



Report of Colonial Nesting Birds in Biscayne National Park for the 2015 – 2016 Nesting Year

Natural Resource Data Series NPS/SFCN/NRDS—XXXX/XXX



ON THE COVER

A Great Blue Heron, a Great White Heron, and their chick occupy a nest on Jones Lagoon in Biscayne National Park.
Photograph by: Robert Muxo, National Park Service South Florida / Caribbean Network.

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Abstract

Introduction and Methods

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 2015 through June 2016.

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.

The monitoring process in 2015-2016 consisted of an annual park-wide survey via helicopter to locate new nesting colonies of wading birds and seabirds within Biscayne National Park coupled with monthly surveys of located colonies that were detected in the annual survey. Two SFCN technicians, 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 in the subsequent 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. SFCN 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 five 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 in 2015 (July-December) and 2016 (January–March and June). Actual survey dates are 7/23/2015, 8/25/2015, 9/22/2015, 10/29/2015, 12/1/2015, 12/30/2015, 1/25/2016, 2/28/2016, 3/30/2016, and 6/3/2016. The “November” flight actually occurred on December first. The 2016 April and May flights did not occur because of helicopter availability and weather conditions. We located two new colonies to add to the six colonies (Mangrove Key, West Arsenicker, Arsenicker Key, Jones Lagoon, Ragged Key 5, and Soldier Key) normally surveyed during the routine monthly flights (Figure 1). The new colonies were named Kings Bay and Kings Road Island (marked with yellow stars in Figure 1). The Kings Bay colony was first observed during the 6/3/2016 flight and the Kings Road Island colony was first observed during the 7/21/2016 flight. Nesting results for the new colonies are not included in this year’s report; Kings Bay is outside the park and Kings Road Island was not detected until July 2016 (after the 2015-2016 nesting season). The Kings Bay colony is located north of the park boundary but is being pilot monitored to determine workload and feasibility. Because of its proximity to the park, the birds nesting at Kings Bay most likely use the park for resources and would complete a picture of colonial birds using Biscayne Bay.

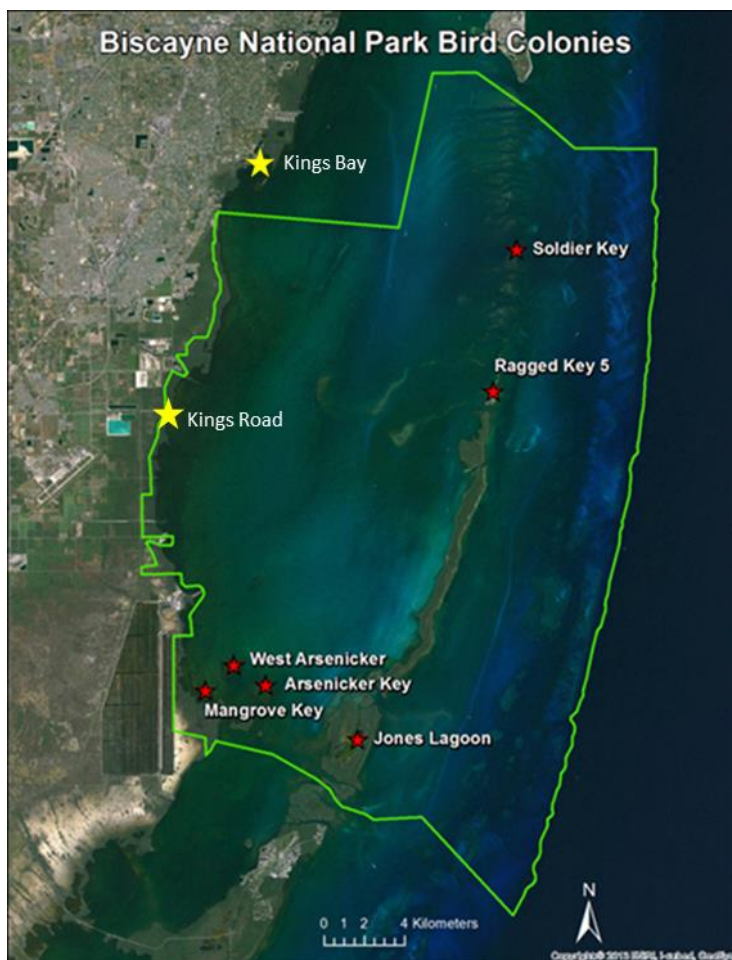


Figure 1. Locations of the nesting colony locations monitored. The six previously surveyed nesting colonies are displayed in red, the new colonies are displayed in yellow, and the park boundary is in green.

Results and Discussion

The standard results of the colonial nesting bird monitoring are summarized in the following tables and graphs and then highlights are discussed further below:

- Table 1: Species list
- Table 2: Comparison of peak nest numbers and nesting index for 2015-2016 nesting season to previously monitored years.
- Figures 2 through 4: Graphs of nests photographed per month by focal species
- Figure 5: Number nesting colonies per species by year
- Figure 6: Number species nesting by colony and year
- Figure 7: Total of peak nest counts across colonies by focal species
- Figure 8: Annual nesting index across colonies by focal species
- Figure 9: Peak nest counts by colony by focal species
- Figure 10: Annual nesting index by colony by focal species
- Table 3: Percent nesting by month and focal species
- Table 4: All photographed and observed data by year, location, and species
- Table 5: Totals and percentages of nests occupied by birds, nests with eggs, nests with chicks, and empty nests

With the 2015-2016 nesting year, the SFCN completed the sixth full nesting year of monitoring colonial nesting birds in Biscayne National Park (BISC). Table 1 provides a brief listing of the species detected either through field observations or photographs of nests. For the 2015-2016 nesting year, there were 8 species photographed nesting and 25 species visually observed using the colonies (Table 1). For the first time in our monitoring we photographed a Great White Heron and a Great Blue Heron sharing a nest and producing chicks (Wurdeemann's Heron) at the Jones Lagoon colony (picture on the front cover). As usual, 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.

The same six colonies of colonial nesting birds were monitored in BISC during the 2015-2016 nesting year: Arsenicker Key, West Arsenicker Key, Mangrove Key, Jones Lagoon, Ragged Key 5 and Soldier Key (figure 1). In addition we located two new colonies (Kings Bay and Kings Road Island) which will be monitored and reported in next year's report.

Focal Species Results

The monitoring results have yielded valuable nesting data for documenting species-specific nesting patterns and trends. We have chosen to break 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, White Ibises, and Roseate Spoonbills.

Divers – Double-crested Cormorants

The Double-crested Cormorant is still the most prominent nesting bird species in our survey, as its nests comprised 93% of peak nest counts and 97% of total nest counts (of focal species) summed across all months in the nesting index (Table 2, Figure 8). Double-crested Cormorants were present at all BISC colony sites except West Arsenicker Key (Figure 6). Double-crested Cormorant nesting remained on Mangrove Key where they were absent two years earlier (Table 4 and Figure 6). The Double-crested Cormorants nest year round with the months with the highest percentage of nests occurring in July and June with 16% and 18% respectively (Table 3). A secondary winter monthly peak nest count occurred in January 2016 with 700 nests and is part of a recent increase of winter nesting at Ragged Key 5 and Soldier Key (Table 4). Biscayne Bay Double-crested Cormorant colonies are variable through time, but Ragged Key 5 and Soldier Key consistently produce the highest peak nest counts (Figure 9). This nesting year's Double-crested Cormorant peak nest numbers and nesting index were within the range of the 2011-2015 nesting years' data collection and no trends are discernable at the park-wide level. The peak nest count detected (1001) was not significantly different from the 2010-2014 mean (967.5) and the nesting index (5211) was essentially equivalent to the 2011-2015 mean (5276.9) (Table 2).

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

This year for the first time we located Great White herons nesting on all six colonies (Table 2 and Figure 9) and they were most numerous at Jones Lagoon. The Great White Heron peak nest count of 22 was the second highest since the 2010-2011 nesting year peak of 29 (Figure 3). Great Egrets were only detected nesting at West Arsenicker whereas previously they also had minimal presence at Arsenicker Key and Jones Lagoon (Table 2, Figure 9). Great Blue Herons were detected nesting on three colonies; Jones Lagoon, Soldier Key, and West Arsenicker. Jones Lagoon was the only colony to show an increase in peak nest count and nesting index for Great Blue Herons (Table 2).

Tactile feeders – Roseate Spoonbill and White Ibis

Roseate Spoonbills resumed nesting after zero nests detected in the 2014-2015 nesting year. Although the nests counted (3) this year are lower than the nest mean (5.2) for the 2011-2015 nesting years, they remain in the range detected in previous years (Table 2). To date Jones Lagoon is the only colony we have seen Roseate Spoonbills nesting (Table 2 and Figure 9). White Ibis nesting occurred at the Arsenicker Key and West Arsenicker colonies (Figure 9 and Table 4). For the past four years White Ibises have consistently nested at Arsenicker Key (Figure 9) but haven't been detected nesting at West Arsenicker since 2010. White Ibis peak nest counts and nesting index were outside the 2011-2015 range of results and less than the multi-year minimums; however these low numbers may be an artifact of the early June 3, 2016 survey flight which may have missed the initiation of 2016 White Ibis nesting. By July 2016 (to be presented in the next year's data summary report), 95 total active nests were recorded for White Ibis which is the highest count in SFCN's data range.

Colony Results

Since the original surveys in 2009 in Biscayne National Park, only the six known colony sites have been relatively consistent in providing nesting colonies, but in June and July of 2016, two new

colonies were observed (Figure 1). The first one located was Kings Bay, located just north of the park boundary. The second one located is a small island just off the mainland and north of park headquarters which we named Kings Road Island (both named for their proximity to other nearby geographic locations). These two colonies were not previously surveyed, but will be included in the following 2016-2017 annual report.

Results for the number of species nesting by colony shows two colonies with fewer species than previously observed (Arsenicker Key and Ragged Key 5), one colony with an additional species (Mangrove Key) and the other three colonies (Jones Lagoon, West Arsenicker and Soldier Key) within the same range of species as previously observed (Figure 6). Some of the variation can be attributed to birds shifting nesting locations (Figure 5).

Conclusion

Of the six focal species, two had results outside the range of 2011-2015 nesting years: four had peak nest counts and nesting indices that were at or below the 2011-2015 mean (Table 2) although the Great Blue Heron peak nest count of 11 nests is very close to the 2011-2015 mean of 11.17 nests. Two species (Great White Heron and Double-crested Cormorants) showed an increase of peak nest counts relative to the 2011-2015 means. Four of the six focal species fell within the peak nest range of the 2011-2016, the two species that fell below the range were, White Ibis and Great Egret. Roseate Spoonbills were detected nesting again on Jones Lagoon and for the first time a Wurdemann's Heron nest was observed. The Double-crested Cormorant remains the most prominent nesting bird in our survey, as its nests comprised over 95% of peak nest counts (all species) in Biscayne National Park (Table 1). Overall, numbers of nests were reflective of the average for the previous five years. With only six years of data, the range of variability is not completely understood.

Literature Cited

- Muxo, R., K. R. T. Whelan, R. Urgelles, J. Alonso, J. M. Patterson, and A. J. Atkinson. 2015. Biscayne National Park colonial nesting birds monitoring protocol, v. 1.00. Natural Resource Report NPS/SFCN/NRR—2015/994. National Park Service, Fort Collins, Colorado.
<https://irma.nps.gov/App/Reference/Profile/2223000/>

Table 1. List of species detected in 2015-2016 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. An asterisk (*) indicates it was not counted as a species.

Common Name	Species Code	Photographed Nests	Field Observed Birds
American White Pelican	AWPE		1
Anhinga	ANHI	6	12
Bald Eagle	BAEA		3
Belted Kingfisher	BEKI		1
Black Vulture	BLVU		5
Black-crowned Night-Heron	BCNH		2
Brown Pelican	BRPE		190
Cattle Egret	CAEG		2
Double-crested Cormorant	DCCO	5423	3968
Great Blue Heron	GBHE	26	49
Great Egret	GREG	29	37
Great White Heron	GWHE	96	166
Laridae family gull	LARI		38
Laughing Gull	LAGU		23
Little Blue Heron	LBHE		4
Magnificent Frigatebird	MAFR		83
Osprey	OSPR		3
Reddish Egret	REEG		1
Ring-billed Gull	RBGU		14
Roseate Spoonbill	ROSP	8	29
Snowy Egret	SNEG		3
Tricolored Heron	TRHE		59
Turkey Vulture	TUVU		17
Unidentified *	UNID	53	
Unidentified Dark Bird *	UNDA	2	
Unidentified White Bird *	UNWH	17	8
White Ibis	WHIB	25	29
White-crowned Pigeon	WCPI		6
Wurde mann's Heron	WUHE	2	
Grand Total		5687	4753

Table 2. Comparison of peak nest numbers and nesting index for 2015-2016 nesting season to 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.

		Peak nest				Nesting index			
		2011-2015 nesting years				2011-2015 nesting years			
		2015-2016	mean	max	min	2015-2016	mean	max	min
Biscayne Nat'l Park	DCCO	1001	967.5	1337	792	5211	5276.9	5660	4927
	GBHE	11	11.17	15	6	26	27.3	44	12
	GREG	12	16	24	14	29	44.8	75.5	22
	GWHE	28	22.83	29	18	96	83.8	108	59
	ROSP	3	4.83	12	0	8	10.8	25	0
	WHIB	24	46.17	78	28	25	66.5	110	45
Arsenicker Key	DCCO	158	171.8	257	107	517	733.5	983.5	489
	GBHE	0	0.4	2	0	0	1	5	0
	GREG	0	0.8	2	0	0	1.9	4.5	0
	GWHE	3	3.6	6	2	12	14.8	26	11
	ROSP	0	0	0	0	0	0	0	0
	WHIB	22	46	60	28	23	70.2	87	45
Jones Lagoon	DCCO	110	121	135	100	437	618.8	905	433
	GBHE	8	5.6	10	2	21	15	25.5	6.5
	GREG	0	1	2	0	0	1.25	2	0
	GWHE	13	7.6	10	6	48	27.7	34	18
	ROSP	3	5.2	12	0	8	11.4	25	0
	WHIB	0	0	0	0	0	0	0	0
Mangrove Key	DCCO	21	34.4	115	0	64	104.7	309	0
	GBHE	0	0	0	0	0	0	0	0
	GREG	0	0	0	0	0	0	0	0
	GWHE	1	0	0	0	1	0	0	0
	ROSP	0	0	0	0	0	0	0	0
	WHIB	0	0	0	0	0	0	0	0
Ragged Key 5	DCCO	489	427.2	706	294	2900	2642	3210	2163
	GBHE	0	0.5	1	0	0	0.5	1	0
	GREG	0	0.4	1	0	0	0.4	1	0
	GWHE	4	4.2	7	2	17	14.3	22.5	9
	ROSP	0	0	0	0	0	0	0	0
	WHIB	0	0	0	0	0	0	0	0
Soldier	DCCO	220	204	342	140	1293	1187.8	1397	1003
	GBHE	1	1.2	2	1	2	3.6	9	1
	GREG	0	0.67	1	0	0	0.67	1	0
	GWHE	3	3	5	2	11	8.3	16	4
	ROSP	0	0	0	0	0	0	0	0
	WHIB	0	0	0	0	0	0	0	0
West Arsenicker	DCCO	0	2.4	10	0	0	3.3	13	0
	GBHE	2	3.6	5	2	3	7.6	15	3
	GREG	12	14.4	20	11	29	44.2	73	19
	GWHE	4	3.4	6	1	7	16.2	29.5	4
	ROSP	0	0	0	0	0	0	0	0
	WHIB	2	4.6	23	0	2	4.6	23	0

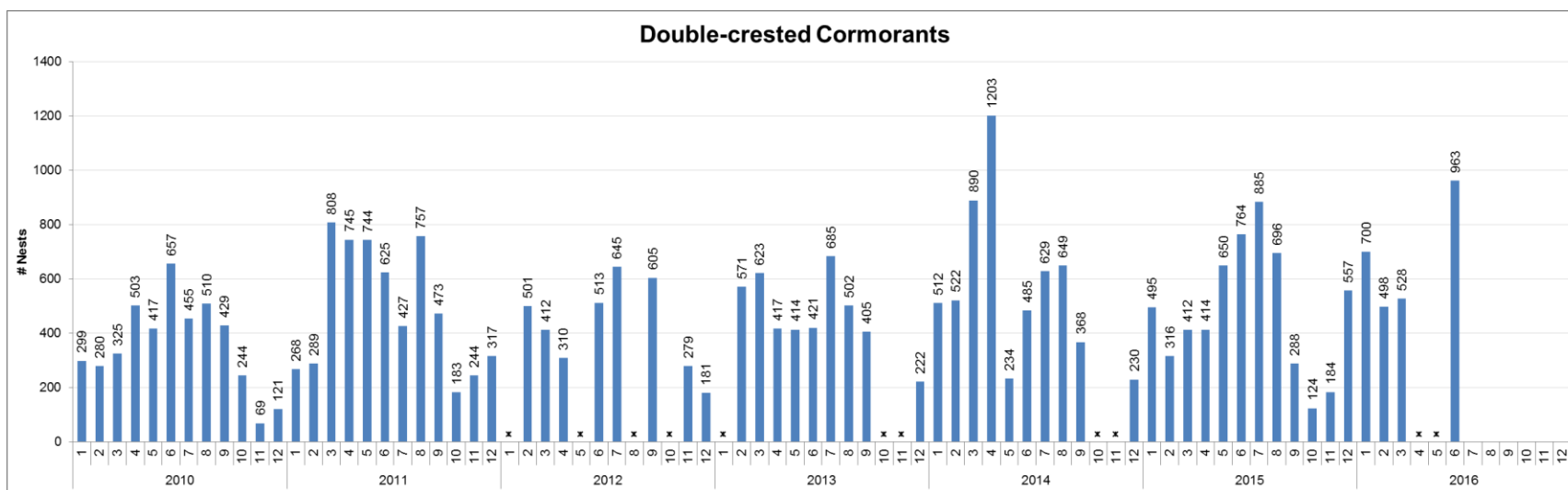


Figure 2. Number of Double-crested Cormorant nests per month. An asterisk (*) indicates months not sampled. July through December of 2016 flights are pending.

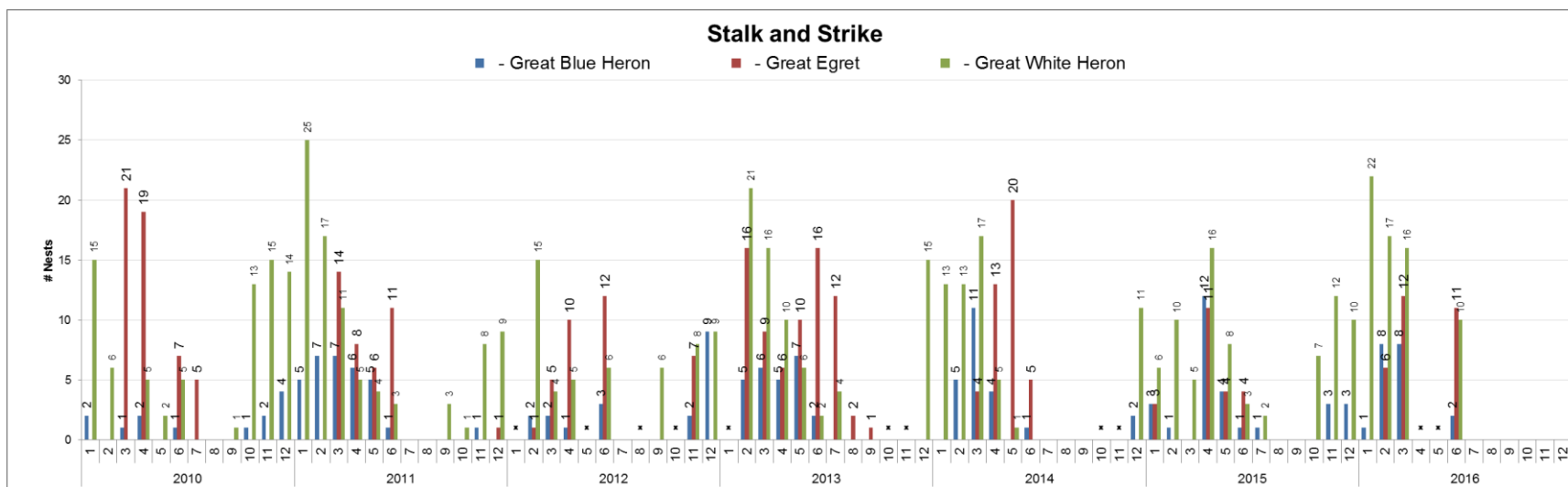


Figure 3. The number of nests by month for selected stalk and strike species: Great Blue Heron, Great Egret, and Great White Heron. An asterisk (*) indicates months not sampled.

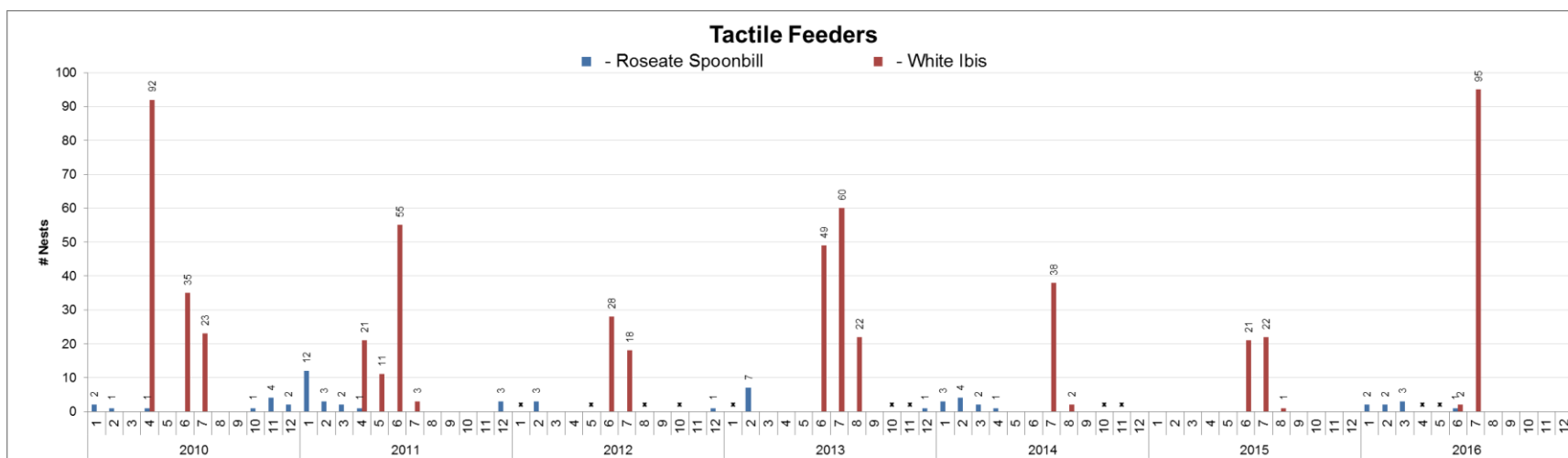


Figure 4. The number of nests by month for two tactile feeder species: Roseate Spoonbills and White Ibises. This graph shows that Roseate Spoonbills nest in the dry season and White Ibises nest in the wet season. An asterisk (*) indicates months not sampled. July 2016 results included to show White Ibis low count in June 2016 was not indicative of a poor breeding event.

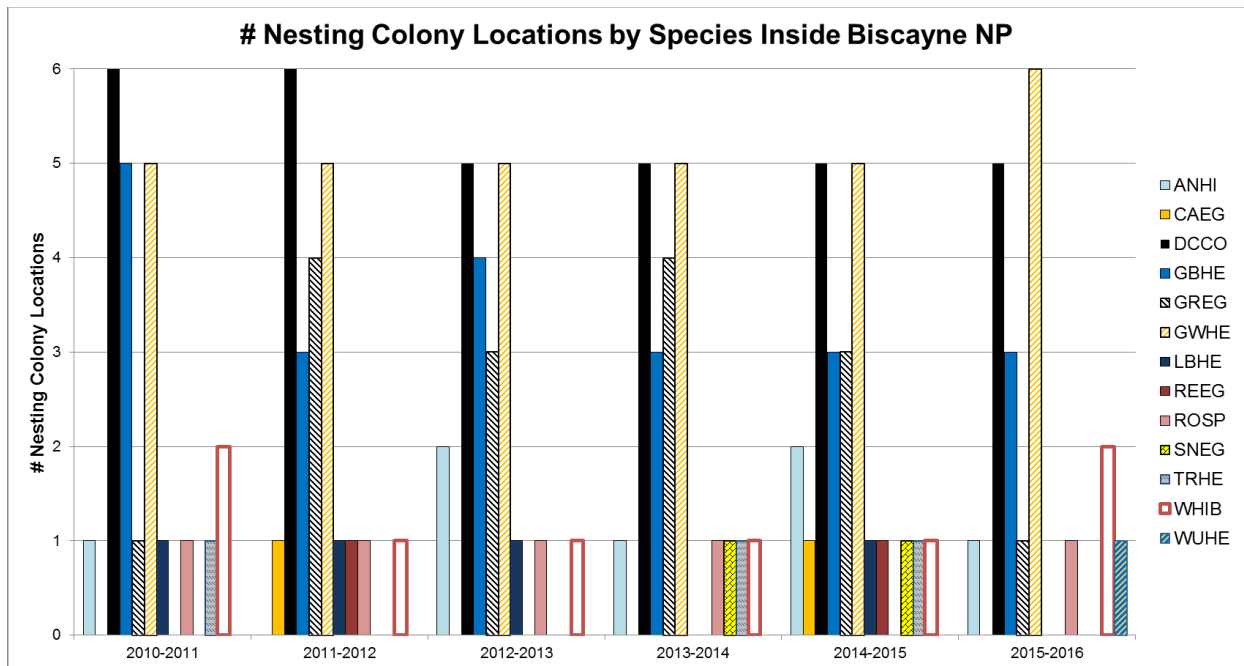


Figure 5. Number of nesting colonies per species by year. Includes all egrets, ibises, and herons.

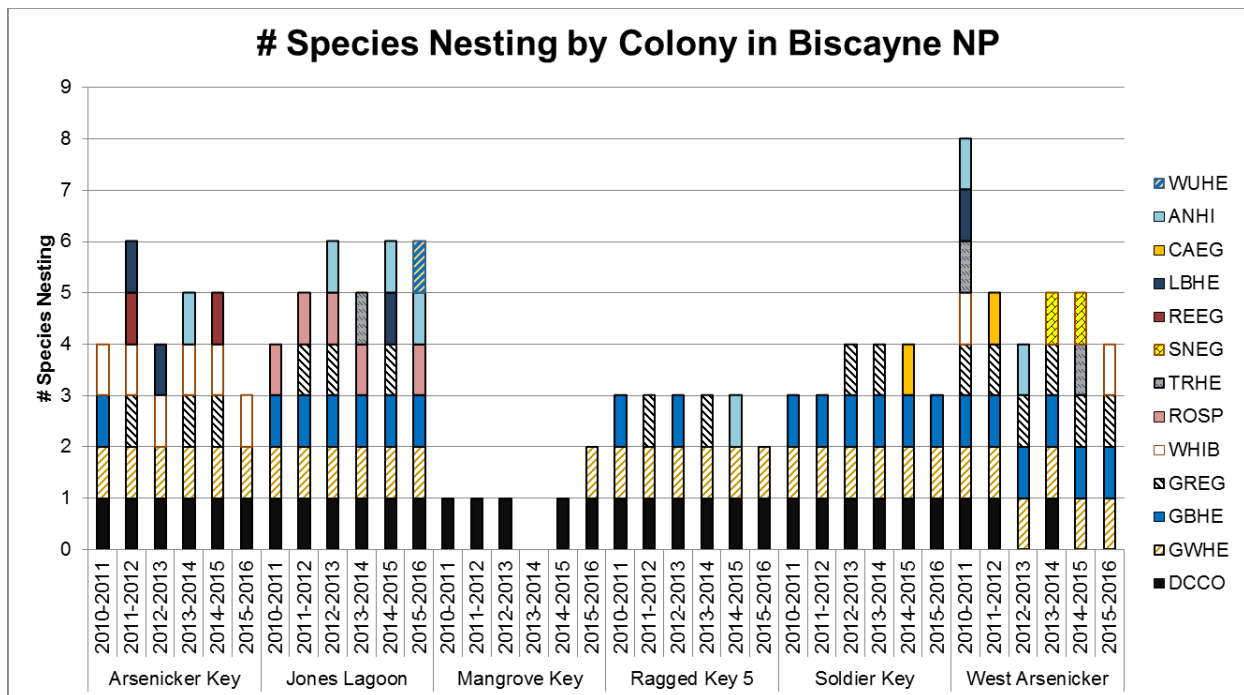


Figure 6. Number of species detected nesting by colony and year. Includes all egrets, ibises, and herons.

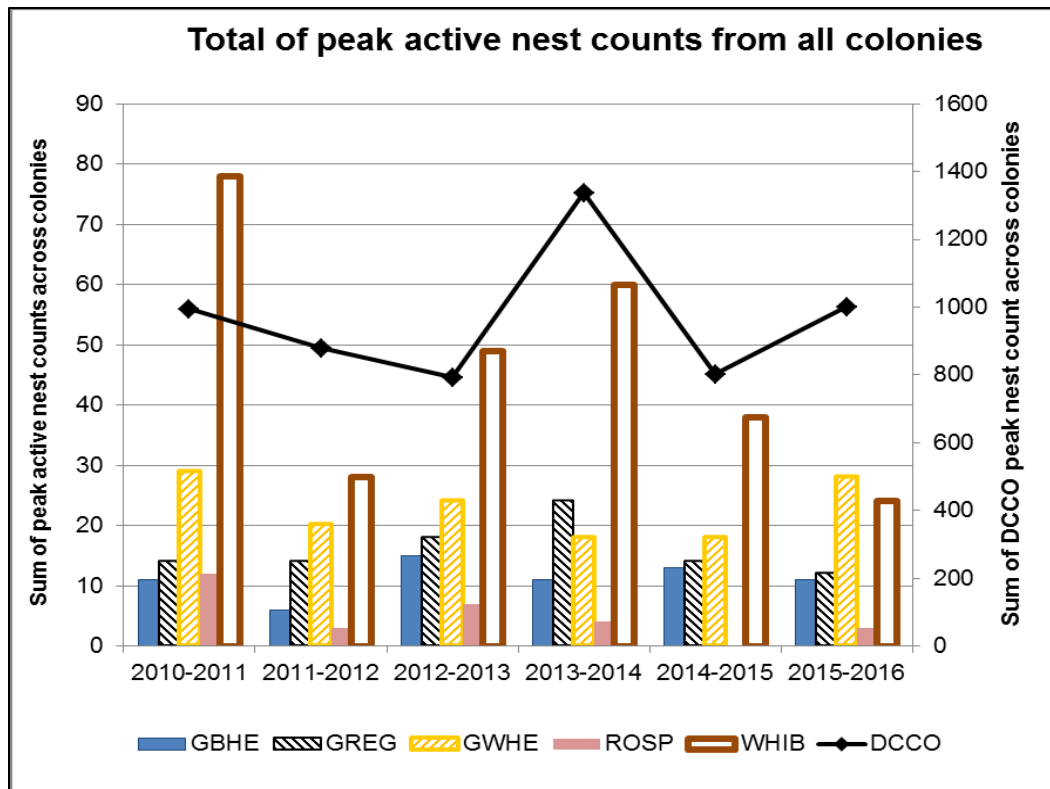


Figure 7. Total of peak nest counts across all colonies for the six focal species. The maximum number of nests detected per colony was summed to create a total of peak nest counts across all colonies.

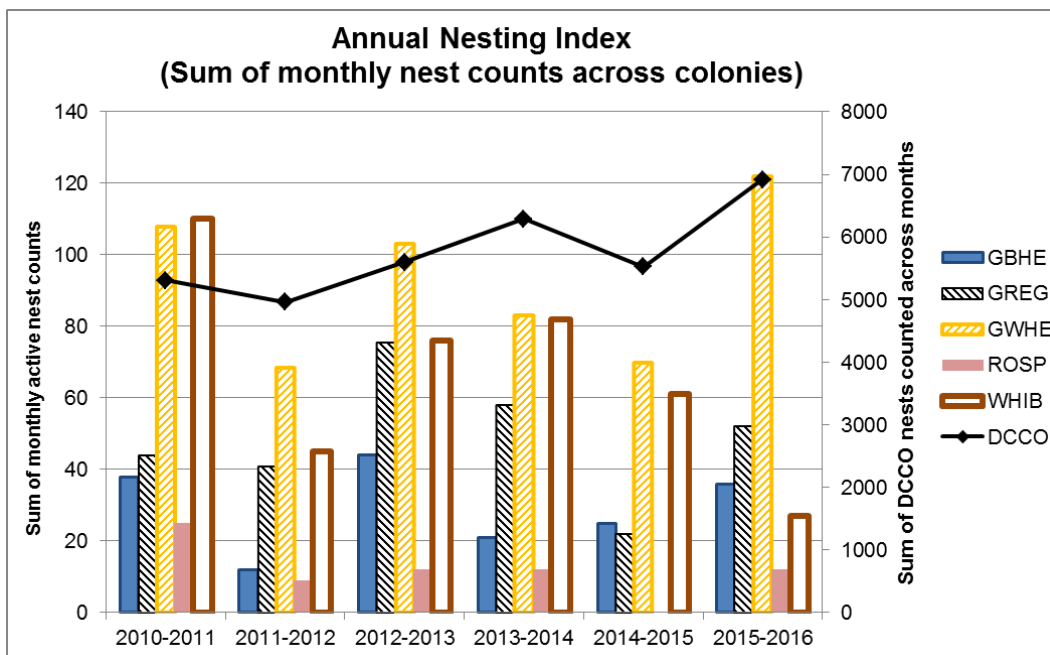


Figure 8. Annual nesting index across colonies by focal species. The number of nests counted at each colony during each month was summed to create an annual nesting index across all colonies for the six focal species. This number exceeds the actual number of nest starts as a single nest could be counted during two or more monthly visits.

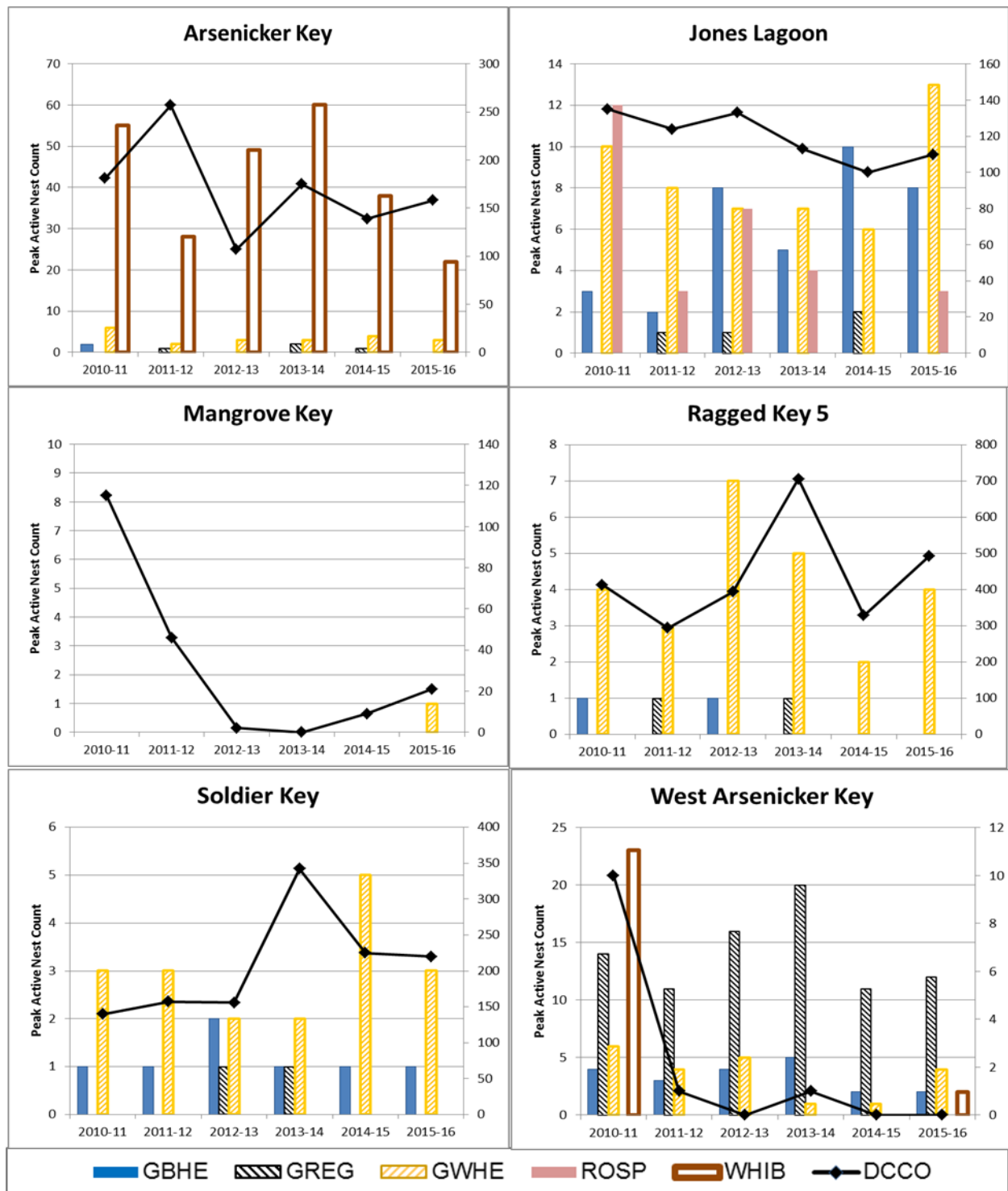


Figure 9. Peak nest counts by colony for the six focal species.

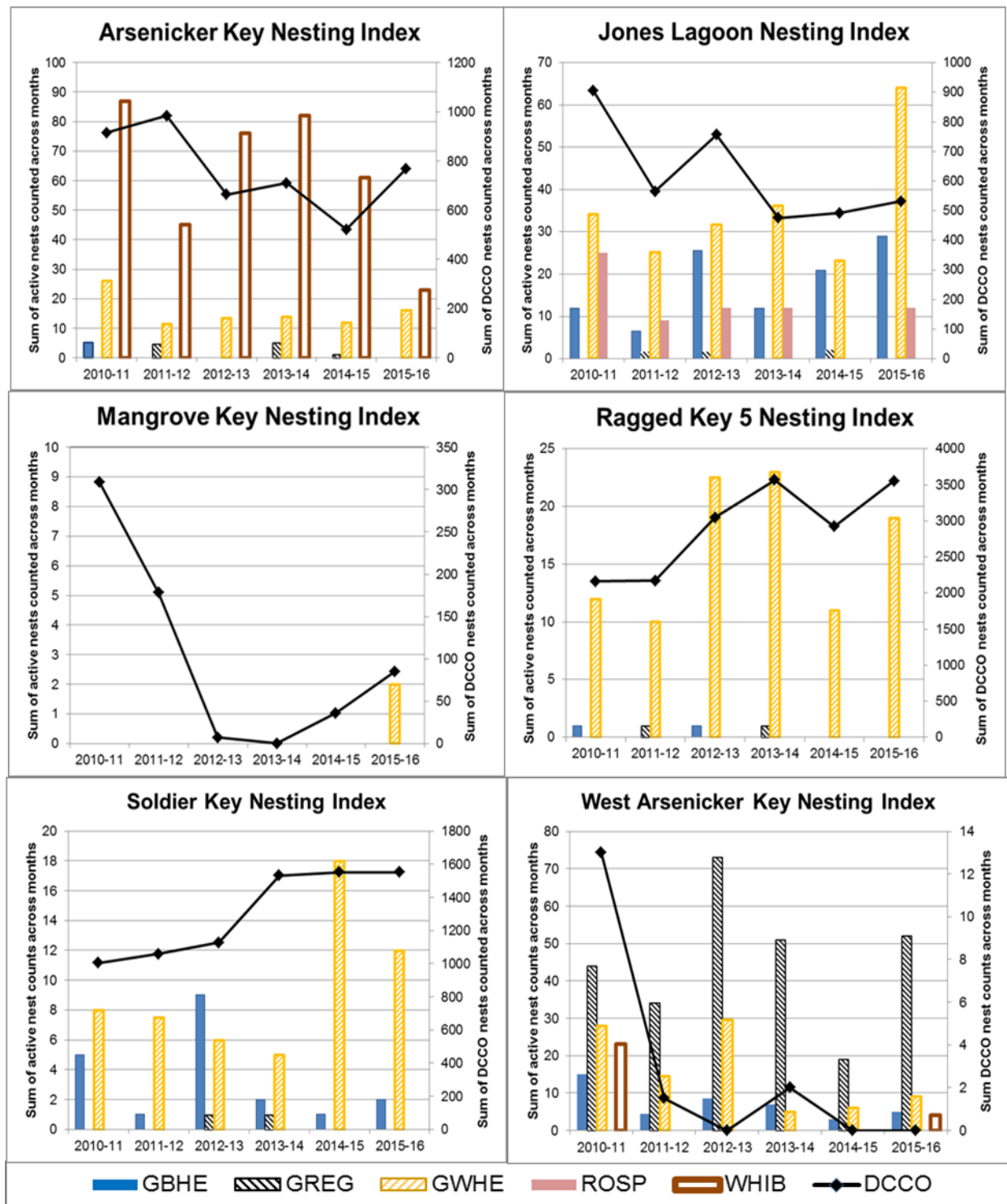


Figure 10. Annual nesting index across colonies by focal species. The annual nesting index is defined as total nests counted across all months and colonies.

Table 3. Percent nesting by month and species. Months with any photographed nests are highlighted. Months with greater than 20% nesting are highlighted as dark blue. NF= No Flight.

Month	Percent Nesting by Month												Total Active Nests Counted
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Double-crested Cormorant	13%	11%	9%	2%	3%	5%	7%	9%	12%	10%	7%	13%	29610
2010-2011	9%	10%	8%	5%	1%	2%	5%	5%	15%	14%	14%	12%	5307
2011-2012	10%	18%	11%	4%	6%	8%	NF	12%	10%	7%	NF	12%	4137
2012-2013	16%	NF	15%	NF	7%	4%	NF	14%	15%	10%	10%	10%	4156
2013-2014	12%	9%	7%	NF	NF	4%	9%	9%	16%	21%	4%	9%	5660
2014-2015	13%	13%	7%	NF	NF	5%	10%	6%	8%	8%	13%	16%	4927
2015-2016	16%	13%	5%	2%	3%	10%	13%	9%	10%	NF	NF	18%	5423
Great Blue Heron	1%	0%	0%	1%	5%	12%	6%	18%	22%	18%	10%	7%	153
2010-2011	0%	0%	0%	3%	5%	11%	13%	18%	18%	16%	13%	3%	38
2011-2012	0%	0%	0%	0%	11%	0%	NF	22%	22%	11%	NF	33%	9
2012-2013	0%	NF	0%	NF	6%	25%	NF	14%	17%	14%	19%	6%	36
2013-2014	0%	0%	0%	NF	NF	0%	0%	24%	52%	19%	0%	5%	21
2014-2015	0%	0%	0%	NF	NF	9%	13%	4%	0%	52%	17%	4%	23
2015-2016	4%	0%	0%	0%	12%	12%	4%	31%	31%	NF	NF	8%	26
Great Egret	7%	1%	0%	0%	3%	0%	1%	9%	18%	20%	16%	24%	245
2010-2011	11%	0%	0%	0%	0%	0%	0%	0%	32%	18%	14%	25%	44
2011-2012	0%	0%	0%	0%	0%	3%	NF	3%	17%	34%	NF	41%	29
2012-2013	0%	NF	0%	NF	11%	0%	NF	25%	14%	9%	16%	25%	64
2013-2014	21%	4%	2%	NF	NF	0%	0%	0%	7%	23%	35%	9%	57
2014-2015	0%	0%	0%	NF	NF	0%	14%	0%	0%	50%	18%	18%	22
2015-2016	0%	0%	0%	0%	0%	0%	0%	21%	41%	NF	NF	38%	29
Great White Heron	1%	0%	2%	5%	9%	15%	14%	20%	15%	9%	4%	5%	460
2010-2011	0%	0%	1%	12%	14%	13%	23%	16%	10%	5%	4%	3%	108
2011-2012	0%	0%	6%	2%	16%	18%	NF	29%	8%	10%	NF	12%	51
2012-2013	0%	NF	8%	NF	10%	12%	NF	27%	21%	13%	8%	3%	78
2013-2014	6%	0%	0%	NF	NF	22%	19%	19%	25%	7%	1%	0%	68
2014-2015	0%	0%	0%	NF	NF	19%	10%	17%	8%	27%	14%	5%	59
2015-2016	2%	0%	0%	7%	13%	10%	23%	18%	17%	NF	NF	10%	96
Roseate Spoonbill	0%	0%	0%	2%	7%	12%	29%	33%	12%	3%	0%	2%	58
2010-2011	0%	0%	0%	4%	16%	8%	48%	12%	8%	4%	0%	0%	25
2011-2012	0%	0%	0%	0%	0%	50%	NF	50%	0%	0%	NF	0%	6
2012-2013	0%	NF	0%	NF	0%	13%	NF	88%	0%	0%	0%	0%	8
2013-2014	0%	0%	0%	NF	NF	9%	27%	36%	18%	9%	0%	0%	11
2014-2015	0%	0%	0%	NF	NF	0%	0%	0%	0%	0%	0%	0%	0
2015-2016	0%	0%	0%	0%	0%	0%	25%	25%	38%	NF	NF	13%	8
White Ibis	44%	7%	0%	0%	0%	0%	0%	0%	0%	6%	3%	41%	376
2010-2011	21%	0%	0%	0%	0%	0%	0%	0%	0%	19%	10%	50%	110
2011-2012	10%	0%	0%	0%	0%	0%	NF	0%	0%	0%	NF	90%	31
2012-2013	27%	NF	0%	NF	0%	0%	NF	0%	0%	0%	0%	73%	67
2013-2014	73%	27%	0%	NF	NF	0%	0%	0%	0%	0%	0%	0%	82
2014-2015	62%	3%	0%	NF	NF	0%	0%	0%	0%	0%	0%	34%	61
2015-2016	88%	4%	0%	0%	0%	0%	0%	0%	0%	NF	NF	8%	25

Table 4. Photographed nests and observed bird data by year, location, and species. Bold numbers indicate totals (by year or location). Note: NF = No Flight and ND = No Data recorded.

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
2009																								
2009 (Totals; NF = No Flight)	69	229	571	678	736	243	310	NF	NF	NF	NF	NF	23	219	414	555	457			NF	NF	NF	NF	NF
Arsenicker Key (Totals)	22	34	169	75	118	60	72	NF	NF	NF	NF	NF		21	109	93	73			NF	NF	NF	NF	NF
Double-crested Cormorant	20	30	167	74	114	55	67							12	100	45	60							
Great Blue Heron			1																					
Great White Heron	2	4	1											9	3									
Magnificent Frigatebird															6	36	1							
Reddish Egret				1																				
Unidentified White Bird					4		5									12								
White Ibis						5											12							
Black Point (Totals)	1	1																						
Bald Eagle	1	1																						
Elliott Key (Totals)			1																					
Osprey			1																					
Jones Lagoon (Totals)	39	87	129	150	98	20	33	NF	NF	NF	NF	NF	17	86	86	106	75			NF	NF	NF	NF	NF
Double-crested Cormorant	31	78	126	149	97	20	33						12	40	80	100	75							
Great Blue Heron	2	1	1	1										1										
Great White Heron	3	8	2										2	9	6									
Magnificent Frigatebird														12		6								
Roseate Spoonbill	1												2	24										
Unidentified					1																			
Unidentified White Bird	2												1											
Mangrove Key (Totals)			53	148	217	7	25	NF	NF	NF	NF	NF			22	80	40			NF	NF	NF	NF	NF
Anhinga																								
Double-crested Cormorant			53	148	217	7	25								22	80	40							
Mangrove Point (Totals)	1		1												1	1								
Osprey	1		1												1	1								
Ragged Key 5 (Totals)		86	166	217	205	85	74	NF	NF	NF	NF	NF		71	125	200	150			NF	NF	NF	NF	NF
Brown Pelican														9										
Double-crested Cormorant		84	163	215	205	85	74							60	120	200	150							
Great Blue Heron				1																				
Great White Heron		1	3											1	5									
Little Blue Heron		1																						
Unidentified White Bird				1										1										
Sands Key (Totals)		1																						
Osprey		1																						

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Soldier Key (Totals)		14	29	76	90	68	103	NF	NF	NF	NF	NF		30	50	60	101			NF	NF	NF	NF	NF
Double-crested Cormorant		14	29	76	90	68	103							30	50	60	100							
Great White Heron																	1							
West Arsenicker (Totals)	6	6	23	12	8	3	3						6	11	21	15	18							
Bald Eagle	1	1	1										1	1	1	3								
Cattle Egret																	6							
Double-crested Cormorant					3		2																	
Great Blue Heron					1												2							
Great Egret	3	4	19	10	2	3							5	10			4							
Little Blue Heron																	1							
Snowy Egret																	1							
Tricolored Heron					1												2							
Turkey Vulture																	2							
Unidentified	2	1	3	2																				
Unidentified White Bird					1		1								20	12								
2010																								
2010 (Totals)	318	292	352	641	423	715	485	511	431	262	91	141	ND	ND	ND	ND	998	ND	ND	ND	ND	ND	ND	330
Arsenicker Key (Totals)	90	54	50	145	144	124	79	116	53	4	6	13					167							54
American White Pelican																								3
Brown Pelican																								2
Double-crested Cormorant	86	52	50	142	141	122	79	116	52			9					150							36
Great Blue Heron																	2							
Great Egret																								2
Great White Heron	4	2		1		2			1	2	6	4					2							6
Green Heron																	5							
Laridae family gull																								4
Magnificent Frigatebird																	6							
Reddish Egret					1																			
Tricolored Heron																	2							
Turkey Vulture																								1
Unidentified Dark Bird					1																			
Unidentified White Bird				2	1					2														
Black Point (Totals)		1	1																					
Bald Eagle		1	1																					
Jones Lagoon (Totals)	96	88	96	64	32	64	81	58	83	57	28	51	ND	ND	ND	ND	57	ND	ND	ND	ND	ND	ND	37
Brown Pelican																								1
Double-crested Cormorant	85	85	96	58	29	61	81	58	83	49	17	42					50							20
Great Blue Heron				2						1	1	3												1
Great White Heron	9			2	2	2				6	6	4					2							6

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Magnificent Frigatebird																								6
Roseate Spoonbill	2	1		1						1	4	2												2
Turkey Vulture																								1
Unidentified				1																				
Unidentified White Bird		2			1	1																		
White-crowned Pigeon																	5							
Mangrove Key (Totals)					1	93	27	37	17				ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND	2
Bald Eagle																								1
Double-crested Cormorant					1	93	27	37	17								150							
Turkey Vulture																								1
Old Rhodes Key (Totals)		1	1																					
Osprey		1	1																					
Ragged Key 5 (Totals)	103	86	131	257	190	300	172	183	206	156	35	58	ND	ND	ND	ND	203	ND	ND	ND	ND	ND	ND	131
Brown Pelican																								8
Double-crested Cormorant	103	84	130	255	190	299	172	183	206	154	35	56					200							100
Great Egret																								2
Great White Heron		2		2						2		2					3							3
Laridae family gull																								15
Snowy Egret																								1
Unidentified			1																					
Unidentified White Bird						1																		
White Ibis																								2
Sands Key (Totals)			1																					
Osprey			1																					
Soldier Key (Totals)	25	59	50	48	56	82	95	114	71	41	17	15	ND	ND	ND	ND	153	ND	ND	ND	ND	ND	ND	91
Double-crested Cormorant	25	59	49	48	56	82	95	114	71	41	17	14					150							70
Great Blue Heron			1														1							
Great White Heron																								2
Laridae family gull																								18
Turkey Vulture																								1
Unidentified White Bird																	2							
West Arsenicker (Totals)	4	3	22	127		52	31	3	1	4	5	4	ND	ND	ND	ND	268	ND	ND	ND	ND	ND	ND	15
Anhinga									1															
Bald Eagle		1	1	1																				
Brown Pelican																								1
Cattle Egret																	75							
Double-crested Cormorant							1	2																9
Great Blue Heron	2					1					1						2							1
Great Egret			21	19		7	5										5							2

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Great White Heron	2	2				1				3	3	4					10							2
Green Heron																	5							
Little Blue Heron						1	1										2							
Tricolored Heron				3		3	1	1									89							
Turkey Vulture																	20							
Unidentified						1																		
Unidentified Dark Bird				2																				
Unidentified White Bird				10		3				1	1													
White Ibis				92		35	23										50							
White-crowned Pigeon																	10							

2011

2011 (Totals)	314	316	845	790	774	695	438	757	477	185	255	336	549	422	616	137	475	516	147	409	182	212	377	335
Arsenic Key (Totals)	58	26	125	179	192	183	124	257	78	2	17	23	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	51	21	121	157	181	127	121	257	77	1	15	20	1		55	24	60	16	45	30	20	200	65	45
Great Blue Heron	1	2	1	1									1								1			
Great Egret												1						2	1	1				
Great White Heron	6	3	3			1			1		1		7	5	2			3			4	1	5	5
Magnificent Frigatebird																		4						
Reddish Egret																	1							
Turkey Vulture																		3		50				
Unidentified										1														1
Unidentified White Bird											1	2												
White Ibis				21	11	55	3									6	12	70	10	12				
Black Point (Totals)														4										
American White Pelican														4										
Jones Lagoon (Totals)	134	89	143	91	85	78	40	124	14	8	50	111	32	43	51	13	91	42	15	48	12	5	48	54
Anhinga																		2						
Brown Pelican																								1
Double-crested Cormorant	110	82	135	87	83	78	40	124	14	7	47	101	12	15	45	12	90	40	15	48	12		40	45
Great Blue Heron	1	1	1	2	2						1			1			1					1	1	1
Great White Heron	10	3	5							1	2	4	6	3	4	1						4	7	4
Roseate Spoonbill	12	3	2	1								3	14	24	2									3
Unidentified				1																				
Unidentified White Bird	1											3												
White Ibis																								
Mangrove Key (Totals)			2	42	69	115	32	46	44	2	9	5			1	24	36	4	14	10	6		1	6

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Brown Pelican																							1	
Double-crested Cormorant			2	42	69	115	32	46	44	2	8	5			1	24	36	4	12	10	6			6
Great Blue Heron																			1					
Great White Heron																			1					
Unidentified Dark Bird											1													
Ragged Key 5 (Totals)	34	135	415	309	275	198	138	188	237	120	158	154	292	204	251	36	100	67	7	112	41	4	114	94
Brown Pelican													40							1	4	12	24	
Double-crested Cormorant	29	133	413	309	275	198	138	188	237	120	157	151	250	200	250	36	100	67	6	110	40		100	65
Great Blue Heron	1																		1					
Great White Heron	4	2	2								1	3	2	4	1					2			2	4
Ring-billed Gull																								1
Soldier Key (Totals)	84	57	139	142	136	107	96	142	101	53	17	39	203	154	246	29	152	133	40	50	56		124	88
Brown Pelican																		1						
Cattle Egret															12									
Double-crested Cormorant	78	53	137	140	136	107	96	142	101	53	17	39	200	150	200	24	150	125	40	50	55		120	85
Great Blue Heron	1	1	1	1										2	2		1	1					1	1
Great White Heron	3	3	1	1									3	2	12	5	1	6			1		3	
Ring-billed Gull																								2
Unidentified	1																							
Unidentified White Bird	1																							
White Ibis															20									
West Arsenicker (Totals)	4	9	21	27	17	14	8		3		4	4	7	12	10	5	23	168	15	90	42	2	17	13
American White Pelican																								1
Anhinga																		3						
Bald Eagle			1	1												2							2	1
Black Vulture																				12				
Brown Pelican																								2
Cattle Egret							8												15					
Double-crested Cormorant				10								1					1	30		10	36			3
Great Blue Heron	1	3	4	2	3	1							1	3	2	1	2	1					3	1
Great Egret			14	8	6	11									6			5		6				
Great White Heron	2	6		4	4	2			2		4	2	6	9	2	2	20	2			5	2	12	5
Little Blue Heron																		30						
Tricolored Heron																		27		12				
Turkey Vulture																		5		50	1			
Unidentified	1			2	4				1															
Unidentified White Bird			2									1												
White Ibis																		15						
White-crowned Pigeon																		50						

	Photographed Nests												Observed Birds											
Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
2012																								
2012 (Totals)	NF	525	427	331	NF	574	663	NF	612	NF	303	202	NF	361	38	168	NF	455	351	NF	544	NF	426	479
Arsenicker Key (Totals)	NF	109	41	15	NF	210	118	NF	55	NF	16	45	NF	109	18	38	NF	107	88	NF	75	NF	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		108	37	10		179	100		52		15	44		70	12	30		45	60		60		34	180
Great Blue Heron														10	2									
Great Egret				1		1								2				5	1		4			
Great White Heron		1	2	2		2			3			1		5	4	5					2		6	8
Little Blue Heron			1															5						
Magnificent Frigatebird																					1			
Reddish Egret				1										3				1						
Turkey Vulture																		23	5					
Unidentified			1								1													
Unidentified White Bird				1																				2
White Ibis						28	18											28	20		5			1
Black Point (Totals)																								1
Osprey																								1
Jones Lagoon (Totals)	NF	60	25	18	NF	48	133	NF	64	NF	75	47	NF	51	6	30	NF	2	36	NF	25	NF	8	18
Anhinga																								2
Brown Pelican														1										
Double-crested Cormorant		43	23	16		47	133		63		72	33		32		26			35		23			4
Great Blue Heron		2	1	1										1	1	1						3	3	
Great Egret		1									1							1						
Great White Heron		8	1	1		1					2	4		8	5	1		1				5	6	
Little Blue Heron																			1		1			
Magnificent Frigatebird														1										
Roseate Spoonbill		3												8							1		3	
Unidentified																							1	
Unidentified White Bird		3							1															
White Ibis																2								
Mangrove Key (Totals)	NF				NF	26		NF	2	NF	1	1	NF	5		3	NF	3		NF	6	NF	7	4
Belted Kingfisher																							2	
Double-crested Cormorant						26			2		1	1		5		3		1			6		2	4
Great Blue Heron																							1	

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Great White Heron																								2
Unidentified White Bird																		2						
Ragged Key 5 (Totals)	NF	275	297	127	NF	141	310	NF	394	NF	154	66	NF	64	5		NF	149	80	NF	257	NF	151	80
Belted Kingfisher																					4			
Brown Pelican														14										55
Double-crested Cormorant		272	294	127		141	310		394		151	66		39				149	80		199		150	20
Great Blue Heron																					54	1		
Great Egret			1																					
Great White Heron		3									3			3	3									3
Laughing Gull														8										
Ring-billed Gull																								2
Unidentified White Bird			2													2								
Soldier Key (Totals)	NF	81	59	158	NF	122	102	NF	94	NF	44	39	NF	103	9	91	NF	84	121	NF	136	NF	213	173
Brown Pelican																		2						8
Double-crested Cormorant		78	58	157		120	102		94		40	37		90		90		81	120		130		200	160
Great Blue Heron			1								2	1		2							2	9	1	
Great Egret																					2			
Great White Heron		3		1		1						1		5	1				1		2	4	2	
Herring Gull																		1						
Laughing Gull														6										
Ring-billed Gull																								2
Unidentified						1					2													
Unidentified White Bird																								
West Arsenicker (Totals)	NF		5	13	NF	27		NF	3	NF	13	4	NF	29		6	NF	110	26	NF	45	NF	7	11
American White Pelican																								2
Bald Eagle												1												1
Brown Pelican														1										2
Cattle Egret																			1					
Double-crested Cormorant														14				1			5			2
Great Blue Heron						3								6		3								
Great Egret			4	9		11					6			4		1		2			8			
Great White Heron			1	1		2			3		3	3		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				3		11					4													
White Ibis																		2	6					

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
White-crowned Pigeon													7 6											
Yellow-crowned Night-Heron													1											
2013																								
2013 (Totals)	NF	628	667	444	443	500	770	534	406	NF	NF	249	NF	339	529	711	536	515	629	572	340	NF	NF	384
Arsenicker Key (Totals)		91	49	16	22	159	239	187	81			16		30	40	87	124	93	64	142	75			63
Anhinga																			1	1				
Brown Pelican														5										7
Double-crested Cormorant		89	46	14	21	107	175	160	80			13		1	30	80	120	60	7	100	36			50
Great Blue Heron														2		1	1		1					
Great Egret									1					16		4			2					
Great White Heron		2	1		1	1	1					2		6			1	2	2		3			6
Little Blue Heron						1														1				
Tricolored Heron																2	2							
Turkey Vulture			1												4				4					
Unidentified			1			1		4				1							5					
Unidentified Dark Bird				1			1	1																
Unidentified White Bird				1			2								6									
White Ibis						49	60	22										30	42	40	36			
White-crowned Pigeon																		1						
Elliott Key (Totals)															43	98								
Brown Pelican																14								
Double-crested Cormorant															30	80								
Great Blue Heron															3									
Little Blue Heron															8									
Osprey																4								
Tricolored Heron															2									
Jones Lagoon (Totals)	NF	35	78	70	84	49	44	56	38	NF	NF	17	NF	79	53	73	108	92	75	53	24	NF	NF	28
Anhinga					2													1						
Brown Pelican																1								2
Double-crested Cormorant		13	72	63	72	47	40	56	38			4		60	30	58	100	90	72	50	24			2
Great Blue Heron		3	1	1	5	2									1	2	2	1		1				3
Great Egret																4								
Great White Heron		7	4	5	3		2					6		10	1	4	6		2	2				5
Little Blue Heron														1										
Roseate Spoonbill		7										1		8	15	4			1					6
Tricolored Heron							1																	

	Photographed Nests												Observed Birds											
Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Unidentified		3	1									2												
Unidentified White Bird		2		1	2		1					4			6									
White Ibis																								10
Mangrove Key (Totals)															1	1	1	13	26	2	4			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)	NF	356	394	214	165	181	347	194	227	NF	NF	136	NF	118	171	225	153	110	184	150	61	NF	NF	127
Anhinga																			1					
Brown Pelican														6			3							20
Double-crested Cormorant		350	385	211	165	180	347	194	227			131		100	170	220	150	110	182	150	60			100
Great Blue Heron				1																				
Great Egret																2								
Great White Heron		6	7	2								5		10	1	3			1		1			6
Laridae family gull														1										
Royal Tern																								1
Unidentified			1																					
Unidentified White Bird			1			1								1										
Soldier Key (Totals)	NF	121	122	132	158	88	124	94	60	NF	NF	78		82	168	205	121	102	190	184	110	NF	NF	155
Brown Pelican														5				1						2
Double-crested Cormorant		119	120	129	156	87	122	92	60			74		65	160	203	120	100	180	180	100			150
Great Blue Heron		1	1		2									5		1								1
Great Egret			1				1												1					
Great White Heron		1		2		1	1					1		6	8	1	1	2	6	1	3			2
Laridae family gull																			2					
Laughing Gull														1						3	6			
Royal Tern																					1			
Unidentified				1				2				3												
West Arsenicker (Totals)	NF	25	24	12	14	23	16	3		NF	NF	2	NF	30	53	22	29	105	90	41	66	NF	NF	6
Anhinga						2													1	1	1			1
Bald Eagle			1												1				1					
Black-crowned Night-Heron																				2	3			
Brown Pelican														4							3			

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Double-crested Cormorant							1							20	7	6	4		20					4
Great Blue Heron		1	4	3											3	3	2		3					
Great Egret		16	8	6	10	16	11	2						6	10	7	12	25	4		6			
Great White Heron		5	4	1	2							1			5			4	4	4	1			1
Little Blue Heron																2				12				
Snowy Egret							1												21					
Tricolored Heron															22	4	10	40	17	20	25			
Turkey Vulture																		6	5	2	12			
Unidentified		1	3	1	1	1	2					1												
Unidentified White Bird		2	4	1	1	4	1	1							5			30			15			
White Ibis																			12					
White-crowned Pigeon																	1		2					
2014																								
2014 (Totals)	534	546	933	1254	261	504	671	652	371	NF	NF	246	584	343	782	417	537	364	1117	605	782	NF	NF	889
Arsenicker Key (Totals)	8	6	15	46	43	89	161	115	34			1	192	39	30	105	37	43	286	55	254			176
American White Pelican													4											2
Anhinga						1									3				2		1			
Bald Eagle																				1				
Brown Pelican													9											4
Double-crested Cormorant	6	3	11	41	41	87	123	113	32				175	36	15	50	35	10	202	39	250			160
Great Blue Heron																		2	1	1				
Great Egret			2			1										2		2	1					
Great White Heron	2	3	2	2								1	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				1	2				2															
Unidentified White Bird				2																				
White Ibis							38	2										15	33	7	1			
Jones Lagoon (Totals)	33	36	104	128	30	29	100	75	45	NF	NF	22	22	36	51	35	55	23	114	47	24	NF	NF	57
Anhinga																	1				1			
Brown Pelican																				1				
Double-crested Cormorant	24	23	85	113	28	23	100	75	45			14	12	24	30	11		20	112	42	22			50
Great Blue Heron		2	5	4		1						2			2	2			2					3
Great Egret																5								

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Great White Heron	5	6	7	3	1							5	6	4	4	2	4	1			1			4
Magnificent Frigatebird														1		14	50							
Roseate Spoonbill	3	4	2	1									4	7	15	1								
Unidentified			4	6	1	5						1												
Unidentified Dark Bird		1																						
Unidentified White Bird	1		1	1																				
White Ibis																				4				
White-crowned Pigeon																		2						
Mangrove Key (Totals)								9	6	NF	NF	2		3			2	3	13	3	7	NF	NF	17
American White Pelican																								1
Brown Pelican														3										6
Cattle Egret																			2	1				
Double-crested Cormorant								9	6			1					2	2	10	2	6			7
Great White Heron																			1		1			2
Laridae family gull																								1
Unidentified												1												
White-crowned Pigeon																		1						
Ragged Key 5 (Totals)	371	340	532	709	84	295	267	292	194	NF	NF	111	210	109	250	132	120	84	336	212	164	NF	NF	264
Anhinga									1															
Belted Kingfisher																					1			
Brown Pelican													2	4	5									9
Double-crested Cormorant	366	337	527	706	83	292	267	292	193			109	200	100	220	130	120	83	333	210	162			245
Great Blue Heron																								1
Great Egret				1											23									1
Great White Heron	5	3	5									2	2	5	2	2		1	2	1	1			2
Laridae family gull																				1				5
Little Blue Heron																								1
Ring-billed Gull													6											
Unidentified					1	2																		
Unidentified Dark Bird				1		1																		
Unidentified White Bird				1																				
Yellow-crowned Night-Heron																			1					
Soldier Key (Totals)	121	160	272	342	82	83	139	161	92	NF	NF	108	157	150	351	131	316	134	333	280	322	NF	NF	359
Brown Pelican													2			3								14
Double-crested Cormorant	116	159	267	342	82	83	139	160	92			106	150	150	340	125	315	130	330	278	282			325
Great Blue Heron		1	1										1		4			1		18			2	
Great Egret																			1					
Great White Heron			2									2			4	3	1	3	2	2	4			1
Laridae family gull															2									16

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Osprey																								1
Red-winged Blackbird															1									
Ring-billed Gull													2											
Snowy Egret																				18				
Turkey Vulture													2											
Unidentified	4		2																					
Unidentified Dark Bird	1							1																
West Arsenicker (Totals)	1	4	10	29	22	8	4			NF	NF	2	3	6	100	14	7	77	35	8	11	NF	NF	16
Anhinga																1			4		2			
Bald Eagle		1	1		1							1		1										2
Brown Pelican																			1		2			
Double-crested Cormorant				1											23			4	5	7	6			12
Great Blue Heron		2	5										2	3	7	1		3						
Great Egret			2	12	20	4									25	4		20	5					
Great White Heron	1	1	1									1	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				9		3	2																	
Unidentified Dark Bird							1										2							
Unidentified White Bird			1	7	1	1	1																	
White Ibis															10	2			2					
White-crowned Pigeon																			4					
2015																								
2015 (Totals)	497	269	304	243	666	791	843	561	246	67	178	559	515	559	601	449	601	530	532	584	412	487	345	333
Arsenicker Key (Totals)	1	10	5	26	58	159	133	47	13	6	1	0	41	40	28	70	154	62	97	117	92	121	52	84
American White Pelican													14											
Anhinga																		2	1	1	1	1		
Belted Kingfisher																						1		
Black Vulture																					4			
Brown Pelican													6								1	2		
Double-crested Cormorant				23	55	134	111	46	13	5			21	30	20	60	60	50	90	60	80	100	40	80
Great Blue Heron																								1
Great Egret	1																							
Great White Heron		4	1	2	2	1				1	1			7	4	4	4	2	1			7	6	3
Laridae family gull														2										
Magnificent Frigatebird																6	72			48			6	
Reddish Egret		1	1			1											1	2						

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Tricolored Heron																	1							
Turkey Vulture														1	4							10		
Unidentified		5			1	2																		
Unidentified White Bird			3	1			1																	
White Ibis						21	21	1									15	2	5	8	6			
White-crowned Pigeon																	1							
Yellow-crowned Night-Heron																		1						
Small White Heron																		3						
Small Dark Heron															2									
Elliott Key (Totals)		1																						
Osprey		1																						
Jones Lagoon (Totals)	30	11	5	22	78	63	102	65	27	5	7	21	9	20	10	43	75	65	41	40	54	24	15	19
Anhinga																2	1		1			1		
Brown Pelican													2											
Cattle Egret																					2			
Double-crested Cormorant	22	8	0	4	73	60	100	65	27	1		14	2	15	2	30	70	60	40	40	50	7	10	1
Great Blue Heron	3	1		10	2	1	1				3	1	2	1	3	4	1					1	1	3
Great Egret	2																							
Great White Heron		2	3	6	2		1			3	4	6	1	4	5	5	2	4				5	4	12
Little Blue Heron				1																			3	
Roseate Spoonbill													2			2								
Small White Heron																						10		
Snowy Egret																					2			
Unidentified	2																							
Unidentified White Bird	1		2	1	1	2				1														
White Ibis																		1						
White-crowned Pigeon																	1							
Mangrove Key (Totals)					6	7	21	7					19	1			3	6	21	8	6	6	4	1
American White Pelican													18											
Anhinga																							1	
Brown Pelican													1										2	
Double-crested Cormorant					6	7	21	7									3	6	20	8	6	6		
Great Egret																			1					
Great White Heron														1									1	1
Ragged Key 5 (Totals)	303	196	231	114	323	329	385	307	100	3	91	372	143	227	257	151	142	134	161	181	63	91	121	95
Black Vulture													1											
Brown Pelican													16	40								1	30	8
Double-crested Cormorant	301	193	230	112	322	328	385	307	100	1	87	370	100	175	250	150	140	130	150	180	60	85	80	80

Month		Photographed Nests												Observed Birds											
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Soldier Key (Totals)	Great Blue Heron														1										
	Great Egret																							1	
	Great White Heron	1	2		2	1	1				2	4	2	6	7	5	1	2	4	11		1	4	6	5
	Laridae family gull														5										
	Laughing Gull																			1				1	
	Osprey																						2		
	Peregrine Falcon																			1					
	Ring-billed Gull																						3		
	Small Dark Heron															1									
	Turkey Vulture													20											
	Unidentified		1																						
	Unidentified White Bird	1			1																				
	White-crowned Pigeon																					1	1		
	Soldier Key (Totals)	161	49	58	58	191	224	202	135	106	53	79	164	288	261	287	159	131	205	204	234	192	219	148	125
	West Arsenicker (Totals)	Black-crowned Night Heron																					1		
Brown Pelican														5	4				1			19	12	20	20
Cattle Egret					1												1								
Double-crested Cormorant		157	48	55	51	188	221	201	135	106	52	76	162	260	250	280	150	120	200	200	220	150	200	120	100
Great Blue Heron					1											2	1				1	18			
Great Egret														3											
Great White Heron		4	1		5	3	1	1			1	3	1		7	5	7	10	4	4	1	2	6	2	3
Laughing Gull																					12	3			
Osprey																	1								
Ring-billed Gull																							6	2	
Unidentified																									
Unidentified White Bird				3																					
Turkey Vulture																									
West Arsenicker (Totals)		2	2	5	23	10	9						2	15	10	19	26	96	58	8	4	5	26	5	9
Soldier Key (Totals)		Anhinga																1			1		1	1	
	Bald Eagle		1	1	1									1	1	1	3							1	
	Brown Pelican													2		1							3		
	Double-crested Cormorant													5		1					4	8			
	Great Blue Heron				1	2						1			1	2	3	1	1	1				2	
	Great Egret				11	4	4							3		15	6	5							
	Great White Heron	1	1	1	1								1		6	10		4				1	1	6	
	Little Blue Heron																1	12			3				
	Red-bellied Woodpecker																						1		
	Small Dark Heron															3									
	Small White Heron																						12		

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Snowy Egret				2	1																			
Tricolored Heron					1											4	60	50						
Turkey Vulture													3	2					1			3		
Unidentified																								
Unidentified White Bird	1		3	7	2	4																		
White-crowned Pigeon																	6	2	2	1				
White Ibis																1	6		3					
2016 (January-June)																								
2016 (Totals)	724	464	492	NF	NF	739							345	477	572	NF	NF	587						
Arsenicker Key (Totals)	3	14	94			144							105	23	40			90						
Anhinga														1										
American White Pelican													1											
Brown Pelican													8											
Double-crested Cormorant		11	93			141							80	12	36			60						
Great Blue Heron																		1						
Great Egret																								
Great White Heron	3	3	1			3								5	3			4						
Laridae family gull													5											
Magnificent Frigate Bird														4				25						
Osprey														1										
Reddish Egret															1									
Turkey Vulture													3											
Unidentified White Bird													8											
Jones Lagoon (Totals)	49	79	86	NF	NF	22							31	33	39	NF	NF	32						
Double-crested Cormorant	34	60	58			17							10	20	24			20						
Great Blue Heron	1	7	8										4	3	2									
Great White Heron	9	9	13			3							10	6	3			6						
Roseate Spoonbill	2	2	3			1							6	4	10			6						
Snowy Egret													1											
Unidentified			1			1																		
Unidentified Dark Bird			1																					
Unidentified White Bird	2	1	1																					
Wurdemann's Heron	1		1																					
Mangrove Key (Totals)						20							9					7						
Black Vulture													1											
Double-crested Cormorants						18												5						
Great White Heron						1												1						
Laridae family gull													8											
Unidentified Dark Bird						1																		

Month	Photographed Nests												Observed Birds											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
White-crowned Pigeon																		1						
Ragged Key 5 (Totals)	492	320	260	NF	NF	318							91	154	202	NF	NF	152						
Brown Pelican													20											
Double-crested Cormorants	489	316	259			317							50	150	200			150						
Great White Heron	3	4	1			1							6	2	2			2						
Laridae family gull													15											
Ring-billed Gull														2										
Soldier Key (Totals)	176	44	38	NF	NF	214							102	213	269	NF	NF	206						
Brown Pelican													15	6	13			1						
Double-crested Cormorant	173	42	37			214							70	200	250			200						
Great Blue Heron		1											1	1				3						
Great White Heron	3	1	1										6	2	6			2						
Laughing Gull														3										
Laridae family gull													10											
Ring-billed gull														1										
Unidentified White Bird			1																					
West Arsenicker (Totals)	4	7	14	NF	NF	21							7	54	22	NF	NF	100						
Bald Eagle													2											
Black-crowned Night Heron															1									
Double-crested Cormorants													1	5										
Great Blue Heron						2							1	2	2									
Great Egret		6	12			11								10	13			12						
Great White Heron	4					2							3					2						
Small Dark Heron																		20						
Small White Heron														13				30						
Tricolored Heron														24	5			30						
Unidentified White Bird		1	2			4																		
White Ibis						2									1			6						

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	2015-2016	8		1		8	100%		13%	
WHIB	2010-2011	109	14	6	1	110	99%	13%	5%	1%
WHIB	2011-2012	31	1	1		31	100%	3%	3%	
WHIB	2012-2013	67		5		67	100%		7%	
WHIB	2013-2014	82	11	6		82	100%	13%	7%	
WHIB	2014-2015	61	1	8		61	100%	2%	13%	
WHIB	2015-2016	24	2	3	1	25	96%	8%	12%	4%

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

NPS XXXXXX, Month Year

National Park Service
U.S. Department of the Interior



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