–	–	–	–
Double-crested cormorant	–	–	–	–	1	30	–	10	36	–	–	3
Great blue heron	1	3	2	1	2	1	–	–	–	–	3	1
Great egret	–	–	6	–	–	5	–	6	–	–	–	–
Great white heron	6	9	2	2	20	2	–	–	5	2	12	5
Little blue heron	–	–	–	–	–	30	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	27	–	12	–	–	–	–
Turkey vulture	–	–	–	–	–	5	–	50	1	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	15	–	–	–	–	–	–

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
White-crowned pigeon	–	–	–	–	–	50	–	–	–	–	–	–
2012 Totals	NS	361	38	229	NS	455	351	NS	544	NS	426	479
Arsenicker Key Totals	NS	109	18	38	NS	107	88	NS	75	NS	40	192
American white pelican	–	12	–	–	–	–	–	–	–	–	–	–
Anhinga	–	1	–	–	–	–	1	–	2	–	–	–
Bald eagle	–	–	–	1	–	–	–	–	–	–	–	–
Belted kingfisher	–	–	–	–	–	–	–	–	1	–	–	–
Brown pelican	–	6	–	–	–	–	–	–	–	–	–	1
Cattle egret	–	–	–	2	–	–	1	–	–	–	–	–
Double-crested cormorant	–	70	12	30	–	45	60	–	60	–	34	180
Great blue heron	–	10	2	–	–	–	–	–	–	–	–	–
Great egret	–	2	–	–	–	5	1	–	4	–	–	–
Great white heron	–	5	4	5	–	–	–	–	2	–	6	8
Little blue heron	–	–	–	–	–	5	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	–	–	–	–	–	1	–	–	–
Reddish egret	–	3	–	–	–	1	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	23	5	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	2
White ibis	–	–	–	–	–	28	20	–	5	–	–	1
Jones Lagoon Totals	NS	51	6	30	NS	2	36	NS	25	NS	8	18
Anhinga	–	–	–	–	–	–	–	–	–	–	–	2
Brown pelican	–	1	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	32	–	26	–	–	35	–	23	–	–	4
Great blue heron	–	1	1	1	–	–	–	–	–	–	3	3
Great egret	–	–	–	–	–	1	–	–	–	–	–	–
Great white heron	–	8	5	1	–	1	–	–	–	–	5	6
Little blue heron	–	–	–	–	–	–	1	–	1	–	–	–
Magnificent frigatebird	–	1	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	–	8	–	–	–	–	–	–	1	–	–	3
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	2	–	–	–	–	–	–	–	–
Mangrove Key Totals	NS	5	–	3	NS	3	–	NS	6	NS	7	4
Belted kingfisher	–	–	–	–	–	–	–	–	–	–	2	–
Double-crested cormorant	–	5	–	3	–	1	–	–	6	–	2	4
Great blue heron	–	–	–	–	–	–	–	–	–	–	1	–
Great white heron	–	–	–	–	–	–	–	–	–	–	2	–
Unidentified white bird	–	–	–	–	–	2	–	–	–	–	–	–
Ragged Key 5 Totals	NS	64	5	61	NS	149	80	NS	257	NS	151	80
Belted kingfisher	–	–	–	–	–	–	–	–	4	–	–	–
Brown pelican	–	14	–	–	–	–	–	–	–	–	–	55
Double-crested cormorant	–	39	–	60	–	149	80	–	199	–	150	20

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Great blue heron	–	–	–	–	–	–	–	–	54	–	1	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	3	3	1	–	–	–	–	–	–	–	3
Laughing gull	–	8	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	2
Unidentified white bird	–	–	2	–	–	–	–	–	–	–	–	–
Soldier Key Totals	NS	103	9	91	NS	84	121	NS	136	NS	213	173
Brown pelican	–	–	–	–	–	2	–	–	–	–	–	8
Double-crested cormorant	–	90	–	90	–	81	120	–	130	–	200	160
Great blue heron	–	2	–	–	–	–	–	–	2	–	9	1
Great egret	–	–	–	–	–	–	–	–	2	–	–	–
Great white heron	–	5	1	–	–	–	1	–	2	–	4	2
Herring gull	–	–	–	–	–	1	–	–	–	–	–	–
Laughing gull	–	6	–	–	–	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	–	2
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	8	1	–	–	–	–	–	–	–	–
West Arsenicker Totals	NS	29	–	6	NS	110	26	NS	45	NS	7	11
American white pelican	–	–	–	–	–	–	–	–	–	–	–	2
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	1
Brown pelican	–	1	–	–	–	–	–	–	–	–	–	2
Cattle egret	–	–	–	–	–	–	1	–	–	–	–	–
Double-crested cormorant	–	14	–	–	–	1	–	–	5	–	–	2
Great blue heron	–	6	–	3	–	–	–	–	–	–	–	–
Great egret	–	4	–	1	–	2	–	–	8	–	–	–
Great white heron	–	4	–	–	–	1	–	–	2	–	6	3
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Osprey	–	–	–	–	–	–	–	–	–	–	–	1
Tricolored heron	–	–	–	2	–	77	12	–	5	–	–	–
Turkey vulture	–	–	–	–	–	4	1	–	25	–	–	–
Unidentified	–	–	–	–	–	15	–	–	–	–	1	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	2	6	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	7	6	–	–	–	–	–
Yellow-crowned night-heron	–	–	–	–	–	1	–	–	–	–	–	–
2013 Totals	NS	339	529	711	536	515	629	572	340	NS	NS	384
Arsenicker Key Totals	NS	30	40	87	124	93	64	142	75	NS	NS	63
Anhinga	–	–	–	–	–	–	1	1	–	–	–	–
Brown pelican	–	5	–	–	–	–	–	–	–	–	–	7
Double-crested cormorant	–	1	30	80	120	60	7	100	36	–	–	50
Great blue heron	–	2	–	1	1	–	1	–	–	–	–	–
Great egret	–	16	–	4	–	–	2	–	–	–	–	–
Great white heron	–	6	–	–	1	2	2	–	3	–	–	6

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Little blue heron	–	–	–	–	–	–	–	1	–	–	–	–
Tricolored heron	–	–	–	2	2	–	–	–	–	–	–	–
Turkey vulture	–	–	4	–	–	–	4	–	–	–	–	–
Unidentified	–	–	–	–	–	–	5	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	6	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	30	42	40	36	–	–	–
White-crowned pigeon	–	–	–	–	–	1	–	–	–	–	–	–
Jones Lagoon	NS	79	53	73	108	92	75	53	24	NS	NS	28
Anhinga	–	–	–	–	–	1	–	–	–	–	–	–
Brown pelican	–	–	–	1	–	–	–	–	–	–	–	2
Double-crested cormorant	–	60	30	58	100	90	72	50	24	–	–	2
Great blue heron	–	–	1	2	2	1	–	1	–	–	–	3
Great egret	–	–	–	4	–	–	–	–	–	–	–	–
Great white heron	–	10	1	4	6	–	2	2	–	–	–	5
Little blue heron	–	1	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	–	8	15	4	–	–	1	–	–	–	–	6
Tricolored heron	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	6	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	–	10
Mangrove Key Totals	NS	–	1	1	1	13	26	2	4	NS	NS	5
Anhinga	–	–	–	–	–	–	–	–	1	–	–	–
Double-crested cormorant	–	–	–	–	–	12	25	1	2	–	–	5
Great white heron	–	–	1	1	1	–	–	1	–	–	–	–
Turkey vulture	–	–	–	–	–	1	1	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	1	–	–	–
Ragged Key 5 Totals	NS	118	171	225	153	110	184	150	61	NS	NS	127
Anhinga	–	–	–	–	–	–	1	–	–	–	–	–
Brown pelican	–	6	–	–	3	–	–	–	–	–	–	20
Double-crested cormorant	–	100	170	220	150	110	182	150	60	–	–	100
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	2	–	–	–	–	–	–	–	–
Great white heron	–	10	1	3	–	–	1	–	1	–	–	6
Laridae family gull	–	1	–	–	–	–	–	–	–	–	–	–
Royal tern	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	1	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	NS	82	168	205	121	102	190	184	110	NS	NS	155
Brown pelican	–	5	–	–	–	–	1	–	–	–	–	2
Double-crested cormorant	–	65	160	203	120	100	180	180	100	–	–	150
Great blue heron	–	5	–	1	–	–	–	–	–	–	–	1
Great egret	–	–	–	–	–	–	1	–	–	–	–	–

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Great white heron	–	6	8	1	1	2	6	1	3	–	–	2
Laridae family gull	–	–	–	–	–	–	2	–	–	–	–	–
Laughing gull	–	1	–	–	–	–	–	3	6	–	–	–
Royal tern	–	–	–	–	–	–	–	–	1	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	NS	30	53	22	29	105	90	41	66	NS	NS	6
Anhinga	–	–	–	–	–	–	1	1	1	–	–	1
Bald eagle	–	–	1	–	–	–	1	–	–	–	–	–
Black-crowned night-heron	–	–	–	–	–	–	–	2	3	–	–	–
Brown pelican	–	4	–	–	–	–	–	–	3	–	–	–
Double-crested cormorant	–	20	7	6	4	–	20	–	–	–	–	4
Great blue heron	–	–	3	3	2	–	3	–	–	–	–	–
Great egret	–	6	10	7	12	25	4	–	6	–	–	–
Great white heron	–	–	5	–	–	4	4	4	1	–	–	1
Little blue heron	–	–	–	2	–	–	–	12	–	–	–	–
Snowy egret	–	–	–	–	–	–	21	–	–	–	–	–
Tricolored heron	–	–	22	4	10	40	17	20	25	–	–	–
Turkey vulture	–	–	–	–	–	6	5	2	12	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	5	–	–	30	–	–	15	–	–	–
White ibis	–	–	–	–	–	–	12	–	–	–	–	–
White-crowned pigeon	–	–	–	–	1	–	2	–	–	–	–	–
2014 Totals	584	343	782	417	537	364	1117	605	782	NS	NS	889
Arsenicker Key Totals	192	39	30	105	37	43	286	55	254	NS	NS	176
American white pelican	4	–	–	–	–	–	–	–	–	–	–	2
Anhinga	–	–	3	–	–	–	2	–	1	–	–	–
Bald eagle	–	–	–	–	–	–	–	–	1	–	–	–
Brown pelican	9	–	–	–	–	–	–	–	–	–	–	4
Double-crested cormorant	175	36	15	50	35	10	202	39	250	–	–	160
Great blue heron	–	–	–	–	–	2	1	1	–	–	–	–
Great egret	–	–	–	2	–	2	1	–	–	–	–	–
Great white heron	2	3	5	4	1	1	1	2	1	–	–	2
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	5
Little blue heron	–	–	–	–	–	1	–	–	–	–	–	–
Magnificent frigatebird	–	–	1	45	–	10	45	–	–	–	–	–
Reddish egret	2	–	2	3	1	1	1	–	–	–	–	–
Tricolored heron	–	–	–	1	–	–	–	–	–	–	–	–
Turkey vulture	–	–	4	–	–	1	–	5	–	–	–	3
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	1	–	–	–	–
White ibis	–	–	–	–	–	15	33	7	1	–	–	–
Jones Lagoon Totals	22	36	51	35	55	23	114	47	24	NS	NS	57
Anhinga	–	–	–	–	1	–	–	–	1	–	–	–

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Brown pelican	–	–	–	–	–	–	–	1	–	–	–	–
Double-crested cormorant	12	24	30	11	–	20	112	42	22	–	–	50
Great blue heron	–	–	2	2	–	–	2	–	–	–	–	3
Great egret	–	–	–	5	–	–	–	–	–	–	–	–
Great white heron	6	4	4	2	4	1	–	–	1	–	–	4
Magnificent frigatebird	–	1	–	14	50	–	–	–	–	–	–	–
Roseate spoonbill	4	7	15	1	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	4	–	–	–	–
White-crowned pigeon	–	–	–	–	–	2	–	–	–	–	–	–
Mangrove Key Totals	–	3	–	–	2	3	13	3	7	NS	NS	17
American white pelican	–	–	–	–	–	–	–	–	–	–	–	1
Brown pelican	–	3	–	–	–	–	–	–	–	–	–	6
Cattle egret	–	–	–	–	–	–	2	1	–	–	–	–
Double-crested cormorant	–	–	–	–	2	2	10	2	6	–	–	7
Great white heron	–	–	–	–	–	–	1	–	1	–	–	2
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	1	–	–	–	–	–	–
Ragged Key 5 Totals	210	109	250	132	120	84	336	212	164	NS	NS	264
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Belted kingfisher	–	–	–	–	–	–	–	–	1	–	–	–
Brown pelican	2	4	5	–	–	–	–	–	–	–	–	9
Double-crested cormorant	200	100	220	130	120	83	333	210	162	–	–	245
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	1
Great egret	–	–	23	–	–	–	–	–	–	–	–	1
Great white heron	2	5	2	2	–	1	2	1	1	–	–	2
Laridae family gull	–	–	–	–	–	–	–	1	–	–	–	5
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	1
Ring-billed gull	6	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
Yellow-crowned night-heron	–	–	–	–	–	–	1	–	–	–	–	–
Soldier Key Totals	157	150	351	131	316	134	333	280	322	NS	NS	359
Brown pelican	2	–	–	3	–	–	–	–	–	–	–	14
Double-crested cormorant	150	150	340	125	315	130	–	278	282	–	–	325
Great blue heron	1	–	4	–	–	1	–	–	18	–	–	2
Great egret	–	–	–	–	–	–	1	–	–	–	–	–
Great white heron	–	–	4	3	1	3	2	2	4	–	–	1
Laridae family gull	–	–	2	–	–	–	–	–	–	–	–	16

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Osprey	–	–	–	–	–	–	–	–	–	–	–	1
Red-winged blackbird	–	–	1	–	–	–	–	–	–	–	–	–
Ring-billed gull	2	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	18	–	–	–
Turkey vulture	2	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	3	6	100	14	7	77	35	8	11	NS	NS	16
Anhinga	–	–	–	–	1	–	4	–	2	–	–	–
Bald eagle	–	1	–	–	–	–	–	–	–	–	–	2
Brown pelican	–	–	–	–	–	–	1	–	2	–	–	–
Double-crested cormorant	–	–	23	–	–	4	5	7	6	–	–	12
Great blue heron	2	3	7	1	–	3	–	–	–	–	–	–
Great egret	–	–	25	4	–	20	5	–	–	–	–	–
Great white heron	1	2	2	3	3	2	–	1	1	–	–	2
Little blue heron	–	–	–	1	–	5	2	–	–	–	–	–
Snowy egret	–	–	10	1	1	2	–	–	–	–	–	–
Tricolored heron	–	–	20	2	–	40	–	–	–	–	–	–
Turkey vulture	–	–	3	–	–	1	12	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	2	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	10	2	–	–	2	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	4	–	–	–	–	–
2015 Totals	514	559	598	449	601	527	534	584	420	452	346	338
Arsenicker Key Totals	41	40	28	70	154	59	97	117	101	109	53	86
American white pelican	14	–	–	–	–	–	–	–	–	–	–	–
Anhinga	–	–	–	–	–	2	1	1	1	1	–	–
Belted kingfisher	–	–	–	–	–	–	–	–	–	1	–	–
Black vulture	–	–	–	–	–	–	–	–	4	–	–	–
Brown pelican	6	–	–	–	–	–	–	–	–	–	1	2
Double-crested cormorant	21	30	20	60	60	50	90	60	80	100	40	80
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	1
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	7	4	4	4	2	1	–	–	7	6	3
Laridae family gull	–	2	–	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	–	6	72	–	–	48	–	–	6	–
Reddish egret	–	–	–	–	1	2	–	–	–	–	–	–
Tricolored heron	–	–	–	–	1	–	–	–	–	–	–	–
Turkey vulture	–	1	4	–	–	–	–	–	10	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	15	2	5	8	6	–	–	–

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
White-crowned pigeon	–	–	–	–	1	–	–	–	–	–	–	–
Yellow-crowned night-heron	–	–	–	–	–	1	–	–	–	–	–	–
Jones Lagoon Totals	9	20	10	43	75	65	42	40	54	14	15	19
Anhinga	–	–	–	2	1	–	1	–	–	1	–	–
Brown pelican	2	–	–	–	–	–	–	–	–	–	–	–
Cattle egret	–	–	–	–	–	–	–	–	2	–	–	–
Double-crested cormorant	2	15	2	30	70	60	40	40	50	7	10	1
Great blue heron	2	1	3	4	1	–	–	–	–	1	1	3
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	1	4	5	5	2	4	1	–	–	5	4	12
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	2	–	–	2	–	–	–	–	–	–	–	3
Snowy egret	–	–	–	–	–	–	–	–	2	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	1	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	1	–	–	–	–	–	–	–
Mangrove Key Totals	19	1	–	–	3	6	22	8	6	6	4	1
American white pelican	18	–	–	–	–	–	–	–	–	–	–	–
Anhinga	–	–	–	–	–	–	–	–	–	–	1	–
Brown pelican	1	–	–	–	–	–	–	–	–	–	2	–
Double-crested cormorant	–	–	–	–	3	6	20	8	6	6	–	–
Great egret	–	–	–	–	–	–	1	–	–	–	–	–
Great white heron	–	1	–	–	–	–	1	–	–	–	1	1
Ragged Key 5 Totals	143	227	256	151	142	134	161	181	62	91	121	95
Black vulture	1	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	16	40	–	–	–	–	–	–	–	1	30	8
Double-crested cormorant	100	175	250	150	140	130	150	180	60	85	80	80
Great blue heron	–	–	1	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	1
Great white heron	6	7	5	1	2	4	11	–	1	4	6	5
Laridae family gull	–	5	–	–	–	–	–	–	–	–	–	–
Laughing gull	–	–	–	–	–	–	–	1	–	–	–	1
Osprey	–	–	–	–	–	–	–	–	–	–	2	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	3	–
Turkey vulture	20	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	–	1	1	–	–
Soldier Key Totals	288	261	288	159	131	205	204	234	192	219	148	128
Black-crowned night-heron	–	–	–	–	–	–	–	–	–	1	–	–
Brown pelican	5	4	–	–	–	1	–	–	19	12	20	20
Cattle egret	–	–	–	1	–	–	–	–	–	–	–	–

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Double-crested cormorant	260	250	280	150	120	200	200	220	150	200	120	100
Great blue heron	–	–	2	1	–	–	–	1	18	–	–	–
Great egret	3	–	–	–	–	–	–	–	–	–	–	–
Great white heron	–	7	5	7	10	4	4	1	2	6	2	3
Laughing gull	–	–	–	–	–	–	–	12	3	–	–	3
Osprey	–	–	–	–	1	–	–	–	–	–	–	–
Ring-billed gull	–	–	–	–	–	–	–	–	–	–	6	2
Turkey vulture	20	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	1	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	14	10	16	26	96	58	8	4	5	13	5	9
Anhinga	–	–	–	–	1	–	1	–	1	1	1	–
Bald eagle	1	1	1	3	–	–	–	–	–	–	–	1
Brown pelican	2	–	1	–	–	–	–	–	–	–	3	–
Double-crested cormorant	5	–	1	–	–	–	–	–	4	8	–	–
Great blue heron	–	1	2	3	1	1	1	–	–	–	–	2
Great egret	3	–	–	15	6	5	–	–	–	–	–	–
Great white heron	–	6	10	–	4	–	–	–	–	1	1	6
Little blue heron	–	–	–	1	12	–	–	3	–	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	4	60	50	–	–	–	–	–	–
Turkey vulture	3	2	–	–	–	–	1	–	–	3	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	1	–	6	–	3	–	–	–	–	–
White-crowned pigeon	–	–	–	–	6	2	2	1	–	–	–	–
2016 Totals	345	464	579	NS	NS	537	539	482	392	282	475	306
Arsenicker Key Totals	105	23	40	NS	NS	90	92	74	75	12	77	43
American white pelican	1	–	–	–	–	–	–	–	–	–	–	–
Anhinga	–	1	–	–	–	–	1	–	–	–	1	1
Black-crowned night-heron	–	–	–	–	–	–	–	–	–	–	–	1
Brown pelican	8	–	–	–	–	–	–	–	–	–	11	7
Double-crested cormorant	80	12	36	–	–	60	50	50	40	10	60	25
Great blue heron	–	–	–	–	–	1	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	1	–	–	–	–
Great white heron	–	5	3	–	–	4	1	–	–	1	5	8
Laridae family gull	5	–	–	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	4	–	–	–	25	40	19	25	–	–	1
Osprey	–	1	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	1	–	–	–	–	2	–	–	–	–
Tricolored heron	–	–	–	–	–	–	–	2	–	–	–	–
Turkey vulture	3	–	–	–	–	–	–	–	10	–	–	–

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Unidentified	–	–	–	–	–	–	–	–	–	1	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	8	–	–	–	–	–	–	–	–	–	–	–
Jones Lagoon Totals	31	33	39	NS	NS	32	40	33	24	15	14	30
Anhinga	–	–	–	–	–	–	–	–	–	1	–	1
Double-crested cormorant	10	20	24	–	–	20	40	30	24	12	7	12
Great blue heron	4	3	2	–	–	–	–	–	–	1	1	4
Great white heron	10	6	3	–	–	6	–	–	–	1	6	9
Roseate spoonbill	6	4	10	–	–	6	–	–	–	–	–	4
Snowy egret	1	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	3	–	–	–	–
Mangrove Key Totals	9	–	–	NS	NS	7	15	18	30	4	12	4
Anhinga	–	–	–	–	–	–	2	–	–	–	–	–
Black vulture	1	–	–	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	3	–
Cattle egret	–	–	–	–	–	–	–	–	24	–	–	–
Double-crested cormorant	–	–	–	–	–	5	10	13	6	4	9	2
Great blue heron	–	–	–	–	–	–	1	–	–	–	–	1
Great white heron	–	–	–	–	–	1	1	–	–	–	–	1
Laridae family gull	8	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	5	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	1	1	–	–	–	–	–
Ragged Key 5 Totals	91	154	203	NS	NS	152	181	150	84	89	162	79
Brown pelican	20	–	–	–	–	–	–	–	–	6	9	20
Double-crested cormorant	50	150	200	–	–	150	180	150	80	80	150	55
Great blue heron	–	–	1	–	–	–	–	–	–	–	–	–
Great white heron	6	2	2	–	–	2	1	–	2	2	3	4
Laridae family gull	15	–	–	–	–	–	–	–	–	–	–	–
Laughing gull	–	–	–	–	–	–	–	–	2	1	–	–
Ring-billed gull	–	2	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	102	213	275	NS	NS	206	167	104	139	162	209	139
Brown pelican	15	6	19	–	–	1	–	–	–	10	–	28
Double-crested cormorant	70	200	250	–	–	200	160	100	130	150	200	100

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Great blue heron	1	1	–	–	–	3	–	–	–	–	1	–
Great egret	–	–	–	–	–	–	–	–	–	–	2	–
Great white heron	6	2	6	–	–	2	7	2	7	1	4	5
Laridae family gull	10	–	–	–	–	–	–	–	–	–	–	–
Laughing gull	–	3	–	–	–	–	–	2	2	1	–	6
Ring-billed gull	–	1	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	–	2	–
West Arsenicker Totals	7	41	22	NS	NS	50	44	103	40	–	1	11
Anhinga	–	–	–	–	–	–	–	–	1	–	–	1
Bald eagle	2	–	–	–	–	–	–	–	–	–	1	–
Black vulture	–	–	–	–	–	–	–	2	–	–	–	–
Black-crowned night-heron	–	–	1	–	–	–	–	–	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	–	–	–	6
Double-crested cormorant	1	5	–	–	–	–	–	2	–	–	–	–
Great blue heron	1	2	2	–	–	–	1	–	–	–	–	–
Great egret	–	10	13	–	–	12	8	–	1	–	–	–
Great white heron	3	–	–	–	–	2	–	2	–	–	–	2
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Royal tern	–	–	–	–	–	–	–	–	–	–	–	2
Snowy egret	–	–	–	–	–	–	–	–	–	–	–	–
Tricolored heron	–	24	5	–	–	30	3	30	12	–	–	–
Turkey vulture	–	–	–	–	–	–	12	45	14	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	1	–	–	6	20	20	12	–	–	–
White-crowned pigeon	–	–	–	–	–	–	–	2	–	–	–	–
2017 Totals	353	779	NS	979	NS	381	360	523	484	647	427	1601
Arsenicker Key Totals	48	142	NS	128	NS	73	113	153	75	296	40	335
Anhinga	–	–	–	–	–	–	–	1	–	–	–	–
Brown pelican	5	23	–	17	–	–	–	–	25	6	13	4
Double-crested cormorant	30	100	–	83	–	68	105	150	30	265	–	320
Great blue heron	1	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	12	–	1	–	–	1	1	–	9	–	1
Great white heron	10	7	–	12	–	–	2	–	–	5	27	8
Magnificent frigatebird	–	–	–	8	–	5	–	1	20	–	–	–
Osprey	–	–	–	–	–	–	–	–	–	1	–	–
Reddish egret	–	–	–	5	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	2	–	–	–	–	–	–	–	–
Turkey vulture	2	–	–	–	–	–	4	–	–	8	–	2
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	–	1	–	–
White-crowned pigeon	–	–	–	–	–	–	1	–	–	–	–	–
Yellow-crowned night-heron	–	–	–	–	–	–	–	–	–	1	–	–
Jones Lagoon Totals	39	24	NS	60	NS	31	23	16	20	69	54	58
Anhinga	–	–	–	3	–	–	–	–	–	1	4	–
Belted kingfisher	–	–	–	–	–	–	–	–	–	–	1	–
Brown pelican	4	–	–	–	–	–	–	–	–	–	1	–
Double-crested cormorant	20	10	–	31	–	30	20	16	20	53	30	35
Great blue heron	2	2	–	4	–	–	–	–	–	5	4	4
Great egret	–	1	–	–	–	–	–	–	–	1	–	–
Great white heron	7	5	–	14	–	1	–	–	–	5	10	11
Magnificent frigatebird	–	–	–	–	–	–	–	–	–	–	–	1
Roseate spoonbill	6	6	–	8	–	–	–	–	–	4	4	7
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	3	–	–	–	–	–
Mangrove Key Totals	4	5	NS	34	NS	5	13	3	14	17	3	18
Brown pelican	–	–	–	1	–	–	–	–	8	7	–	–
Double-crested cormorant	1	–	–	6	–	5	9	2	5	9	1	14
Great blue heron	–	1	–	–	–	–	–	–	–	–	–	1
Great egret	–	–	–	4	–	–	–	1	–	1	–	3
Great white heron	1	3	–	5	–	–	2	–	–	–	2	–
Little blue heron	–	–	–	3	–	–	–	–	–	–	–	–
Snowy egret	–	1	–	14	–	–	–	–	–	–	–	–
Tricolored heron	–	–	–	1	–	–	–	–	–	–	–	–
Turkey vulture	1	–	–	–	–	–	–	–	1	–	–	–
Unidentified	1	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	–	–	2	–	–	–	–	–
Ragged Key 5 Totals	82	338	NS	207	NS	120	105	51	70	94	66	526
Brown pelican	10	3	–	–	–	–	–	–	10	17	22	15
Double-crested cormorant	65	320	–	200	–	120	103	50	55	70	35	470
Great blue heron	–	–	–	–	–	–	–	–	1	2	–	–
Great egret	–	5	–	–	–	–	–	–	–	–	–	–
Great white heron	6	10	–	6	–	–	2	1	1	3	4	4
Herring gull	–	–	–	–	–	–	–	–	–	2	–	–
Laridae family gull	–	–	–	1	–	–	–	–	–	–	–	1
Tricolored heron	1	–	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	36
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	–	3	–	5	–
Soldier Key Totals	174	250	NS	462	NS	98	4	265	275	157	246	655

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Brown pelican	30	12	–	–	–	–	1	–	5	14	30	28
Double-crested cormorant	130	220	–	410	–	90	–	250	240	130	210	600
Great blue heron	2	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	10	–	1	–	–	–	4	6	3	–	–
Great white heron	8	8	–	24	–	8	3	8	4	7	6	7
Laridae family gull	–	–	–	–	–	–	–	–	–	3	–	–
Laughing gull	4	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	21	–	–	–	3	20	–	–	–
Turkey vulture	–	–	–	6	–	–	–	–	–	–	–	20
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	6	20	NS	88	NS	54	102	35	30	14	18	9
Anhinga	–	–	–	1	–	–	–	–	–	–	2	–
Bald eagle	–	–	–	–	–	–	–	–	–	–	–	2
Belted kingfisher	–	–	–	–	–	–	–	–	–	1	1	–
Black vulture	–	–	–	–	–	–	2	2	–	–	–	–
Brown pelican	–	1	–	4	–	–	–	–	14	12	8	2
Double-crested cormorant	–	–	–	8	–	2	3	3	12	1	2	2
Great blue heron	2	–	–	2	–	–	–	–	–	–	–	–
Great egret	–	18	–	8	–	–	2	1	–	–	1	–
Great white heron	3	1	–	10	–	–	–	–	–	–	4	1
Little blue heron	–	–	–	–	–	–	–	–	1	–	–	–
Osprey	–	–	–	–	–	–	–	–	–	–	–	1
Royal tern	1	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	23	–	–	20	–	–	–	–	–
Tricolored heron	–	–	–	32	–	–	11	6	–	–	–	–
Turkey vulture	–	–	–	–	–	2	4	3	–	–	–	1
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	50	52	20	3	–	–	–
White-crowned pigeon	–	–	–	–	–	–	8	–	–	–	–	–
2018 Totals	548	679	NS	714	566	256	709	214	160	206	207	164
Arsenicker Key Totals	74	128	NS	51	43	20	10	50	34	75	32	42
Anhinga	–	–	–	1	–	–	–	–	–	–	–	–
Black vulture	–	–	–	–	–	–	–	–	4	–	–	–
Brown pelican	1	2	–	5	–	–	–	–	–	12	3	–
Double-crested cormorant	60	105	–	11	23	14	4	47	10	60	20	38
Great blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Great egret	–	4	–	16	2	–	3	2	–	–	–	–
Great white heron	10	5	–	10	10	5	3	–	–	3	4	4
Laridae family gull	3	–	–	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	12	–	–	8	–	–	–	15	–	5	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	–	–	–	4	–	–	–	–	–	–	–	–

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Snowy egret	–	–	–	3	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	1	–	1	5	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
Jones Lagoon Totals	109	51	NS	47	32	24	21	12	16	17	27	23
Anhinga	–	2	–	–	–	1	1	–	–	–	–	–
Brown pelican	–	–	–	1	–	–	–	–	–	–	–	–
Double-crested cormorant	80	–	–	20	28	20	18	10	15	10	12	12
Great blue heron	2	5	–	2	2	–	–	1	–	1	1	7
Great egret	–	1	–	–	–	2	1	–	–	–	1	–
Great white heron	15	11	–	9	2	–	1	–	–	6	9	–
Little blue heron	–	9	–	–	–	–	–	1	–	–	–	–
Roseate spoonbill	12	23	–	15	–	–	–	–	–	–	4	4
Tricolored heron	–	–	–	–	–	1	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	1	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	29	7	NS	29	24	13	13	20	6	16	5	17
Anhinga	–	–	–	–	3	1	1	–	–	–	–	–
Brown pelican	1	–	–	–	–	–	–	3	–	–	–	–
Double-crested cormorant	25	3	–	21	5	9	10	15	5	15	–	15
Great blue heron	1	–	–	1	1	–	1	–	–	–	–	–
Great egret	–	–	–	–	–	2	–	1	–	–	–	–
Great white heron	2	4	–	2	9	1	–	–	–	1	3	2
Laridae family gull	–	–	–	–	–	–	–	–	–	–	2	–
Little blue heron	–	–	–	–	–	–	–	1	–	–	–	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–
Roseate spoonbill	–	–	–	–	5	–	–	–	–	–	–	–
Snowy egret	–	–	–	4	–	–	1	–	–	–	–	–
Tricolored heron	–	–	–	1	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	1	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White-crowned pigeon	–	–	–	–	1	–	–	–	–	–	–	–
Ragged Key 5 Totals	145	186	NS	308	191	9	302	21	27	29	46	29
Brown pelican	20	8	–	–	–	–	1	–	–	6	–	11
Double-crested cormorant	115	160	–	300	188	6	300	19	25	20	30	10
Great blue heron	–	–	–	–	–	–	–	–	–	–	1	–
Great egret	–	–	–	2	–	–	–	2	–	–	–	–
Great white heron	10	17	–	5	3	3	1	–	–	2	10	2
Laridae family gull	–	–	–	–	–	–	–	–	2	1	5	5
Little blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Tricolored heron	–	1	–	–	–	–	–	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	–	–	–	–	1

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	184	271	NS	225	157	63	204	59	66	66	71	45
Brown pelican	20	1	–	2	5	–	–	–	–	20	5	–
Double-crested cormorant	150	260	–	180	148	62	200	51	50	40	50	30
Great blue heron	–	1	–	1	–	–	–	–	11	–	1	5
Great egret	–	–	–	5	–	1	–	2	4	–	–	–
Great white heron	8	7	–	7	4	–	4	–	–	6	15	5
Laridae family gull	6	–	–	–	–	–	–	6	1	–	–	5
Snowy egret	–	–	–	30	–	–	–	–	–	–	–	–
Tricolored heron	–	2	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	7	36	NS	54	119	127	159	52	11	3	26	8
Brown pelican	2	–	–	–	–	–	–	–	–	1	2	8
Double-crested cormorant	–	5	–	11	–	–	–	6	2	2	20	–
Great blue heron	–	2	–	1	2	–	–	1	–	–	–	–
Great egret	5	22	–	31	22	67	6	37	–	–	–	–
Great white heron	–	7	–	3	12	–	–	–	–	–	4	–
Laridae family gull	–	–	–	–	–	–	–	–	5	–	–	–
Little blue heron	–	–	–	1	–	–	19	1	–	–	–	–
Snowy egret	–	–	–	–	14	–	–	–	–	–	–	–
Tricolored heron	–	–	–	7	4	41	–	6	–	–	–	–
Turkey vulture	–	–	–	–	–	–	7	1	4	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	47	–	–	–	–	–
White ibis	–	–	–	–	55	19	80	–	–	–	–	–
White-crowned pigeon	–	–	–	–	10	–	–	–	–	–	–	–
2019 Totals	NS	278	NS	141	108	106	172	105	162	NS	NS	259
Arsenicker Key Totals	NS	31	NS	23	24	22	20	29	48	NS	NS	46
Brown pelican	–	1	–	–	–	–	–	–	9	–	–	–
Double-crested cormorant	–	20	–	20	18	14	12	29	39	–	–	39
Great egret	–	4	–	–	–	3	–	–	–	–	–	–
Great white heron	–	1	–	3	4	4	–	–	–	–	–	2
Laridae family gull	–	–	–	–	1	–	–	–	–	–	–	1
Roseate spoonbill	–	5	–	–	–	–	–	–	–	–	–	4
Turkey vulture	–	–	–	–	–	–	8	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	1	1	–	–	–	–	–	–
Jones Lagoon Totals	NS	30	NS	20	15	23	17	12	14	NS	NS	21
Anhinga	–	–	–	–	–	–	–	1	–	–	–	–
Double-crested cormorant	–	10	–	15	11	18	10	8	14	–	–	10

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	3
Great egret	–	9	–	–	–	–	–	–	–	–	–	–
Great white heron	–	6	–	5	4	4	2	1	–	–	–	8
Roseate spoonbill	–	5	–	–	–	–	–	2	–	–	–	–
Snowy egret	–	–	–	–	–	1	–	–	–	–	–	–
Tricolored heron	–	–	–	–	–	–	5	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	NS	8	NS	16	10	7	12	10	12	NS	NS	25
Anhinga	–	–	–	–	–	–	–	1	–	–	–	–
Brown pelican	–	–	–	–	–	–	–	–	6	–	–	–
Double-crested cormorant	–	–	–	5	5	2	9	8	4	–	–	25
Great blue heron	–	–	–	–	2	–	–	–	–	–	–	–
Great white heron	–	8	–	7	3	5	–	–	–	–	–	–
Little blue heron	–	–	–	4	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	–	3	–	–	–	–	–
Turkey vulture	–	–	–	–	–	–	–	1	2	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified dark bird	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
Ragged Key 5 Totals	NS	72	NS	10	11	5	18	13	23	NS	NS	67
Brown pelican	–	11	–	–	–	–	–	–	–	–	–	22
Double-crested cormorant	–	55	–	6	7	4	18	12	11	–	–	40
Great blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Great egret	–	5	–	–	–	–	–	–	6	–	–	1
Great white heron	–	1	–	4	4	1	–	1	–	–	–	2
Laridae family gull	–	–	–	–	–	–	–	–	–	–	–	2
Ring-billed gull	–	–	–	–	–	–	–	–	3	–	–	–
Snowy egret	–	–	–	–	–	–	–	–	3	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	NS	129	NS	58	41	36	56	24	65	NS	NS	94
Brown pelican	–	27	–	3	5	–	–	–	3	–	–	27
Double-crested cormorant	–	86	–	50	30	30	50	13	55	–	–	60
Great blue heron	–	–	–	–	–	–	–	–	4	–	–	1
Great white heron	–	11	–	5	6	6	6	6	3	–	–	6
Laridae family gull	–	5	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	–	–	–	–	5	–	–	–	–
West Arsenicker Totals	NS	8	NS	14	7	13	49	17	–	NS	NS	6
Black vulture	–	–	–	–	–	–	–	1	–	–	–	–
Brown pelican	–	3	–	–	–	–	–	–	–	–	–	5
Double-crested cormorant	–	2	–	–	1	1	–	3	–	–	–	1

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Great blue heron	–	–	–	1	–	–	–	–	–	–	–	–
Great egret	–	2	–	4	–	1	3	–	–	–	–	–
Great white heron	–	1	–	–	5	3	1	–	–	–	–	–
Little blue heron	–	–	–	–	–	–	–	–	–	–	–	–
Reddish egret	–	–	–	–	–	–	–	–	–	–	–	–
Snowy egret	–	–	–	–	–	3	20	2	–	–	–	–
Tricolored heron	–	–	–	4	–	–	20	–	–	–	–	–
Turkey vulture	–	–	–	–	–	2	5	7	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	–	5	–	3	–	3	–	–	–	–
White-crowned pigeon	–	–	–	–	1	–	–	1	–	–	–	–
2020 Totals	124	90	191	NS	NS	–	–	–	–	–	–	–
Arsenicker Key Totals	63	24	42	NS	NS	–	–	–	–	–	–	–
Brown pelican	5	–	5	–	–	–	–	–	–	–	–	–
Double-crested cormorant	50	16	25	–	–	–	–	–	–	–	–	–
Great egret	–	–	–	–	–	–	–	–	–	–	–	–
Great white heron	7	8	9	–	–	–	–	–	–	–	–	–
Magnificent frigatebird	–	–	2	–	–	–	–	–	–	–	–	–
Roseate spoonbill	1	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
White ibis	–	–	1	–	–	–	–	–	–	–	–	–
Jones Lagoon Totals	14	24	20	NS	NS	–	–	–	–	–	–	–
Anhinga	–	–	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	3	2	5	–	–	–	–	–	–	–	–	–
Great blue heron	–	–	2	–	–	–	–	–	–	–	–	–
Great egret	–	2	–	–	–	–	–	–	–	–	–	–
Great white heron	9	18	10	–	–	–	–	–	–	–	–	–
Roseate spoonbill	2	2	3	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
Mangrove Key Totals	3	13	6	NS	NS	–	–	–	–	–	–	–
Anhinga	–	–	2	–	–	–	–	–	–	–	–	–
Brown pelican	–	6	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	–	1	–	–	–	–	–	–	–	–	–	–
Great blue heron	2	–	1	–	–	–	–	–	–	–	–	–
Great white heron	1	5	2	–	–	–	–	–	–	–	–	–
Little blue heron	–	1	1	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
Ragged Key 5 Totals	15	8	14	NS	NS	–	–	–	–	–	–	–
Brown pelican	3	3	3	–	–	–	–	–	–	–	–	–

Table A-2 (continued). Observed bird data by year, colony, and species [NS=No Survey].

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Double-crested cormorant	4	–	5	–	–	–	–	–	–	–	–	–
Great white heron	7	4	6	–	–	–	–	–	–	–	–	–
Laridae family gull	–	1	–	–	–	–	–	–	–	–	–	–
Turkey vulture	1	–	–	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Soldier Key Totals	23	11	89	NS	NS	–	–	–	–	–	–	–
Brown pelican	4	1	–	–	–	–	–	–	–	–	–	–
Double-crested cormorant	9	–	70	–	–	–	–	–	–	–	–	–
Great blue heron	–	1	1	–	–	–	–	–	–	–	–	–
Great white heron	10	6	13	–	–	–	–	–	–	–	–	–
Herring gull	–	–	3	–	–	–	–	–	–	–	–	–
Laridae family gull	–	3	2	–	–	–	–	–	–	–	–	–
Unidentified	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified white bird	–	–	–	–	–	–	–	–	–	–	–	–
West Arsenicker Totals	6	10	20	NS	NS	–	–	–	–	–	–	–
Anhinga	–	1	2	–	–	–	–	–	–	–	–	–
Brown pelican	3	–	1	–	–	–	–	–	–	–	–	–
Double-crested cormorant	2	1	3	–	–	–	–	–	–	–	–	–
Great egret	–	–	1	–	–	–	–	–	–	–	–	–
Great white heron	1	8	2	–	–	–	–	–	–	–	–	–
Osprey	–	–	1	–	–	–	–	–	–	–	–	–
White ibis	–	–	10	–	–	–	–	–	–	–	–	–

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