

# Appendix 5-2: STA Avian Survey Results

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In accordance with the Avian Protection Plan (APP) for Black-necked Stilts and Burrowing Owls Nesting in the Everglades Agricultural Area Stormwater Treatment Areas (Pandion Systems, Inc., 2008), protective measures were implemented during the 2011 nesting season (March–July 2011). The APP characterizes potential risks to the two avian species afforded protected status under the Migratory Bird Treaty Act — black-necked stilts (*Himantopus mexicanus*) and burrowing owls (*Athene cunicularia*). Specifically, the plan characterizes the risks to ground-nesting migratory bird species from STA construction, start-up, operation, drought conditions, routine maintenance, and enhancement activities. It also outlines actions intended to minimize harmful impacts to these migratory birds and nests due to these STA-related activities. During Calendar Year 2011 (CY2011), survey results for black-necked stilts and related operational efforts are presented in this appendix. Similar to recent years, no burrowing owl nests were observed within the confines of any STAs during the CY2011 surveys. Other STA avian-related information on the Everglade snail kite (*Rostrhamus sociabilis plumbeus*) during the reporting period is also summarized in this section.

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## BLACK-NECKED STILTS

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Black-necked stilts are the focus of the APP surveys, as they are an abundant and conservative indicator species for ground-nesting birds in the STAs. Stilts nest directly on the ground, often close to the water's edge, so they tend to be vulnerable to increases in water level. During the 2011 nesting season, standardized field surveys were conducted by the South Florida Water Management District (District or SFWMD) in accordance with the APP, along with close coordination with the U.S. Fish and Wildlife Service (USFWS). Operational procedures related to water flow and levee/canal maintenance were implemented accordingly to reduce impacts to ground-nesting birds in the STAs. Black-necked stilt nest surveys of treatment cells were performed from the levees, representing 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 – performed every 30 days from the start of the breeding season; all treatment cells were surveyed to provide baseline nesting information and the basis for operational decisions throughout the season.
2. Supplemental – performed as needed depending on nesting and water conditions; selected treatment cells were surveyed to provide information needed to make operational decisions.
3. Spot-check – performed as needed depending on nesting and water conditions; inspections were done on specific nest locations previously recorded; the numbers of nests in cells not surveyed are assumed to remain as previously observed.

Levee surveys were conducted using binoculars (16 x 50 millimeters) or a spotting scope (20-60 x 80 millimeters). A hand-held Global Positioning System unit provided the latitude and longitude of observer location on the levee where nests were detected inside of a treatment cell. Distance from the observer to the nests was measured with a rangefinder (6 x 216.0°). Information including coordinates of observer, number and distance of nests, observations, and observer initials was also recorded. Standardized reports were used to note the location and number of black-necked stilt nests by flow-way and treatment cell. Information regarding stilt nest activities and locations, and the resulting operational restrictions within the STAs, were distributed to both District and USFWS staff.

## 2011 BLACK-NECKED STILT NESTING SEASON

The 2011 nesting season surveys began in mid-April, with the earliest nests observed on April 25 in STA-1E. Because few nests were observed during the April monthly surveys, the May monthly surveys were moved to the beginning of the month and were implemented between May 2 and 16. June monthly surveys were performed between June 2 and 23. Supplementary surveys were performed within all STAs except STA-6 during late May because of the potential onset of the rainy season. In late June and early July, several spot-check surveys were performed within STA-1E, STA-1W, STA-2, and STA-3/4 to observe whether nesting had been completed in these STAs. The nesting season was complete on July 11, when a spot check in STA-1E found no nesting stilts. This completion date was consistent with nesting patterns observed in previous years, adding further evidence that the timing of the black-necked stilt nesting season remained relatively constant even though environmental conditions may change.

There were 339 black-necked stilt nests observed via levee surveys during the 2011 breeding season, with the highest number of nests observed in STA-3/4 (142 nests), followed by STA-1W (105 nests) (**Table 1**). A summary of bird nest counts for each STA is presented in **Tables 2** through **6**. It should be noted that higher numbers of black-necked stilt nesting were originally anticipated due to the dry season conditions that occurred between April and July 2011. However, actual numbers were lower because water managers were able to keep many of the STA cells hydrated throughout much of the dry season by managing available water sources. This kept many of these cells inundated to a level that fewer black-neck stilts were able to establish nests within these cells. Conversely, other STA cells became dry very early in the breeding season and were therefore less suitable nesting grounds for black-necked stilts. Once the rainy season began, the District was able to manage water levels and minimize the flooding of locations where nests were present. Overall, although the total abundance of stilt chicks was not measured during surveys, more than 100 black-necked stilt chicks were observed foraging near adult birds in several STAs from May–July 2011.

**Table 1.** Summary of black-necked stilt (*Himantopus mexicanus*) nesting in Stormwater Treatment Area 1E (STA-1E), STA-W, STA-2, STA-3/4, STA-5, and STA-6 from 2006–2011 [from 2007–2011 South Florida Environmental Report (SFER) – Volume I, Chapter 5].

STA	2006	2007	2008	2009	2010	2011
1E	186	102	69	102	150	42
1W	49	236	26	360	19	105
2	0	74	16	237	29	39
3/4	5	55	7	69	15	142
5	122	147	73	105	14	10
6	0	0	0	0	0	1
<b>TOTAL</b>	<b>362</b>	<b>614</b>	<b>191</b>	<b>873</b>	<b>227</b>	<b>339</b>

**Table 2.** Black-necked stilt nesting season levee surveys at STA-1E from April–July 2011.

STA-1E										
Flow-way	Cell	Black-necked Stilt Nests Inside Treatment Cell as Observed from the Levee								
		Monthly	Monthly	Supple- mentary	Monthly	Supple- mentary	Supple- mentary	Spot Check	Spot Check	Spot Check
		4/25/11	5/4/11	5/18/11	6/6/11	6/15/11	6/21/11	6/28/11	7/5/11	7/11/11
Eastern	1	1	3	0	0	NS	0	NS	NS	NS
	2	0	0	0	0	NS	0	NS	NS	NS
	PSTA	0	0	0	1	NS	1	0	NS	NS
Central	3	0	0	1	0	0	0	NS	NS	NS
	4N	0	0	0	0	0	0	NS	NS	NS
	4S	0	9	1	1	0	0	NS	NS	NS
Western	5	0	0	0	0	NS	0	NS	NS	NS
	6	0	1	0	1	NS	0	NS	NS	NS
	7	0	0	0	0	NS	0	NS	NS	NS
Distribution Cells	Eastern	3	14	14	4	0	0	NS	NS	NS
	Western	0	0	0	1	2	4	5	4	0
<b>Totals</b>		<b>4</b>	<b>27</b>	<b>16</b>	<b>9</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>0</b>

NS – Not Surveyed

**Table 3.** Black-necked stilt nesting season levee surveys at STA-1 from April–July 2011.

STA-1W							
Flow-way	Cell	Black-necked Stilt Nests Inside Treatment Cell as Observed from the Levee					
		Monthly	Monthly	Supple- mentary	Monthly	Spot Check	Spot Check
		4/21/11	5/09/11	5/25/11	6/14/11	6/28/11	7/5/11
Eastern	1A	0	0	0	0	NS	NS
	1B	0	0	0	0	NS	NS
	3	0	0	0	0	NS	NS
Western	2A	0	0	0	0	NS	NS
	2B	0	78	17	16	2	0
	4	0	8	0	0	NS	NS
Northern	5A	0	0	0	0	NS	NS
	5B	0	0	0	0	NS	NS
<b>Totals</b>		<b>0</b>	<b>86</b>	<b>17</b>	<b>16</b>	<b>2</b>	<b>0</b>

NS – Not Surveyed

**Table 4.** Black-necked stilt nesting season levee surveys at STA-2 from April–July 2011.

STA-2						
Cell	Black-necked Stilt Nests Inside Treatment Cell as Observed from the Levee					
	Monthly	Monthly	Supple- mentary	Monthly	Monthly	Spot Check
	4/14/11	5/2/11	5/20/11	6/13/11	6/14/11	7/6/11
1	0	0	0	0	NS	NS
2	0	0	0	0	NS	NS
3	0	0	0	0	NS	NS
4*	0	12	20	11	NS	0
5*	NS	NS	0	NS	0	NS
6*	NS	NS	2	NS	0	NS
7*	NS	NS	NS	NS	0	NS
8*	NS	NS	NS	NS	0	NS
<b>Totals</b>	<b>0</b>	<b>12</b>	<b>20</b>	<b>11</b>	<b>0</b>	<b>0</b>

NS – Not Surveyed

\* = Cell Offline during APP Survey Period

**Table 5.** Black-necked stilt nesting season levee surveys at STA-3/4 from April–July 2011.

STA-3/4						
Flow-way	Cell	Black-necked Stilt Nests Inside Treatment Cell as Observed from the Levee				
		Monthly	Monthly	Supple- mentary	Monthly	Spot Check
		4/13/11	5/13/11	5/27/11	6/16/11	7/6/11
Eastern	1A	0	17	0	0	NS
	1B	0	1	1	0	NS
Central	2A	0	0	0	0	NS
	2B	0	1	0	8	0
PSTA	USAV	0	61	NS	0	NS
	LSAV	0	34	NS	0	NS
	PSTA	0	0	NS	0	NS
Western	3A	0	0	0	0	NS
	3B	0	8	11	1	0
<b>Totals</b>		<b>0</b>	<b>122</b>	<b>12</b>	<b>9</b>	<b>0</b>

NS – Not Surveyed

**Table 6.** Black-necked stilt nesting season levee surveys at STA-5 and STA-6 from April–July 2011.

STA-5/6								
Flow-way	Cell	Black-necked Stilt Nests Inside Treatment Cell as Observed from the Levee						
		Monthly	Monthly	Monthly	Monthly	Supple- mentary	Monthly	Monthly
		4/11/11	4/12/11	5/5/11	5/16/11	5/31/11	6/2/11	6/23/11
Flow-way 1	STA-5 1A	NS	0	NS	2	0	NS	0
	STA-5 1B	NS	0	NS	0	0	NS	0
Flow-way 2	STA-5 2A	NS	0	NS	0	0	NS	0
	STA-5 2B	NS	0	NS	5	1	NS	0
Flow-way 3	STA-5 3A	NS	0	NS	2	0	NS	0
	STA-5 3B	NS	0	NS	0	0	NS	0
Flow-way 4	STA-5 4A*	NS	NS	NS	NS	NS	NS	NS
	STA-5 4B*	NS	NS	NS	NS	NS	NS	NS
Flow-way 5	STA-5 5A*	NS	NS	NS	NS	NS	NS	NS
	STA-5 5B*	NS	NS	NS	NS	NS	NS	NS
Flow-way 6	STA-6 Cell4*	NS	NS	NS	NS	NS	NS	NS
	STA-6 Section 2*	0	NS	1	NS	NS	0	NS
Flow-way 7	STA-6 Cell 5	0	NS	0	NS	NS	0	NS
Flow-way 8	STA-6 Cell 3	0	NS	0	NS	NS	0	NS
<b>Totals</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>0</b>

NS- Not Surveyed

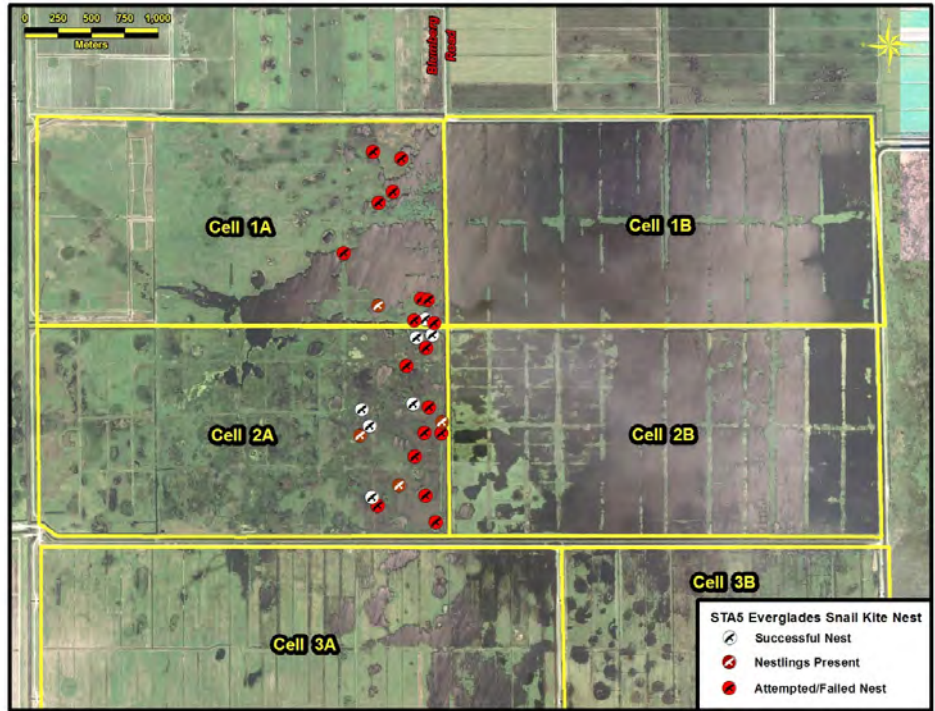
\* = Cell Offline during APP Survey Period

## EVERGLADE SNAIL KITES

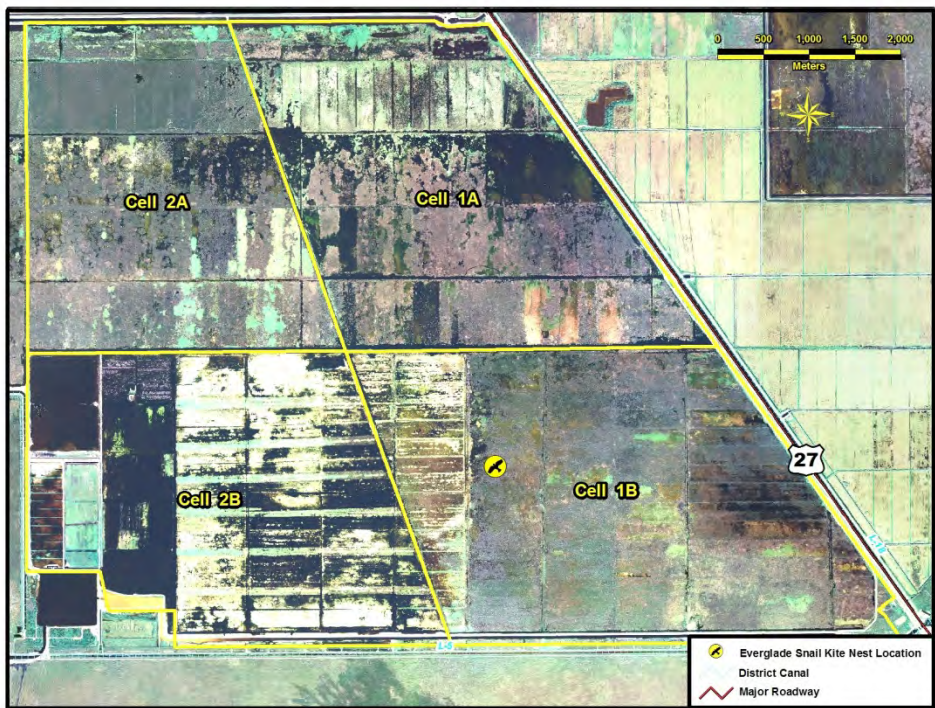
As reported in the 2011 South Florida Environmental Report (SFER) – Volume I, Chapter 5, Everglade snail kites were first spotted over STA-5 and STA-3/4, demonstrating nesting behavior in late March 2010. In April 2010, the District was informed by the USFWS that several snail kite nests had been discovered by the University of Florida snail kite survey crew, which was contracted by the U.S. Army Corps of Engineers to perform snail kite nesting surveys throughout the state of Florida. Specifically, Everglade snail kites were observed nesting within STA-5, Cells 1A and 2A, in April 2010 (Kitchens 2010 data). This was the first documented nesting by this federally and state-listed endangered avian species in any of the STAs operated by the District. During CY2010, 29 snail kite nests were established in STA-5 (Kitchens 2010 data; **Figure 1**). Applying guidance from the USFWS, the District altered the operations of STA-5, Cells 1A and 2A, to minimize impacts to the Everglade snail kites so that no incidental takes occurred in CY2010.

In January 2011, the University of Florida snail kite crew began reporting dozens of snail kites flying over STA-5 and STA-3/4 (Kitchens 2011 data). During CY2011, there were no nests established in STA-5 and only one nest was established in STA-3/4 (Kitchens 2011 data). The single nest within STA-3/4, Cell 1A (**Figure 2**) was first reported on May 3, 2011, and was determined to have failed on May 29, 2011. STA-5 and STA-3/4 were likely too dry to support successful snail kite nesting due to drought conditions during 2011. Similar to CY2010, there were no reports of STA operations impacting any Everglade snail kite nests during CY2011.





**Figure 1.** Location of 29 Everglade snail kite (*Rostrhamus sociabilis plumbeus*) nests identified in STA-5 during 2010.



**Figure 2.** Location of one Everglade snail kite nest identified in STA-3/4 during 2011.

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## LITERATURE CITED

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Kitchens, W. 2010. Data received by the South Florida Water Management District from the University of Florida snail kite survey crew from April 12, 2010 to October 23, 2010.

Kitchens, W. 2011. Data received South Florida Water Management District from the University of Florida snail kite survey crew from January 16, 2011 to June 23, 2011.

Pandion Systems, Inc. 2008. Avian Protection Plan for Black-necked Stilts and Burrowing Owls Nesting in the Everglades Agricultural Area Stormwater Treatment Areas. Prepared by Pandion, Gainesville, FL, for the South Florida Water Management District, West Palm Beach, FL.