Appendix 5B-2: Summary of STA Black-necked Stilts and Other Protected Birds during the 2014 Nesting Season

Brian Garrett

The South Florida Water Management District (SFWMD or District), in cooperation with the United States Fish and Wildlife Service (USFWS), finalized an Avian Protection Plan (APP) in 2008 for the Everglades Stormwater Treatment Areas (STAs) and their expansions, which focused on black-necked stilts (*Himantopus mexicanus*) and Florida burrowing owls (*Athene cunicularia floridana*) (Pandion Systems, 2008). These two species are afforded protected status under the Migratory Bird Treaty Act of 1918. Additional protected status has been given to the burrowing owl, as they are also listed as a species of special concern in the state of Florida. Black-necked stilts and Florida burrowing owls are used as sentinel species for the APP. This means that by addressing these two species, negative impacts to other protected migratory bird species should also be minimized within the Everglades STAs. The APP characterizes the risks to ground-nesting migratory bird species from STA construction, operation, start-up, drought conditions, routine maintenance and enhancement activities, and outlines actions intended to minimize harmful impacts to migratory birds and their nests due to these potential disturbances. The APP is unconventional in that it has been developed to help manage the operation of constructed treatment wetlands, i.e., the STAs, which already provide important habitat, nesting, and foraging benefits to migratory birds as compared to the previous agricultural land use (Gawlik and Beck, 2010). The protective measures outlined in the APP were implemented between April and July 2014. The APP survey results from calendar year 2014 (CY2014) are presented in this appendix.

Everglade snail kites (*Rostrhamus sociabilis*) were observed nesting within STA-5 Cell 1A and Cell 2A in April 2010 (Kitchens, 2010). This was the first documented nesting of this federally and state-listed endangered avian species in any of the STAs operated by the District. Since that time, the University of Florida (UF) Snail Kite Lab has conducted snail kite nesting surveys in the STAs during this species' nesting season. When snail kite nests are observed, the UF Snail Kite Lab examines the nests and reports their findings to the District and USFWS. From 2010 to 2013, there were 76 snail kite nesting attempts observed within the Everglades STAs.

During CY2014, the UF Snail Kite Lab conducted snail kite nesting surveys within the Everglades STAs between mid-January and mid-October. There were 113 snail kite nests that were established in STA-1E Cell 4N (three nests; **Figure 1**) and STA-5 Cells 5-2A (1 nest; **Figure 2**), 5-3A (1 nest; **Figure 2**), 5-3B (72 nests; **Figure 2**), 5-4A (3 nests; **Figure 2**), 5-5A (8 nests, **Figure 2**), and 5-5B (25 nests; **Figure 2**). Everglade snail kite nesting activities for the 2014 nesting season in the STAs, based on surveys conducted by UF, are summarized in this appendix.

Figure 1. Locations of the three Everglade snail kite nests in STA-1E Cell 4N from March 9–May 21, 2014. [Note: Diamonds represent snail kite nests and squares represent water control structures.]

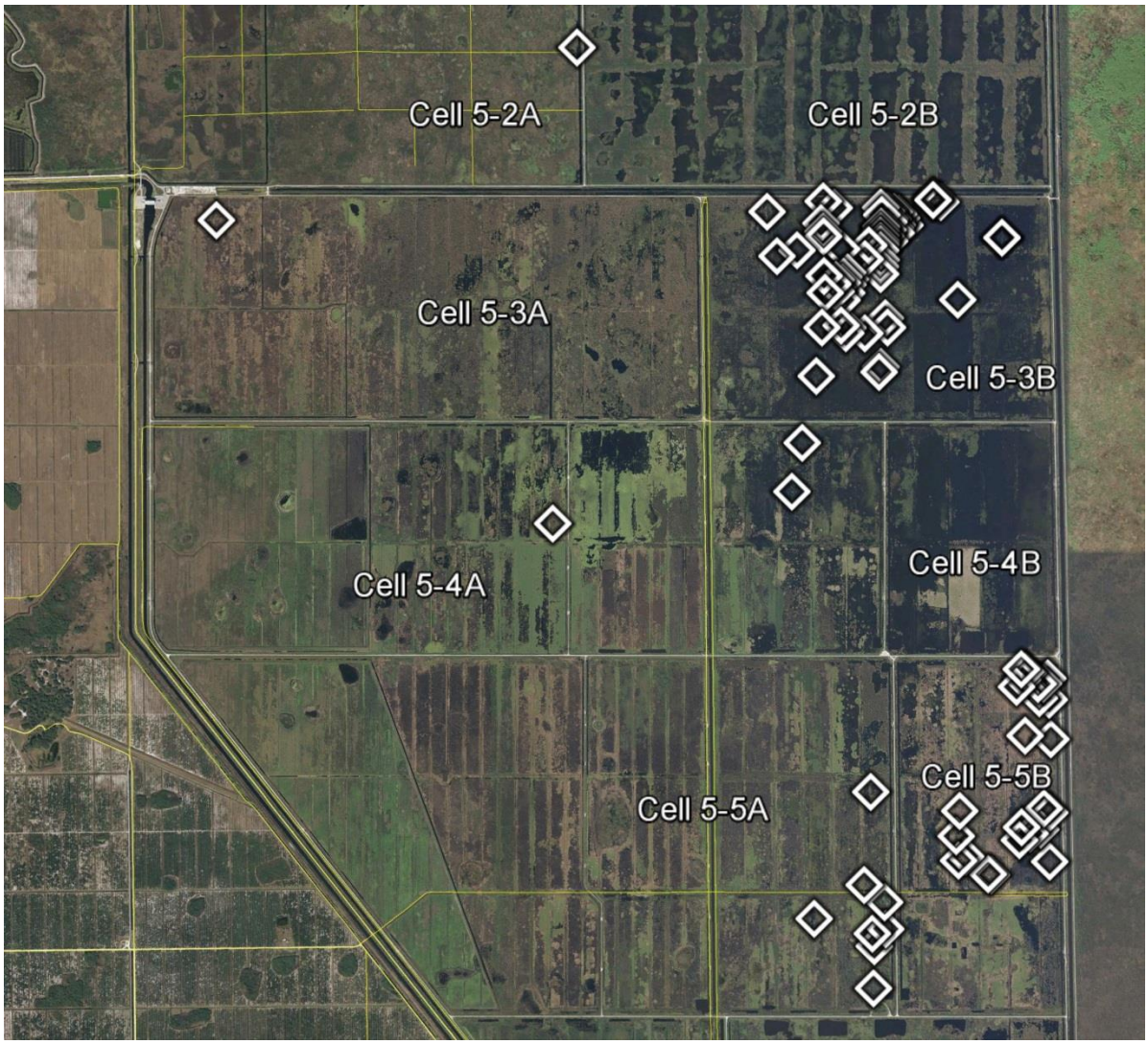

Figure 2. Locations of the 110 Everglade snail kite nests in STA-5/6 Cells 5-2A, 5-3A, 5-3B, 5-4A, 5-5A and 5-5B from February 15–October 24, 2014. [Note: Diamonds represent snail kite nests.]

BURROWING OWLS

No burrowing owl nests were observed within the confines of any of the Everglades STAs during the CY2014 surveys.

BLACK-NECKED STILTS

Standardized surveys were conducted according to the APP. Close coordination among scientists, water operators, field stations, and USFWS biologists was maintained throughout the black-necked stilt nesting season. Operational procedures related to water flow and levee and canal maintenance were implemented accordingly to reduce impacts to ground-nesting birds within the STAs. Although the abundance of stilt chicks was not measured, several dozen black-necked stilt chicks were observed foraging near adult birds in several STAs during May, June, and July 2014.

Consistent with the APP, black-necked stilts were the focus of the surveys, as they are considered to be an abundant and conservative indicator species for ground-nesting birds in the STAs. Black-necked stilts nest directly on the ground, often close to the water's edge, or they construct nests that emerge about three to five inches above shallow water. Nest sites are vulnerable to increases in water levels, more than other ground-nesting species that select sites farther upslope or in standing vegetation.

During the 2014 nesting season, 122 black-necked stilt nests were observed in the STAs (**Table 1**). This was the third lowest number of stilt nests observed during a nesting season in the STAs since the APP has been implemented. There were two hydrologic events that occurred in most STA cells, which likely contributed to the low number of stilt nests observed during 2014: (1) prior to the start of the stilt nesting season, water managers were able to keep many STA cells hydrated by managing available water sources, and (2) the rainy season began in mid-May, when the number of stilt nests is usually peaking. These two events helped to keep many of these cells inundated to a level at which few black-neck stilts were able find shallow water or exposed ground to establish nests within the STAs. In addition to these hydrologic conditions, the coverage of emergent plants in many cells has increased as the STA marshes have matured and STA managers have planted large areas of the marsh with emergent vegetation. Increased emergent vegetation coverage and the decrease in shallow open-water areas that are the preferred nesting locations for black-necked stilts and other ground-nesting migratory birds have resulted in less overall available nesting habitat. Once the rainy season began, the District was able to manage water levels and, to the greatest extent possible, minimize the flooding of locations where nests were present.

Table 1. Summary of black-necked stilts nesting in the STAs from 2006–2014.

Year	STA-1E	STA-1W	STA-2	STA-3/4	STA-5/6	Total Nests
2006	186	49	0	5	122	362
2007	102	236	74	55	147	614
2008	69	26	16	7	73	191
2009	102	360	237	69	105	873
2010	150	19	29	15	14	227
2011	42	105	39	142	11	339
2012	9	5	0	4	15	33
2013	23	13	12	4	45	97
2014	0	16	32	1	73	122

Sources: Pietro et al. (2010); Germain & Pietro (2011); Ivanoff et al. (2012, 2013); Chimney (2014).

Black-necked stilt nest surveys of treatment cells were performed from the levees (levee surveys) by experienced and trained District staff. Levee surveys represent a resourceful way to observe a large area and obtain useful information regarding the relative number of nests within a treatment cell. Three different types of levee surveys were implemented based on the type of information needed to make operational decisions:

1. Monthly – This survey type was performed once a month from the beginning of the breeding season. All treatment cells were surveyed to provide baseline nesting information and the basis for operational decisions throughout the season.
2. Supplementary – This survey type was performed on an as needed basis depending on nesting and water conditions. This type of survey was performed during periods between monthly surveys. Selected treatment cells were surveyed to provide information needed to make operational decisions.
3. Spot-check – This survey type was performed on an as-needed basis, depending on nesting and water conditions. Inspections were done on specific nest locations previously recorded.

Levee surveys were conducted using binoculars [16 x 50 millimeter (mm)] or a spotting scope (20-60 x 80 mm). A hand-held global positioning system (GPS) unit provided latitude and longitude of the observer location on the levee where nests were detected inside a treatment cell. Distance from the observer to the nest(s) was measured with a rangefinder (6 X 216.0°). Information including coordinates of observer, number and distance of nests, observations, and observer initials were recorded in the field on survey sheets. After each survey was completed, summarized data were analyzed and incorporated into reports. Reports were standardized for all STAs and used to inform District staff of the location of black-necked stilt nests and number of nests by treatment cell. Reports regarding black-necked stilt nest activity and locations, and the resulting activity restrictions within the STAs, were distributed by e-mail to both District and USFWS staff.

MODIFICATION OF OPERATIONAL PROCEDURES AND LEVEE AND CANAL MAINTENANCE

Adjustments to STA operations and maintenance procedures were developed in accordance with the APP to reduce impacts to ground-nesting birds within the STAs. Where possible, flow was routed to areas that did not have nests. Schedules for grass mowing and road grading for levee and canal maintenance were adjusted at locations where nesting was observed to times outside of the black-necked stilt nesting season. Additionally, bean-bag markers were placed along roadways to mark nests that could potentially be impacted by vehicle traffic.

While grass mowing schedules within the STAs were modified based on the black-necked stilts' nesting season, these changes also benefited other protected ground-nesting migratory bird species including killdeer (*Charadruis vociferous)*, common nighthawks (*Chordeiles minor*), and least terns (*Sternula antillarum*). Several dozen protected ground-nesting birds were observed nesting on STA levee roads and staging areas between March and July 2014. Black-necked stilts, killdeers, common nighthawks, and least terns have similar incubation periods ranging between 18 to 25 days (Robinson et al., 1999; Jackson and Jackson, 2000; Thompson et al., 1997; Poulin et al., 1996). While black-necked stilts and killdeer have normally completed their nesting activities in the Everglades STAs by early July, common nighthawks and least terns can nest into mid-August. Modifications to operations and maintenance within the STAs during Water Year 2014 (WY2014) (May 1, 2013–April 30, 2014) are shown in **Table 2**.

Table 2. Modified operations, levee, and canal maintenance activities implemented during WY2014 due to migratory bird nesting.

STA	Type of Action	Date Implemented	Impact Reduction of Ground Nesters Description of Action
All	Operational	Throughout Breeding Season	Utilized flow-ways that were not impacted with black-necked stilt nests to reduce phosphorus in stormwater runoff.
All	Maintenance	Throughout Breeding Season	Modified mowing and grading schedule to reduce impacts to ground nesters and young on levee roads and embankments.

WY14 Operational Changes to Individual STAs Due to Nesting

STA	Cell	Affected Time Period	# of Nests	Species	Adjustment to Operations
1E	4N	May 1 to November 7, 2013	18	Everglade Snail Kite	Stages in Cell 4N were operated between 16.4 feet and 15.1 feet between May 1 and June 28. Stages in Cell 4N were operated between 16.7 feet and 15.1 feet between June 28 and Aug. 5. Stages in Cell 4N were operated between 16.4 feet and 15.1 feet between Aug. 5 and Sept. 25. Stages in Cell 4N were operated between 16.7 feet and 15.1 feet between Sept. 25 and Oct. 23. On Oct. 23 stage guidance was lifted. Limited access to Cell 4N and 4S for all O&M activities from May 1 to Nov. 7.
1E	EDC	May 10 to May 17, 2013	1	Black-necked Stilt	Guidance was given to keep stages under 17.60 feet in this cell during this period.
1E	5	May 17 to June 3, 2013	1	Black-necked Stilt	Guidance was given to keep stages under 15.20 feet in this cell during this period.
1E	2	June 26 to July 23, 2013	21	Black-necked Stilt	No impact to operations since this cell was offline during nesting.
1E	4N	March 5 to April 30, 2014	3	Everglade Snail Kite	Stages in Cell 4N were operated between 16.4 feet and 15.1 feet between Mar. 5 and Apr. 23. Limited access to Cell 4N and 4S for all O&M activities from Mar 5 to Apr. 30.
1W	2B	May 10 to June 17, 2013	4	Black-necked Stilt	Guidance was given to keep stages under 11.00 feet in this cell during this period.
1W	4	May 10 to June 17, 2013	9	Black-necked Stilt	Guidance was given to keep stages under 11.00 feet in this cell during this period.
1W	5B	April 30 to April 30, 2014	4	Black-necked Stilt	Guidance was given to keep stages under 10.00 feet in this cell during this period.
2	3	May 14 to June 10, 2013	7	Black-necked Stilt	Guidance was given to keep stages under 10.90 feet in this cell during this period.
2	5	May 14 to June 10, 2013	4	Black-necked Stilt	Guidance was given to keep stages under 10.70 feet in this cell during this period.
2	6	May 14 to June 10, 2013	1	Black-necked Stilt	Guidance was given to keep stages under 10.70 feet in this cell during this period.
3/4	PSTA	May 1 to May 15, 2013	1	Black-necked Stilt	Guidance was given to keep stages under 10.50 feet in this cell during this period.
3/4	2A	May 15 to June , 2013	2	Black-necked Stilt	Guidance was given to keep stages under 10.20 feet in this cell during this period.
3/4	3B	May 15 to May 21, 2013	1	Black-necked Stilt	Guidance was given to keep stages under 11.10 feet in this cell during this period.
3/4	3B	May 21 to June 17, 2014	1	Black-necked Stilt	Guidance was given to keep stages under 10.90 feet in this cell during this period.
5/6	5-1B	May 1 to June 14, 2013	9	Black-necked Stilt	Guidance was given to keep stages under 12.50 feet in this cell during this period.
5/6	5-2B	May 1 to June 14, 2013	7	Black-necked Stilt	Guidance was given to keep stages under 12.30 feet in this cell during this period.
5/6	5-3B	May 1 to July 3, 2013	13	Black-necked Stilt	Guidance was given to keep stages under 13.60 feet in this cell during this period.
5/6	5-5B	May 1 to May 24, 2013	1	Black-necked Stilt	Guidance was given to keep stages under 13.60 feet in this cell during this period.

Table 2. Continued.

WY14 Operational Changes to Individual STAs Due to Nesting					
STA	**Cell**	**Affected Time Period**	**# of Nests**	**Species**	**Adjustment to Operations**
5/6	5-3B	May 8 to Oct 15, 2013	22	Everglade Snail Kite	Stages in Cell 5-3B were operated between 13.6 feet and 13.4 feet between May 8 and July 3. Stages in Cell 5-3B were operated between 14.0 feet and 13.4 feet between July 3 and July 8. Stages in Cell 5-3B were operated between 14.4 feet and 13.4 feet between July 8 and Sept. 21. Stages in Cell 5-3B were operated between 14.7 feet and 13.4 feet between Sept. 21 and Oct. 1. On Oct. 1 stage guidance was lifted. Limited access to Cell 5-3B for all O&M activities from May 8 to Oct. 15.
5/6	5-4A	May 15 to June 14, 2013	3	Black-necked Stilt	Guidance was given to keep stages under 13.30 feet in this cell during this period.
5/6	5-4B	May 15 to July 3, 2013	12	Black-necked Stilt	Guidance was given to keep stages under 13.20 feet in this cell during this period; however.
5/6	5-3B	Feb 15 to April 30, 2014	9	Everglade Snail Kite	Cell 5-3B was operated with a minimum stage 13.4 feet between Feb. 15 and Mar. 5. There was no maximum stage during this period. Stages in Cell 5-3B were operated between 14.4 feet and 13.4 feet between Mar. 5 and Mar. 31. Stages in Cell 5-3B were operated between 14.7 feet and 13.4 feet between Mar. 31 and April 18. Stages in Cell 5-3B were operated between 14.4 feet and 13.4 feet between April 18 and April 30. Limited access to Cell 5-3B for all O&M activities from Feb. 15 to April 30.
5/6	5-2A	Mar. 9 to April 30, 2014	1	Everglade Snail Kite	Cell 5-2A was operated with a minimum stage 14.3 feet between Mar. 9 and April 30. There was no maximum stage during this period. Limited access to Cell 5-2A for all O&M activities during this period. Greatly limited access to G-343G structure during this period.
5/6	5-4A	Mar. 23 to April 30, 2014	1	Everglade Snail Kite	Stages in Cell 5-4A were directed operated between 16.4 feet and 14.4 feet between Mar. 23 and April 30, but no water was available. Limited access to Cell 5-4A for all O&M activities during this period.
5/6	5-4B	April 25 to April 30, 2014	10	Black-necked Stilt	Guidance was given to keep stages under 13.20 feet in this cell during this period.
5/6	6-4	April 25 to April 30, 2014	1	Black-necked Stilt	Guidance was given to keep stages under 12.80 feet in this cell during this period.
5/6	5-3B	April 28 to April 30, 2014	1	Black-necked Stilt	Stage guidance was based on nesting snail kites in this cell during this period.
5/6	5-4A	April 28 to April 30, 2014	4	Black-necked Stilt	Stage guidance was based on nesting snail kites in this cell during this period.

Table 2. Continued.

WY14 Maintenance Changes to Individual STAs Due to Nesting				
Location	**Affected Time Period**	**# of Nests**	**Species**	**Adjustment to Operations**
STA-1E at the rock stockpiles on the eastern north levee	May 1 to June 24, 2013	~20-30	Least Tern	Tern nesting became wide spread and activities near the stockpiles ceased. These rock stockpiles are used to repair washouts on STA levee roads.
STA-1E at southern portion of Cell 4N and the northern portion of Cell 4S	May 1 to November 7, 2013	18	Everglade Snail Kite	Access was restricted in an approximate 300 acre area in the southern half of Cell 4N and vegetation treatments were limited in the approximate 300 acre northern half of Cell 4S since this was the area snail kites were primarily foraging.
STA-1E on the northern Levee of the EDC	May 10, 2013 to early-June, 2013	1	Killdeer	Ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in early-June 2013.
STA-1E on alternate northern levee road on the north side of the EDC	June 26, 2013 to mid-July, 2013	1	Killdeer	Ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in mid-July 2013.
STA-1E Southern portion of Cell 4N and the northern portion of Cell 4S	March 5 to April 30, 2014	3	Everglade Snail Kite	Access was restricted in an approximate 60 acre area in the southern half of Cell 4N and vegetation treatments were limited in the approximate 300 acre northern half of Cell 4S since this was the area snail kites were primarily foraging.
STA-1E at the rock stockpiles on the eastern north levee	April 23 to April 30, 2014	4	Least Tern	Attempts were made to make some of the rock stockpiles available. Eventually, tern nesting became wide spread and activities near the stockpiles ceased. These rock stockpiles are used to repair washouts on STA levee roads.
STA-1W on west levee of Cell 4	May 10, 2013 to early-June, 2013	3	Black-necked Stilt	Each ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in early-June 2013.
STA-1W on levee between cells 2B & 4	May 31, 2013 to late-June, 2013	2	Black-necked Stilt	Each ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in late-June 2013.
STA-1W south end of Cell 3	June 3, 2013 to late-July 2013	~10 to 15	Tri-colored heron & little blue heron	Access was restricted to this area until nesting was completed in late-July.
STA-2 on the north levee of Cell 6	March 26, 2013 to mid-April, 2014	1	Killdeer	Ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in mid-April 2014.
STA-2 on the north levee of Cell 4	April 28, 2014 to April 30, 2014	1	Killdeer	Ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in mid-May 2014.
STA-3/4 on east levee of Cell 1B	May 15 to early-June, 2013	1	Killdeer	Ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in early-June 2013.
STA-5/6 in Cell 5-3B	May 8 to Oct 15, 2013	22	Everglade Snail Kite	Access was restricted in the majority of Cell 5-3B.
STA-5/6 on levee between cells 5-4A & 5-4B	May 25 to mid-June, 2013	1	Killdeer	Ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in mid-June 2013.
STA-5/6 in Cell 5-3B	Feb 15 to April 30, 2014	9	Everglade Snail Kite	Access was restricted in the majority of Cell 5-3B.
STA-5/6 in Cell 5-2A near the G-343F structure	March 10 to April 30, 2014	1	Everglade Snail Kite	Access was restricted along the eastern side of Cell 5-2A including access to the G-343F structure.
STA-5/6 in Cell 5-4A	March 31, to April 30, 2014	1	Everglade Snail Kite	Access was restricted in an 18 acre area in the center of Cell 5-4A.
STA-5/6 on a levee that runs through Cell 5-4A	April 10 to April 30, 2014	1	Killdeer	Ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in early-May 2014.

Table 2. Continued.

WY14 Maintenance Changes to Individual STAs Due to Nesting				
Location	Affected Time Period	# of Nests	Species	Adjustment to Operations
STA-5/6 on the western levee of Cell 6-2	April 25 to April 30, 2014	1	Killdeer	Ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in mid-May 2014.
STA-5/6 on the western levee of Cell 6-3	April 25 to April 30, 2014	1	Killdeer	Ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in mid-May 2014.
STA-5/6 on the northern levee of Cell 6-5	April 25 to April 30, 2014	1	Killdeer	Ground nest was marked with bean bags and reported to District staff. Mowers avoided area until nesting was completed in mid-May 2014.

SURVEY RESULTS FROM THE 2014 BLACK-NECKED STILT NESTING SEASON

The 2014 nesting season surveys began in late April 2014, with the earliest stilt nests observed on April 25 in STA-5/6. Because few nests were observed during the April monthly survey, the May monthly survey was moved to the middle of the month and was implemented between May 9 and 20. The June monthly survey was performed between June 2 and 17. A supplementary survey was conducted in STA-1E at the end of May to confirm that there was still no nesting in this STA. Three supplementary surveys were performed in Cell 5B of STA-1W during May and April and a spot check of the known nests was performed on June 19 after a major rain event. The rain event flooded all nests as direct rainfall filled the wetland basin quicker than it could be drained off. A supplementary survey was conducted on June 18 in STA-2 Cells 3, 5, and 6 to check on the status of nests within this STA and found that all nesting was complete. In mid-June, a spot check survey performed within STA-3/4 found that activity at the lone nest in Cell 3B was completed. A supplementary survey was conducted in STA-5/6 Cells 5-3B, 5-4A, 5-4B, 5-5A, and 5-5B in late June to check the status of nesting in this STA. The nesting season was determined to be complete on July 1 when a spot-check survey in STA-5/6 Cell 5-5B observed no active stilt nests.

Overall, 122 black-necked stilt nests were observed via levee surveys during the 2014 nesting season (**Table 1**), with the highest number of nests observed in STA-5/6 (73 nests), followed by STA-2 (32 nests). The total number of nests during 2014 was less than the average total number of nests that has been observed from 2010 to 2013 (174 nests; **Figure 3**). All surveys from 2010 to 2014 were conducted by the same individuals, so the annual nest counts are comparable. APP survey by survey results are presented in **Table 3**. Several dozen precocial black-necked stilt chicks (**Figure 4**) were observed in the STAs where stilt nests had been observed.

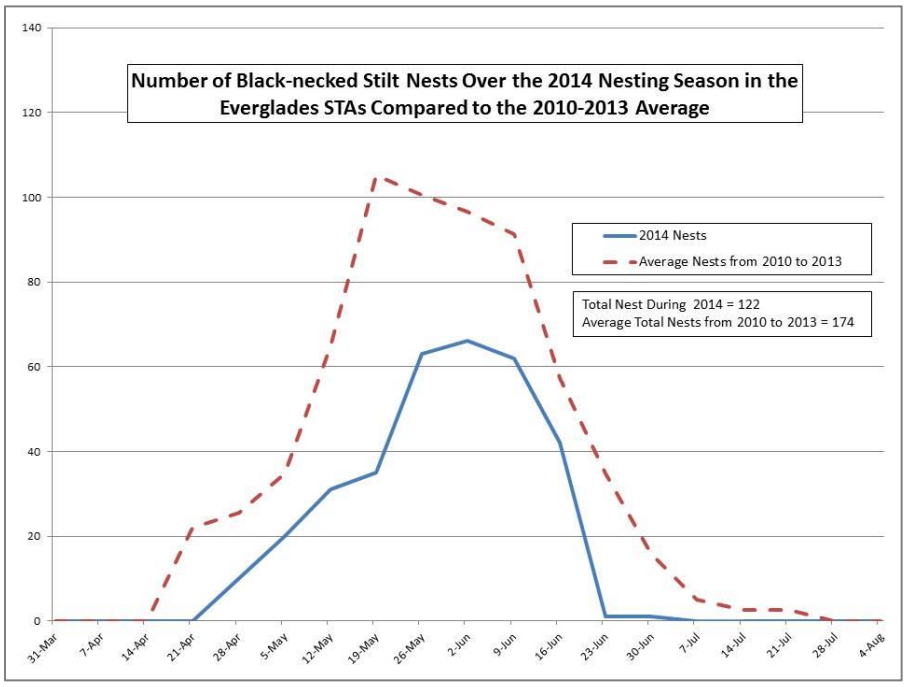

Figure 3. Total number of black-necked stilt nests each week during the 2014 nesting season compared to the average number of nests during the 2010 to 2013 nesting seasons.

Figure 4. A precocial black-necked stilt chick in STA-5/6 Cell 4A (photo by the SFWMD, June 2014).

EVERGLADE SNAIL KITES

In March 2014, the UF Snail Kite Lab personnel confirmed reports of snail kite nests within STA-1E Cell 4N (Fletcher, 2014). From March 5 to May 21, there were three snail kite nests confirmed within STA-1E Cell 4N (Fletcher, 2014; **Figure 1**). From February 15 to October 24, there were 110 snail kite nests observed in STA-5/6 (Fletcher, 2014; **Figure 2**). These snail kite nests were found in six separate cells in STA-5/6 including Cell 5-2A (1 nest), Cell 5-3A (1 nest), Cell 5-3B (72 nests), Cell 5-4A (3 nests), Cell 5-5A (8 nests), and Cell 5-5B (25 nests). Although snail kite nesting has occurred in STA-3/4 previously, there were no nests established in this STA during 2014 (Fletcher, 2014). Construction, operations, and maintenance activities near all of the above-mentioned snail kite nests were performed to avoid disturbing the nests (**Table 2**). The stage in STA cells with snail kite nests was adjusted multiple times during the nesting season to minimize potential impacts to nests and chicks (**Tables 4**–**10**). The USFWS was consulted on construction, maintenance, and operational activities that might negatively affect snail kite nesting.

Table 3. Black-necked stilt nesting season levee surveys for each STA (April–July 2014). NS = not surveyed.

STA-1E					
		Black-necked Stilt Nests Inside Treatment Cell as Observed from the Levee			
Flow-way	Cell	Monthly 4/23/14	Monthly 5/14/14	Supplementary 5/30/14	Monthly 6/17/14
Eastern	1	0	0	0	0
	2	0	0	0	0
Central	3	0	0	0	0
	4N	0	0	0	0
	4S	0	0	0	0
Western	5	0	0	0	0
	6	0	0	0	0
	7	0	0	0	0
Distribution Cells	Eastern	0	0	0	0
	Western	0	0	0	0
Totals		**0**	**0**	**0**	**0**

STA-1W								
Flow-way	Cell	Black-necked Stilt Nests Inside Treatment Cell as Observed from the Levee						
		Monthly 4/30/14	Monthly 5/16/14	Supple-mentary 5/27/14	Monthly 6/4/14	Supple-mentary 6/12/14	Supple-mentary 6/16/14	Spot Check 6/19/14
Eastern	1A	0	0	NS	0	NS	NS	NS
	1B	0	0	NS	0	NS	NS	NS
	3	0	0	NS	0	NS	NS	NS
Western	2A	0	0	NS	0	NS	NS	NS
	2B	0	0	NS	0	NS	NS	NS
	4	0	0	NS	0	NS	NS	NS
Northern	5A	0	0	NS	0	NS	NS	NS
	5B	4	4	7	4	5	3	0
Totals		**4**	**4**	**7**	**4**	**5**	**3**	**0**

Table 3. Continued.

STA-2					
	Black-necked Stilt Nests Inside Treatment Cell as Observed from the Levee				
	Monthly	Monthly	Monthly	Monthly	Supplementary
Cell	4/21/14	5/9/14	5/14/14	6/3/14	6/18/14
1	0	NS	0	0	NS
2	0	NS	0	0	NS
3	0	NS	5	1	0
4	0	0	NS	0	NS
5	0	5	NS	0	0
6	0	6	NS	15	0
7	0	0	NS	0	NS
8	0	0	NS	0	NS
Totals	**0**	**11**	**5**	**16**	**0**

STA-3/4					
		Black-necked Stilt Nests Inside Treatment Cell as Observed from the Levee			
		Monthly	Monthly	Monthly	Spot Check
Flow-way	Cell	4/29/14	5/15/14	6/5/14	6/18/14
Eastern	1A	0	0	0	NS
	1B	0	0	0	NS
Central	2A	0	0	0	NS
	2B	0	0	0	NS
PSTA	USAV	0	0	0	NS
	LSAV	0	0	0	NS
	PSTA	0	0	0	NS
Western	3A	0	0	0	NS
	3B	0	0	1	0
Totals		**0**	**0**	**1**	**0**

Table 3. Continued.

STA-5/6									
		Black-necked Stilt Nests Inside Treatment Cell as Observed from the Levee							
Flow-way	Cell	Monthly 4/25/14	Monthly 4/28/14	Monthly 5/19/14	Monthly 5/20/14	Monthly 6/2/14	Monthly 6/11/14	Supple-mentary 6/20/14	Spot Check 7/1/14
Flow-way 1	5-1A	NS	0	0	NS	0	NS	NS	NS
	5-1B	NS	0	0	NS	0	NS	NS	NS
Flow-way 2	5-2A	NS	0	0	NS	0	NS	NS	NS
	5-2B	NS	0	0	NS	0	NS	NS	NS
Flow-way 3	5-3A	NS	0	1	NS	0	NS	NS	NS
	5-3B	NS	1	9	NS	0	NS	0	NS
Flow-way 4	5-4A	NS	4	21	9	19	NS	0	NS
	5-4B	5	5	1	2	3	NS	0	NS
Flow-way 5	5-5A	0	NS	NS	2	4	NS	0	NS
	5-5B	0	NS	NS	1	3	NS	1	0
Flow-way 6	6-4	1	NS	NS	1	NS	0	NS	NS
	6-2	0	NS	NS	0	NS	0	NS	NS
Flow-way 7	6-5	0	NS	NS	0	NS	0	NS	NS
Flow-way 8	6-3	0	NS	NS	0	NS	0	NS	NS
Totals		**6**	**10**	**32**	**15**	**29**	**0**	**1**	**0**

Table 4. Changes in the operational stages for STA-1E Cell 4N due to the presence of nesting Everglade snail kites between March 9 and May 21, 2014.

STA-1E Cell 4N (Elevation = 14.1 ft NVGD)			
Date	**Max Stage (ft)**	**Main Stage (ft)**	**Min Stage (ft)**
Mar 9, 2014	17.4	15.4*	15.1*
Mar 31, 2014	16.4	15.4*	15.1*
May 12, 2014	No Stage Guidance Necessary		
May 21, 2014	No Buffer Zone Required – No More Snail Kite Nesting		

* = as long as water was available

Table 5. Changes in the operational stages for STA-5 Cell 5-2A due to the presence of nesting Everglade snail kites between March 10 and May 6, 2014.

STA-5/6 Cell 5-2A (Elevation = 13.3 ft NVGD)			
Date	**Max Stage (ft)**	**Main Stage (ft)**	**Min Stage (ft)**
Mar 10, 2014	No Max†	14.6*	14.3*
May 6, 2014	No Stage Guidance Necessary No Buffer Zone Required – No More Snail Kite Nesting		

† = Nest higher than cell can be filled (no max necessary)
* = as long as water was available

Table 6. Changes in the operational stages for STA-5/6 Cell 5-3A due to the presence of nesting Everglade snail kites between August 27 and September 9, 2014.

STA-5/6 Cell 5-3A (Elevation = 13.0 ft NVGD)			
Date	**Max Stage (ft)**	**Main Stage (ft)**	**Min Stage (ft)**
Aug 27, 2014	15.4	14.3*	14.0*
Sept 9, 2014	No Stage Guidance Necessary No Buffer Zone Required – No More Snail Kite Nesting		

* = as long as water was available

Table 7. Changes in the operational stages for STA-5/6 Cell 5-3B due to the presence of nesting Everglade snail kites between February 15 and October 13, 2014.

STA-5/6 Cell 5-3B (Elevation = 12.4 ft NVGD)			
Date	**Max Stage (ft)**	**Main Stage (ft)**	**Min Stage (ft)**
Feb 15, 2014	No Max†	13.6*	13.4*
Mar 10, 2014	14.4	13.6*	13.4*
Mar 31, 2014	14.7	13.6*	13.4*
Apr 18, 2014	14.4	13.6*	13.4*
May 30, 2014	13.8	13.6*	13.4*
Aug 15, 2014	14.1	13.6*	13.4*
Aug 27, 2014	14.5	13.6*	13.4*
Sept 9, 2014	14.6	14.0*	13.4*
Sept 22, 2014	15.0	14.0*	13.4*
Oct 13, 2014	No Stage Guidance Necessary No Buffer Zone Required – No More Snail Kite Nesting		

† = Nest higher than cell can be filled (no max necessary)
* = as long as water was available

Table 8. Changes in the operational stages for STA-5/6 Cell 5-4A due to the presence of nesting Everglade snail kites between March 31 and July 17, 2014.

STA-5/6 Cell 5-4A (Elevation = 13.4 ft NVGD)			
Date	**Max Stage (ft)**	**Main Stage (ft)**	**Min Stage (ft)**
Mar 31, 2014	16.4	14.6*	14.4*
May 12, 2014	15.4	14.7*	14.4*
May 30, 2014	14.9	14.7*	14.4*
June 16, 2014	14.0	13.7*	13.4*
July 17, 2014	No Stage Guidance Necessary No Buffer Zone Required – No More Snail Kite Nesting		

* = as long as water was available

Table 9. Changes in the operational stages for STA-5/6 Cell 5-5A due to the presence of nesting Everglade snail kites between August 15 and October 24, 2014.

STA-5/6 Cell 5-5A (Elevation = 13.7 ft NVGD)			
Date	**Max Stage (ft)**	**Main Stage (ft)**	**Min Stage (ft)**
Aug 15, 2014	15.2	14.9*	14.7*
Aug 27, 2014	15.8	15.0*	14.7*
Sept 9, 2014	16.1	14.7*	14.0*
Sept 29, 2014	16.5	14.7*	14.0*
Oct 13, 2014	No Stage Guidance Necessary		
Oct 24, 2014	No Buffer Zone Required – No More Snail Kite Nesting		

* = as long as water was available

Table 10. Changes in the operational stages for STA-5/6 Cell 5-5B due to the presence of nesting Everglade snail kites between May 20 and October 24, 2014.

STA-5/6 Cell 5-5B (Elevation = 12.0 ft NVGD)			
Date	**Max Stage (ft)**	**Main Stage (ft)**	**Min Stage (ft)**
May 20, 2014	No Max†	13.2*	13.0*
May 28, 2014	14.5	13.2*	13.0*
June 19, 2014	14.6	13.3*	13.0*
June 26, 2014	14.2	13.3*	13.0*
July 17, 2014	14.6	13.3*	13.0*
Aug 15, 2014	14.5	13.3*	13.0*
Sept 9, 2014	14.0	14.0*	13.0*
Sept 29, 2014	15.0	14.0*	13.0*
Oct 13, 2014	No Stage Guidance Necessary		
Oct 24, 2014	No Buffer Zone Required – No More Snail Kite Nesting		

† = Nest higher than cell can be filled (no max necessary)

* = as long as water was available

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