

Appendix L: Crested Caracara Survey Memoranda

Audubon's Crested Caracara Survey Technical Report

Florida Department of Transportation

District 1

SR 70

Limits of Project: From CR 721 S to South of CR 599/128th Avenue

Highlands and Okeechobee Counties, Florida

Financial Management Number: 450334-1

ETDM Number: N/A

Date: 12/12/2023

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.

AUDUBON'S CRESTED CARACARA

(Polyborus plancus audubonii)

SURVEY REPORT

ROADWAY IMPROVEMENT PROJECT

STATE ROAD (SR) 70 FROM COUNTY ROAD (CR) 721 SOUTH TO CR 599/128th AVENUE

HIGHLANDS AND OKEECHOBEE COUNTIES

FM NUMBER: 450334-1

FLORIDA DEPARTMENT OF TRANSPORTATION

DISTRICT ONE



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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT) is undertaking a roadway improvement project on State Road (SR) 70 in southern Highlands and Okeechobee Counties between Arcadia, FL and Okeechobee, FL. This project begins at County Road (CR) 721 South in Highlands County to the west and continues 8.56 miles east to CR 599/128th Avenue, which is located just east of the Highlands/Okeechobee County line and lies within the Federally designated Audubon's crested caracara consultation area and adjacent to suitable caracara habitat (**Figure 1**).

In compliance with the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA), potential impacts to the Audubon's crested caracara (*Polyborus plancus audubonii* or *Caracara plancus audubonii*) have been assessed for the above referenced project. This report represents the results of caracara foraging, nesting, and productivity surveys conducted during the 2023 caracara survey season.

1.2 AUDUBON'S CRESTED CARACARA

The caracara is a non-migratory subspecies of falcon that ranges across Florida, Texas, Arizona, Cuba, Mexico, Central America, and northern South America. A disjunct population occurs in south Florida which is isolated from the remaining populations and in 1987 was listed as *threatened* under the Endangered Species Act of 1973 (16 U.S.C 1531 et seq).

Caracaras are large and long-lived raptors with an unusual and distinct color pattern (**Photo 1**). Adults and subadults bear a black crest atop their head, have a naked face of bright orange skin, a white neck that becomes barred with dark streaks across the upper chest and back, and brownish-black wings, back, and lower abdomen, with subadults displaying less striking features. The tail is white with narrow, dark crossbars and a dark terminal band, and their feet and legs are bright yellow. Prominent white patches are visible near the tips of the wings in flight. Juveniles have a similar color pattern but are brownish and buffy with dark streaks on their breast and upper back. Their facial skin is also pinkish in color and their legs are gray.

In Florida, caracaras typically inhabit dry or wet prairies with scattered cabbage palms (*Sabal palmetto*) and can also be found in lightly wooded areas. Because of widespread land use changes, caracaras now commonly use improved or semi-improved pasture as foraging habitat, notably if seasonal wetlands are present. Studies show that caracaras in Florida primarily nest in cabbage palms surrounded by open habitats with low ground cover and low density of tall or shrubby vegetation. However, caracaras have been recorded nesting in other tree species including Slash pine (*Pinus elliotii*), cypress (*Taxodium* spp.), oaks (*Quercus geminata*, *Quercus minima*, *Quercus pumila*), red cedar (*Juniperus virginiana*), Australian pine (*Casuarina equisetifolia*), saw palmetto (*Serenoa repens*), and black gum (*Nyssa sylvatica*). Rarely, caracara have been observed nesting on electrical substations, radio towers, and billboards (Morrison 2001, Humphrey & Morrison 1997, USFWS 2016).



Photo 1 Adult Audubon's crested caracara observed 01/31/2023 in the survey area.

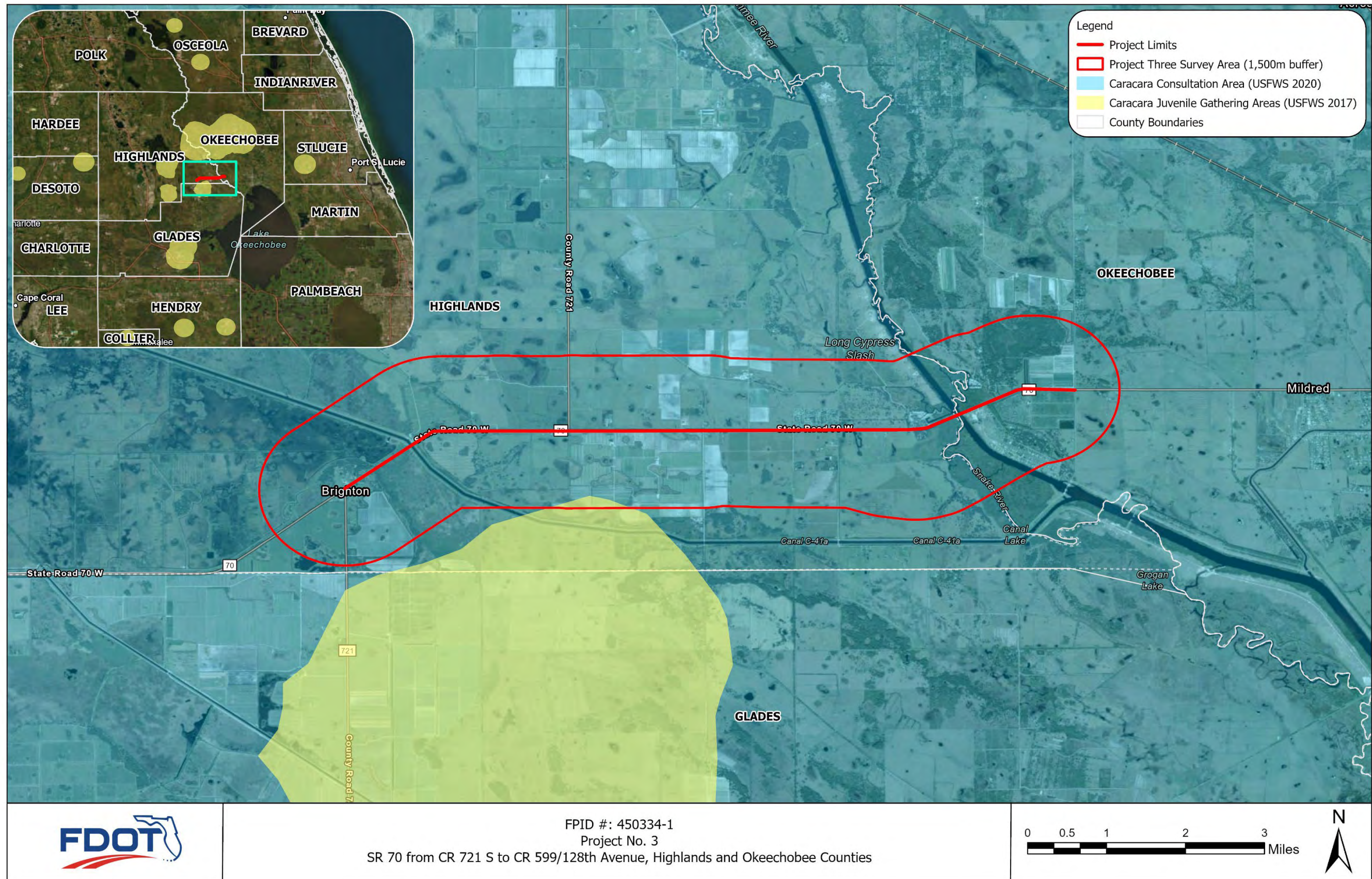


Figure 1 Project Location and Designated Caracara Areas

2.0 METHODOLOGY

The field survey protocol was developed based jointly upon the USFWS (United States Fish and Wildlife Service) *Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)* and Florida Fish and Wildlife Conservation Commission’s (FWC) *Recommended Management Practices and Survey Protocols for Audubon’s Crested Caracara (Caracara cheriway audubonii) in Florida*. Survey methodology included pre-survey documentation of existing land uses and natural communities, direct observation data, identification of potential caracara habitat, development of the field survey protocol, assignment of survey station locations, and approval of the survey protocol by USFWS prior to proceeding.

2.1 EXISTING LAND USE

Based upon USFWS survey guidelines, a 1,500-meter buffer was applied to the FDOT ‘Project Area’ (i.e. the footprint of the proposed project) to create the ‘Survey Area’. Then the South Florida Water Management District (SFWMD) Florida Land Use, Cover, and Forms Classification System (FLUCFCS) (2017-2019) shapefile and current aerial photography were used to map suitable foraging and nesting habitat (**Figure 2**). Referring to the USFWS survey protocol, descriptions of suitable habitat were cross-referenced with SFWMD land use data. Based upon the SFWMD land use data and subsequent field verification/ground truthing, the identified survey area consists of approximately 11,000 acres of potentially suitable nesting and foraging habitat, representing approximately 92 percent of the total study area.

Table 1 below provides a list of potential caracara habitat and approximate acreage occurring within the survey area. The predominant suitable habitat is improved pasture followed by unimproved pastures and row crops.

Table 1 Potentially suitable foraging and nesting habitat in the survey area by SFWMD FLUCFCS codes.

Land Use Code	Land Use Description	Acres in Survey Area	Percentage of Survey Area
2110	Improved Pastures	5734.85	48.55%
2120	Unimproved Pastures	1040.88	8.81%
2130	Woodland Pastures	506.61	4.29%
2140	Row Crops	953.11	8.07%
2150	Field Crops	146.23	1.24%
2210	Citrus Groves	220.53	1.87%
2410	Tree Nurseries	4.34	0.04%
2420	Sod Farms	675.51	5.72%
3100	Herbaceous (Dry Prairie)	42.97	0.36%
3200	Upland Shrub and Brushland	21.55	0.18%
3300	Mixed Rangeland	63.44	0.54%
4110	Pine Flatwoods	31.65	0.27%
4270	Live Oak	8.41	0.07%
4280	Cabbage Palm	4.24	0.04%
4340	Upland Mixed Coniferous / Hardwood	17.32	0.15%
6172	Mixed Shrubs	535.95	4.54%

Land Use Code	Land Use Description	Acres in Survey Area	Percentage of Survey Area
6410	Freshwater Marshes / Graminoid Prairie - Marsh	816.53	6.91%
6411	Freshwater Marshes-Sawgrass	0.17	0.00%
6430	Wet Prairie	184.51	1.56%
7400	Disturbed Land	35.34	0.30%
7430	Spoil Areas	41.81	0.35%

2.2 POTENTIAL HABITAT ANALYSIS

Based upon guidance documents provided by USFWS, suitable caracara nesting habitat includes dry or wet prairies that contain scattered cabbage palms as well as lightly wooded areas, improved, unimproved, and woodland pastures, sod farms, row crops, levees, and rangeland. Common vegetation includes saw palmetto, scrub oaks, cypress, and short herbaceous vegetation. Cabbage palms are the strongly preferred nesting habitat, though there have been reports of nests in other vegetation such as slash pine, cypress, and oak. Habitat analysis was performed prior to the start of the survey season using the above existing land use and natural community data followed by field verification of community types and physical structure to determine the location of suitable habitat. Natural habitats within the project corridor include freshwater marshes, prairies, and shrub and brushland, mostly associated with the Kissimmee River and the C-41a Canal. Potential habitat mapped as pastures, croplands, and rangeland is found throughout the survey area. Small isolated freshwater marshes are found throughout these areas as well. The remaining survey area consists of low-density and rural residential lands not considered suitable habitat.

2.3 EXISTING OCCURRENCE DATA

Previous documentation of caracara occurrences includes data collected from casual observations and data collected from formal surveys occurring within and adjacent to the project survey area. Data sources include FNAI and the FWC Fish and Wildlife Research Institute (FWRI). The project lies entirely within the USFWS consultation area for the Audubon's crested caracara and the study area includes USFWS-designated juvenile gathering areas for the species located south of the project near the C-41a Canal.

2.4 SURVEY PROTOCOL

Surveys were performed in strict accordance with the protocols described in the USFWS *Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)*. The survey area encompasses SR 70 and a 1500-meter buffer zone around the project area. Potential caracara survey stations were evaluated in the field on December 23, 2022. Survey stations were modified during the season as needed to obtain a better view of caracara activity and potential nesting sites. A map showing suitable habitat and the eight survey stations is provided above as **Figure 2**. Representative photographs of the field of view from survey stations are provided in **Appendix A**.

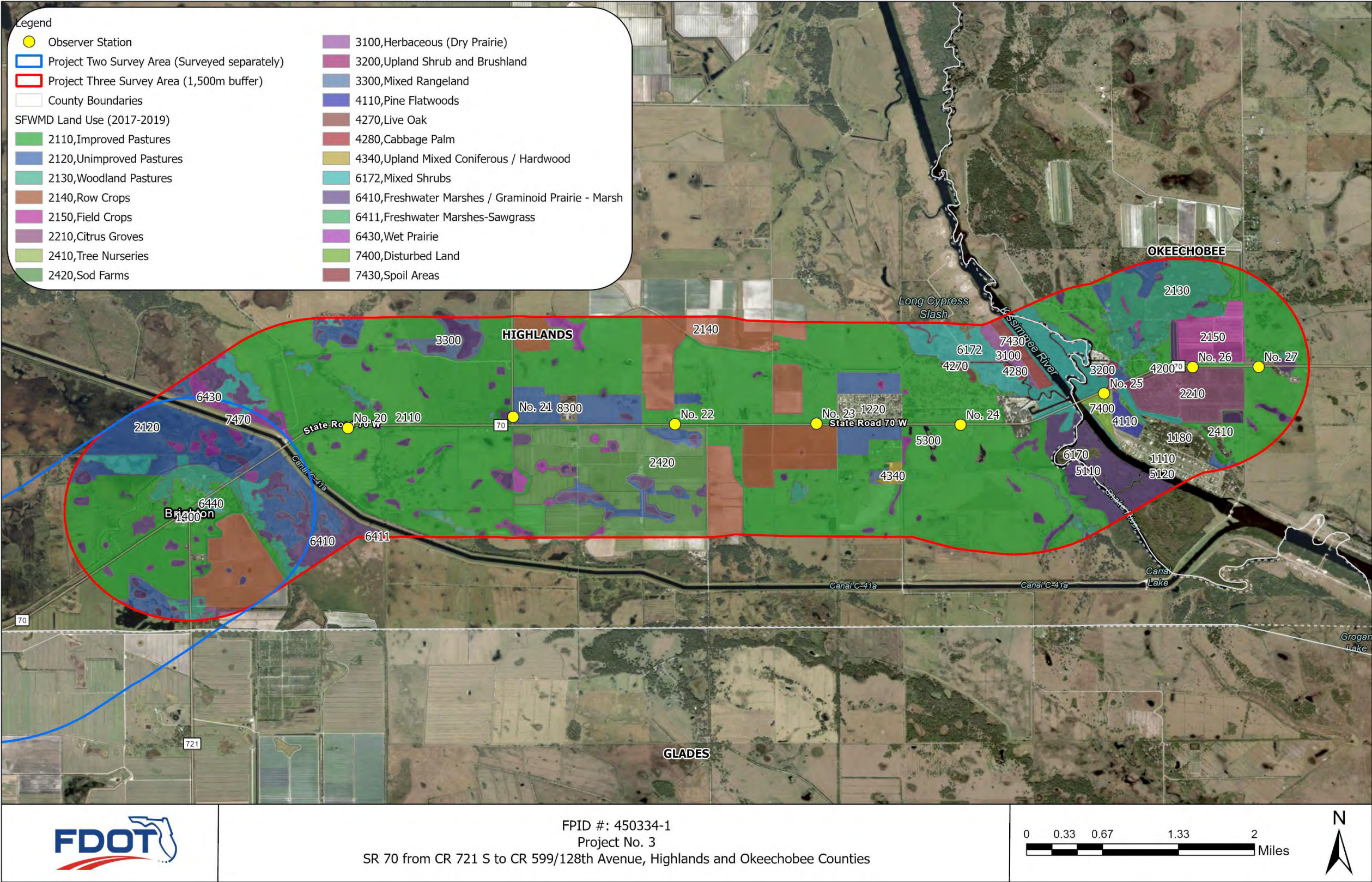


Figure 2 Suitable caracara habitat and location of survey stations

Caracara nest surveys were conducted at each survey station between January 4 and April 28, 2023. Surveys for each station were conducted approximately every two weeks, began 15 minutes prior to sunrise, and continued for at least three hours after sunrise per survey protocol. During each survey, observers remained in their vehicles at a survey station unless they were pursuing a flying caracara or standing outside their vehicle to gain a better view of an active bird.

All primary observers held at least a bachelor's degree in natural sciences with greater than two years professional experience conducting bird surveys and at least 40 hours of caracara survey experience. Field personnel utilized binoculars, aerial photographs of the survey area, datasheets, and cameras to document and record observations. Weather conditions, survey times, descriptions of sightings, and other pertinent information were recorded on datasheets and approximate caracara sighting locations and flight paths were recorded on aerial photographs (**Appendix B**).

3.0 RESULTS

Documented observations have been summarized in four separate groupings: 1) potential habitat; 2) activity; 3) nesting; and 4) additional species.

3.1 POTENTIAL HABITAT OBSERVATIONS

Pre-Survey Field Visit

December 23, 2022

A pre-survey field visit was conducted to verify the results of the desktop land use analysis for potential habitat. Eight (8) observation stations were identified for Project 3 and were field adjusted based on ground conditions (actual land use) and field of view, including location of trees or manmade structures and curvature of the roadway that effected the observer viewshed.

3.2 ACTIVITY OBSERVATIONS

Survey Event 1

January 4, 2023

Station 20 – One adult was observed at 0756 flying east along SR 70, perching briefly in an oak, and then continuing east along the road. Two adults were observed flying over a pasture north of SR 70 at 0911.

Station 23 – One adult caracara was observed at 0744 following SR 70 from west to east. It perched on various utility poles and then flew to perch on and enter a slash pine.

Station 24 – One caracara was observed at 0850 flying east over a pasture south of SR 70. A second caracara was observed at 0852 flying east along SR 70. At 0915, one caracara was observed flying west and then south low over a pasture south of SR 70.

January 5, 2023

Station 21 – One adult was observed at 0820 perched on a post north of SR 70, flew south to a pole at 0829, and departed west at 0836. An adult was observed at 0930 flying north.

Station 22 – At 0944 one adult caracara was observed grabbing roadkill and departing north over agricultural fields.

Station 25 – No caracara observed.

January 6, 2023

Station 26 – One adult caracara was observed perched on a snag east of the station at 0719. Caracara departed flying west over SR 70.

Station 27 – Numerous caracaras were observed including an adult perched on a snag west of the station at 0719 and another adult perched on a snag east of the station at 0734. Two adults, one carrying food, flew over the station at 0736 headed east. One adult was observed flying north over the tree line on 128th Ave at 0913. Two adults were observed perched on a snag at 1105, both departed south at 1107 and 1111.

Survey Event 2

January 17, 2023

Station 20 – No caracara observed.

January 18, 2023

Station 21 – One adult was observed at 0920 perched on a pole north of SR 70, which then flew SE at 0945 to perch in an oak.

Station 23 – No caracara observed.

Station 24 – One adult was observed flying east over SR 70 at 0846. An adult was observed again at 0911 flying east over SR 70 towards the river. At 0950, an adult was observed perched in a slash pine east of the survey station for at least ten minutes.

January 19, 2023

Station 22 – Numerous caracaras were observed, including a juvenile that was observed at 0752 that remained in the area perching and walking on the ground for approximately 1 hour. A second juvenile was observed at 0833 circling the road. The two juveniles departed west at 0857, reappeared at 0907 and remained in the area. One adult flew in from the south at 0939 to perch in a snag. The caracara departed flying north at 0955 and was joined by a second adult. One juvenile left the area headed south at 1041.

Station 25 – No caracara observed.

January 20, 2023

Station 26 – One adult caracara was observed flying west along SR 70 at 0812. Another adult was observed flying north from south of SR 70 to perch on snag east of survey station at 0823, which departed flying west along SR 70 at 0839. At 0904, an adult approached flying east along SR 70 to perch in the snag.

Station 27 – Numerous caracaras were observed. One adult flew in from the northwest at 0804 to perch on snag east of the survey station. It departed southwest at 0812. An adult was observed flying from the southwest at 0823 to perch in a different snag west of the survey station, which departed southwest at 0838. At 0904, an adult approached flying east along SR 70 to perch in the snag, which departed southeast at 0919. An adult approached from the north at 1024 to land in the eastern snag, moved to western snag at 1026, and departed flying southwest after a few minutes.

Survey Event 3

January 31, 2023

Station 21 – One adult was observed flying north along CR 721 at 0931 and then flew south to perch on a pole at 0938.

Station 23 – Multiple caracaras were observed. An adult was observed flying from the west headed southeast at 0723. At 0851, one adult flew along SR 70 from the east to perch on a pole, then flew across the road to a second pole at 0854. At 0859, it moved to a third pole circling around fresh roadkill and then flew south down SR 70 at 0902. At 0905, two adults flew together from the south, one stopped to perch on a pole while the other continued towards the east. The perched adult flew south at 0908. An adult was observed flying east to west over a field at 0941 and then followed by a second adult at 0943. At 1006 an adult was observed flying from the south headed north.

Station 24 – One adult was observed flying east over SR 70 and then turned north at 0741. An adult was observed flying from the southeast at 0945, crossed SR 70 and landed to perch in pine. The adult hopped to the ground at 0952 and then flew to a cabbage palm, returned to the ground at 0955 and then flew back to cabbage palm carrying what appeared to be nesting material. The adult left the cabbage palm at 0957, perched in a nearby pine, and vocalized. It departed flying east along SR 70 and then southeast at 1002.

February 1, 2023

Station 20 – No caracara observed.

Station 22 – No caracara observed.

Station 25 – One caracara was observed at 1016 flying towards SR 70 from the southeast which was chased off to the west by nesting osprey.

February 2, 2023

Station 26 – One adult caracara approached from the north at 0940 to perch on snag east of the survey station. It left the perch at 0950 headed east down SR 70 and then turned northwest over a pasture.

Station 27 – One adult caracara was observed perched on a snag at 0735 having approached from the south. It departed west at 0738.

Survey Event 4

February 14, 2023

Station 21 – One adult was observed north over SR 70 at 0840. Two adults were seen perched on poles south of SR 70 at 0857. One flew south into a group of palms and the other flew north out of view at 0922.

Station 23 – At 0805, one adult circled over SR 70, perched briefly, and then departed north at 0810. An adult was observed flying over SR 70 east to west at 0835. At 0901, an adult flew over SR 70 from the west to perch and then departed east following the road at 0902.

Station 24 – An adult was observed perched on a slash pine adjacent to the potential nest tree at 0758. At 0811, an adult flew into a suspected nesting cabbage palm with nesting materials. At 0819, one adult left the tree to the ground and then re-entered the palm. At 0821, an adult left the cabbage palm to perch briefly in a slash pine with a second adult and then departed northwest. The second adult departed west down SR 70 at 0829 and then turned northwest. At 0839, one adult was observed from the west flying east down SR 70. An adult returned to the slash pine at 0842, hopped to the ground at 0850, and flew to perch in another slash pine. At 0903, an adult flew in from the west following SR 70 and landed in a field. Two adults were observed together in a slash pine at 0914, one flew to suspected nesting cabbage palm at 0921, returned to pine at 0924, and departed east at 0927. One adult returned to the cabbage palm at 0934, and then both adults departed east/northeast together at 0949.

February 15, 2023

Station 22 – An adult was observed at 0705 flying from the northeast to enter a cabbage palm. A second adult approached from the east and entered the same palm at 0706. One adult departed west at 0707. The second adult departed in the same direction at 0709. At 0816, an adult flew across SR 70 from the north to land in a royal palm. It departed the palm flying northeast at 0825 to perch on a snag, departing north at 0829. At 0905, an adult approached from the north to perch back on the snag and was joined by a second adult at 0908. One adult departed snag at 0912 to return to the original cabbage palm. The second adult departed at 0914 to land in the sod farm southwest of the survey station. At 0916, the first adult departed the cabbage palm southwest to perch in a royal palm. One adult flew northeast at 0919 and the second adult flew south over SR 70 and then turned west at 0926.

Station 25 – No caracara observed.

February 16, 2023

Station 26 – No caracara observed.

Station 27 – No caracara observed.

Survey Event 5

March 1, 2023

Station 21 – No caracara observed.

Station 24 – One adult approached from the north across SR 70 at 0942 and continued westbound over the road to land in a slash pine northwest of the suspected nest tree a few minutes later. It left the perch at 0946 to fly across SR 70 in a large southeast loop.

Station 25 – No caracara observed.

March 2, 2023

Station 22 – No caracara observed.

Station 23 – An adult was observed flying into a group of trees at 0819. At 0828, one adult flew into a cabbage palm with nesting material. It left the cabbage palm at 0835 heading east across the pasture. An adult returned to the same cabbage palm at 0841 and was joined by a second adult from the ground at 0842. One adult left the tree headed northwest at 0844. The second adult left the tree and landed on the ground nearby at 0845. One adult returned to the cabbage palm at 0854 and then left at 0905 to a utility pole. At 0909, a second adult returned to the cabbage palm to perch and then hopped to the ground a few minutes later. An adult left the tree at 0913 to perch on a fence post while the second adult returned to the tree. The adult left the tree at 0919 to the ground in a nearby pasture while the other adult returned to the tree. The adult left the tree back into the pasture at 0924, and then both adults returned to the cabbage palm at 0927. One adult returned to the pasture at 0930 and was joined by a subadult at 0937. At 0940, an adult flew to the ground with food and then returned to the cabbage palm. The subadult departed east at 0941, and then returned to perch on a fence post at 0951.

March 3, 2023

Station 26 – A subadult flew in from the southwest at 0705 to perch north of SR 70 and then departed north over the road. At 0712, a subadult approached from the northeast to the sod farm and then returned to the perch. It departed the perch at 0716 flying west, grabbed food from SR 70 and then landed in the sod farm. It returned from the west at 0724, grabbed food off the road, and returned to the sod farm. At 0727 it returned to the road and then perched on a fence post to the south and then flew northwest across the sod farm at 0729 to a snag on the western limits.

Station 27 – A subadult approached from the southwest at 0706 to perch on a snag briefly, then departed north over the road and turned south over a field. The subadult returned to the perch at 0714 and then departed west over the road at 0717.

Survey Event 6

March 15, 2023

Station 21 – One adult was observed perched on a pole north of SR 70 at 0822 which flew northwest out of vision at 0826.

March 16, 2023

Station 22 – No caracara observed.

Station 25 – No caracara observed.

March 17, 2023

Station 26 – No caracara observed.

Station 27 – One juvenile was observed at 0824 flying from the southwest across a field and then continued north along NW 128th Ave.

Survey Event 7

March 28, 2023

Station 22 – An adult was observed at 0927 flying west from the northeast to land in a sod field. At 0949, a second adult flew west from the northeast to the join the first in the sod field. One adult departed at 0953 west over the field. The second adult departed field at 0954 to perch in a royal palm.

Station 25 – No caracara observed.

March 29, 2023

Station 21 – No caracara observed.

Station 26 – No caracara observed.

Station 27 – No caracara observed.

March 31, 2023

Station 24 – A juvenile was observed flying north to south at 0836. At 0923, one adult was observed flying east/northeast and was joined by a second adult, both continuing northeast.

Survey Event 8

April 11, 2023

Station 26 – An adult was observed at 0755 flying from the southwest, then flew east down SR 70 and perched on a snag. It hopped down to the ground out of sight at 0759.

Station 27 – An adult was observed at 0755 flying from the west to perch on a snag. It hopped down to the ground at 0758, grabbed food from SR 70, and perched on a fence post until 0810, then hopped into trees out of sight.

April 12, 2023

Station 21 – An adult was observed at 0843 flying north along CR 721, then turned east. At 0906, an adult was observed perched on a pole east of CR 721, then flew west just south of SR 70 at 0908.

Station 22 – No caracara observed.

Station 25 – No caracara observed.

April 14, 2023

Station 24 – No caracara observed.

Survey Event 9

April 23, 2023

Station 21 – An adult was observed flying north along CR 721 at 0752, then turned east to perch on a fence post. A second adult was observed in a pasture east of CR 721 at 0802. Three caracaras were observed in a pasture east of CR 721 at 0822. At 0857, two adults were observed flying north along CR 721.

April 25, 2023

Station 24 – No caracara observed.

Station 25 – No caracara observed.

April 26, 2023

Station 26 – An adult was observed flying in from the east at 0726 to land on a perch for a few minutes and then continued east. It returned to the perch at 0741 from a south field and left the perch at 0750 headed southeast over the field. At 0755, an adult flew west down SR 70 carrying food then turned northwest at the curve. At 0920, two adults flew east down SR 70, one turned northeast and the other flew to land in the southeast field.

Station 27 – An adult flew in from the northeast at 0648 to perch on the snag, then departed northeast at 0653. At 0725, an adult flew in from the northeast to the western snag, then departed east at 0727 following SR 70, turned back northwest over a field, and flew out of sight headed northeast. At 0742, an adult approached from the southwest to perch on the western snag, departed east over the road at 0750, then turned southeast to land in a field. It departed the field at 0755 carrying food, turned west over the road and then departed northwest. At 0920, two adults flew in from the west, one to the eastern perch and one to the southeast field. The perched adult departed east over the road at 0930 and the second adult departed the field headed northwest carrying food.

April 28, 2023

Station 22 – At 0647, an adult flew west of the road, turned north and then east and appeared to land in a field. At 0703, an adult approached from the west carrying food towards the nest tree at Station 23. The adult departed the nest tree at 0708 headed east and then turned heading west. At 0823, an adult flew northwest from the southeast and joined a second adult perched on a utility pole. At 0828, one adult departed west and the second flew in a circle and returned to the perch. At 0831, the adult flew west from the perch down SR 70, circle around the sod farm, and then perched on a utility pole north of SR 70 at 0835. At 0837, it flew northeast from the perch circling in a field north of SR 70.

3.3 NESTING OBSERVATIONS

Productivity Surveys

February 15, 2023

Station 20 – At 0710, an adult flushed from the nest. Observations suggest that chicks have hatched.

February 28, 2023

Station 20 – At 0703, an adult was observed perched on a pole near the nest tree, then flew northeast at 0704. An adult returned to the nest with food at 0714, flew to perch briefly on a pole at 0716, then flew northeast. At 0721, two adults were seen perched on poles near the nest, moved perches a few times, then flew east at 0741. Both adults returned to the nest with food at 0755, one departed east at 0756 and the other perched on a pole briefly then departed east at 0832. At 0845 an adult returned from the east, was chased by a hawk, then landed in the fronds of the nest tree.

March 14, 2023

Station 20 – An adult was observed perched on a pole by the nest at 0726, flew north at 0730. At 0752, an adult flew into the nest. The second adult flew out of the nest to perch on a pole nearby, then flew north at 0757. An adult returned to the nest with food at 0810, left nest to perch on a pole, then flew north at 0830. An adult returned from the east to perch near the nest at 0903, then departed north at 0913. Potential two juveniles in the nest.

March 16, 2023

Station 23 – An adult approached the nest tree from the south pasture at 1205, perched in front of the nest tree and then entered the nest after a couple of minutes. At 1220, a juvenile approached the nest from a western pasture and was chased off by an adult towards the southwest.

Station 24 – At 1730, an adult flew west down SR 70 then circled back northeast and continued west down SR 70. It was seen flying in wide circles around SR 70 between 1740 and 1745. No activity around, or use of, nest tree was observed.

March 17, 2023

Station 24 – No activity around, or use of, nest tree observed. Nest considered a failure/abandoned.

March 28, 2023

Station 20 – Both adults were observed on posts by the nest at 0800. Both adults and one fledgling were observed on the ground near the nest at 0816. Fledgling and adults remained on the ground until end of survey.

Station 23 – An adult emerged from the nest at 1101 to perch on a nearby utility pole and then departed west at 1105. At 1142, an adult approached from the southwest, circled and entered the nest from the west, emerged from the nest, circles, and re-entered the nest from the east.

March 31, 2023

Station 23 – An adult emerged from the nest at 1024 to perch on a nearby utility pole and then departed east at 1036. At 1042, an adult flew east to west chasing a crow from the nest area and then perched on a fence, dropped to the ground at 1046 and then walked around for approximately 8 minutes picking at food on the ground. At 1054, it flew up to perch in the nest tree and then entered the nest a few minutes later. An adult emerged from the nest at 1059, perched on a fence post, and then dropped to the ground at 1104. It jumped up and down from the fence post a few times and then sat on the post preening until end of survey.

April 11, 2023

Station 20 – A fledgling was observed on a fence post by the nest at 0725, hopped down to the ground at 0729, then flew a short distance out of view at 0740. At 0802, the fledgling was observed flying a short distance to a fence post west of the nest. An adult perched on an adjacent fence post at 0806, then departed north. At 0818, an adult returned from the west and had a brief interaction with the fledgling on the ground. The adult departed northwest at 0826. An adult and the fledgling were observed on the ground south of the nest at 0908.

Station 23 – An adult approached from the southwest and flew east/southeast down the road at 1033. At 1110, an adult appeared from the southeast chasing a juvenile bald eagle from the nest area. It returned and landed in the nest tree briefly and then left to perch on a nearby utility pole at 1115. It left the perch at 1120 headed south.

April 14, 2023

Station 23 – An adult approached from the southeast headed northwest to enter the nest at 1054. It departed the nest at 1056 headed southeast.

April 22, 2023

Station 20 – An adult was observed perched on a pole south of the nest at 0742. A second adult was observed perched close by on a palm at 0756. Both adults flew to ground at 0817, then one adult returned to the pole at 0837. At 0850, the adult flew into a nearby palm, chatter was heard, then a juvenile flew out of the palm headed north/northwest. The adult flew north, then turned west and the juvenile followed it west along SR 70. Productivity surveys for this station were concluded.

April 25, 2023

Station 23 – An adult entered the nest at 1002 and then departed after a few minutes headed east down SR 70. At 1015, an adult was observed chasing a juvenile caracara from the northwest, the juvenile landed in a group of pines and the adult continued southeast. At 1023, an adult approached from the east and chased the juvenile northwest. An adult was observed perched on utility pole near the nest at 1042 and was chased off by other nesting passerines at 1053. An adult returned to the utility pole at 1124 and then entered the nest a few minutes later. The second adult flew in at 1127 to perch on fence post near the nest tree. The first adult departed the nest to join the other on the fence below the nest tree at 1129 and the second adult flew into the nest. Perched adult departed south across the field. Adult departed the nest at 1143 and returned to perch on nearby utility pole.

April 28, 2023

Station 23 – An adult emerged from the nest at 0954 to perch briefly on utility pole and then departed west. It returned to the nest from the northwest at 0956. At 0959, an adult approached from the west to perch on a fence post, hopped to the ground briefly, and then entered the nest at 1001. One adult emerged from the nest at 1002 onto the ground and was joined by the second adult at 1005. One returned to the nest 1007 and the second returned to the nest at 1010 carrying food from the ground. One adult flew east from the nest tree to perch on a utility pole at 1012, moved southeast to a second utility pole south of SR 70 at 1013, and then flew southwest at 1018.

May 12, 2023

Station 23 – Both adults were observed perched on a nearby utility pole at 0822. The first adult departed west at 0832 and the second adult departed east, turning south at 0834. One adult flew in from the northwest with food to enter the nest at 0911, exited the nest to perch on palm fronds at 0915, and returned to perch on the utility pole at 0917. At 0919, it departed northeast. At 0940, an adult returned to the nest from the east carrying food and then returned to the utility pole at 0942.

May 24, 2023

Station 23 – An adult was observed at 0827 flying east to west along SR 70 to perch on a utility pole. It departed northwest over the sod field at 0833, followed by a second adult headed north. One adult was seen flying southeast from the sod field at 0902. No activity near or in the nest was observed.

June 2, 2023

Station 23 – At 0815, one adult flew in from the north to the ground in front of the nest tree. It entered the nest at 0816, exited to perch on a fence post at 0824, and then moved to the utility pole at 0827. At 0828, two juveniles exited the nest to perch on palm fronds in the nest tree. The adult departed east over SR 70 and then turned south at 0839. The juveniles were observed on the palm fronds vocalizing, flapping wings, and preening until 1004 when they re-entered the nest (**Photo 2**).



Photo 2 Two juvenile caracara observed on palm frond in Station 23 nest tree.

June 16, 2023

Station 23 – One adult returned from the east to the ground near the nest tree at 0630 carrying food. A second adult approached from the east at 0634 to perch on utility pole, then departed north at 0657. The first adult hopped up to perch on a fence post at 0656, was joined by the second adult on an adjacent fence post at 0657, and both departed to the north. The observer location was shifted at 0700 and two juveniles were observed, one on a fence post and one on the ground. Between 0714 and 0908, the adults returned with food to feed the juveniles five times, both juveniles were observed eating. In between feedings, the juveniles were observed walking around on the ground, perched on fence posts, preening,

interacting with each other, and flying between fence posts and in small loops on the ground (**Photo 3**). Productivity surveys for this station were concluded.



Photo 3 Two juveniles observed on fence posts near Station 23 nest tree.

3.4 ADDITIONAL SPECIES UTILIZATION

There is one verified active bald eagle nest adjacent to Station 27 (**Photo 4**) and one expected bald eagle nest in the proximity of Stations 22 and 23 due to activity observed in the area. On at least one occasion, caracara and bald eagles were observed fighting over roadkill within the project area. One juvenile bald eagle flew close to the nest tree in Station 23 and was chased off by an adult caracara.

Six osprey nests were located near Station 25 and they were active throughout the survey season (**Photo 5**). Only one caracara was observed in this station, during Survey Event 3, which was immediately chased off by an adult osprey. An active osprey nest was also observed between Stations 26 and 27 but no conflicts were observed at these sites. A variety of passerines, waterfowl, and raptors, including bald eagles, black and turkey vultures, hawks, and osprey were observed throughout the study area during the survey period (**Table 2**).



Photo 4 Active bald eagle nest adjacent to Station 27.



Photo 5 Active osprey nest within Station 25.

Table 2 Observed bird species in the survey area

Scientific Name	Common Name	Stations Observed
<i>Accipiter cooperii</i>	Cooper's Hawk	22, 23, 26, 27
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	22, 26, 27
<i>Anas fulvigula</i>	Mottled Duck	22
<i>Anhinga anhinga</i>	Anhinga	22, 23, 24, 25, 26
<i>Antigone canadensis</i>	Sandhill Crane	22, 23, 24, 26, 27
<i>Ardea alba</i>	Great Egret	22, 23, 24, 25, 26, 27
<i>Ardea herodias</i>	Great Blue Heron	22, 24, 25, 26
<i>Bubo virginianus</i>	Great-horned Owl	22
<i>Bubulcus ibis</i>	Cattle Egret	22, 23, 24, 25, 26, 27
<i>Buteo lineatus</i>	Red-shouldered Hawk	22, 23, 24, 27
<i>Cardinalis cardinalis</i>	Northern Cardinal	27
<i>Cathartes aura</i>	Turkey Vulture	22, 23, 24, 25, 26, 27
<i>Charadrius vociferus</i>	Killdeer	22, 25, 27
<i>Circus hudsonius</i>	Northern Harrier	22, 23, 24, 26
<i>Coragyps atratus</i>	Black Vulture	22, 23, 24, 25, 26, 27
<i>Corvus brachyrhynchos</i>	American Crow	22, 23, 24, 25, 26, 27
<i>Dendrocygna autumnalis</i>	Black-bellied Whistling Duck	26
<i>Dryobates pubescens</i>	Downy Woodpecker	23
<i>Egretta caerulea</i>	Little Blue Heron	22, 23, 25
<i>Egretta thula</i>	Snowy Egret	22, 25, 26
<i>Egretta tricolor</i>	Tri-colored Heron	23, 24, 25
<i>Elanoides forficatus</i>	Swallow-tailed Kite	26
<i>Eudocimus albus</i>	White Ibis	23, 24, 25, 26
<i>Falco sparverius paulus</i>	Southeastern American Kestrel	22, 23, 25
<i>Gallinago delicata</i>	Wilson's Snipe	27
<i>Haliaeetus leucocephalus</i>	Bald Eagle	22, 23, 27
<i>Hirundinidae spp.</i>	Swallow Species	22, 23, 24, 25, 26
<i>Lanius ludovicianus</i>	Loggerhead Shrike	22, 23, 26
<i>Megaceryle alcyon</i>	Belted Kingfisher	22
<i>Melanerpes carolinus</i>	Red-bellied Woodpecker	23, 24, 25, 27
<i>Mimus polyglottos</i>	Northern Mockingbird	22, 23, 24
<i>Molothrus ater</i>	Brown-headed Cowbird	24
<i>Mycteria americana</i>	Wood Stork	22, 23, 24, 25, 27
<i>Myiarchus crinitus</i>	Great Crested Flycatcher	22, 24, 25
<i>Nannopterum auritum</i>	Double-crested Cormorant	22, 23, 24, 25, 26, 27
<i>Pandion haliaetus</i>	Osprey	22, 23, 25, 26, 27
<i>Passerina ciris</i>	Painted Bunting	22
<i>Poliophtila caerulea</i>	Blue-gray Gnatcatcher	23, 24
<i>Quiscalus major</i>	Boat-tailed Grackle	22, 24, 26
<i>Quiscalus quiscula</i>	Common Grackle	22, 23, 24, 25, 26, 27
<i>Sayornis phoebe</i>	Eastern Phoebe	22
<i>Setophaga coronata</i>	Yellow-rumped Warbler	23
<i>Setophaga palmarum</i>	Palm Warbler	22, 23, 24, 27
<i>Streptopelia decaocto</i>	Eurasian Collared Dove	22

<i>Scientific Name</i>	<i>Common Name</i>	<i>Stations Observed</i>
<i>Sturnella magna</i>	Eastern Meadowlark	22, 23, 24, 26, 27
<i>Sturnus vulgaris</i>	Common Starling	22, 23, 24, 25, 26, 27
<i>Turdus migratorius</i>	American Robin	23, 27
<i>Zenaida macroura</i>	Mourning Dove	22, 23, 24, 25, 26, 27

4.0 DISCUSSION

4.1 CARACARA SIGHTING CLUSTERS AND FLIGHT TRACKS

A total of 61 nesting surveys and 19 productivity surveys were completed across the eight survey stations. Caracara(s) were observed during 37 of the nesting surveys and 18 of the productivity surveys and were observed at least once at each survey station.

Caracara survey data shown in **Figure 3** and **Figure 4** reveals clusters of sightings and flight tracks that appear to converge on or depart from similar locations, along with sighting of active nests by other bird species. Caracaras were observed most frequently at Station 23 near NW New Pine Ridge Rd. and in between Stations 26 and 27. Frequent activity observed at Station 23 proved to be associated with an active nest near that station. At Stations 26 and 27, the high caracara activity dropped off around survey event 4, which coincided with fledging of the nearby bald eagle nest. During the last two survey events, adult caracaras were seen repeatedly collecting food from the area and returning to the field northwest of Station 26. This evidence suggests that a roost or potentially a nest may exist in that area. Sightings were frequent at Station 24 until an apparent nest failure/abandonment prior to survey event 6. Caracaras were not observed in the area around the Kissimmee River which is saturated with active osprey nests except on one occasion during survey event 3 when the individual caracara was immediately chased out of the area by an adult osprey.

Sighting clusters were generally located within habitat mapped as improved pasture, with foraging activities also observed within cropland/pasture and orchards/groves. Caracaras were commonly observed utilizing manmade structures including utility poles and fence posts as perches, along with snags and occasionally fronds of cabbage and royal palms.

4.2 CARACARA NESTING

Two successful caracara nests were documented in the survey area during the survey season. The nest identified at Station 23 produced two chicks (**see Photo 2 and Photo 3**) and the nest identified at Station 20 produced one chick. As caracara are cryptic around their nests and nests are extremely difficult to see, additional undetected nests could exist in the area as well. Both confirmed nests were located within areas mapped as improved pasture.

The area immediately surrounding a caracara nest is considered to be its core nest territory and includes all habitats within 985 feet of the nest tree. The larger breeding territory includes everything within 5,000 feet of a nest tree. **Figure 5** shows the core nest territory and potential breeding territory centered around each identified nest tree.

4.3 POTENTIAL PROJECT IMPACTS

Habitat utilization by caracaras was confirmed in all portions of the survey area during the 2023 survey season. Nesting activity, including nest construction and protection, potential egg incubation, and delivery of food, was observed at two nest sites, both of which produced chicks. The first nest, located within Station 20 (approximate GPS coordinates 27.235678, -81.060708), was identified on February 15, 2023, and chicks were confirmed on March 28, 2023. The second nest, located within Station 23 (approximate GPS coordinates 27.237339, -81.027219), was identified on March 16, 2023, and chicks were confirmed on June 2, 2023.

The USFWS Species Conservation Guidelines for Audubon's crested caracara establish two management zones for caracara habitat use. The primary zone includes a 300-meter (985 foot) buffer around the nest tree and the secondary zone includes a 1500-meter (4920 foot) buffer around the nest tree. The secondary zone is generally the foraging territory for that nest site.

The proposed project activities are located within the primary and secondary protection zones for both identified nest trees. Potential project activities that fall within these zones include construction of additional travel lanes for SR 70. Reduction of impacts within the primary zone is essential to prevent adverse effects on successful reproduction. This is particularly important during the nesting season (November to April). Caracaras routinely feed on roadkill; therefore, paved roadways are considered potential foraging habitat for this species. As such, new areas of roadway may still be considered potential foraging habitat despite the change in land use. USFWS-designated juvenile gathering areas are located within the survey area and would require additional conservation measures if they were located within the project area, such as an on-site monitor during construction. However, the proposed project does not include designated juvenile gathering areas.

Per the USFWS guidance to reduce impacts within the primary and secondary zones, the following conservation measures are recommended within the project area during construction:

Year-Round Conservation Measures:

- Maintain nest trees and other trees in the primary zone, including dead trees that are used for perching and roosting.
- Maintain ground vegetation, pasture, grassland, wetlands, ditches, canals, etc. in the primary and secondary zones.
- Avoid use of chemicals toxic to wildlife in the primary and secondary zones, including pesticides, fertilizers, or herbicides.

Nesting Season Conservation Measures (November to April):

- No construction or land clearing activities may take place in the primary or secondary zones of a nest during nesting season.
- In general, human activities should be limited in the primary zone, including low flyovers by aircraft.

4.4 CONCLUSION

The proposed project will impact a small area of habitat within the primary zone of two nest trees, however conservation measures will be implemented during construction to further minimize impacts and the project area does not include juvenile gathering areas. Therefore, it is anticipated that this project will have an effect determination of “may affect, but not likely to adversely affect” for the Audubon’s crested caracara. Coordination with USFWS will be required to determine the final effect determination.

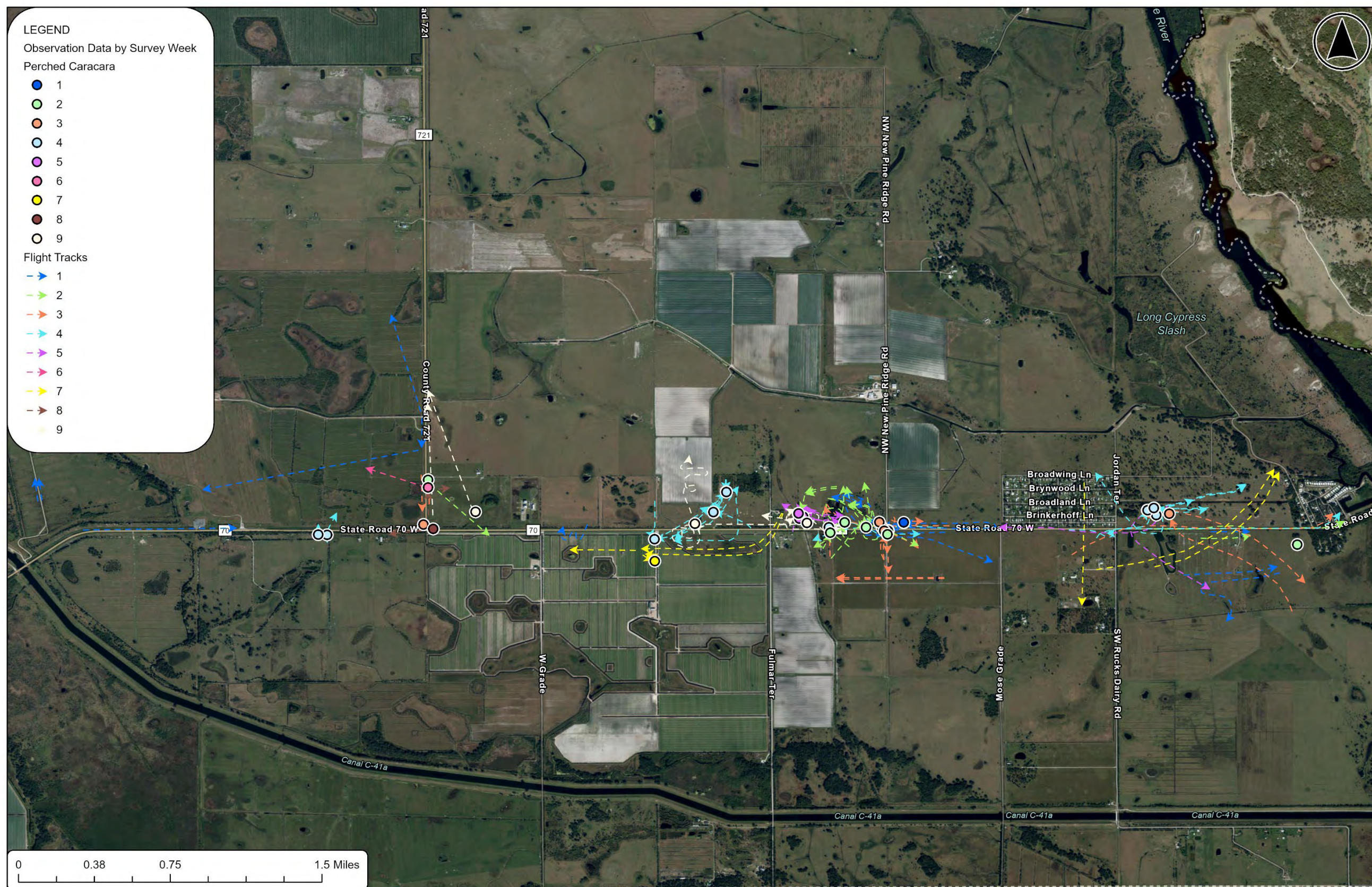


Figure 3 Survey data for stations west of the Kissimmee River.

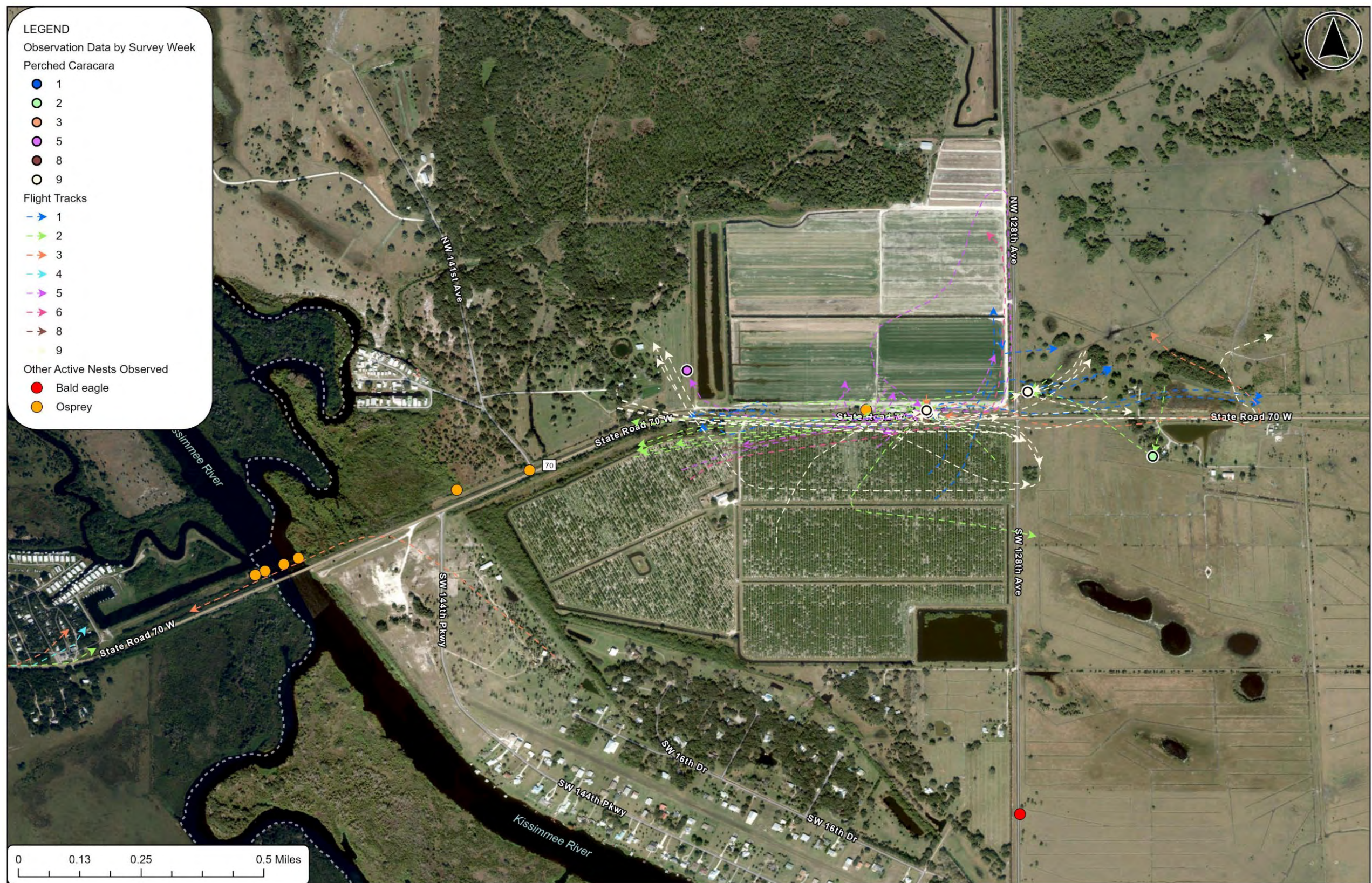
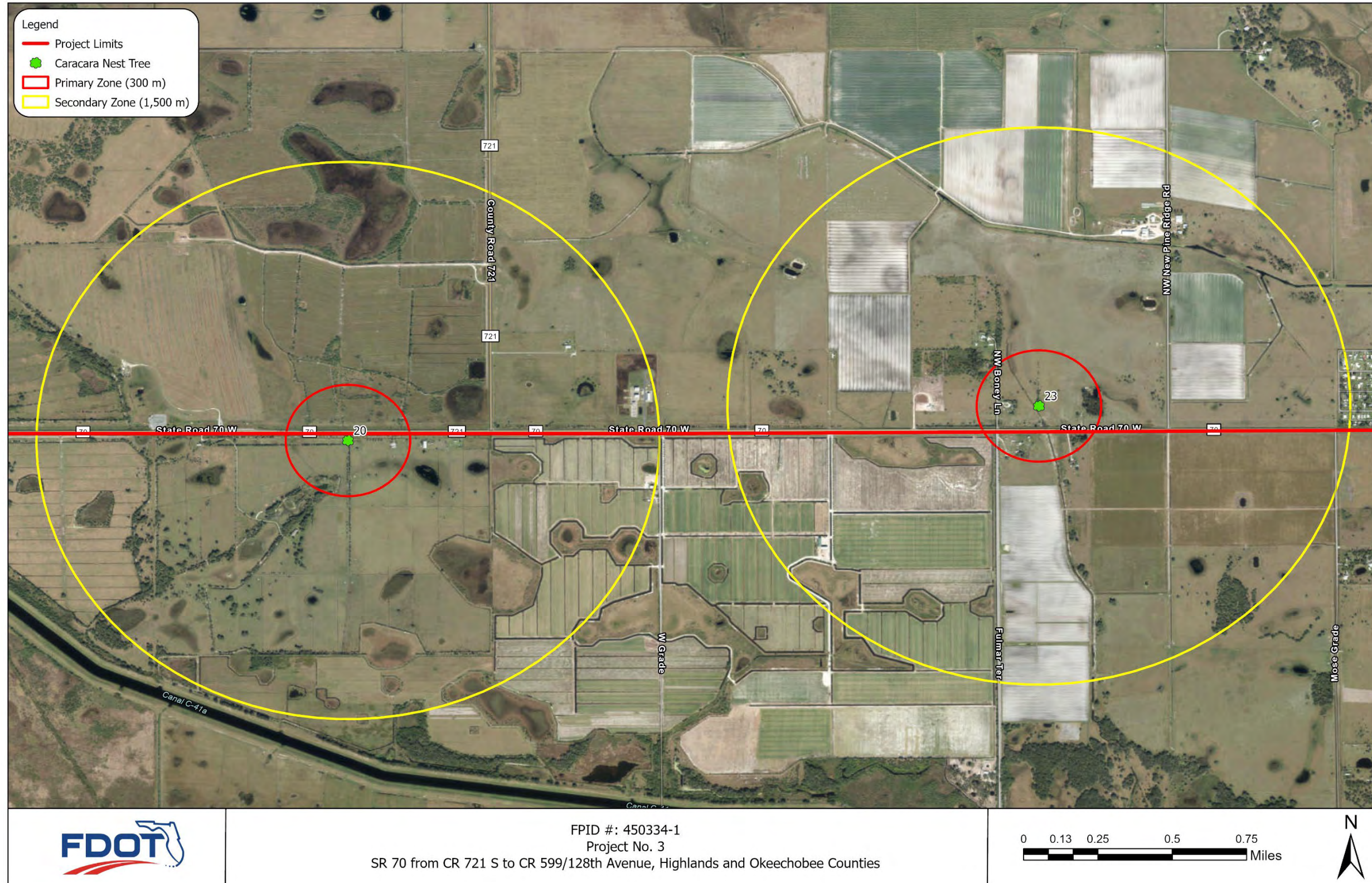


Figure 4 Survey data for stations east of the Kissimmee River.



5.0 REFERENCES

Humphrey, S.R., and Morrison, J.L. (1997). Habitat Associations, Reproduction, and Foraging Ecology of Audubon's Crested Caracaras in South-Central Florida. Final Report. Florida Game and Freshwater Fish Commission (Florida Fish and Wildlife Conservation Commission) Nongame Program Project No. NG91-007.

Morrison, Joan and the Florida Fish and Wildlife Conservation Commission (FWC) Bureau of Wildlife Diversity Conservation (2001). Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara (*Caracara cheriway audunonii*) in Florida. Technical Report No. 18.

US Fish and Wildlife Service (USFWS) (2016). USFWS Crested Caracara Draft Survey Protocol – Additional Guidelines (2016-2017 Breeding Season)

US Fish and Wildlife Service (USFWS) South Florida Ecological Services Office (2004). Species Conservation Guidelines. South Florida. Audubon's Crested Caracara.

Appendix A

Representative Survey Station Photographs

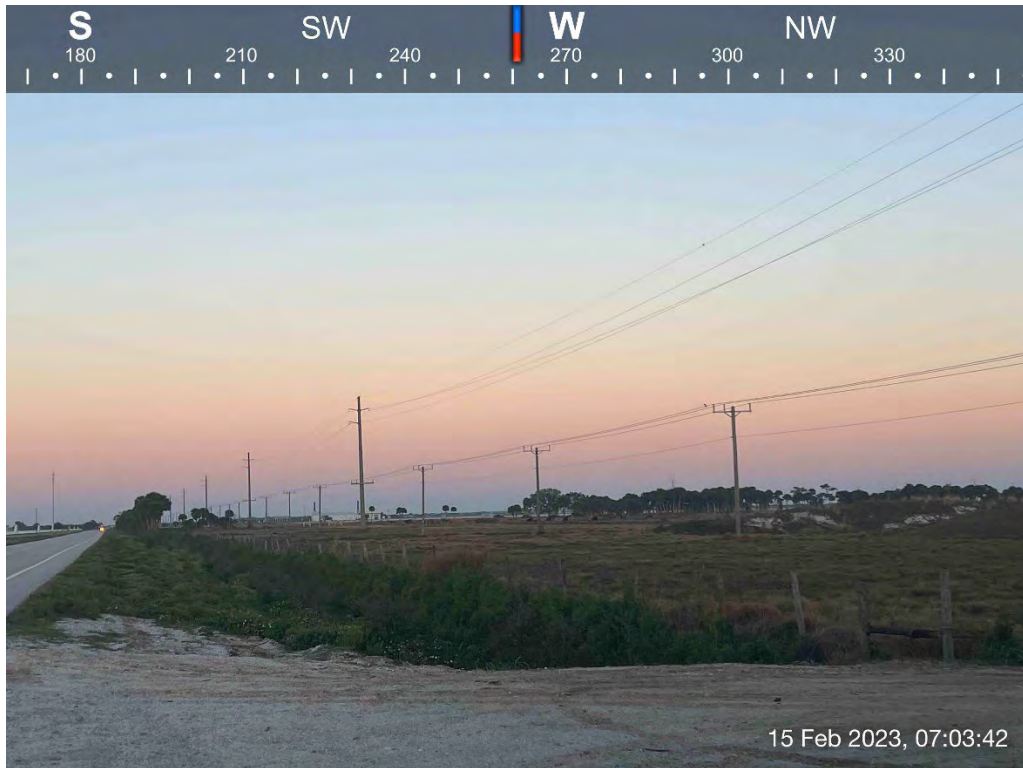


Photo 1: Field of view from Survey Station 22



Photo 2: Field of view from Survey Station 24



Photo 3. Field of view from Survey Station 25

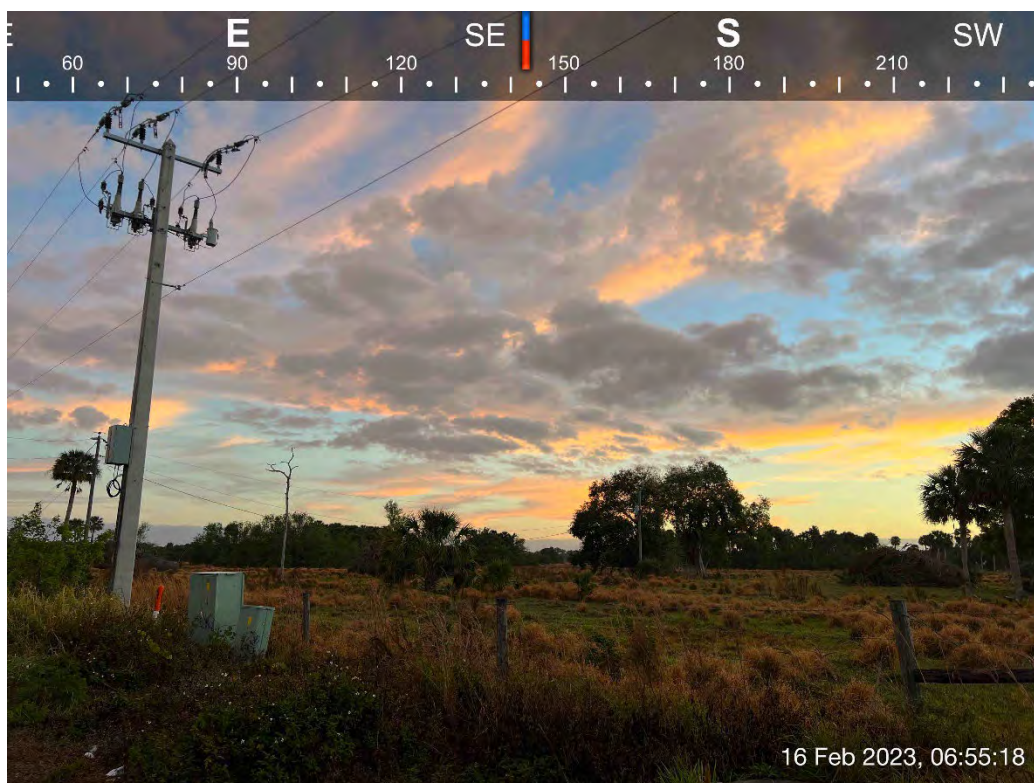


Photo 4. Field of view from Survey Station 27

Appendix B

Field Collected Data

WEEK 1

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: 27.2359, -81.6747

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-4-2022	7		Chavez

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	66	SSE7	50		light fog
Finish: 10	79	S12	30		

Observation Point Information

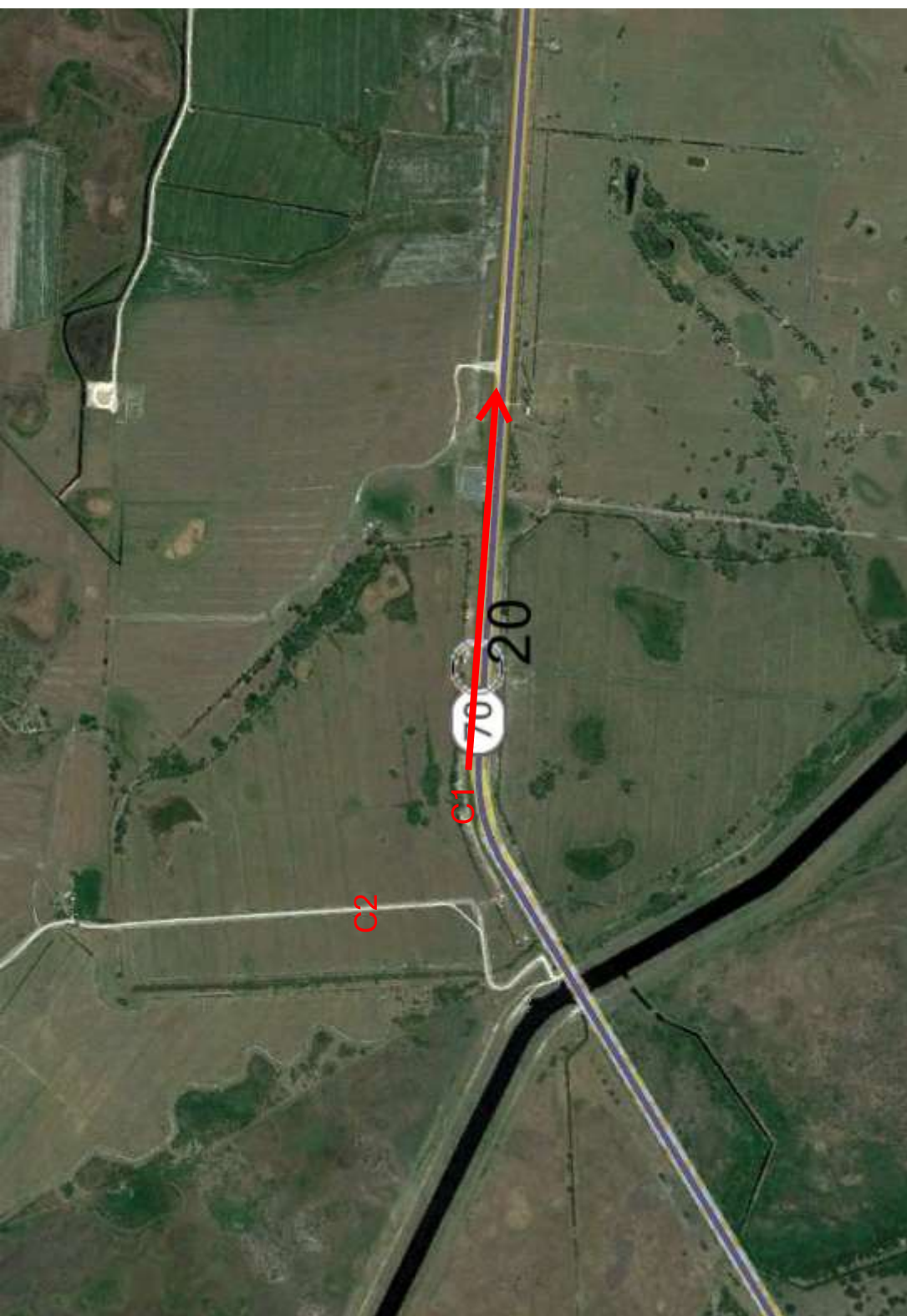
General Site and Habitat Conditions; Other Activities in the Area

Bus traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
C1 20	A	7:56	A observed flying east on 70, perched briefly in oak, flew east
C2 20	2A?	9:11	2 possible Adults observed flying over station 20



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: _____

Location/Observation Block/Lat-Long: #23

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/4/22	6:45 AM	10:14	Caitlin H71 / Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:59	70°F	7 mph from south	5%	thin, cirrus	NO
Finish: 10:14	76°F	11 mph from south	15%	stratocumulus + cirrus	NO

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
decomp. cattle NW of station. Eagle observed perched N of station throughout survey.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	A	7:44	approached from west, down SR 70. Perched on S pole for 2 minutes, north pole for 3 min, then back to S pole.
	A	7:53	flow down SR 70 east of station then looped back to powerline pole. then flew to perched slash pine, crawled into tree.



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 METRIC Caracara Surveys

Location/Observation Block/Lat-Long: 24

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
Jun 4 2022	6:51		A. Myers

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: <u>6:51</u>	<u>66</u>	<u>SSE ~5 mph</u>	<u>10%</u>		<u>Light Fog</u> ^{newby} _{clear fast}
Finish: <u>10:15</u>	<u>66</u>	<u>~10 mph, SSE</u>	<u>10%</u>		<u>None</u>

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
<u>Cattle Pastures; house (possibly unoccupied);</u> <u>along SR 70</u>

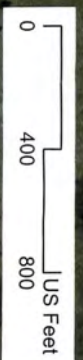
Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
<u>24</u>	<u>A?</u>	<u>850</u>	<u>Flying East over pasture South of SR 70</u> <u>Last sight behind farmhouse</u> <u>Likely adult</u>
<u>24</u>	<u>A?</u>	<u>852</u>	<u>Likely adult</u> <u>Flying East along SR 70, last</u> <u>sight behind Roadside Veg</u>
<u>24</u>	<u>A?</u>	<u>9:15</u>	<u>Flying W over pasture, turned; flew S,</u> <u>was always low over pasture</u> <u>Likely adult</u>

41E 22.13 4.5 6.6 22.181

11
9.10 12 14 15
13
16 17
18 19 20
21
22 24



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70
Location/Observation Block/Lat-Long: 27.2371/-81.0537

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-5	7	10	Chuck

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	70	SSW 6	40		Fog
Finish: 10	75	SSW 9	50		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Basic draft

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
C1 21	A	8:20	A observed perched on post 2500' N of 721/70
C1 21	A	8:29	Flew South perched on pole
C1 21	A	8:36	A Flew West out of view
C2 21	A	9:30	A observed 2500' N of 721/70 Flew North



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: _____

Location/Observation Block/Lat-Long: #22

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/5	6:51	10:15	CAITLIN HILL; PRIMARY

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:51	71°F	9 mph from south	40%	alt stratoc	mod fog @ start, fading
Finish: 10:15				alt stratoc	No

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Positioned across from sod farm. Dead cow at eastern prairie north of sod farm.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
On car	A	9:44	Caracara grabbed roadkill from center of SR 70 (approached from northern prairie) flew w/ food (due to cars) to crevice. (eagle deterred landing)



21 18-19 22 23 24
11 16-17 12 14 15
9-10 13

1 2 3 4 5 6 7 8

22

0 400 800 US Feet

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SA 70 Caracara Surveys

Location/Observation Block/Lat-Long: Station 25 (27.2461739 -80.9289730)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
Jan 5 2022	0653		R. Myers 272461739 -80.9289730

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 06:53	~67	South < 5mph	100%		Fog (Fog gone ~8:30)
Finish: 10:16	75	South 5-10mph	50%	stratus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Fog in early AM; Near Kissimmee River; best views to South - pasture w/ cabbage palms on WMD land; [landscaping crew on scene w/ 5 trucks & on foot w/ weed wackers] @ 7:30

OSPREY NEST #1 w/ 2 adults on telephone line immed. N of station 25
OSPREY Nest #2 just to West, N side of SA 70, adult carrying nest material

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
25			

NO CARA CARA SIGHTED

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Caracara A/S Surveys

Location/Observation Block/Lat-Long: Station 26

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
06/05 6/28	0655	10:15	Rob Myers

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0655	57	6 mph N	20	Stratus	NONE
Finish: 1015	65	14 MPH N	15	stratus	NONE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Citrus Field to South, Sod Farm to North, Kissimmee River nearby to west, canals to North Many Osprey

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Station 26	A.	7:19	Perched on snag East of station 26 then flew west along SR 70 until vegetation blocked view



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: _____

Location/Observation Block/Lat-Long: #27

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/6/22	6:59	10:25	Caitlin Hill/Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:59	57°F	8 mph North	15%	cirrostratus, cirrus	No
Finish: 10:25	65°F	14 mph North	5%	Cirrus	NO

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

--

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	A	7:19	adult caracara, perched on snag
	A	7:34	adult caracara, perched on snag
	A	7:36	adult cc w/ food flying E, second adult cc follows, lost behind tree line
	A	9:13	adult cc seen flying over tree line on 128th Ave(N) from the N. Flew E, lost behind trees @ 9:19



WEEK 2

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 201/27.259 N / -81.07476

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-17-23	7	10	Chad

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	39	SSW2	0		
Finish: 10	63	SSSE2	0		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No caracara observations

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 21/ 27.2372N / -81.0537 W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/8-23	7	10	Carl

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	50	56	0		Early fog
Finish: 10	68	SE 4	5		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
C1 21	A	9:20	A observed N of 70, perched on pole
C2 21	A	9:45	A Flew SE perched in oak



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 - Project #3

Location/Observation Block/Lat-Long: #23

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/18	6:30AM		Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:30AM	48°F	1 mph NW	5%	Cirrostatus	mod. fog 1st hour
Finish:	70°F	6 mph N	10%	Cirrostatus	no

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Bald eagle observed hunting throughout observation block during survey.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Caracara Surveys - Metric

Location/Observation Block/Lat-Long: 27°14'10.6"N 81°00'46.6 W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/18/23	657		R. MYERS

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 657	50	—	100 %	Fog	Fog
Finish: 10:15	71	SSE 5mph	10 %		None

Observation Point Information

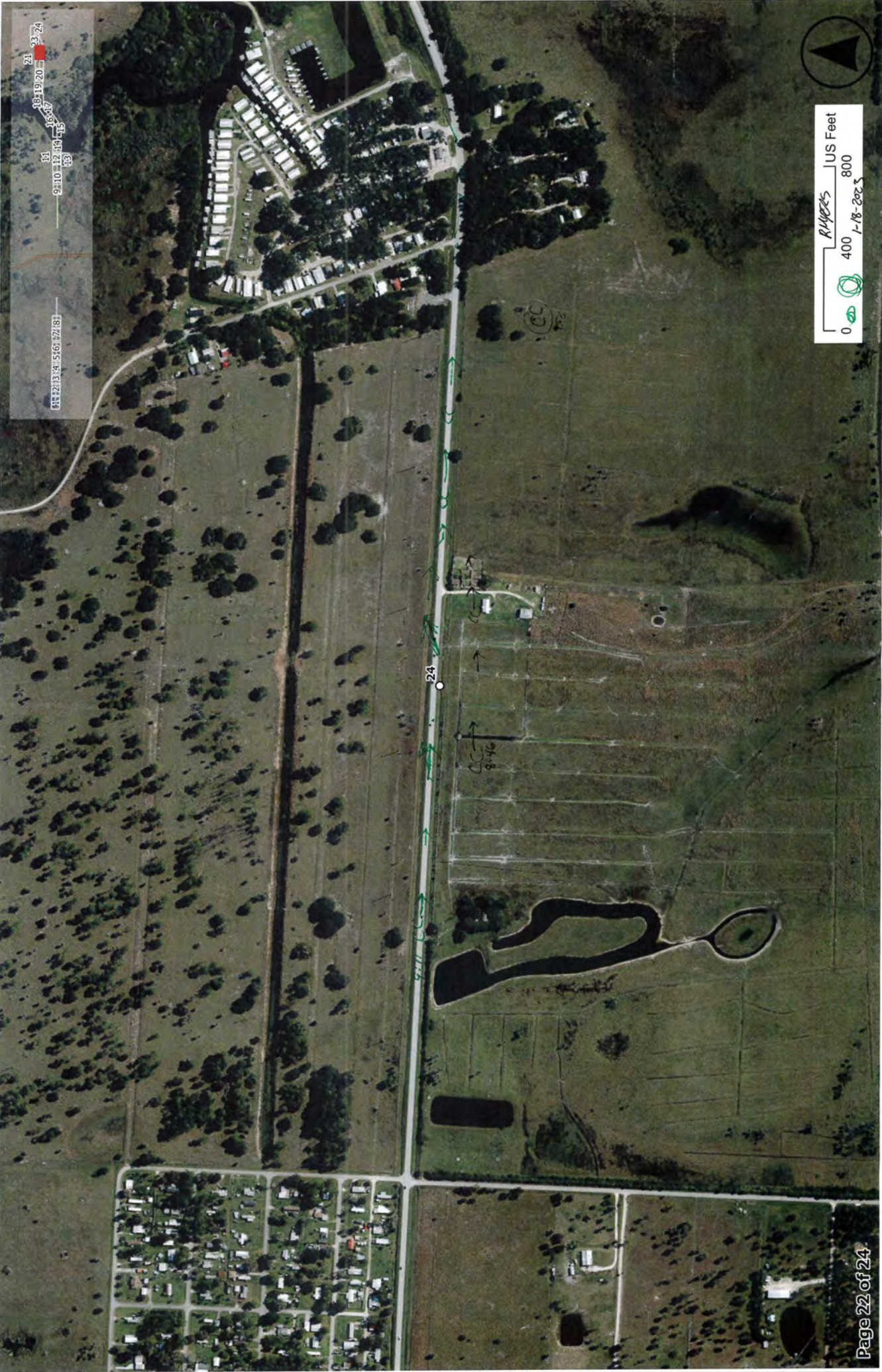
General Site and Habitat Conditions; Other Activities in the Area

Fog Early & persistent ~ 8:00

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Point 24	A	8:46	Flying E parallel to SR 70
Point 24	A	9:11	Flying E Above SR 70, Flew over river & lost behind treeline
Point 24	A	9:56	Adult perched in isolated Pine East of survey station, near Riparian corridor perched 10+ minutes, exit not observed



9-10-12-13-14-15-16-17-18-19-20-21-22-23-24

11 12 13 14 15 16 17 18 19 20 21 22 23 24

0 400 800 US Feet
1-18-2023

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: STA 22

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/19/23	6:40A		Carlin Hill, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:40	57°	1 mph N	0%	—	mod. frost haze
Finish: 10:51	76°	10 mph N	5%	Altostratus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

roadkill (coyote) adj to WB SR70 just west of New Pine Ridge Rd. Eagles & northern harrier observed using fields to south.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
adj to road @ SR70	IM	7:52	cc flew S to SR70 from W of pines, perched adj to SR 70 for 4 mins
adj. to SR70	IM	7:56	cc#1 moved to perch further east, perched on ground for 37 mins
	IM #2	8:33	cc#2 approached SR70 from SW, crossed road & did a circle around roadkill perched near W. cc#1 flew W
	IM #1 IM	8:57	cc#1 flew north from rd, cc#2 dropped, they joined & flew and then together flew W of pines - cc turned to perch

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

adj to Carr SR 70	IMx2	9:07	both flew east from behind pines toward SR 70. One perched south of SR 70 & one kept flying SE.
"	IMx2	9:16	both juv. flew in from NW to cabbage palms N of SR 70 + perched long time
"	A	9:39	adult flew up from S + perched in pine snag S of SR 70 then flew NW of pines
N of SR 70 on New	Ax2	9:55	adult #1 took off from ground + flew N, second adult caracara joined it + both flew N
Pine Ridge Rel	?	10:17	cc flew south towards cluster of cabbage + slash pine just west of pines N of SR 70
"	Juv.	10:41	Juv. left rubble on ground + flew south to cluster of palms/pines





**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Metric Caracara Surveys

Location/Observation Block/Lat-Long: _____

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-19-23	0656		Rob Myers

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0656	56	1 mph N	100% Fog	Fog	Fog
Finish: 1017	74	S ~ 9 mph	10%	circus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Many Osprey No Casa Casa

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
—	—	—	—



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 METAC Caracara

Location/Observation Block/Lat-Long: #26

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-20-23	0657		Rob Myers

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0657	66	E ~ 1 mph	85%		light sprinkle
Finish: 1015	77	S ~ 8 mph	40%		None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

citrus to South
bare field for row crops to North

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
26 #26		711	Flew from S of SR 70 across SR 70 & down SR 70 then landed in field to N and perched on snag
26	A	812	Flew West along SR 70
26	A	823	Adult flew from S of SR 70 North & perched on snag N of SR 70
26	A	0839	Adult flew from perch on snag West along SR 70

Same individual

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

26	A	0904	Adult Flew E bound along SR 70 & landed in snag

1-20-23
Amyers
station 26



0 1-20-23 400 800 US Feet
Bake / MGS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: 27

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/20/23	6:45	10:30	Caitlin Hiel, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:45	66°	1 NE	75%	Stratocumulus nimbostratus	N ^{light rain} before survey.
Finish: 10:30	73°	6 mph SW	60%	cumulonimbus nimbostratus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Bald eagles (nest 8 of station) observed hunting around station/observation block.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
128th St Wob 128th St	A	8:04	adult flew to snag + perched from NW
"	A	8:12	adult flew SW across SR 70, continued behind tree line @ Station 26
"	A	8:23	adult returned from SW, crossed SR 70 + perched on different snag 8 of sod farm
"	A	8:38	adult again flew SW behind tree line + Station #26

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

"	A	9:04	caracara was flying low + approached perch from west, then perched on snag
"	A	9:19	adult left perch + flew SE across SR 70 + continued SE behind tree line
"	A	10:24	caracara adult approached snag @ house from N
"	A	10:26	adult flew from snag across SR 70 to AM perch/snag, then flew to snag west, flew SW after couple min.



WEEK 3

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 70

Location/Observation Block/Lat-Long: 21/27.37/-81.052 7

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-31-22	7	10	Chad

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	63	WNW 2	68		Early fog
Finish: 10	75	SE 3	35		

Observation Point Information

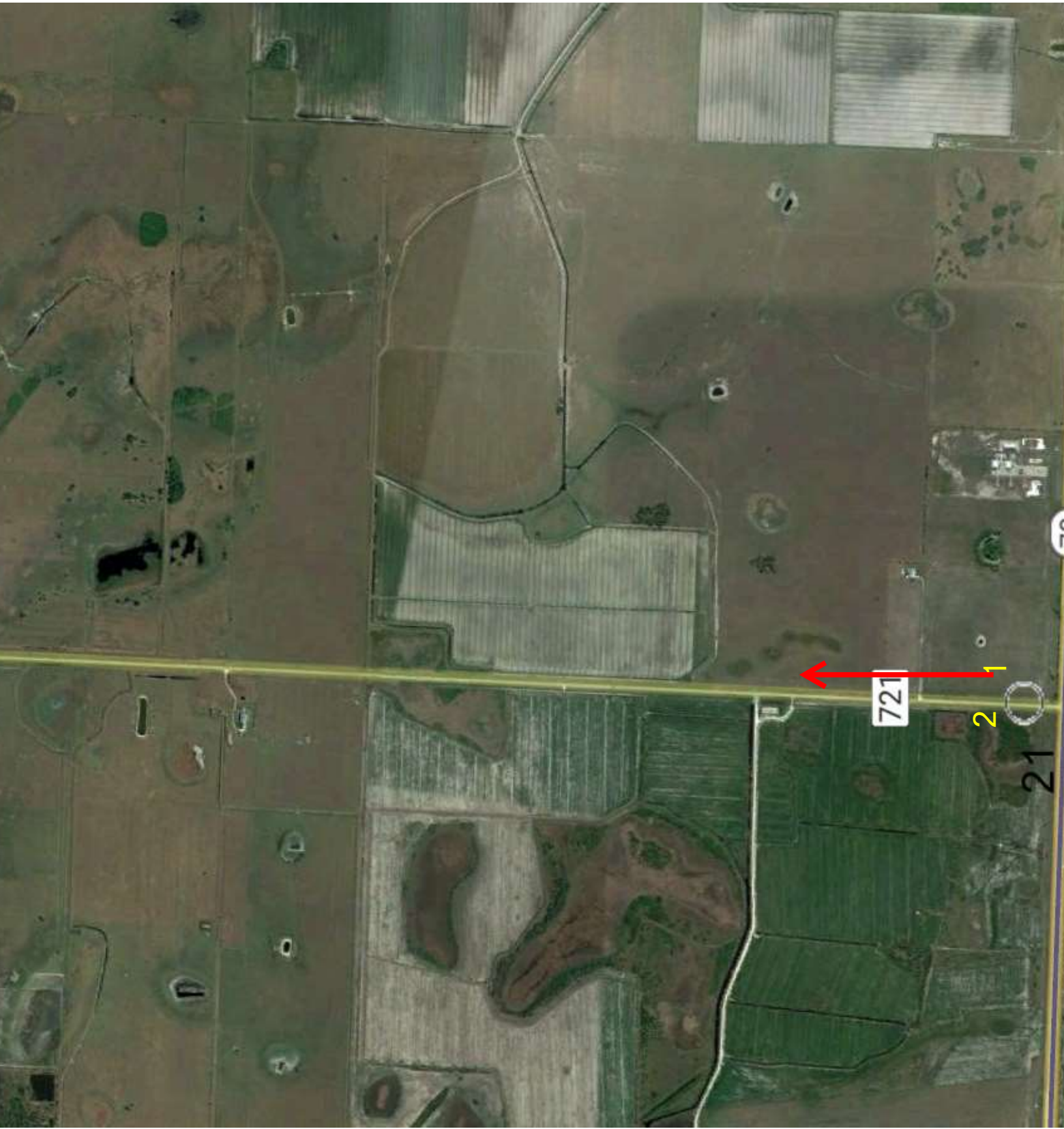
General Site and Habitat Conditions; Other Activities in the Area

Basil traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
21	A	9:31	A Fly north along 721 stop at fence by bait
21	A	9:38	A fly south past the pole



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 23

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/31/23	6:40 AM	10:15 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:40 AM	61	1 NE	20	altostratus, stratocumulus	minor fog for 1st ~30 mins
Finish: 10:15 AM	67	1 NE	50	altostratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Bald Eagle hunting in area, took fresh road kill

Observations

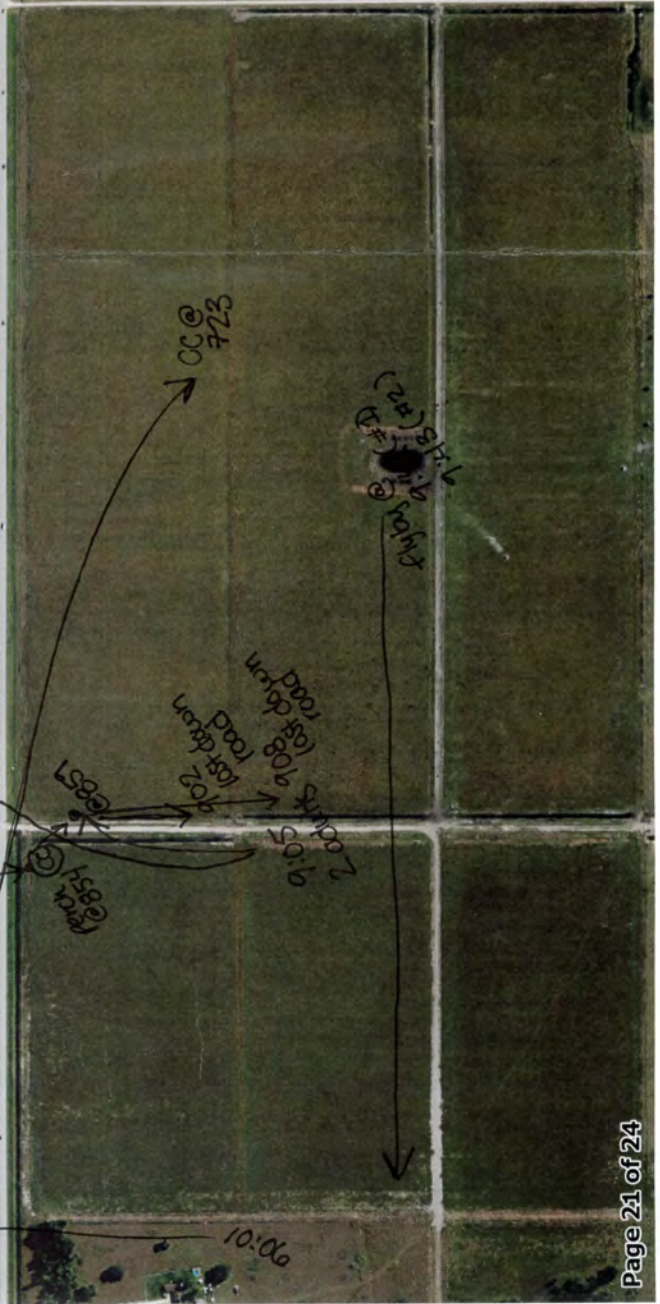
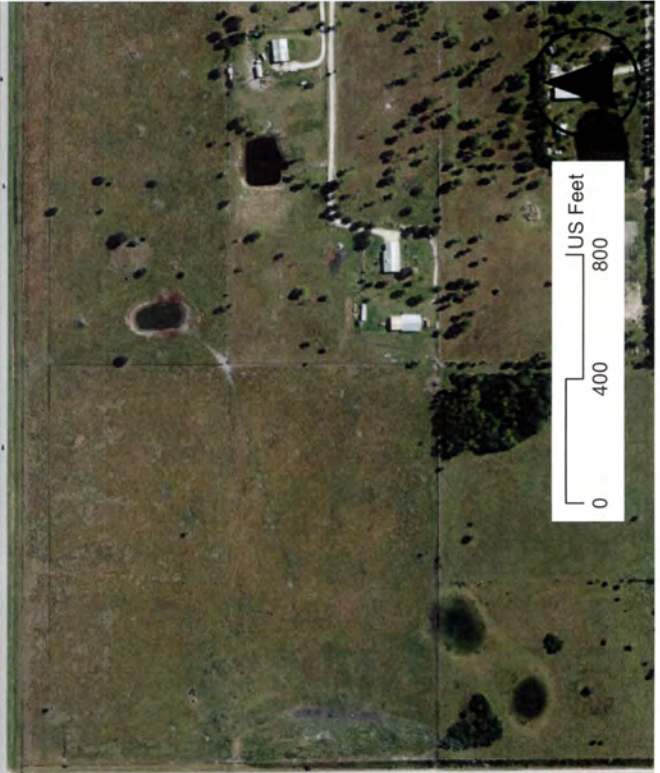
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
23	A	7:23	Flyover from W heading SE
23	A	8:51	Flew along road from E to perch. Flew across road to second perch @ 8:54
23	A	8:59	Moved to third perch, circling fresh road kill. Flew S @ 902, lost down road.
23	A, A	9:05	Fly from S (2 adults together), 1 perched, 1 circling, lost moving E

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

23	A	9:08	Perched adult + the flew S, lost down road.
23	A	9:41	Adult flyby E to W over field, Second adult @ 943
23	A	10:06	Flyby S to N, lost behind trees

1/31/23



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: Project 3-SR70

Location/Observation Block/Lat-Long: #24

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/31/23	6:49A	10:30A	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:49A	61°F	0 mph	50%	Cirrostratus, Cirrocumulus	mild, low fog
Finish: 10:30A		1 mph ↑			—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

RSH on perch @ first light in observation block, hunted throughout eastern portion of observation block during survey

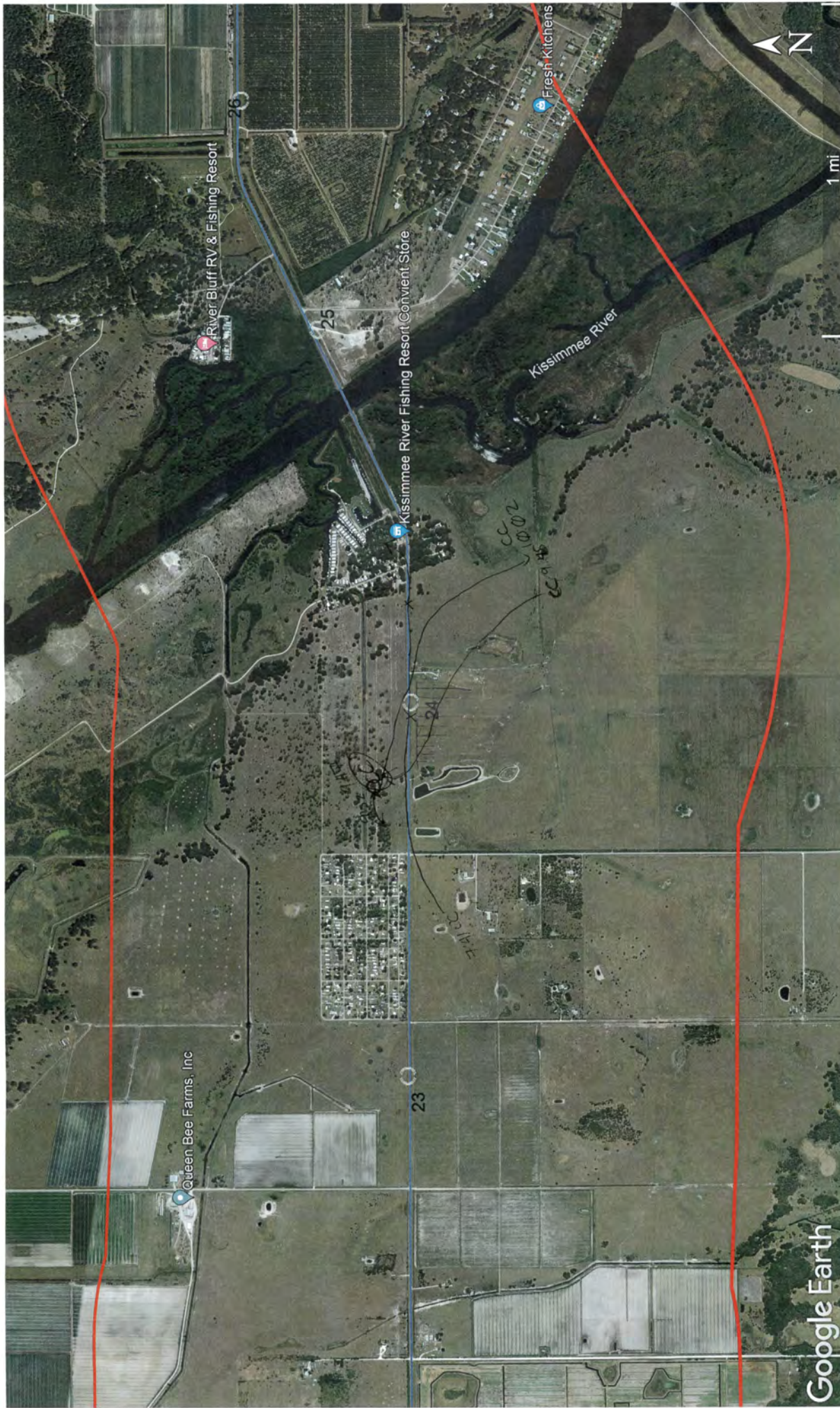
Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
S of SR70	A	7:41	adult flying east down SR70 turned north to head of RV park @ curve
N of SR70	A	9:45	adult flew into obs. block from SE, crossed SR70 & landed on pine
11	A	9:52	adult hopped down to ground, walked around, flew back to cabbage palm near pine (went into
		9:55	adult flew down to ground then returned (carrying something) to cabbage palm

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

1	A	9:57	left cabbage few minutes, perched on slash pine + vocalized
11	A	10:02	adult flew east from perch along SR 70 then SE



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: 20/27°14'11.82"N / 81°4'1.82"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2-1-23	7	10	Chuck

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	64	WSW 4	5		Partly fog
Finish: 10	77	W 3	5		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	N1	observations	

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Eat-Long: Station 22

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/1/23	6:50 AM	10:15 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:50 AM	62	1 N	50	altostratus, cirrus	N/A
Finish: 10:15 AM	76	4 N	5	altostratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Lack of activity in area; Fire in nearby field

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: Project 3 SR70

Location/Observation Block/Lat-Long: #25

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
6:45A	2/1/23	10:16A	Caitlin Hill, Primary



Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:45	64°F	1mph →	25%	cirrostratus, altostratus	—
Finish: 10:16A	76°F	5mph ↘	5%	cirrostratus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Several active ospreys (five nests immediately adj. to SR 70) throughout observation block during survey

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
South of SR 70 East of bridge	Adult/ Subadult	10:16	Caracara flew towards SR 70 from SE and was chased west by an osprey. The caracara continued flying down westbound SR 70

96 active nest



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 Project 3

Location/Observation Block/Lat-Long: #26

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
6:48A	2/2/23	10:12	Caitlin Hill, Primary



Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:48	65°F	5mph ↗	0%	—	low/light fog @ start
Finish: 10:12	77°F	6mph ↗	5%	altocumulus	

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
S of SR 70 + saddle farm	A	9:40	adult approached snag from N (flight in not seen, appeared to pop up from farm)
"	A	9:50	adult left perch + flew east down SR70, then turned NW and went across pasture (lost behind treeline)



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SP 70 Project 3

Location/Observation Block/Lat-Long: Station 27

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/2/23	6:40 AM	10:15 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:40 AM	62	1 SE	5	cirrus	minor fog 1st ~ 30 mins
Finish: 10:15 AM	76	5 SW	5	cirrus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Recent utility work in area (directly adjacent to frequently used shag)

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
27		7:35	Perch on snag, approached from SE or SW, flew W @ 7:38

2/2/23



Google Earth

WEEK 4

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: 21/27/439°N 81°03'14"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
7-14-23	7	10	Church

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	91	NNE 4	0		Slight Fog
Finish: 10	64	ESE 3	0		

Observation Point Information

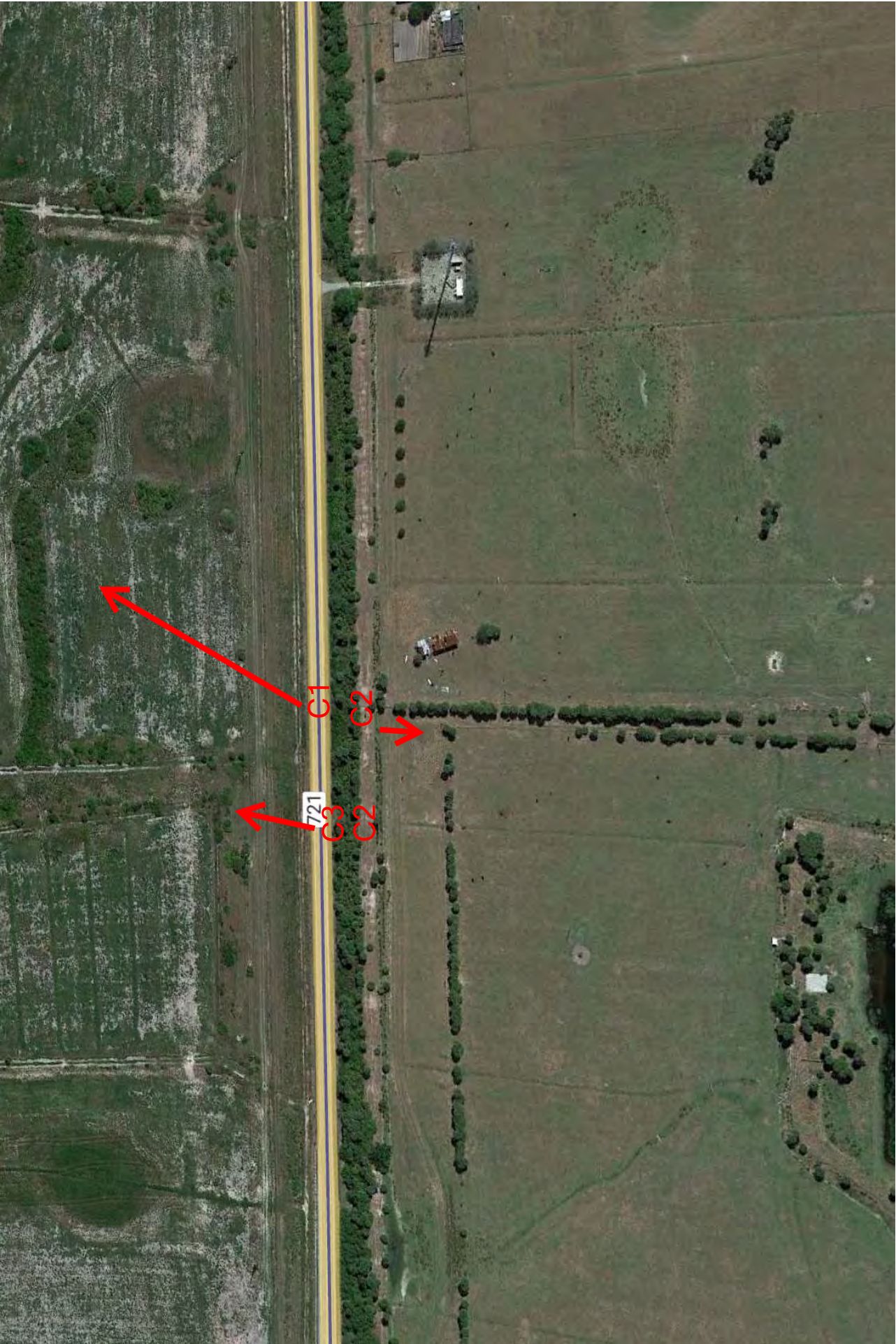
General Site and Habitat Conditions; Other Activities in the Area

Bayou traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Tm	Time	Description of behavior, flight path, etc
C1 71	?	8:41	Observed flying N over 70, 100' west of 721
C2 21	2A	8:57	2 Adults perched on poles S of 70, 1A flew south into group of palm trees
C3 21	A	9:22	Other A fly N out of view



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 23

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/14/23	6:45 AM	10:15 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:45 AM	44°	1 S	5	stratus	N
Finish: 10:15 AM	64°	5 NE	0	N/A	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

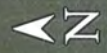
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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
23	A	8:05	circled over road, perched, departed N @ 8:10
23	A	8:35	Flew over road E to W
23	A	9:01	Flew over road from W to perch, departed E following road @ 9:02

2/14



4000 ft

Google Earth

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project #3

Location/Observation Block/Lat-Long: Station #24

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/14/23	6:40 ^{AM}	10:05 ^{AM}	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:40	41°F	1mph ←	0%	—	fog @ sunrise
Finish: 10:05	63°F	1mph ←	0%	—	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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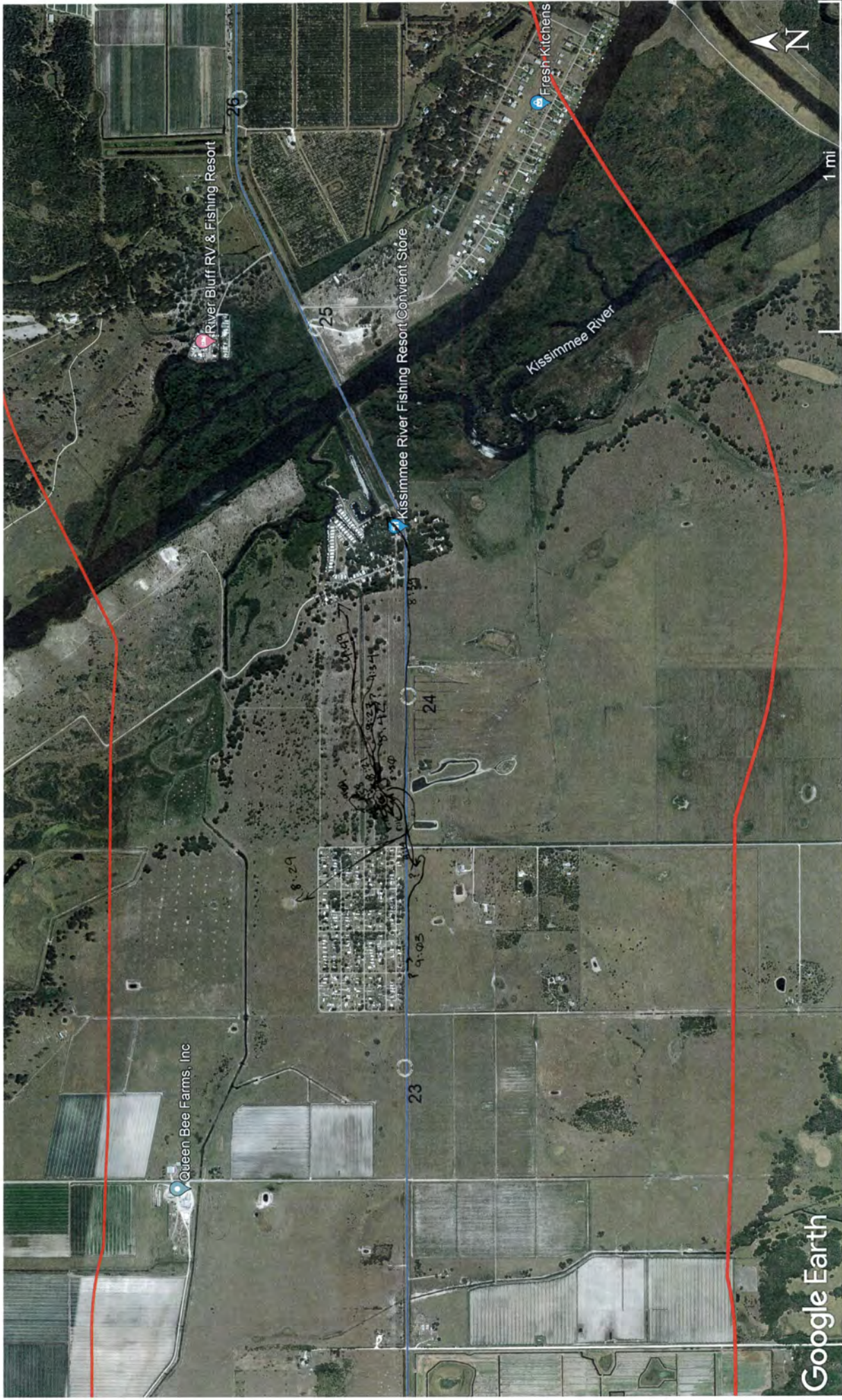
Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
N of SR 70	A	7:58	adult perched on slash pine adj. to potential nest/cabbage, gathered sticks & branches
"	A	8:11	adult flew off w/ nesting materials to cabbage palm
"	A	8:19	1 adult flew out of palm & then to ground & back up to palm
"	A	8:21	1 adult left palm, flew NE to another adj. slash pine w/ another adult... then flew NW

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

11	A	8:29	second adult flew west down SR 70 after leaving pine, moved S of SR 70 then turned NW @ MH park
11	A	8:39	adult returned from W, flying E down 70, lost behind tree line as road curves before River
11	A	8:42	adult returned to northern pine
11	A	8:50	adult 'hopped' down from pine, flew to pine just south
11	A	9:03	adult flew in from W, down 70, landed in field S W of Rucks Dairy & SR 70
11	A	9:14	both adults together in pine, second adult flew in from S W field
11	A	9:21	adult flew into cabbage palm
11	A	9:24	adult left palm & flew to N pine
11	A	9:27	adult flew low & east from pine
11	A	9:34	adult flew back to palm, low & from east
11	A	9:49	both adults flew E/NE together from palm & pine



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 22

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/15/23	6:45 AM	10:05 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:45 AM	54	1 NW	0	N/A	N
Finish: 10:05 AM	74	10 SE	5	altostratus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
22	A	7:05	Adult approached from NE into Sabal palm
22	A	7:06	Second adult approached from E over road and entered same palm. One adult departed 7:07 W.
22	A	7:09	Second adult departed in same direction.
22	A	8:16	Flew across road from the N, landed in Royal Palm

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

22	A	8:25	Departed Royal Palm and flew NE to perch on snag. departed N at 8:29
22	A	9:05	Approached from N to perch on snag, second adult joins at 9:08
22	A	9:12	First adult leaves snag and returns to original Sabal palm
22	A	9:14	Second adult departs SN and lands in sod field
22	A	9:16	First adult departs Sabal Palm SW to perch in Royal Palm
22	A	9:19	One adult departs NE
22	A	9:26	One adult flies S over road and then turns W flies S over road and then turns W

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 Project #3

Location/Observation Block/Lat-Long: Station #25

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/15/23	6:39 ^{AM}	10:03 ^{AM}	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:39	59°F	1mph ↗	5%	Altostratus	—
Finish: 10:03	74°F	2mph ↗	10%	Altostratus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Osprey nests & heavy osprey presence

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			—

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 Project #3
Location/Observation Block/Lat-Long: Station #26

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/16/23	6:42 ^{AM}	10:01 ^{AM}	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:42 ^{AM}	59°F	1 mph ↗	25%	altostatus	—
Finish: 10:01	74°F	3 mph ↗	35%	altostatus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Some osprey activity w/ nearly nest

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			—

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 27

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/16/23	6:45 AM	10:00 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:45 AM	60	2 N	25	stratocumulus, cirrostratus	N
Finish: 10:00 AM	76	9 SE	10	altostratus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

WEEK 5

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: 21/27°14'12"N 81°03'14"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-1-23	7:00		Chuck

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	55	W4	50		Fog
Finish: 10	73	W2	15		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic - fog until 9am

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
no observations			

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3
Location/Observation Block/Lat-Long: #24

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/1/23	6:31 A	10:02 A	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:31 A	57°F	0 mph	0	—	heavy low fog for 1st hour
Finish: 10:02 A	70°F	1 mph →	10%	cirronimbus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Burning crops in SW soil farms, created low smoke to west of survey block

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
N of WB SR 70	A	9:42	adult came from N field across SR 70 & continued flying down. WB SR 70, landed 2 minutes later in pine NW of cabbage/nest
11	A	9:46	adult left perch, flew across SR 70, large SE loop

3/1



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 25

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/1/23	6:30 AM	9:50 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:30 AM	57	1 E	0	N/A	Mod. fog for 1st half
Finish: 9:50 AM	69	1 NW	10	Stratocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Numerous osprey nests in area.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SP 70 Project 3

Location/Observation Block/Lat-Long: Station 22

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/2/23	6:32 AM	9:50 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:32 AM	57	1 NE	0	N/A	N
Finish: 9:50 AM	77	11 S	15	altocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Numerous hawks hunting in area.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3
Location/Observation Block/Lat-Long: #23

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/2/23	6:30A		Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:30A	57°F	1 mph ↑	0%	—	low blanket of fog on ground
Finish:					

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
N of SR 70	A	8:19	adult seen flying into cabbage near group of trees
"	A	8:28	adult flies into cabbage palm carrying nesting material
"	A	8:35	adult leaves cabbage & heads & E across pasture
"	A	8:41	adult returns to same cabbage palm

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

//	A	8:42	second adult flew into tree from low ground nearby
//	A	8:44	one adult flew NW, left tree
//	A	8:45	second adult left tree + landed on ground in pasture nearby
//	A	8:54	one adult returned to the nest/cabbage palm
//	A	9:05	adult left nest + perched on low utility pole (not perched)
//	A	9:09	second adult returned to nest, perched adult hopped down a couple minutes later
//	A	9:13	adult left nest + perched in fence post nearby, second adult returned to nest
//	A	9:19	second adult left nest + flew down to same, adjacent pasture, first adult flew back to nest
//	A	9:24	adult left nest → pasture
#	A	9:27	both adults returned to nest
//	A	9:30	one adult left + flew into adj. pasture

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

1	Sub g A	9:37	sub adult flew in from east, landed near adult in field
11	Sub/ A	9:40	adult flew nest to ground w/ food, one minute later returned to nest
1	Sub	9:41	sub adult left & flew east
11	sub	9:51	sub adult returned from east & perched on fence post



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 Project 3

Location/Observation Block/Lat-Long: #26

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/3/23	6:32a	9:50	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:32a	72°F	10 mph ↑	15%	cirrostratus	—
Finish: 9:51	78°F	14 mph ↑	15%	alto cumulus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
S of SR70		7:05	carac. flew in from SW pasture to perch N of SR70 then flew W on 70th & North on road
1,		7:12	flew from NE to pasture & then returned to perch
1		7:16	left perch, flew west grabbed something from SR70 & landed on road
		7:24	returned from west, grabbed something off road & returned to sod farm
		7:27	returned to road & then to post to the south
		7:29	flew NW across sod farm to snag on western limits



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 27

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/3/23	6:32 AM	9:50 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:32 AM	70	8 S	5	Cirrostratus	N
Finish: 9:50 AM	79	17 S	5	alto cumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Bald eagle hunting nearby; Numerous osprey in area.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
27	Sub adult	7:06	Approached from SW, landed on perch ~ 30 seconds, followed road N then turned over field headed S
27	Sub adult	7:14	Returned to perch, departed W over road @ 7:17



WEEK 6

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2015-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: 21/27°14'36"N 81°03'14"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-15-23	7:10		Chard

Weather					
Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:10	55	N 9	80		
End: 10:00	59	nnw 8	70		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, rear throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc.)

Observer	Age	Time	Description of behavior, flight path, etc
21	A	8:22	A on pole along 721 N, 2,100' N of 70
21	A	8:26	A Flew NW out of view



A on pole

721

721

721

70

21

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 700 Project # 3

Location/Observation Block/Lat-Long: # 22

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/16/13	7:05	10:35	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:05	50°F	6 mph ↙	5%	stratocumulus	—
Finish: 10:35	68°F	5 mph ↙	5%	stratus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Bald eagle observed perched in sod farm/scrub w/in ~~vicinity~~ of sunrise, remained for most of the morn'g (~7:30 - 9:30). Fire in SW pasture @ 10:00 AM

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 25

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/16/23	07:13 AM	10:35 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:13 AM	51	6 N	5	stratus	N
Finish: 10:35 AM	67	9 NE	5	stratus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Numerous active osprey nests in area.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: # 26

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/17	7:13		Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:13					
Finish: 10:42	74°F	15 mph ↑	5%	cirro stratus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 27

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/17/23	07:12 AM	10:35 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:12 AM	50	1 NE	5	stratus	N
Finish: 10:35 AM	73	12 S	5	stratus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Active bald eagle and osprey nests nearby

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
27	Im	8:24	Subadult flew from SW across field, continued N along NW 128th Ave, lost behind tree line.



4000 ft

Rio Ranch Corporation

River Bluff RV & Fishing Resort

Fresh Kitchens & Flooring

Kissimmee River

Google Earth

WEEK 7

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, Project 3

Location/Observation Block/Lat-Long: Station 22

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/28/23	7:00 AM	10:20 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:00 AM	67	1 E	20	stratus	mod fog @ start
Finish: 10:20 AM	72	2 W	40	altocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Great Horned owl spotted flying through area.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
22	A	9:27	Adult flew W from NE to land in sod field.
22	A	9:49	2nd adult flew W from NE to join the 1st in sod field.
22	A	9:53	one adult departed W over field
22	A	9:54	2nd adult flew to Royal Palm tree line.

3/28 STA22



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 Project #3

Location/Observation Block/Lat-Long: #25

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/28/23	6:59a		Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:59a	67°F	0 mph	—	—	Fog @ sunrise
Finish: 10:20	79°F	1 mph	—	—	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Osprey observed on nearby fence post, eating @ dawn. Vulture flew through area and was chased out by osprey. Osprey seen carrying nesting material nearby

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 21/27°14'35"N 81°03'13"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-29-23	7	10	Church

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	64	NW 3	50		Early fog
Finish: 10	75	N 6	25		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
No observations			

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 Project 3

Location/Observation Block/Lat-Long: #26

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/29/23	6:55 AM	10:20 AM	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:55 AM	64°F	4 mph N	15%	Altostratus	Minor fog in
Finish: 10:20 AM	78°F	7 mph N/NW	50%	Stratocumulus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Osprey actively using their nest nearby, Eagles observed SW of station (Active nest)

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
—	—	—	—

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, Project 3

Location/Observation Block/Lat-Long: Station 27

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/29/23	6:58 AM	10:21 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:58 AM	65	5 N	10	altocumulus	Minor fog 1st half hour
Finish: 10:21 AM	76	7 N	50	stratocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Active bald eagle & osprey nests nearby.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, Project 3
Location/Observation Block/Lat-Long: Station 24

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/31/23	06:57 AM	10:20 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 06:57 AM	60	4 E	15	altostratus	N
Finish: 10:20 AM	76	16 E	10	altocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
24	Im	8:36	Juvenile passed through N to S.
24	A	9:23	One adult flew E, turned NE; second adult joined, both disappeared NE

3/31 STA24



Google Earth

WEEK 8

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: #26

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/11/23	6:42	10:05	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:42 ^A	69°F	7 mph ←	45%	cirrus	—
Finish: 10:05	73°F	8 mph ←	85%	cirrus, cumulus	light rain for last 5 min

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

osprey observed @ active nest to north
osprey carrying nesting material to snag.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Sob SR 70	A	7:55	cc approached from SW, flew E down SR 70 + then perched on snag
11	A	7:59	hopped down to ground level, not visible from this station



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, Project 3

Location/Observation Block/Lat-Long: Station 27

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/11/23	6:44 AM	10:05 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:44 AM	66	9 NE	25	stratus	N
Finish: 10:05 AM	74	20 NE	90	nimbostratus	drizzle ~ 10 min

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

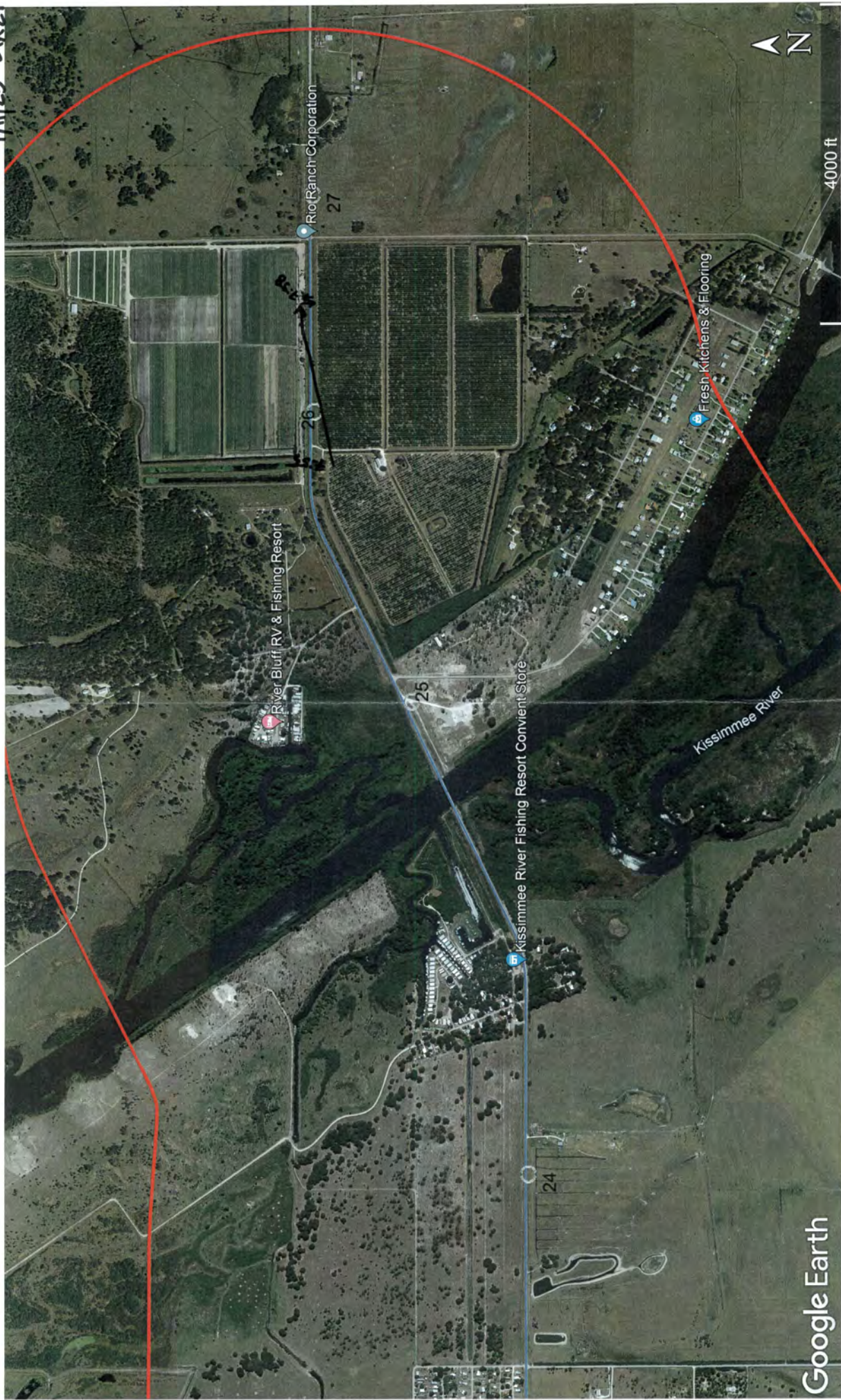
Active osprey & bald eagle nests nearby

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
27	A	7:55	Approached from W to perch on snag.
27	A	7:58	Grabbed food from road, perched on fence to eat. Lost in treeline @ 8:10.

4/11/23 STA 27



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 21 / 27°4'35" N 81°03'13" W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4-12-23	7	10	Chuck

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	68	ENE 9	90		Scattered rain
Finish: 10	73	E 14	90		11

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im.	Time	Description of behavior, flight path, etc
21	A	8:43	A observed near 721/70, flew N along 721 then E
21	A	9:06	A on pole 600' East of 721/70
21	A	9:08	A flew W, south of SR 70



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project #3

Location/Observation Block/Lat-Long: Station 22

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/12/23	6:42	10:04	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:42	68°F	9 mph ←	85%	cumulus, stratus	light rain @ start = mid
Finish: 10:04	71°F	11 mph ←	85%	stratus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Bald eagle observed hunting around station.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, Project 3

Location/Observation Block/Lat-Long: Station 25

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/12/23	6:42 AM	10:05 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:42 AM	68	9 NE	85	nimbostratus	N
Finish: 10:05 AM	71	14 NE	90	stratus	light rain ~ 30 min

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area:

Numerous active osprey nests & bald eagles hunting in the area. Conflict between osprey & eagles observed

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation; head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, Project 3

Location/Observation Block/Lat-Long: Station 24

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/14/23	6:43 AM	10:05 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:43 AM	66	2 N	10	altostratus	N
Finish: 10:05 AM	78	4 S	25	cirrostratus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

WEEK 9

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70
Location/Observation Block/Lat-Long: 21/27°14'35"N 81°03'14"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4-23-23	7	10	Chuck

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	68	NW 6	10		
Finish: 10	76	NW 8	10		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
21	A	7:52	A observed flying N along 721, flew east on fence post
21	A	8:02	2nd A observed in pasture east of 721
21	A?	8:22	3 C's in pasture E of 721, unsure of ages at least 2 A
21	A	8:57	2 A's flew N along 721 out of view



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project #3

Location/Observation Block/Lat-Long: Station #24

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/25/25	6:32 ^{AM}	9:55 ^{AM}	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:32 ^{AM}	66°F	0 mph	75%	overcast	—
Finish: 9:55 ^{AM}	78°F	7 mph	45%	overcast	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Crows were feeding on roadkill in middle of SR 70 ~~along~~ west of Riverside Rd. South of this, construction equipment actively used (crane).

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			—

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 25

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/25/23	6:30 AM	9:55 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:30 AM	67	2 E	60	stratocumulus	N
Finish: 9:55 AM	76	5 SE	40	stratocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Numerous active osprey nests in area, chicks observed.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project #3
Location/Observation Block/Lat-Long: #26 station

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/26/23	6:28 ^{AM}	10:05 ^{AM}	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:28 ^{AM}	66°F	0 mph	5%	cirrostratus	light fog
Finish: 8:10:05	76°F	3 mph ←	30%	cirrostratus, cumulus	—

by sunrise

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
No eagle activity during this survey, limited osprey activity.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
#26 S of 70	Subadult A	7:26	adult flew in from east down 70 & landed on perch for few minutes
"	Sub- A	7:41	Subadult returned to perch from south pasture.
"	Subadult	7:50	left perch & flew SE over pasture
"	Adult	7:55	flew west down 70 carrying food then turned NW @ curve

flew east

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

11	A	9:20	two caracara flew east down SR 70, one flew NE (lost behind tree line) the other flew to the SE field



**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 27

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/26/23	6:25 AM	9:50 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:25 AM	65	5 NE	5	stratus	N
Finish: 9:50 AM	76	3 NE	25	stratocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area



Bald eagle nest nearby has fledged.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
27	A	6:48	Flew in from NE to perch on snag; Departed NE @ 6:53.
27	A	7:25	Flew in from NE to western snag
27	A	7:27	Departed E, followed road ~1 minute then turned back NW over field. Lost headed NE over field
27	A	7:42	Perched on W snag from SW

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

27	 A	7:50	Departed E over road, turned SE to land in field.
27	 A	7:55	Departed field with food headed NNW NNW, turned W over road, continued NNW
27	A, A	9:20	2 Adults flew in from W, one to eastern perch + one to SE field.
27	A	9:30	Perched adult departed E over road
27	A	9:31	Second (field) adult departed NW with food

4/26 STA 27



Google Earth

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 22

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/28/23	6:30 AM	9:50 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:30 AM	68	2 W	30	stratocumulus	N
Finish: 9:50 AM	75	8 S	90	altostratus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
22 <i>Fulmar Terr.</i>	A	6:47	Adult flew W over road, turned back N then E. Appeared to land in field
22	A	7:03	Adult approached from W carry food towards STA 23 nest tree
22	A	7:08	Adult appeared to leave STA 23 nest tree headed E; then turned around and headed W
22	A, A'	8:23	Adult flew ^{NW} from SE; turned to perch on utility pole ↑ joined 2nd Adult

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

22	A	8:28	one adult flew downward w
22	A	8:28	2nd Adult flew SE circled back NW to same perch on utility pole
22 mini horse driveway	A	8:31	Adult flew W from perch down SR70; circled around sod farm to perch on utility perch N of SR70 @ 8:35
22	A	8:37	Adult flew N/E/NE from perch; lost circling in field N of SR70

4/28 STA 12



Google Earth

PRODUCTIVITY

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 30/27°14'58"N 81°3'30"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2-15-20	2		Chavez

Time	Air Temp	Wind Speed and Direction	Weather		Rain/Fog
			% Cloud Cover	Cloud Type	
Start: 7	17	SE 6	0		Slight fog
Finish:					

Observation Point Information

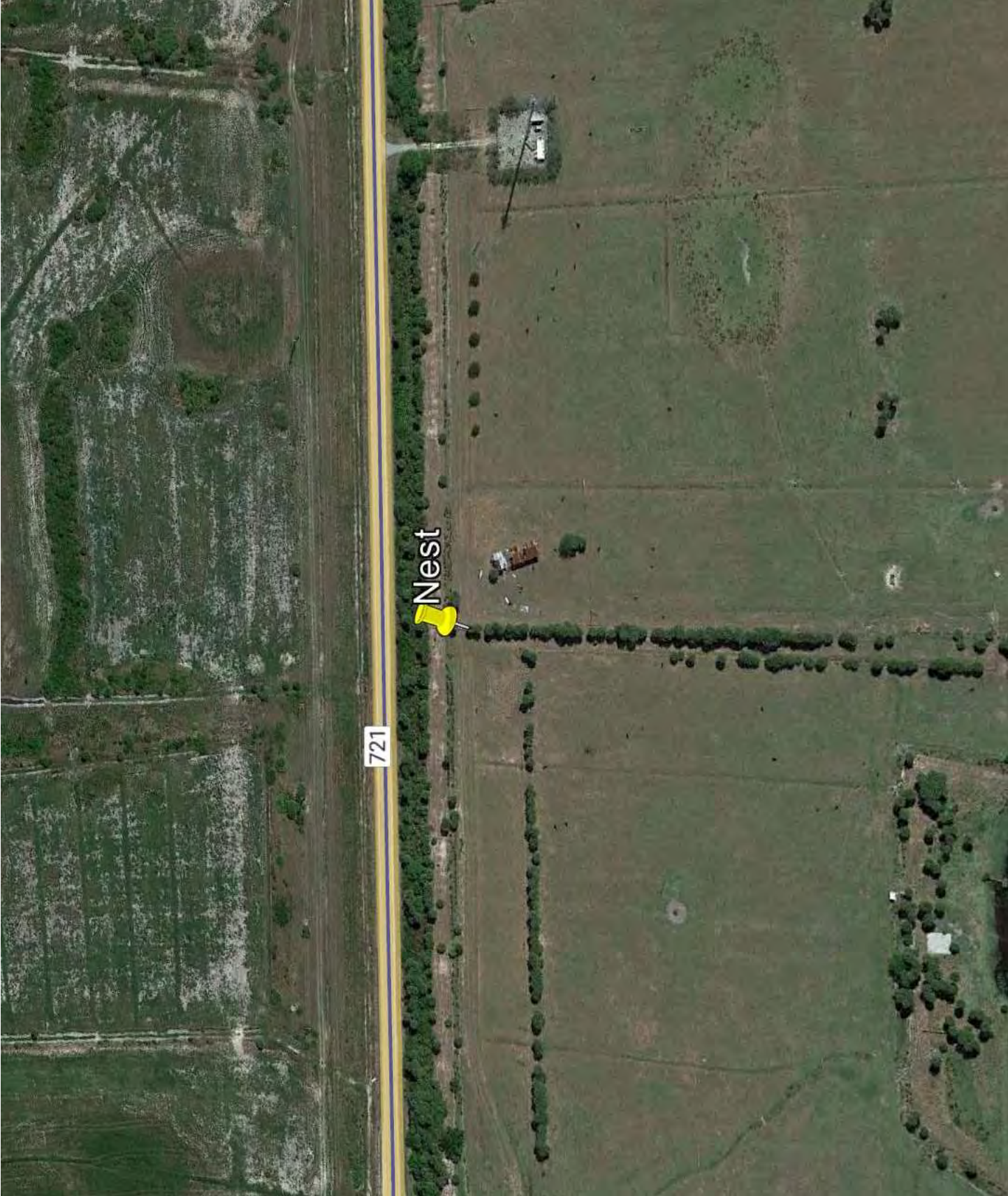
General Site and Habitat Conditions; Other Activities in the Area

Flight - Traffic
NEST ~~1~~ 27°14'8.45"N 81°3'38.67"W

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/T	Time	Description of behavior, flight path, etc
C1 20	A	7:14	A Flashed from nest Based on observation click(s) have hatched



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: 20/26°14'09"N 81°03'33"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2-28-23	6:50	9:45	Chwick

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:50	61	SW 6	30		
Finish: 9:45	75	SW 7	20		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic & AG -

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
20	A	7:03	A on pole near nest
20	A	7:04	A Flew NE out of view
20	A	7:11	A Flew into nest L/feet
20	A	7:16	A on pole from nest, flew off NE

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

26	2A	7:21	2 A on pole, one flew N, the other perched on palm
26	2A	7:38	Both A's on palm (as if to nest)
26	A	7:40	1 A back on pole
26	2A	7:41	Both A's flew East
26	2A	7:55	Both A's return to nest w/ food
26	A	7:56	1 A flew East
26	A	8:07	1 A on pole, other on nest
26	A	8:32	A on pole flew east out of view
26	A	8:45	A flew in from east, chased by hawk, perched in palm of nest
26	A	9:00 9:10	A on pole

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: 26°27'14" N 81°03'30" W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-14-20	7:10	10	Church

Weather					
Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:10	64	N 8	70		
Finish: 10	68	N 9	60		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic - potential two young in nest

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc.)

Observer	Age	Time	Description of behavior, flight path, etc.
26	A	7:26	A on pole near nest
26	A	7:30	A Flew N
26	A	7:52	A Flew into nest, other A also in nest, A on pole by nest
26	A	7:57	A on pole Flew N

Additional Guidance (2016-2017 Breeding Season)

20	A	8:10	A Flew int. nest w/food
20	A	8:11 8:14	A left nest, on pole
20	A	8:30	A on pole Flew N
20	A	9:03	A Flew in from E back on pole new nest
20	A	9:13	A on pole Flew N
20	A	9:31	A back on pole

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: #23 - Productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/16	11:30	12:35	

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:					
Finish:					

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Still appear active nest, incubation

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
N of SR 70, east of nest	A	12:05	adult approached nest tree from south pasture, landed/perched in front of nest tree. Returned to nest after a couple minutes.
1	Im	12:20	juvenile approached nest pasture W of nest
1	Im A	12:25	adult chasing juvenile SW of tree, had went behind shelter/western prop

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 Project 3

Location/Observation Block/Lat-Long: #24 - Productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/16	4:30		

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:					
Finish:					

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
N of SR70	A	5:30	adult flew ^{from} west down SR70, then circled (counter clockwise) towards SR70 NE
//	A	5:39	flew west across north pasture, circling (counter) down to SR70 (west of observer)
//	A	5:41 - 5:45	appeared, flying in wide circles around SR70 ^{same} SR70 ^{canion} on SR70, west of observer

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 Project 3

Location/Observation Block/Lat-Long: Station #24- Productively

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/17/23	1:00PM	4:00PM	Caitlin Hill, Primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start 4:00PM	79°F	17mph S	5%	altostratus	—
Finish 4:00PM	81°F	12mph S	10%	altostratus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
No caracara observed in vicinity, adults & juveniles. No use of potential nesting tree observed. Bald eagles observed flying south of SR70. ASSUMED ABANDONED.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
—	—	—	—

USFWS Crested Caracara Draft Survey Protocol -
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: J R 70

Location/Observation Block/Lat-Long: 20/27°14'08"N 81°03'30"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-28-13	7:10		Chvrd

Time	Air Temp	Wind Speed and Direction	Weather		Rain/Fog
			% Cloud Cover	Cloud Type	
Start: 7:10	66	NW 3	20		Early fog
Finish: 9:45	77	WSW 3	15		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic & ag
1 fledgling observed

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
19	A	8:00	2 A's on post by nest
19	A	8:16	2 A's & (1 fledgling) on ground near nest
19	A	8:42	1 A on post, 1 A on ground - 1 fledgling on ground
19	A	9:18	Both A's & fledgling on ground

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SE 70, Project 3

Location/Observation Block/Lat-Long: Station 23-Productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/28/23	10:26 AM	11:49 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 10:26 AM	73	3 W	30	altocumulus	N
Finish: 11:49 AM	81	2 W	5	altocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
23	A	11:01	One adult emerged from tree to perch on pole. Departed W @ 11:05.
23	A	11:42	Adult approached from SW, circled tree & appeared to enter tree from the W, came out, circled, & re-entered tree from the E

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, Project 3

Location/Observation Block/Lat-Long: Station 23-productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/31/23	10:22 AM	11:30 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 10:22 AM	77	16 SE	20	altocumulus	N
Finish: 11:30 AM	79	16 SE	10	altocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
23	A	10:24	one adult emerged from tree to perch on pole
23	A	10:36	Departed E
23	A	10:42	Flew E to W chasing crow, circled N to perch on fence
23	A	10:46	Dropped to ground, walked around for ~ 8 minutes, appeared to be picking at food on ground

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

23	A	10:54	Flew up to perch in nest tree, entered tree ~ 3 minutes later
23	A	10:59	Emerged from tree to perch on fence. Dropped to ground @ 11:04
23	A	11:08	Jumped back up to fence post. Preening. To ground @ 11:11
23	A	11:13	Preening on fence post 11:13-11:30

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 20127°14'09"N 81°03'30"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4-11-23	7	10	Chuck

Time	Air Temp	Wind Speed and Direction	Weather		
			% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:07	76	ENE 11	50		
End: 10	76	ENE 12	40		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Bay traffic & AS (Still 1 Fledgling observed)

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Imm	Time	Description of behavior, flight path, etc
10	F/I	7:25	Fledgling observed on fence post near nest
20	F/I	7:29	F on ground
20	F/I	7:40	F flew short distance into ditch out of view
20	F/I	8:02	F observed flying short distance on post west of nest

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

20	A	8:06	A on pole west of nest, Flew N out of view
20	A/F	8:18	A Flew in from W, landed S of nest. Fledging on ground brief interaction w/ Adgunk
20	A	8:26	A Flew NW out of view, Fledging also out of view
20	A/F	9:08	A & F observed S of nest

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SP 70 Project #3

Location/Observation Block/Lat-Long: Station #23, Productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/11/13	10:20	11:30	Caitlin Hill, Erin Hill

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 10:20					
Finish: 11:30					

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

appears active, adults returning regularly but not carrying anything
incubation

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
N6 70	A	10:33	adult approached from W/SW, flew east down road, disappeared SE
"	A	11:10	appeared from SE, appeared to have chased eagle (juv.) away from nest tree
"	A	11:15	retained, landed in nest tree. Left nest & perched @ nearby pole
"	A	11:20	left perch, flew S to pasture lost behind southern pines.

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, Project 3

Location/Observation Block/Lat-Long: Station 23 Productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/14/23	10:10 AM	11:15 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 10:10 AM	78	45	25	Cirrostratus	N
Finish: 11:15 AM	82	80	40	Cirrostratus / alto cumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
23	A	10:54 AM	Approach from SE, headed NW to enter nesting tree. Did not appear to be carrying food.
23	A	10:56 AM	Left nest, headed SE. Lost behind treeline

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 78

Location/Observation Block/Lat-Long: 20/27°14'09"N 81°03'30"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4-22-20	7	9:30	Church

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	68	SW 4	40		
Finish: 9:30	77	SSW 6	40		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic 1 fledgling observed

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
20	A	7:42	A on pole S of nest
20	A	7:56	2nd A on Palm near A on pole, 700' SSW of nest
20	A	8:17	A on pole Flew into hammock toward ground, 2nd A did same but
20	A	8:37	out of view A back on pole, if fledgling on ground too far to see

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

20	A/I	8:50	A from pole flew into nearby palm, head chatter, I flew out of palm N, NE, A flew N then W, I followed A W along 70

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project #3
Location/Observation Block/Lat-Long: Station #23- Productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/25	10:02 ^{AM}		Caitlin Hill, Rummy Evin Smith

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 10:02 ^{AM}	79°F	8 mph N	50%	cirrostratus altostratus	-
Finish:					

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Nob SR 70	A	10:02	upon arriving at station, adult caracara flew into nest tree and then left after a couple minutes & flew east down SR 70
"	A	10:05	landed on a perch S of 70, lost behavioral line
"	A juv	10:15	adult chasing juvenile approached from NW, juv/sub landed in pines east of nest. adult continued flying SE
"	A juv	10:23	adult approached from east, Chased subadult NW in a loop
"	A	10:42	second adult was seen perched on pole near nest tree
"	A	10:53	second adult chased off by craning, building nest

A	11:24	adult flew back to pole to perch just S of nest, from S. Returned to nest a couple moments later
A	11:27	second adult flew in low & landed on small fence post SE of nest
A	11:29	first adult left tree/nest & landed next to other adult on fence post, who then flew into nest. Then first adult flew south across field
A	11:43	adult left nest & returned to perches just S & SE of nest

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 Project 3

Location/Observation Block/Lat-Long: Station 23 productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/28/23	9:53 AM	10:43 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 9:53 AM	75	85	90	altostratus	N
Finish: 10:43 AM	78	75	90	altostratus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
23	A	9:54	Emerges from tree to perch on tree pole; departed W @ 9:56 AM
23	A	9:56	Adult returned to nest tree from NW
23	A	9:59	Adult came from W and perched on fence pole
23	A	10:01	Adult hopped down to ground for approx 10 sec. then returned to nest tree

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

23	A	10:02	1st Adult emerged from nest and landed on ground; appeared to have food in beak
23	A	10:05	2nd Adult emerged from nest to join 1st A.
23	A	10:07	Adult flew back into nest
23	A	10:10	Adult with food in beak flew back into nest
23	A	10:12	Adult flew ^{E from} nest nest tree onto utility pole
23	A	10:13	Adult flew from utility pole S/SE then perched on utility pole S of SR 70
23	A	10:14	Adult left perch and headed SW

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 project 3

Location/Observation Block/Lat-Long: Station 23 productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
5/12/23	8:22 AM	10:17 AM	Enn Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 8:22 am	74	4 E	10%	altostratus	N
Finish: 10:17 AM	82	9 E	40%	altocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
23	A; A	8:22 AM	Both adults perched on utility pole
23	A	8:32 AM	1st adult departed West
23	A	8:34 AM	2nd adult departed East then turned South
23	A	9:11 AM	Appeared at tree from NW; entered tree: with food?

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

23	A	9:15 AM	Exited nest to rest on fronds
23	A	9:17 AM	Returned to utility pole perch
23	A	9:19 AM	Adult flew E from utility pole then N; Circled back E then N
23	A	9:40 AM	One adult returned from E to nest carrying something small in beak
23	A	9:42 AM	Adult returned to utility pole

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 23 - Productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
5/24/23	8:20 AM	10:30 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 8:20 AM	74	2 NE	30	altostratus	N
Finish: 10:30 AM	81	2 NE	30	altocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
No activity at or near the nest tree.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
23	A	8:27 AM	Followed SR 70 from East to West; landed on utility pole
23	A	8:33 AM	Departed NW over sod field
23	A	8:33	Second adult followed. Flew over road, lost N over tree line.
23	A	8:39	Adult perched on utility pole. Hopped down to ground @ 8:45. Then to fence post

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

23	A	9:02	Adult flew SE from sod field.

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, Project 3

Location/Observation Block/Lat-Long: Station 23

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
6/2/23	7:15 AM	10:30 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:15 AM	71°	4N	5%	altostratus	N
Finish: 10:30 AM	81°	5NE	60%	altocumulus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

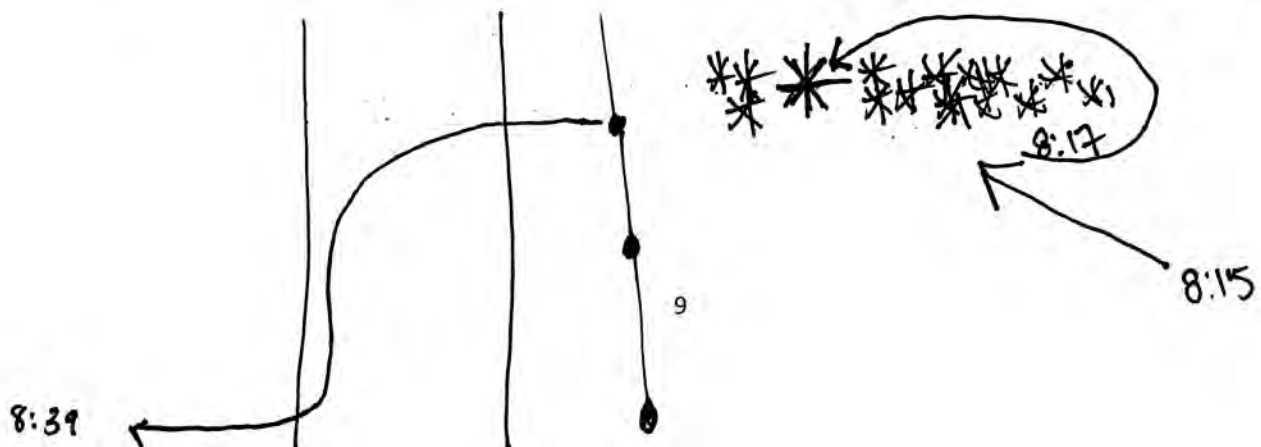
Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
23	A	8:15 AM	Adult flew from N onto ground in front of nest tree
23	A	8:16 AM	Adult flew from ground into nest tree. Flew to fence post @ 8:24, to utility pole @ 8:27.
Adult flew from nest tree			
23	IM/IM	8:28 AM	Two juvies nestlings perched on branch in nest tree

6/2/23

STIX 63101-601100

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

23	A	8:39AM	Adult flew from utility pole towards E over road then turned S
23	IM/IM	10:04AM	Nestlings went back into nest



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Project 3

Location/Observation Block/Lat-Long: Station 23 productivity

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
6/16	6:30 AM	9:30 AM	Erin Smith, primary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:30	76	1 SE	80	stratus	N
Finish: 9:30	82	10 SW	90	stratus	N

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
23	A	6:30	Adult returned to ^{ground near} nest from the E carrying food.
23	A	6:34	Adult approached from E, turned S to perch on utility pole. Departed N @ 6:51.
23	A	6:56	1st adult from ground to fence post, second adult joined on adjacent post @ 6:57 → both departed N
23	J, J	7:00	* moved observer location 2 juveniles observed, one on fence post + one on ground eating

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

23	J, J	7:07AM	Juvenile on ground flew up to fence post, then jumped backed down to ground. Other juvenile remained on fence post.
23	J, J	7:10	Juvenile on ground flew up to fence post. Other juvenile remained on fence post.
23	J	7:12	Juvenile hopping from fence post to fence post intermittently
23	A, J	7:14	Adult returned and dropped food. Juvenile flew over to eat.
23	J, J	7:22	Both juveniles on fence post preening.
23	A	7:29	Adult flew from ground to utility pole on south side of SR 70.
23	A, J, J	7:34	Adult flew from south with food in beak to juveniles. Both juveniles ate food.
23	A	7:39	Adult flew sw w. Lost sight behind tree line.
23	J, J	7:45	Juveniles disappeared into brush.

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

23	A, J, J	8:04 AM	Adult returned for food drop. Both juveniles ate.
23	A, J	8:56 AM	Adult returned to tree adjacent to SR70. Appeared to grab food. One juvenile flew to adult (8:58 AM).
23	A	9:08 AM	Adult dropped food and left; flew S.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TECHNICAL REPORT COVERSHEET

650-050-38
ENVIRONMENTAL
MANAGEMENT
08/22

Audubon's Crested Caracara Survey Technical Report

Florida Department of Transportation

District One

SR 70

Limits of Project: From Lonesome Island Road to CR 721 South

Highlands County, Florida

Financial Management Number: 449851-1

ETDM Number: 14490

Date: 10/04/2023

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.

SR 70 FROM LONESOME ISLAND ROAD TO CR 721 SOUTH

FPID No. 449851-1

Audubon's Crested Caracara Survey Technical Report

Prepared for
FDOT District One

October 2023



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SR 70 FROM LONESOME ISLAND ROAD TO CR 721 SOUTH

Audubon's Crested Caracara

Introduction

This report summarizes the methods and results of a 2023 species-specific Audubon's crested caracara (*Polyborus plancus audubonii*) survey conducted for the proposed improvements to State Road (SR) 70 from Lonesome Island Road to County Road 721 South in Highlands County, Florida (**Figure 1**). The U.S Fish and Wildlife Service (USFWS) Audubon's crested caracara Consultation Area (CA) overlaps the entire project limits; therefore, there is the potential for habitat of this species to be impacted. This survey was conducted in accordance with the 2016 USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season).

Species Information

Species and Habitat Description

The Audubon's crested caracara is a large, boldly patterned raptor with a crest, naked face, heavy bill, elongated neck, and long legs. It has a body length of about 50-60 centimeters (cm) (20-24 inches) and a wingspan of about 124 cm (50 inches). The adult is blackish-brown on the crown, upper abdomen, rump, wings, and thighs. The lower part of the head, throat, upper breast, lower abdomen, and undertail coverts are white or cream. The lower breast has blackish barring with a buff background color. The back is also heavily barred with black and white. The tail is white with 11 to 14 narrow dark crossbars and a broad terminal band; there are conspicuous white patches in the outer part of the wing in flight. The bill is bluish-gray which contrasts with the bright yellow facial skin, which turns reddish-orange when flushed with blood. The legs and feet are deep yellow. Juveniles have a similar color pattern but are brownish and buff with the breast and upper back streaked instead of barred. In addition, facial skin of juveniles is pinkish in color and the legs are gray.

Caracaras inhabit open xeric to mesic habitats. Its preferred habitat is native dry or wet prairie with associated marshes, cabbage palm (*Sabal palmetto*), and cabbage palm - live oak (*Quercus virginiana*) hammocks. Native prairie habitats have been greatly reduced in Florida via residential and commercial development and conversion to improved pasture, consequently, caracaras frequently utilize unimproved and improved pastures. Adult caracaras maintain and defend large territories, usually with their mates. Breeding activity can occur between September and June with the primary season being November through April. Suitable nest trees are an important component

of caracara habitat. Cabbage palms are most frequently utilized followed by live oaks, cypress (*Taxodium* spp.), and occasionally Australian pine (*Casuarina* spp.) and black gum (*Nyssa sylvatica*). Caracaras usually construct their nests 12 to 50 feet above the ground and they consist primarily of woven vines trampled to form a depression (Humphrey and Morrison 1997). Caracara pairs sometimes have two or three alternate nest trees that may be used in different years or for a second nesting effort within the same year. All nest trees are typically situated in the same general vicinity, usually within 0.3 miles of each other.

Caracaras forage extensively on the ground with a foraging range average of 3,000 acres and a radius of approximately one mile. Caracaras are opportunistic feeders with a diet consisting of carrion as well as a wide variety of live invertebrate and vertebrate prey. This species also closely follows agricultural equipment to capitalize on prey that may be exposed during agricultural activities. Agricultural drainage ditches, cattle ponds, roadside ditches, and other shallow water features also provide good feeding areas for caracaras (Morrison 2001). Within native habitats, caracaras regularly scavenge in recently burned areas and forage along the margins of wetlands within dry prairie communities.

Status

The Audubon's crested caracara is listed as a federally designated threatened species by the USFWS and is protected by both the Endangered Species Act (ESA), as amended (16 U.S.C. 1531 et seq.) and the Migratory Bird Treaty Act. No Critical Habitat has been designated for this species.

The decline of the caracara in Florida is primarily due to habitat loss. In particular, the optimal habitat for caracaras, dry prairie, has been largely destroyed or modified for agriculture and residential/commercial development. Additionally, previous regulatory mechanisms did not adequately prevent the destruction or modification of the caracara's habitat, located mainly on private land. Both of these factors led to the federal listing of the species.

In order to reduce the potential for nest abandonment and loss of eggs and small chicks from human disturbance, the USFWS recommends that primary and secondary protection zones be placed around nest trees (2004 USFWS). The primary zone encompasses a 360-degree area extending 300 meters (985 feet) outward from the nest tree. Morrison (2001) found that the adult caracaras are most sensitive to human disturbance during incubation or early nesting stages if the source of disturbance is within 300 meters from the nest tree. Year-round restrictions in the primary zone typically include activities such as alteration to pasture, wetlands, nest trees, and other vegetation, as well as construction of buildings, roads, power lines or canals, changes in land management activities, and chemical applications that are harmful to wildlife. Nesting season limitations within the primary zone include normal agricultural activities (only until nestlings fledge), human entry, and low flyovers by aircraft.

A 360-degree secondary zone is recommended as a foraging protection zone and extends 1,500 meters (4,920 feet) outward from the nest tree. Conservation measures for this zone include maintaining pasture, grassland, and wetlands (including ditches and canals) that are necessary for caracara foraging habitat. Conversion of pasture and wetland habitats in this zone to row crops,

sugarcane, citrus groves, pine plantations or hardwood forest may adversely affect caracaras. The use of chemicals toxic to wildlife including pesticides, fertilizers, or herbicides should be limited as they may impact the food supply available for caracaras. Normal ranching and agricultural operations (including sod farming), hiking, bird watching, fishing, camping, picnicking, hunting, and recreational off-road vehicle use are allowed within the secondary zone.

Existing Environmental Characteristics

Natural/biological features and land use within the survey boundary were initially reviewed using the 2017 Florida Land Use, Cover, and Forms Classification System (FLUCFCS) Geographic Information System (GIS) data layer available South Florida Water Management District (SFWMD). A 1,500-meter secondary zone buffer of the project limits, which comprises the project action area for this species, was created. Improved Pastures (FLUCFCS 2110, ~ 38%) is the predominant land use, followed by Citrus Groves (FLUCFCS 2210, ~ 19%). The remaining land use / land cover categories with significant coverage in the 1,500-meter buffer include: Unimproved Pastures (FLUCFCS 2120, ~ 11%), Fallow Cropland (FLUCFCS 2610 ~8%), Freshwater Marshes / Graminoid Prairie - Marsh (FLUCFCS 6410, ~ 7%), and Sugar Cane (FLUCFCS 2156 ~4%). These categories total 87% of the land use/land cover within a 1,500-meter buffer of the project limits. **Figure 2** depicts the land uses within the 1,500-meter buffer. Lands surrounding the project limits are impacted due to agricultural activities such as growing row crops, cattle grazing, and citrus farming.

Methodology

Preliminary Data Collection

A comprehensive literature and GIS database search was conducted for the project action area (1,500-meter buffer of the project boundary) to determine if the Audubon's crested caracara was previously documented within the project limits and if suitable habitat was available. The literature and database search included standard references such as the Rare and Endangered Biota of Florida Series, Florida Geographic Data Library (FGDL) GIS databases, as well as the Florida Fish and Wildlife Conservation Commission (FWC) and USFWS lists of protected species and their GIS databases.

Based on this preliminary data collection effort, caracara findings include the following:

- The project falls within the USFWS Audubon's crested caracara CA;
- No critical habitat has been designated for the caracara;
- Suitable foraging and nesting habitat was identified within and outside the project limits; and
- One (1) generalized location of non-breeding communal roosts and gathering places for caracara, as documented by the USFWS, is located within the caracara secondary zone for the

proposed project. Two (2) additional caracara non-breeding communal roosts and/or gathering places are located just outside the caracara secondary zone for the proposed project.

Field Survey Methodology

Project biologists examined current aerial imagery and the 2017 SFWMD FLUCFCS data to identify appropriate areas to survey for caracara nests. The 1,500-meter survey boundary buffer was used to identify any potential nests that would have a primary and/or secondary protection zone that overlaps with the proposed project. Potential survey stations were identified, and a field review was conducted to verify the suitability of the survey stations.

Ten (10) survey stations were established (Stations 9-19) which allowed for a field of view that included potential caracara nesting trees. Determination of survey stations was based upon potential available nesting habitat, area of visibility, and suitable foraging habitat. Caracara foraging and nest tree surveys were conducted bi-weekly from January 3, 2023, through April 26, 2023, and each survey event included field surveys in the morning per the 2016 USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season). As a note, Station 18 caracara surveys were completed until May 26, 2023, due to potential nesting observations at the end of the survey season. Foraging and nest tree surveys began fifteen (15) minutes before sunrise and lasted three (3) hours. For each survey event, a team of one or two field biologists monitored a predetermined survey station. Typically, each person worked individually and routinely, assessing the project area to the greatest extent possible and monitoring areas that had suitable nesting and/or foraging habitat in the vicinity. Survey efforts were focused in open and woodland pastures which provided the best foraging habitat for the species, contained potential nest trees, and provided the best visibility for the survey area. Survey stations and observation blocks are presented in **Figure 3**. Once a caracara nest tree was identified, a productivity survey was then initiated following the USFWS guidelines.

USFWS Caracara Survey Forms were used to record survey observations and all survey forms are provided in **Appendix A**. Information recorded on the forms includes names of observers, current weather, number of caracaras observed, their age class, crested caracara activity, and incidental wildlife species observed. Crested caracara data from the survey forms is summarized as a table in **Appendix B**.

Results

Potential foraging habitat for the species was identified throughout the project landscape. Pastureland, citrus groves, lightly wooded areas, and roadways (which provide roadkill) offer foraging opportunities for caracaras and are present within the project area. Potential nesting habitat for the species was also identified within the project area; specifically, pastureland and rural residential land containing cabbage palms. Within the SR 70 existing right-of-way (ROW) and proposed ROW, potential nesting habitat was observed which consists of cabbage palms and slash pines (*Pinus elliottii*). All caracara observations were recorded, and the results are presented in **Figure 4**. A summary of the crested caracara survey data is documented in **Appendix B**.

Photographs documenting the representative field of view at each survey station are in **Appendix C**. Crested caracara observer experience is documented in **Table 1** shown below.

Table 1. Crested Caracara Observer Experience.

Name	Primary or Secondary Observer	Total Hours of Experience	Number of Caracara Nests Previously Found
Alan Alshouse	Primary	342	2
Emily Keenan	Primary	41	0
Tori Kuba	Primary	211	3
Jennifer Korn	Primary	679	17
Church Roberts	Primary	1000+	50+
Brett Solomon	Primary	43	2
Zackary Yawn	Primary	48	1

Crested caracaras were observed at all ten (10) survey stations during field surveys, but nesting activity was only observed at Stations 10, 13, 14, 16, and 18 (**Figure 4**). It is important to note that caracara activity, copulation, nest building, feeding and tending to the chicks, and observations of young fledging the nest, were noted at Stations 15, 17, and 19, as well. Stations 14 and 15 had clear views of the nest site for Station 14, Stations 16 and 17 had clear views of the nest site for Station 16, and Stations 13 and 19 had clear views of the nest site for Station 13. Additionally, Station 18 appears to have had two failed nest attempts, see below for details.

Potential nesting activity was first observed at Station 10 on March 7, 2023, and the location of the nest was documented on March 21, 2023, in a cabbage palm. On April 7, 2023, two immature caracaras/fledglings were observed feeding on the ground with food from the adult. This event indicates a successful fledge from the nest.

Potential nesting activity was first observed at Station 13 on February 10, 2023, and the location of the nest was documented on February 20, 2023, in a cabbage palm. On March 10, 2023, one adult, one juvenile, and two fledglings (immature) caracaras were observed walking together in the horse pasture on the east side of CR 721. The nest site is approximately 100 yards south of where the birds were walking about. The fledglings were doing a lot of exploring and making short hopping flights. On March 24, 2023, one immature caracara/fledgling was observed walking around in the pasture and flying into the nest area. This event indicates a successful nesting season with two fledglings observed.

As a note, scientists conducting caracara surveys at Station 19 observed caracara activity in the vicinity of Station 13. On February 27, 2023, two adult caracaras were observed feeding one fledgling on the ground in the vicinity of the nest tree at Station 13. On March 13, 2023, observers

from Station 19 noted two fledglings in the pasture. For the remaining surveys at Station 19 (March 28, April 10, and April 21, 2023) observations indicate only one fledgling was observed.

Potential nesting activity was first observed at Station 14 on January 7, 2023, and the location of the nest was documented on January 20, 2023, in a cabbage palm. On March 2, 2023, adult caracaras were observed feeding young in the nest, scientists estimated that there was one chick in the nest. On March 17, 2023, scientists observed one adult caracara flying into nest with food then exited and flew into adjacent cabbage palm. Scientists observed the individual fly down and back up to adjacent tree. Scientists observed fledge. On March 29, 2023, scientists conducting caracara surveys at Station 15 documented an adult caracara taking carrion to Station 14 to feed fledglings. On April 25, 2023, scientists conducting caracara surveys at Station 15 documented one adult and three juvenile caracaras on the berm of the canal north of road on Lykes property. These appear to be the Station 14 fledglings, which confirms they had three young fledged. Another adult caracara brought a piece of food to one of the juveniles which further confirms these are the Station 14 adults and their fledged young.

Potential nesting activity was first observed at Station 16 on January 5, 2023. A pair of adult caracaras were observed copulating on January 5 and 17, 2023, by scientists conducting caracara surveys at Station 17. Scientists conducting caracara surveys at Station 16 confirmed the location of the nest on January 18, 2023, in a cabbage palm. On February 1, 2023, scientists observed adults feeding young and heard sounds of chicks in the nest, but they could not determine how many young were in the nest. On February 28, 2023, scientists confirmed one chick was present in the nest (from Station 17). On March 15, 2023, the immature caracara was observed flying around and begging the adult for food, indicating a successful fledge from the nest. Observations at Station 17 on March 28, 2023, indicate adults bringing carrion to and feeding the fledgling at Station 16. On April 11, 2023, scientists observed the adult caracara and fledgling from Station 16 landing and feeding at Station 17. Scientists hypothesized that this observation was an indication that there is no other active territory or nest near this area since Station 16 adult and juvenile were unbothered using the area.

Potential nesting activity was first observed at Station 18 on January 30, 2023. Caracaras were observed at Station 18 throughout the survey season, but no nest or potential nesting behavior was observed until April 27, 2023. A potential nest was observed on April 27, 2023, in a cabbage palm. Two adult caracaras were observed flying in and out of the same cabbage palm. Additionally, territorial displays were observed. Scientists returned to Station 18 on May 11, 2023, to see if this caracara pair had a nest, but no caracaras were observed. On May 26, 2023, no nest was observed again, but the same caracara pair was present. Based on the observations, it appeared the pair had an unsuccessful nesting attempt.

Conclusions

Based on the field surveys five active crested caracara nests were documented within 1,500 meters of the project limits; nests were observed at Station 10, Station 13, Station 14, Station 16, and Station 18 (**Figure 5**). The proposed project is outside the 300-meter primary zone but within the

1,500-meter secondary zone for the nests located near Station 10, Station 13, Station 14, and Station 18.

For the caracara nest documented near Station 16, the nest is located on the north side of SR 70 within the right-of-way (ROW) and the primary zone for this nest overlaps the project limits.

A total of 11.10 acres of the SR 70 project footprint is located within the 300-meter primary protection zone for the caracara nest located at Station 16. Land uses within the proposed project footprint include 9.82 acres of Improved Pastures (FLUCFCS 2100) and 1.28 acres of Roads and Highways (FLUCFCS 8140). The nest tree will be directly affected by the roadway project, due to the close proximity of the nest to the existing ROW. A total of 9.82 acres of primary zone habitat will be converted to roadway use based on the proposed project.

There are recommendations in place to reduce impacts to the crested caracara, and the primary zone of a caracara nest is particularly important to this species during nesting season, therefore, the following construction precautions are recommended to reduce any potential impact to the nest:

- Land clearing activities for the project will be conducted outside of the caracara nesting season (December 1 through April 30) to the greatest extent practicable. Since caracara nesting season is from December 1 through April 30, clearing should be completed between May 1 and November 30.
- Should it be necessary to conduct land clearing activities within the nesting season (December 1 through April 30), the applicant or their designated agent will survey suitable caracara nesting habitat within the project site to determine if an active caracara nest occurs within or adjacent to (i.e., within viewing distance) the project site. If an active nest is observed on or near the project site (i.e., within 300 meters), land clearing within 300 meters (985 feet) of the nest will not occur until monitoring has determined the nest has either been abandoned, or chicks within the nest have fledged and left the nest site.

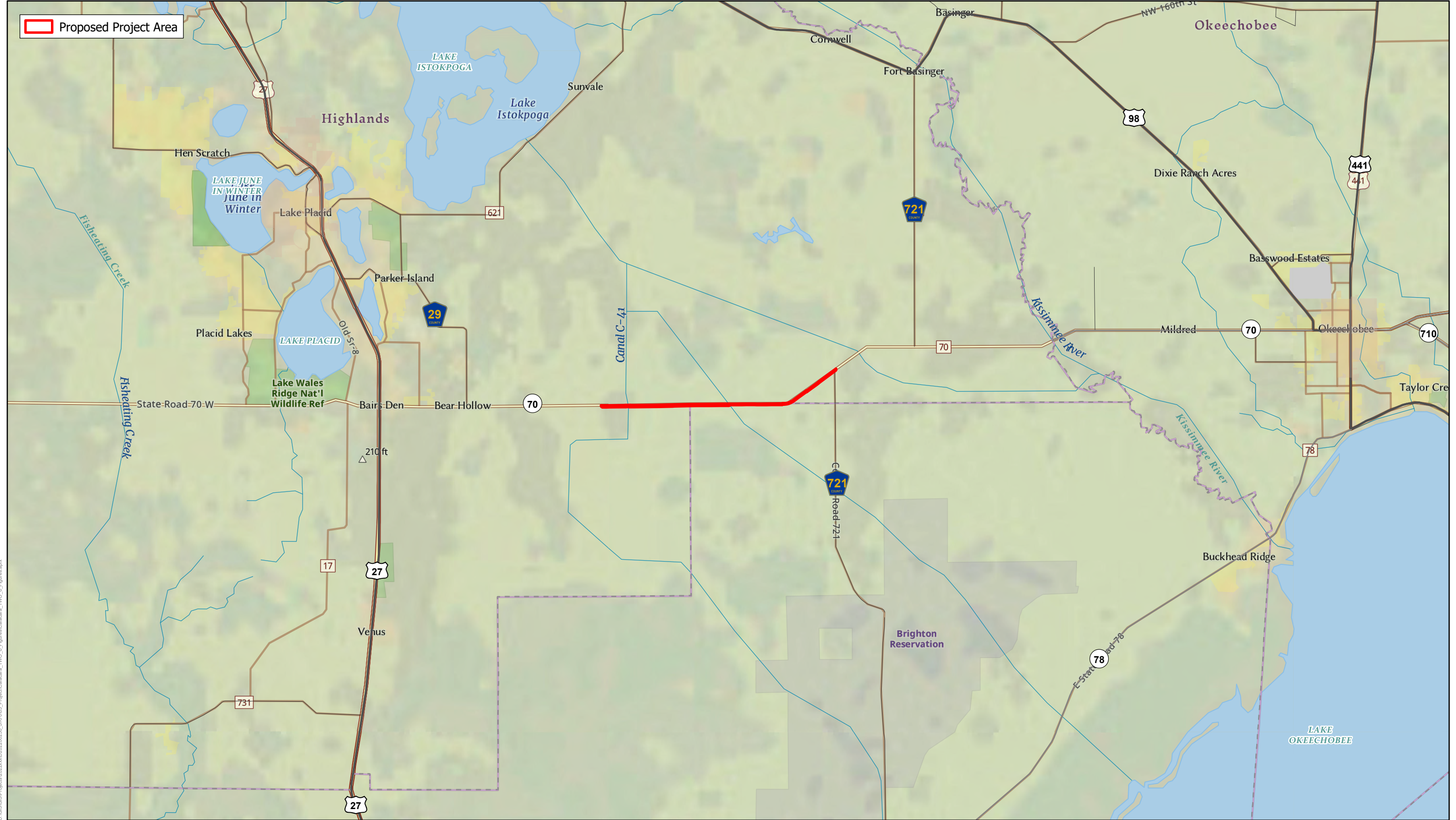
Because the proposed project will impact a small area of habitat within the primary zone, and land clearing activities are proposed to occur outside of the caracara nesting season, it's anticipated that this project "may affect, but is not likely to adversely affect" the Audubon's crested caracara.

References

- Humphrey, S.R., and J. L. Morrison. 1997. Habitat Associations, Reproduction, and Foraging Ecology of Audubon's Crested Caracaras in South-Central Florida. Final Report. Florida Game and Freshwater Fish Commission (Florida Fish and Wildlife Conservation Commission) Nongame Program Project No. NG91-007 (August 8, 1997).
- Morrison, J. L. 2001. Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara (*Polyborus plancus audubonii*) in Florida. Technical Report No. 18. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL.
- U.S. Fish and Wildlife Service. 2004. Species Conservation Guidelines South Florida. Audubon's Crested Caracara.
- U.S. Fish and Wildlife Service. 2016. USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season).

Figures

- Figure 1 Project Location Map
- Figure 2 Land Use Within 1,500-Meter of Project Area Map
- Figure 3 Crested Caracara Survey Stations and Observation Blocks Map
- Figure 4 Crested Caracara Nest Tree Locations and Flight Paths Map
- Figure 5 300-Meter Buffer (Primary Zone) of Nest Trees



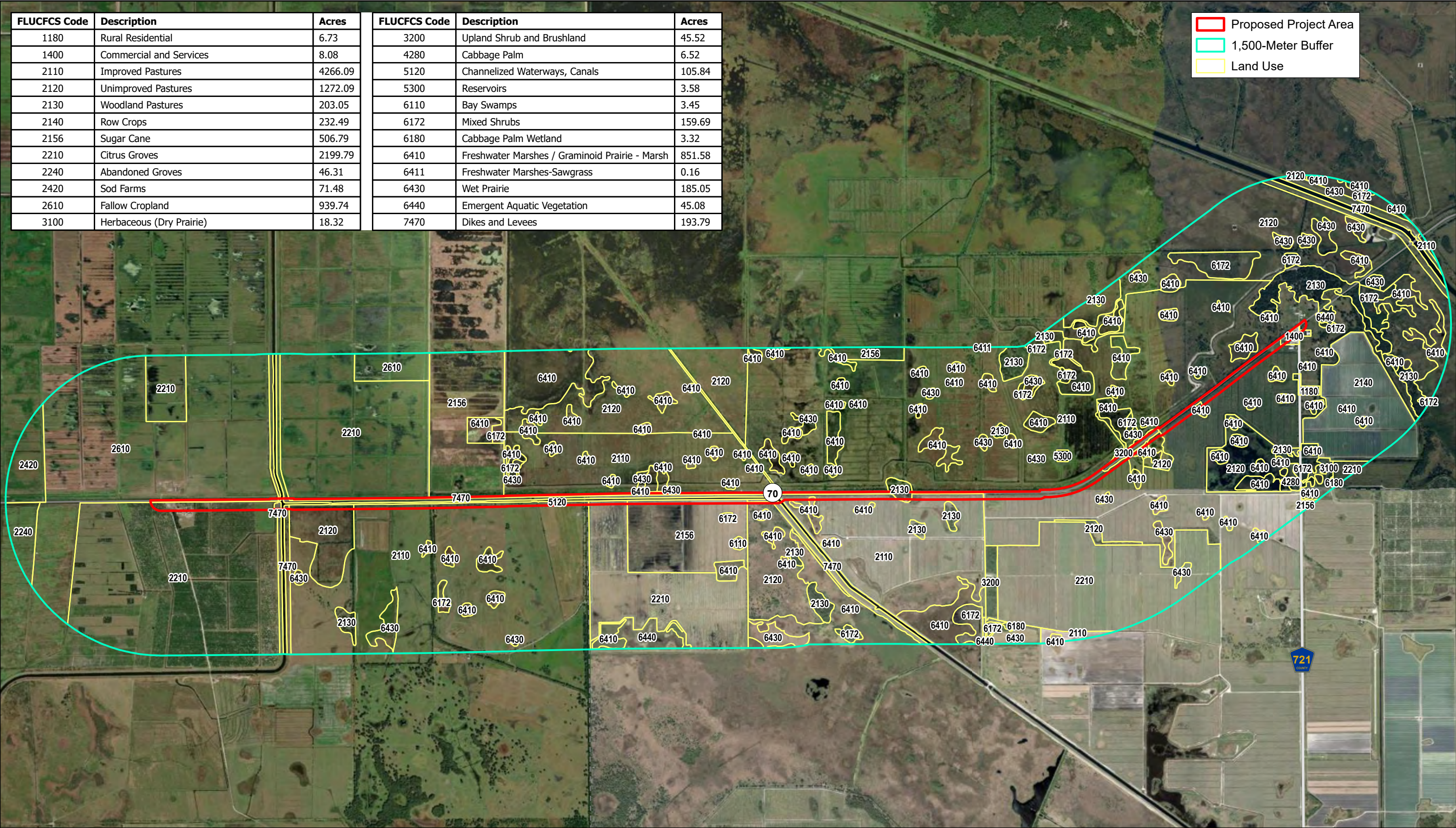
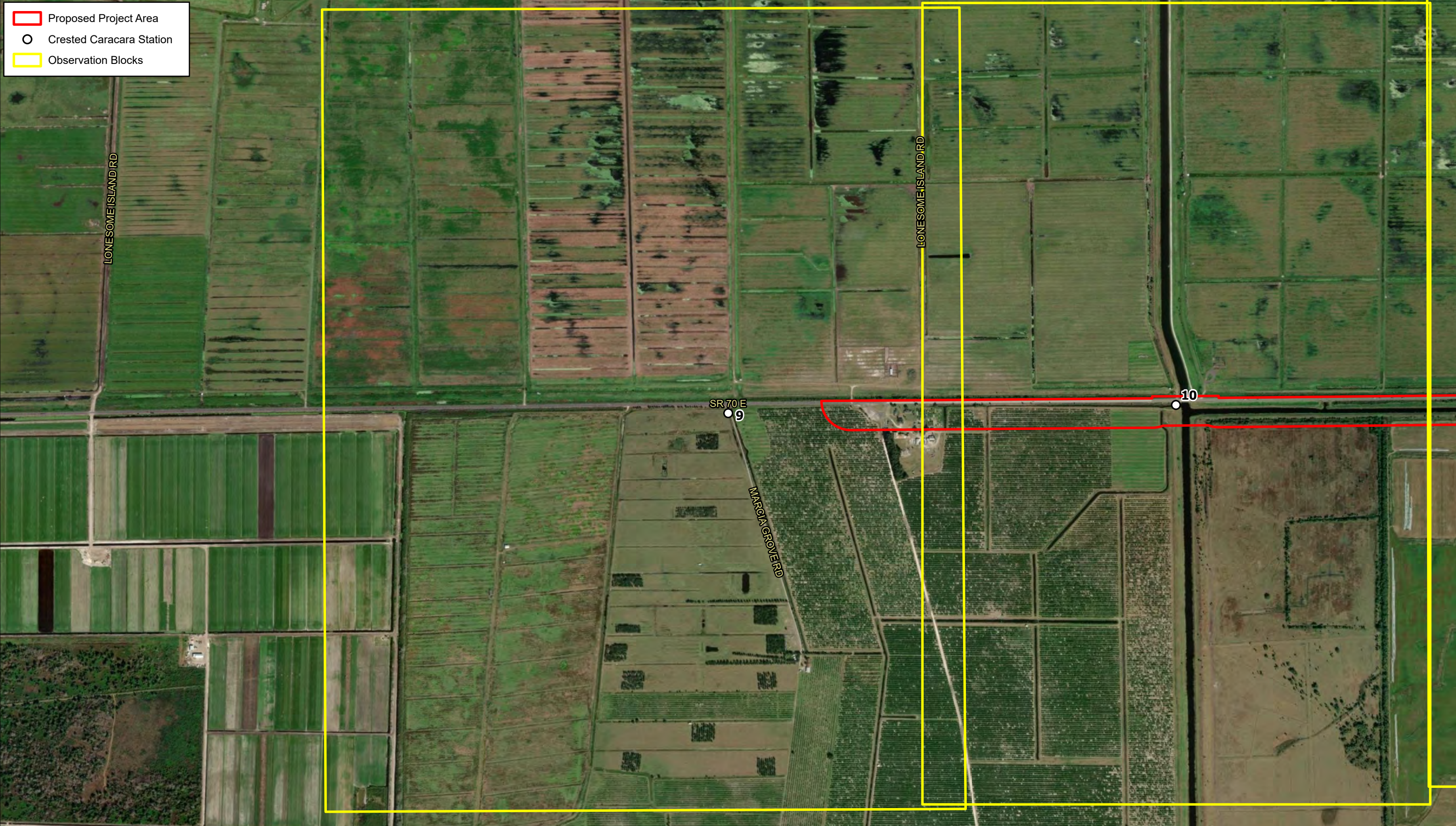
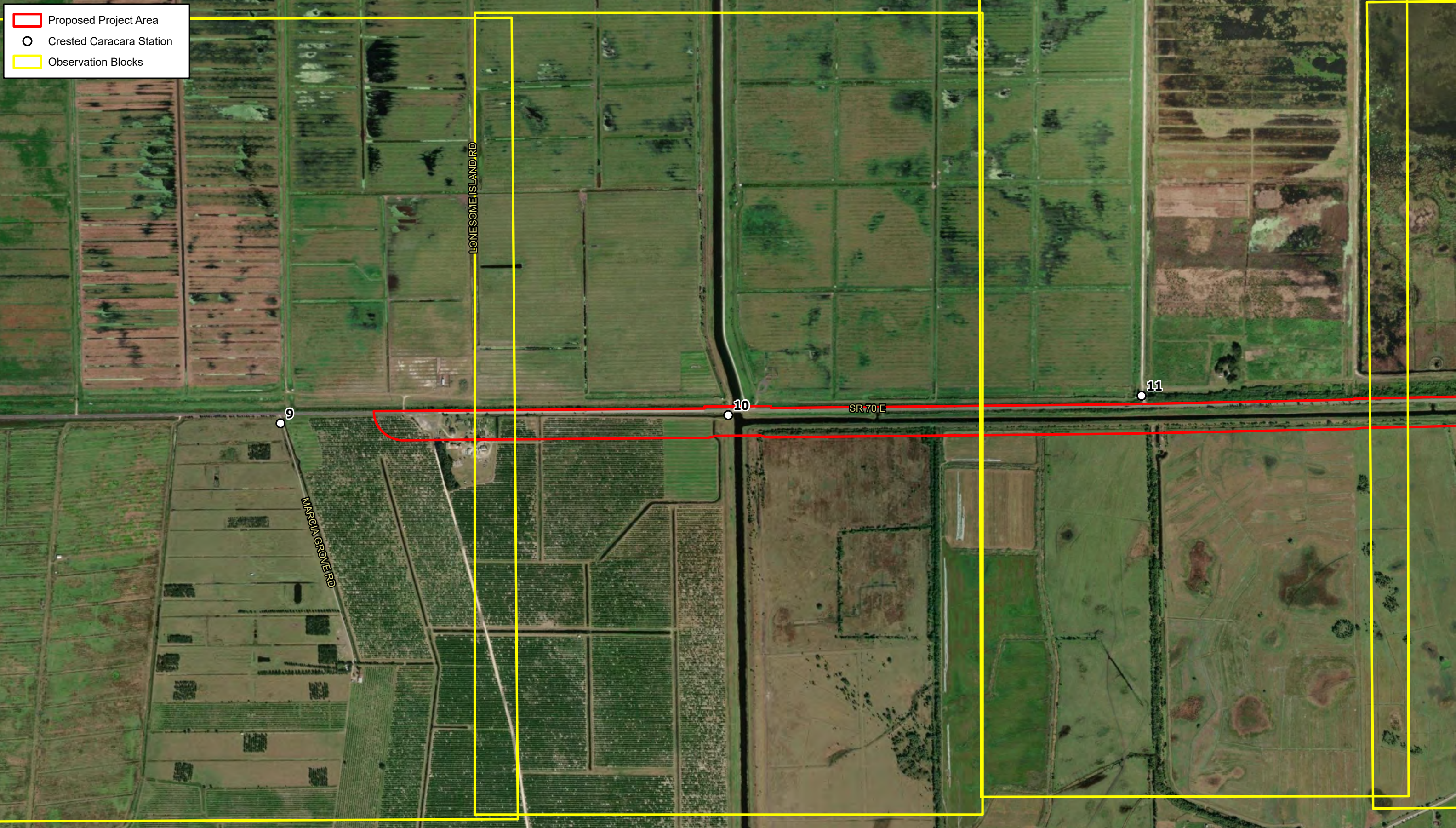
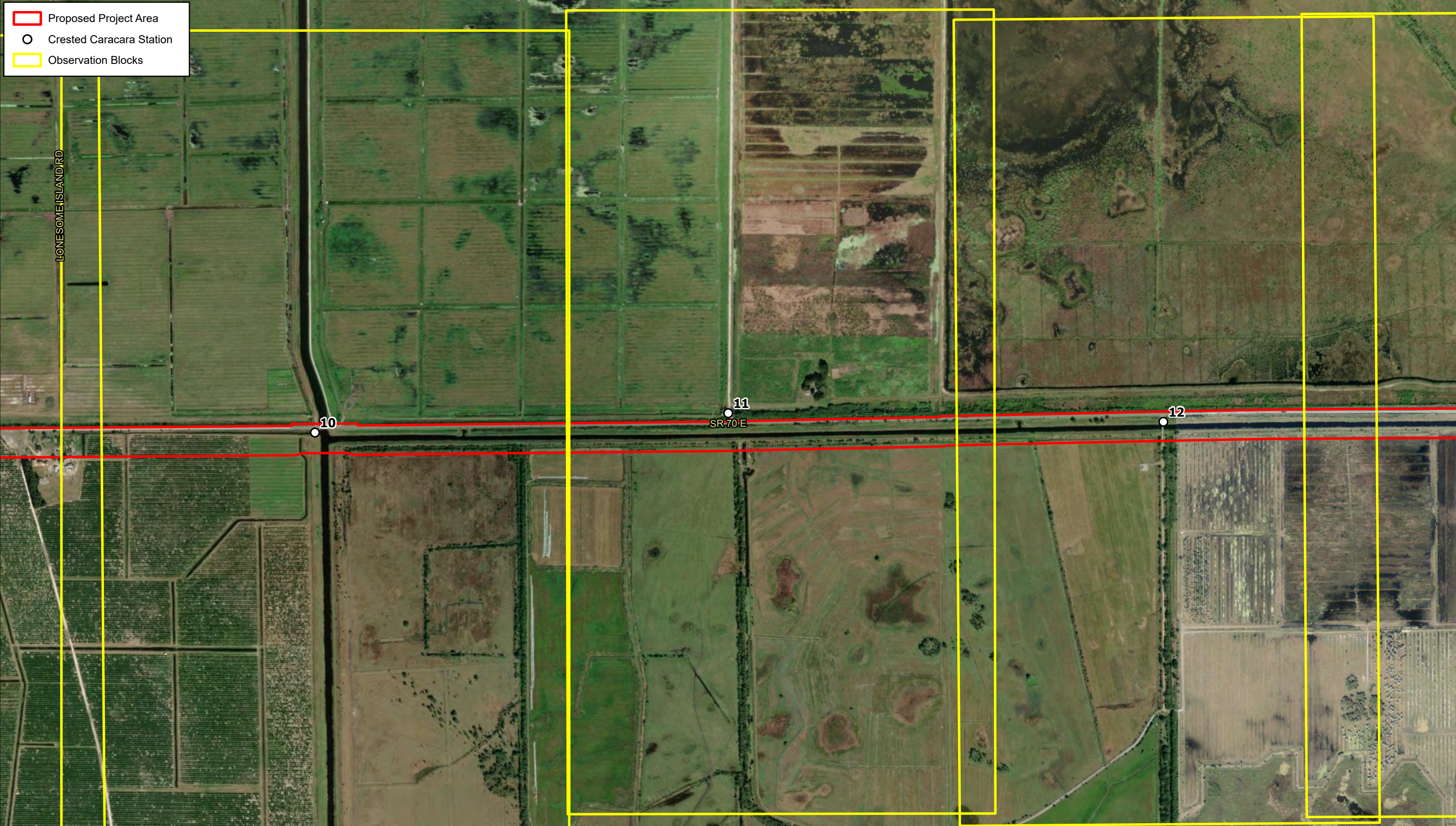


Figure 2 - Land Use Within 1,500-Meter of Proposed Project Area







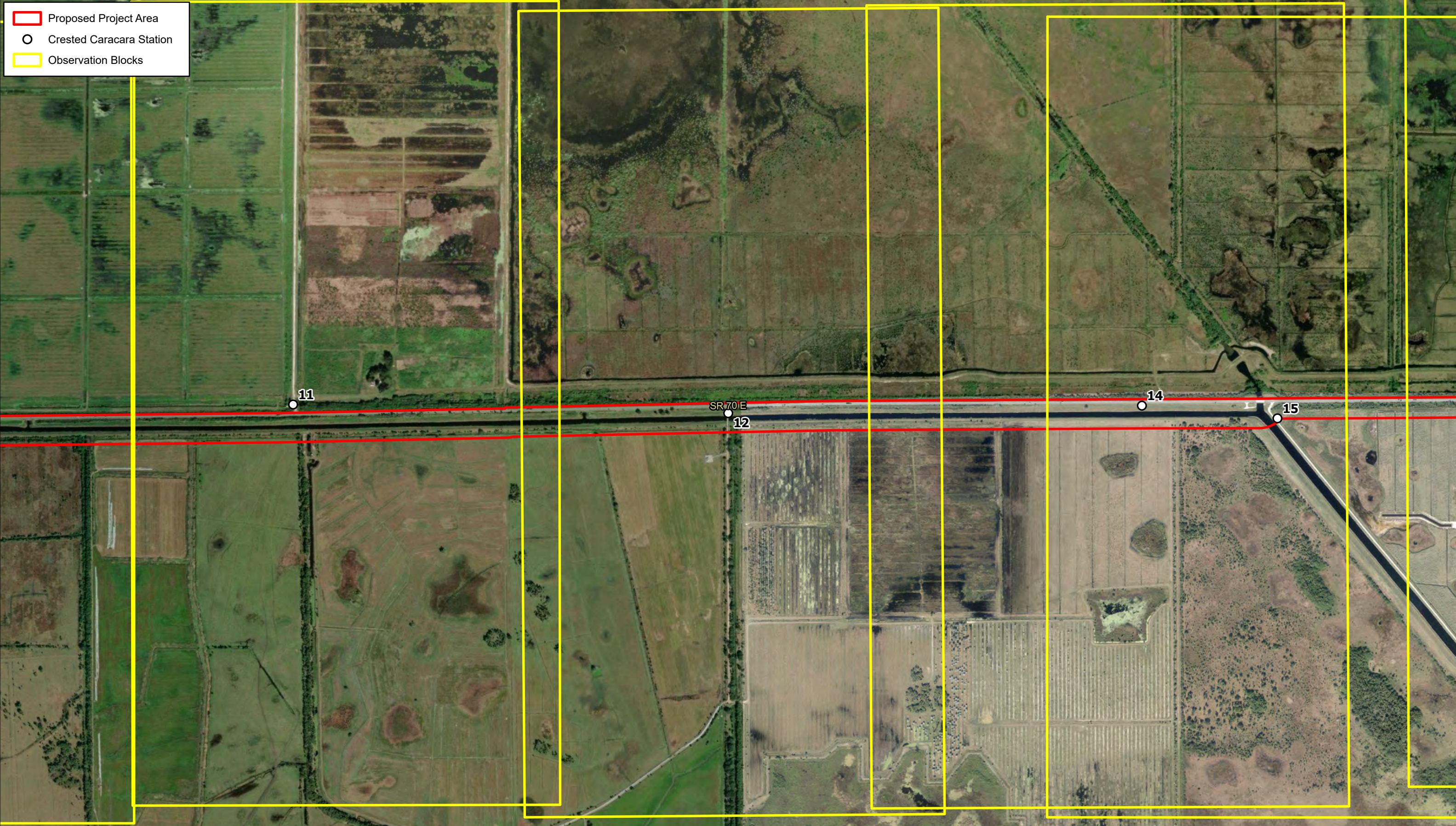
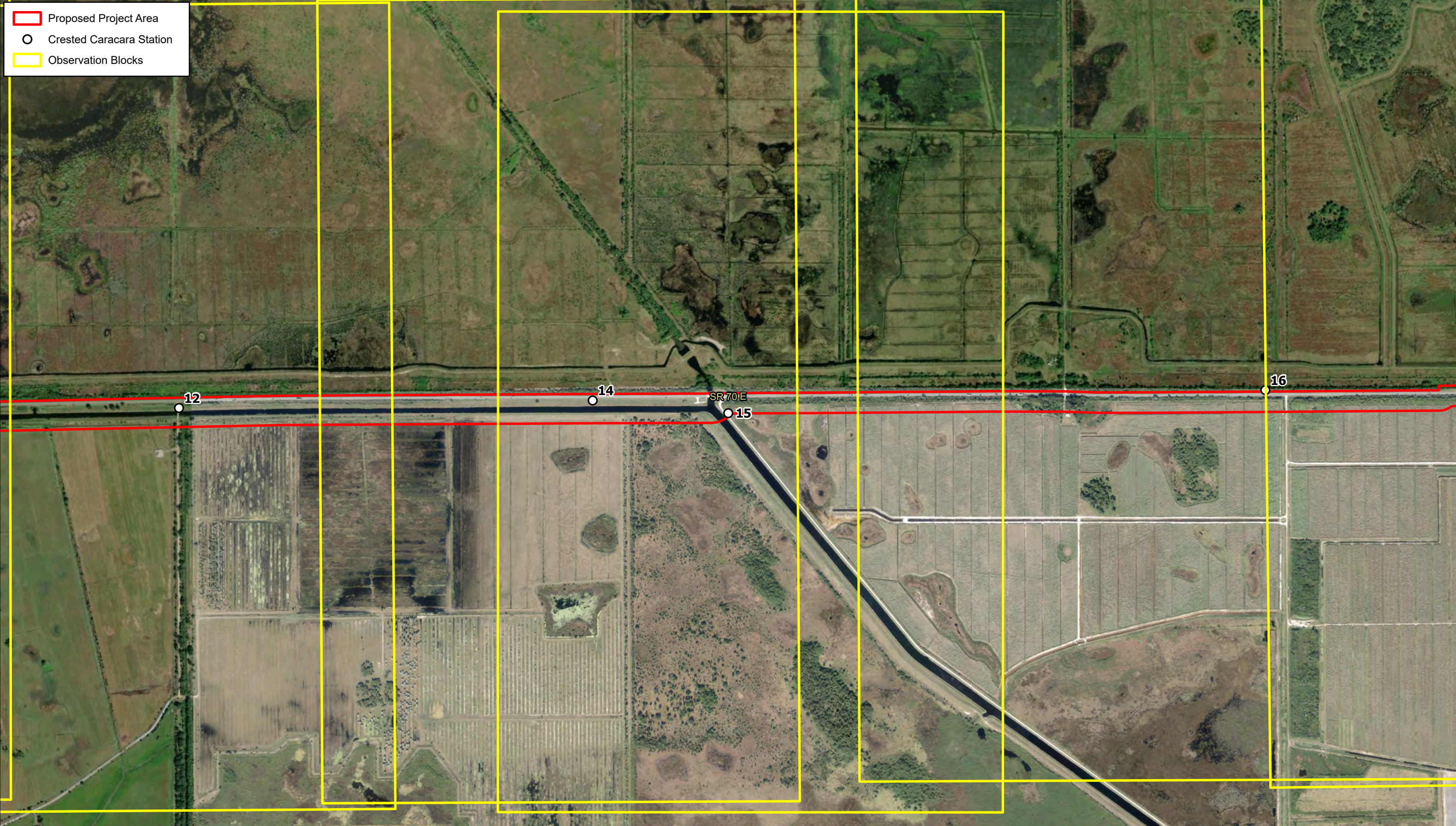


Figure 3 - Crested Caracara Survey Stations and Observation Blocks Map

Sheet 4 of 9
FPID#: 449851-1
SR 70 from Lonesome Island Road to CR 721 S
Highlands County, Florida



Proposed Project Area

Crested Caracara Station

Observation Blocks

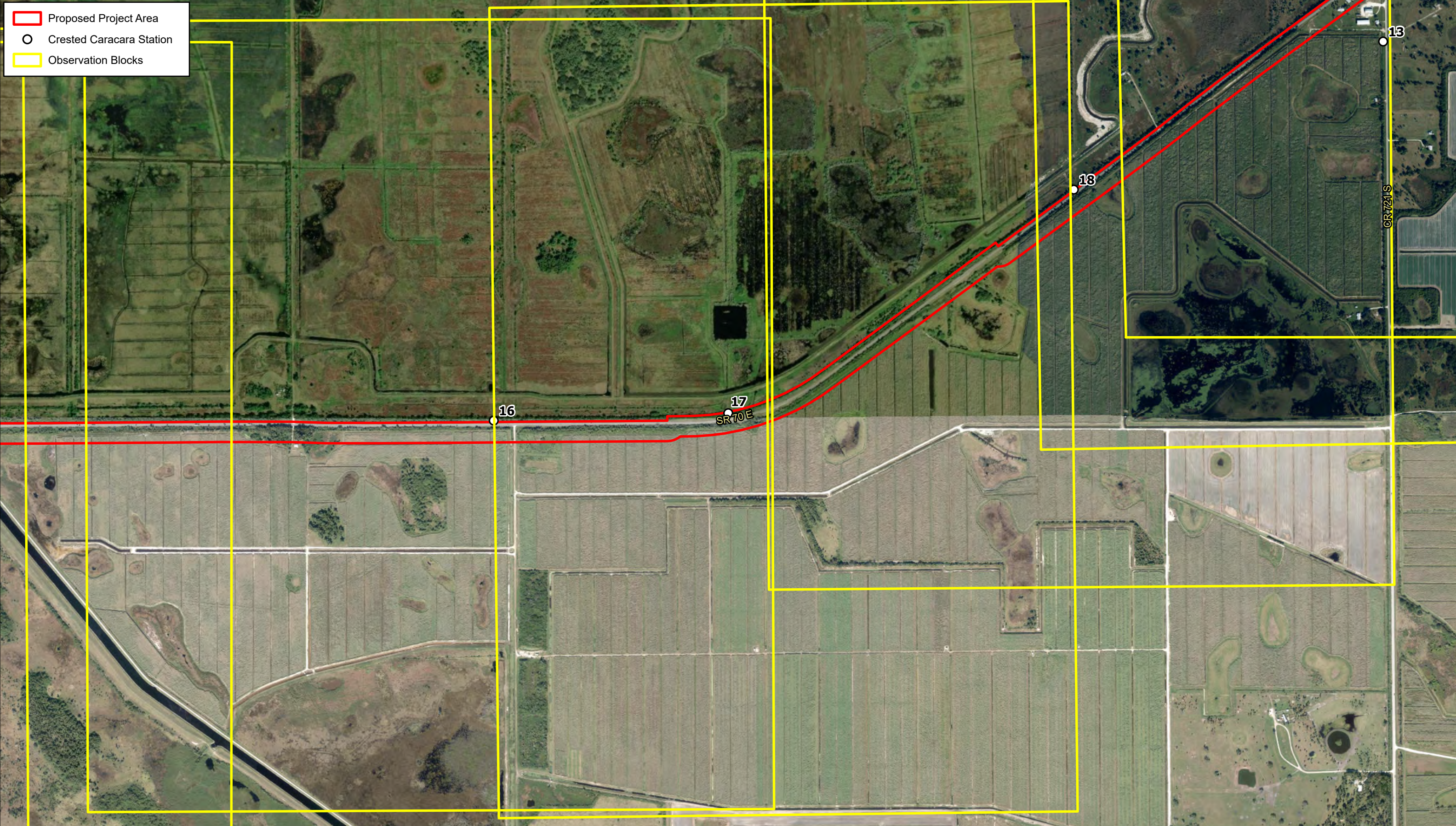


Figure 3 - Crested Caracara Survey Stations and Observation Blocks Map

Sheet 7 of 9
FPID#: 449851-1
SR 70 from Lonesome Island Road to CR 721 S
Highlands County, Florida

0 500 1,000 Feet



All data within this map are supplied as is, without warranty. This product has not been prepared for legal, engineering, or survey purposes. Users of this information should review or consult the primary data sources to ascertain the usability of the information.

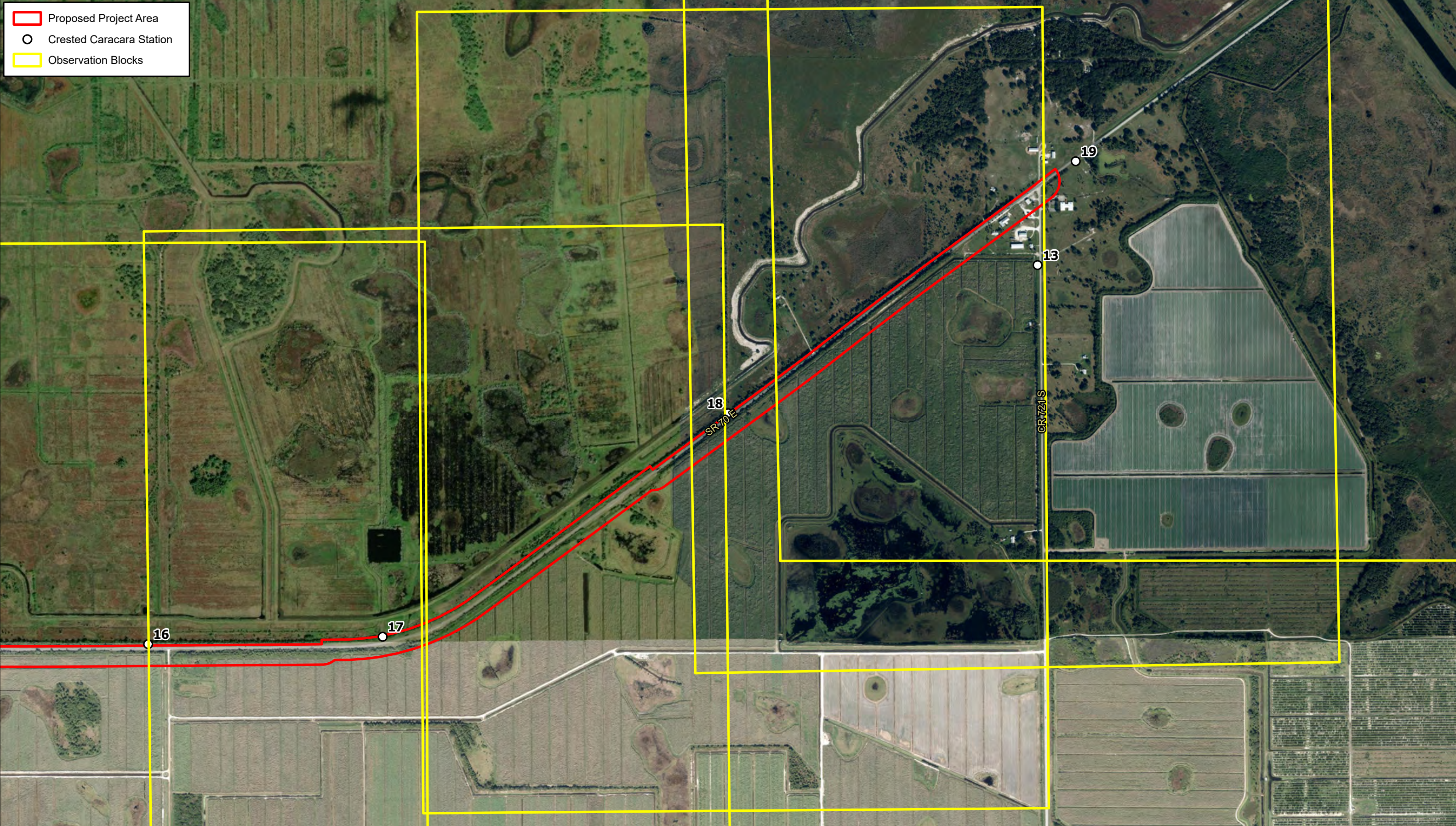
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-ESRI Aerial Imagery

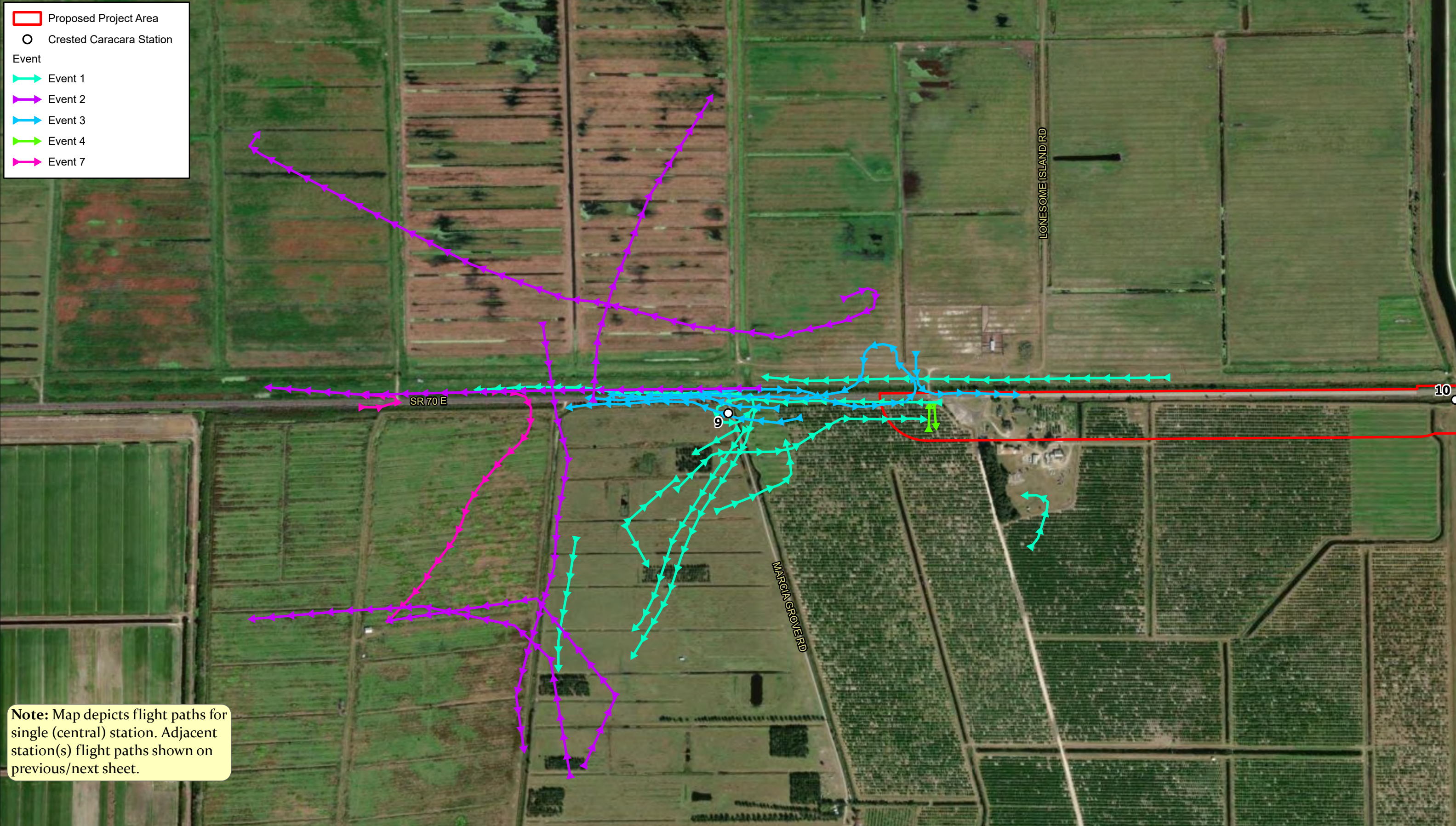


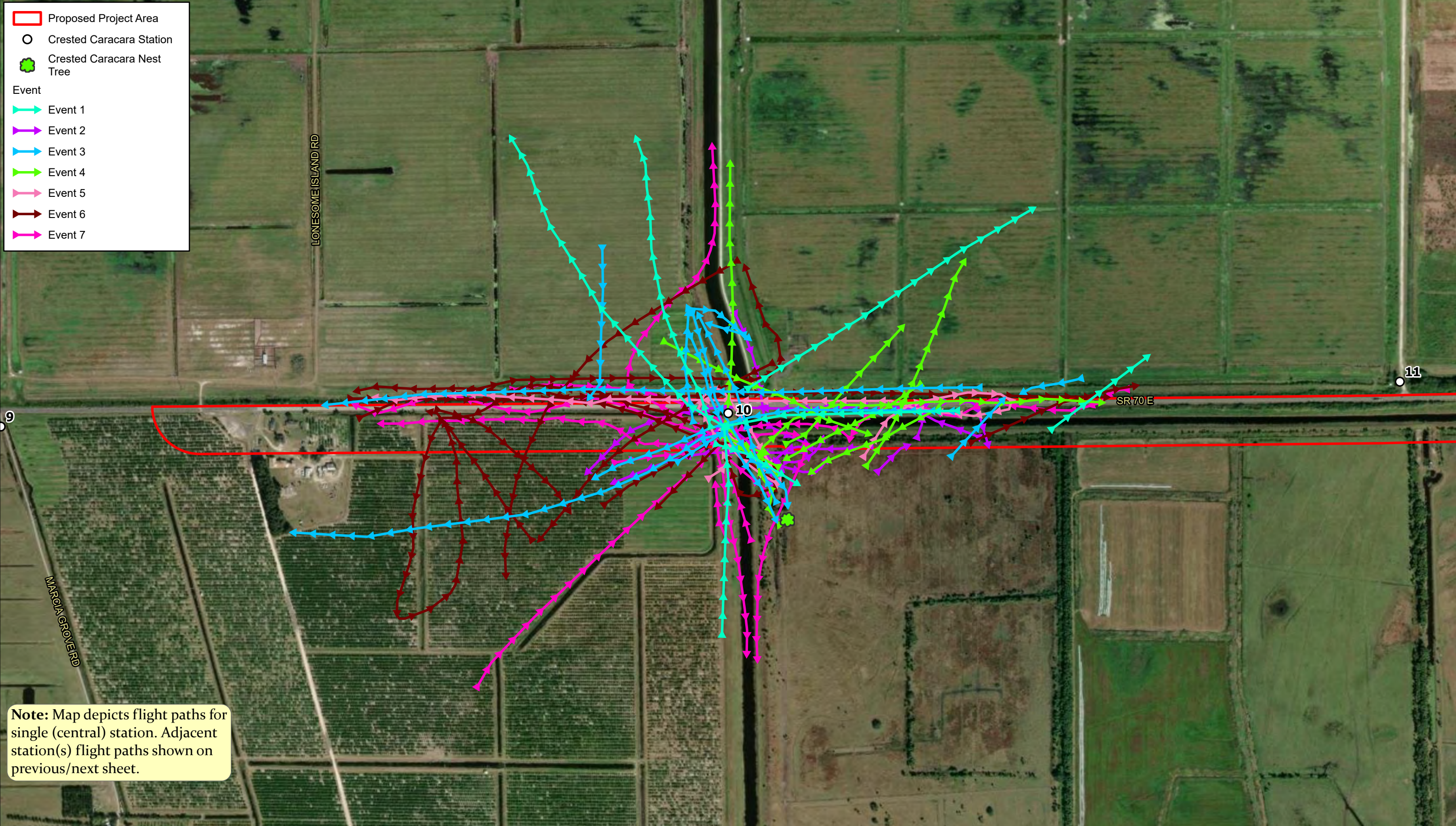
Proposed Project Area

Crested Caracara Station

Observation Blocks







Proposed Project Area

Crested Caracara Station

Crested Caracara Nest Tree

Event

Event 1

Event 2

Event 3

Event 4

Event 5

Event 6

Event 7

Note: Map depicts flight paths for single (central) station. Adjacent station(s) flight paths shown on previous/next sheet.

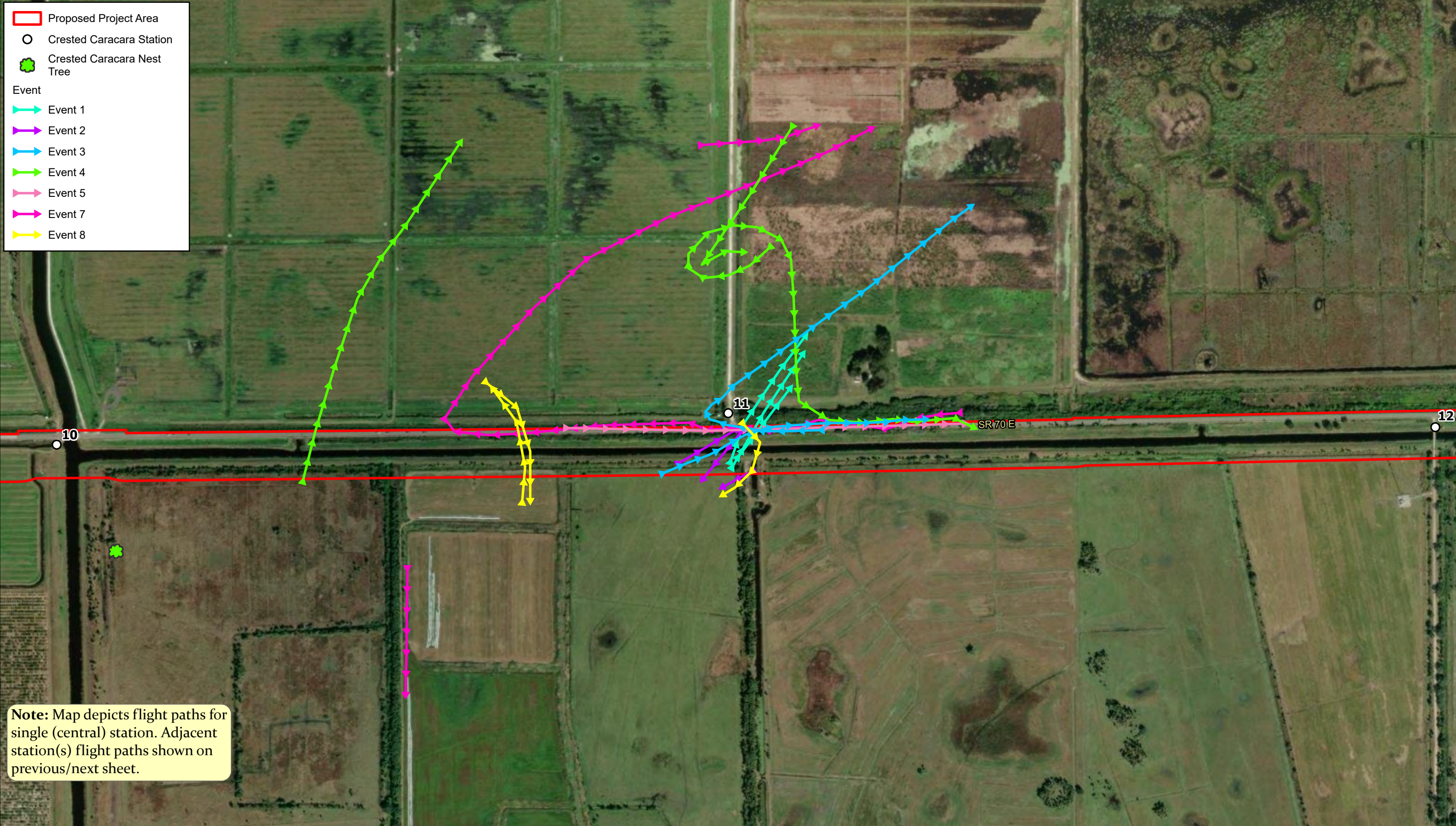
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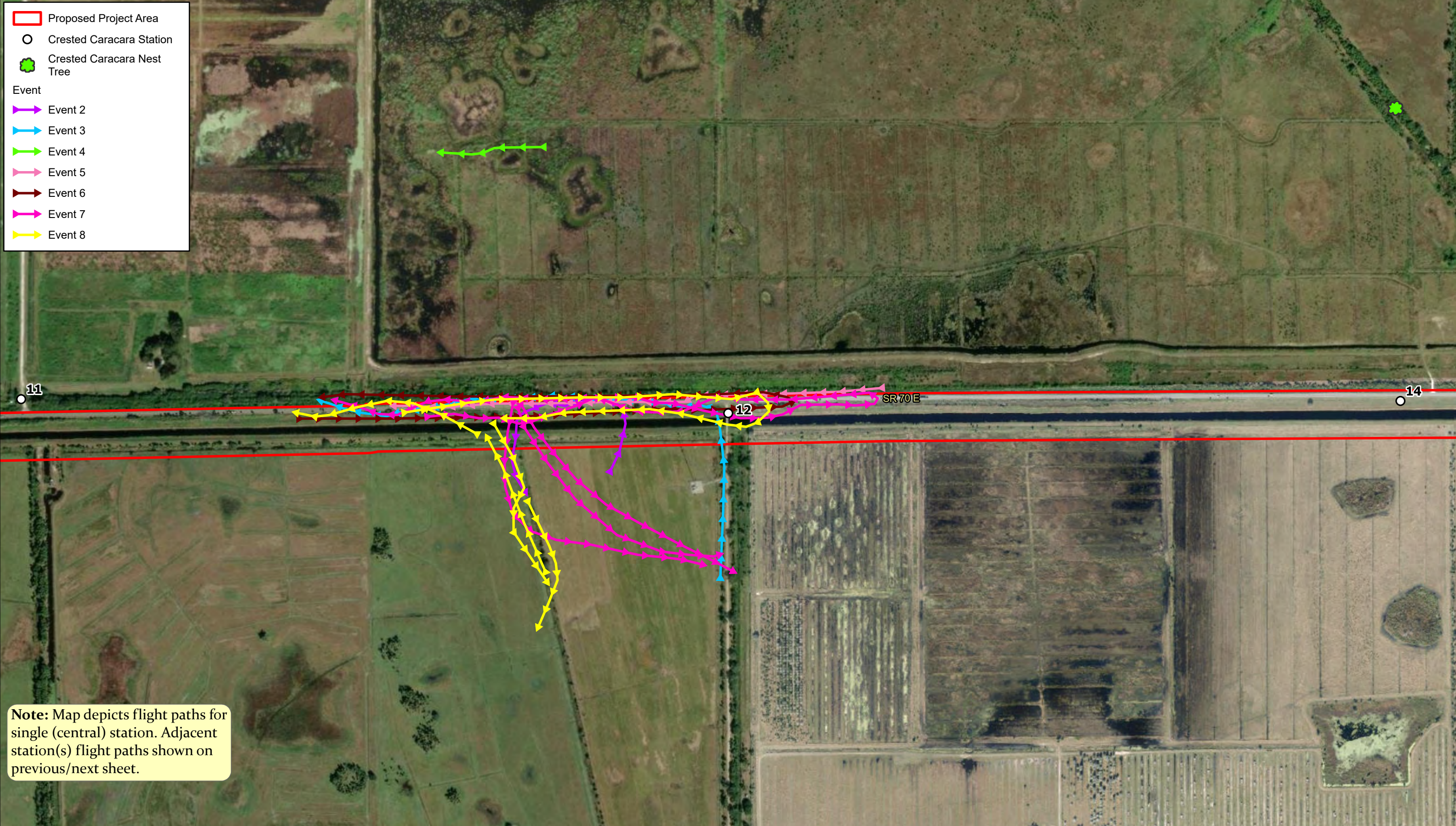
All data within this map are supplied as is, without warranty. This product has not been prepared for legal, engineering, or survey purposes. Users of this information should review or consult the primary data sources to ascertain the usability of the information.

Figure 4 - Crested Caracara Survey Stations and Flight Paths

Sheet 2 of 11
FPID#: 449851-1
SR 70 from Lonesome Island Road to CR 721 S
Highlands County, Florida

Data Source:
-ESA
Imagery Source:
-ESRI Aerial Imagery





Proposed Project Area

Crested Caracara Station

Crested Caracara Nest Tree

Event

Event 2

Event 3

Event 4

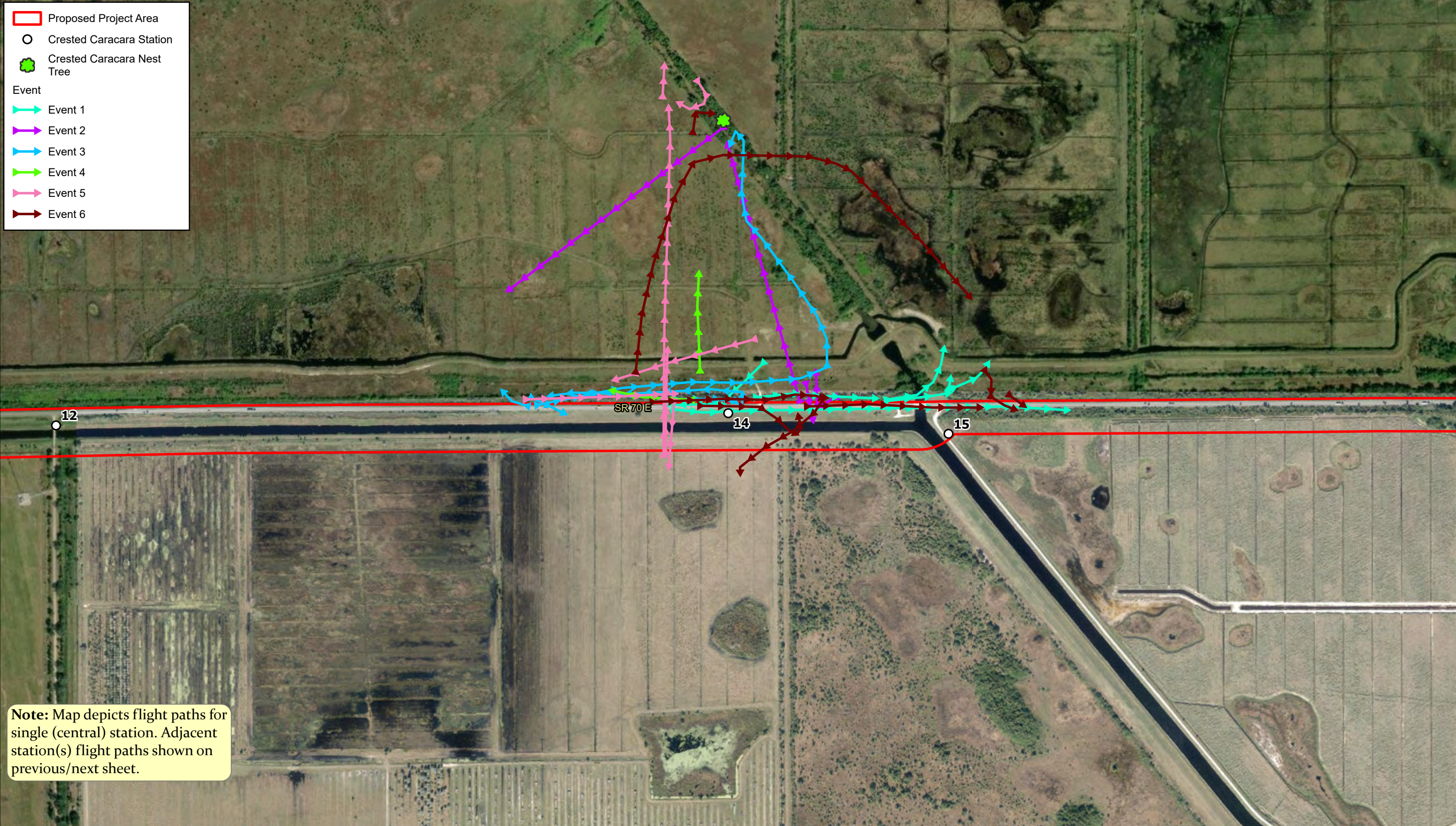
Event 5

Event 6

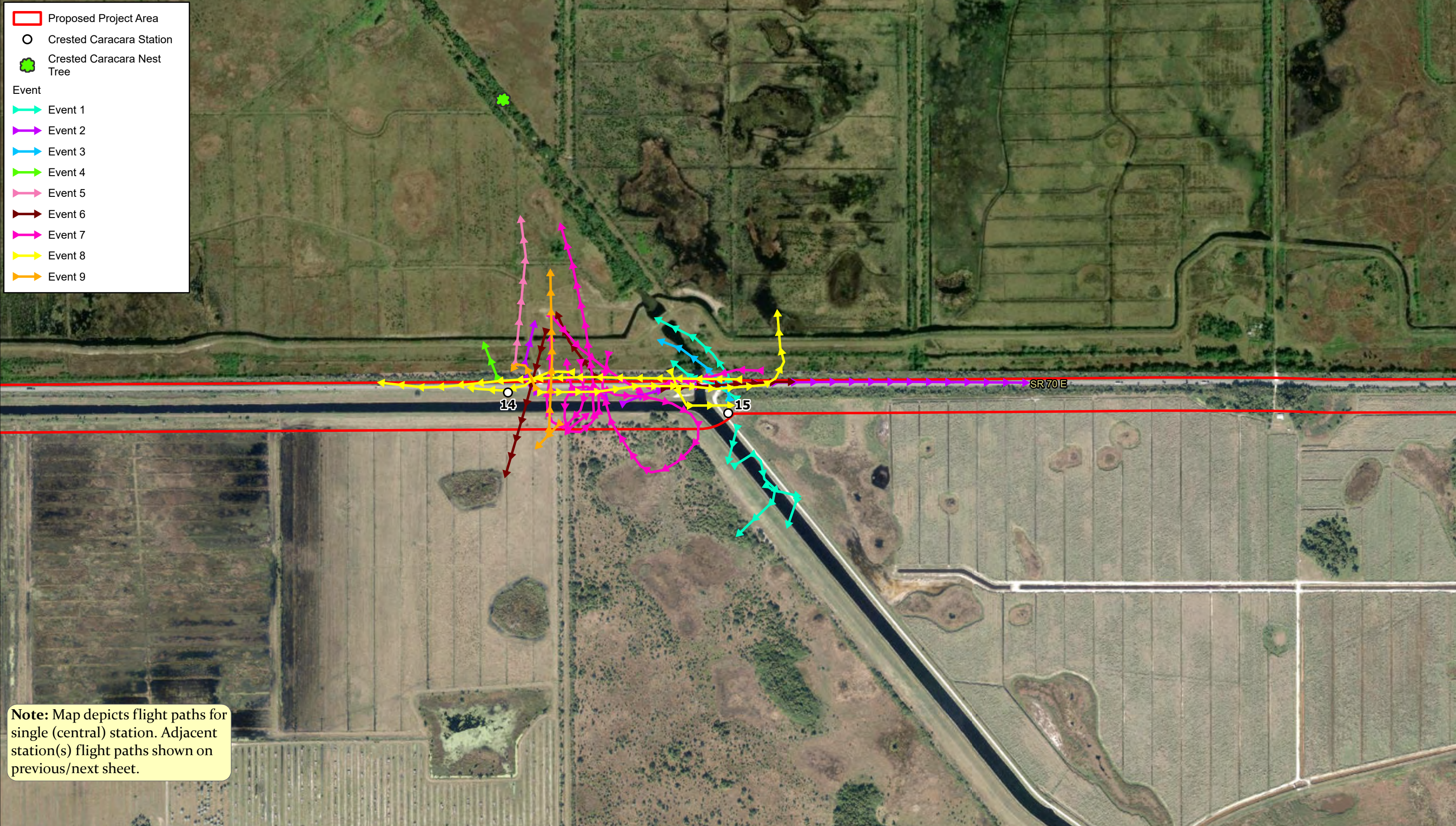
Event 7

Event 8

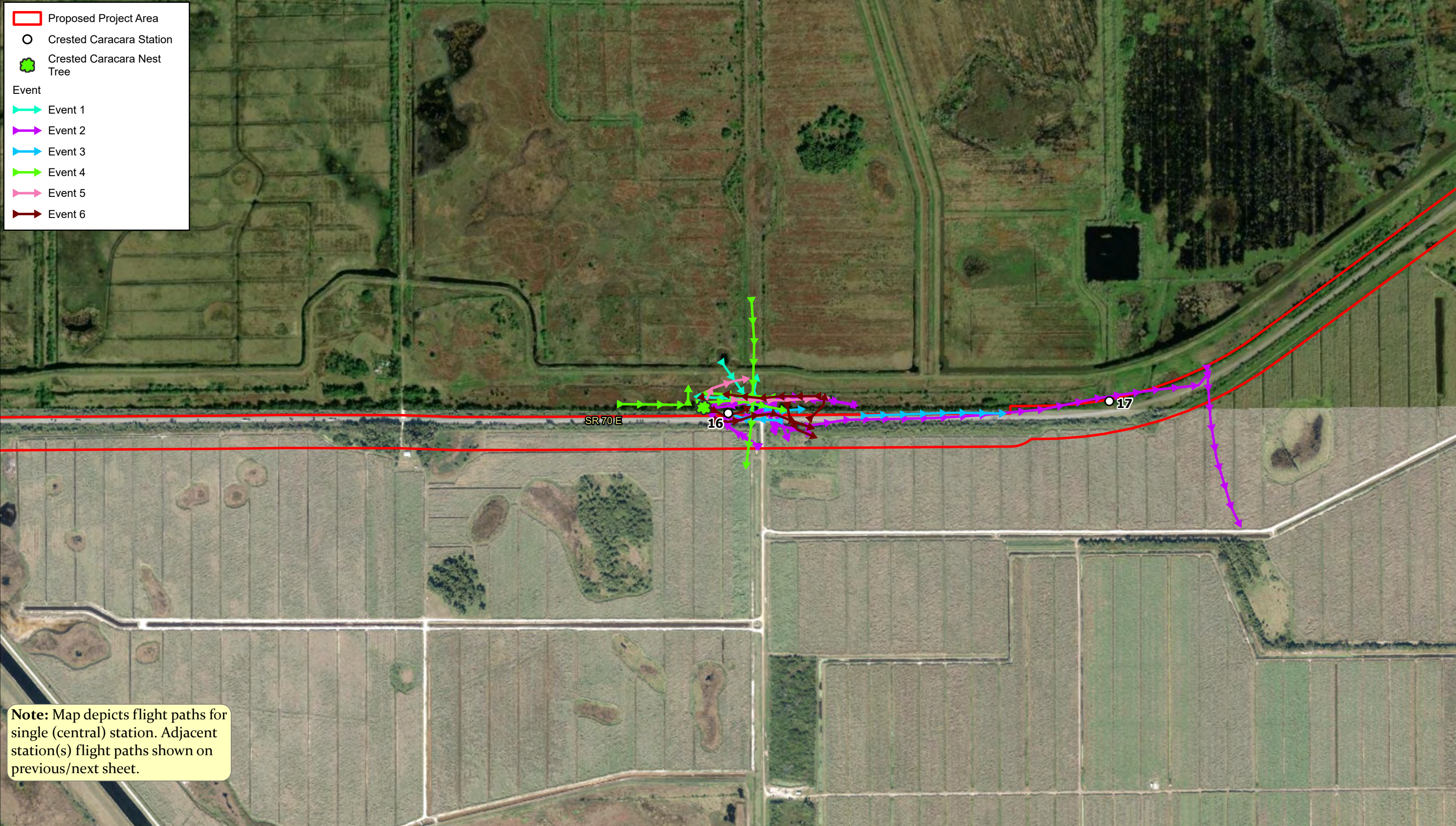
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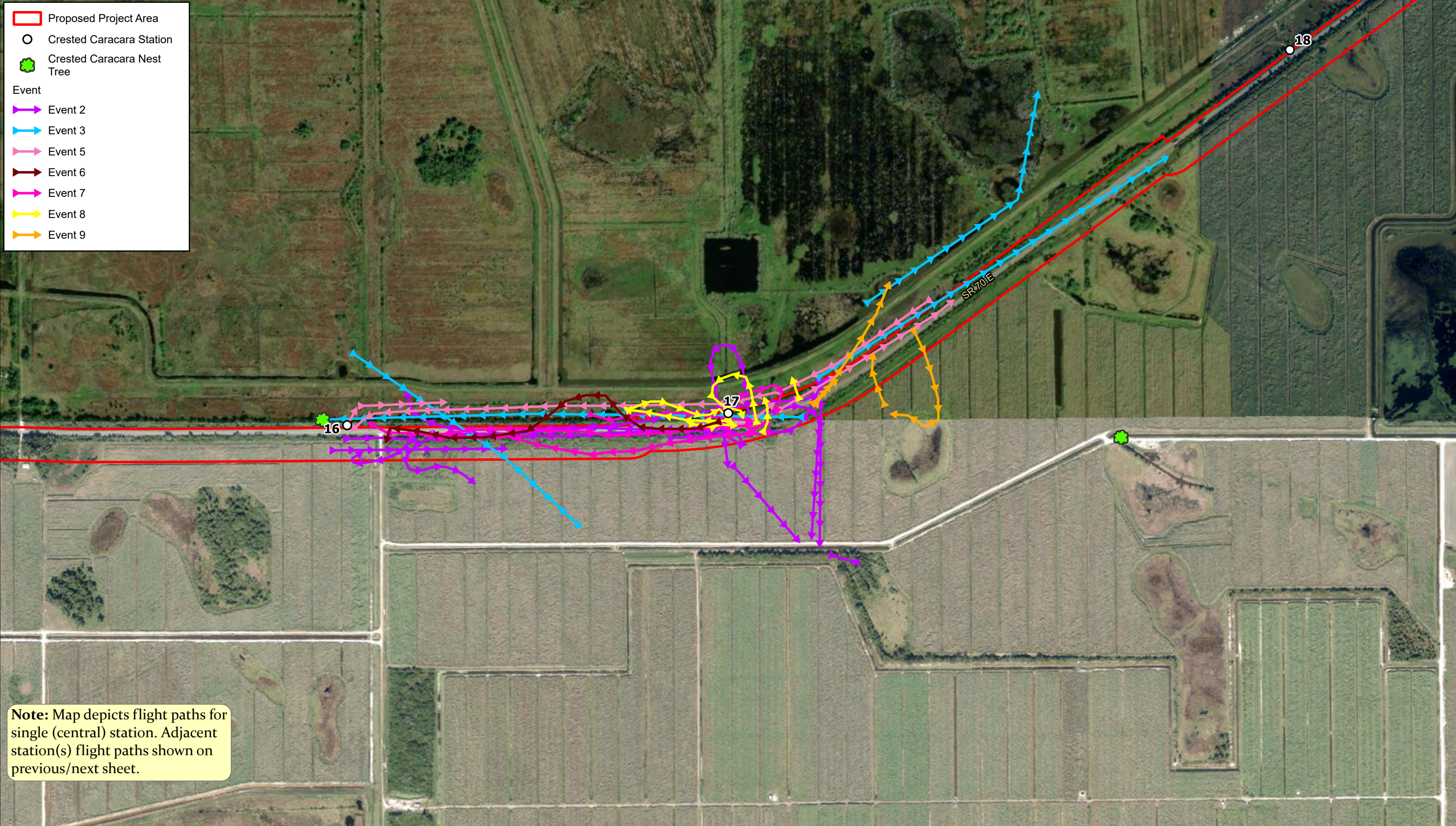
Note: Map depicts flight paths for single (central) station. Adjacent station(s) flight paths shown on previous/next sheet.



Note: Map depicts flight paths for single (central) station. Adjacent station(s) flight paths shown on previous/next sheet.



Note: Map depicts flight paths for single (central) station. Adjacent station(s) flight paths shown on previous/next sheet.



Note: Map depicts flight paths for single (central) station. Adjacent station(s) flight paths shown on previous/next sheet.



Proposed Project Area

Crested Caracara Station

Crested Caracara Nest Tree

Event

Event 1

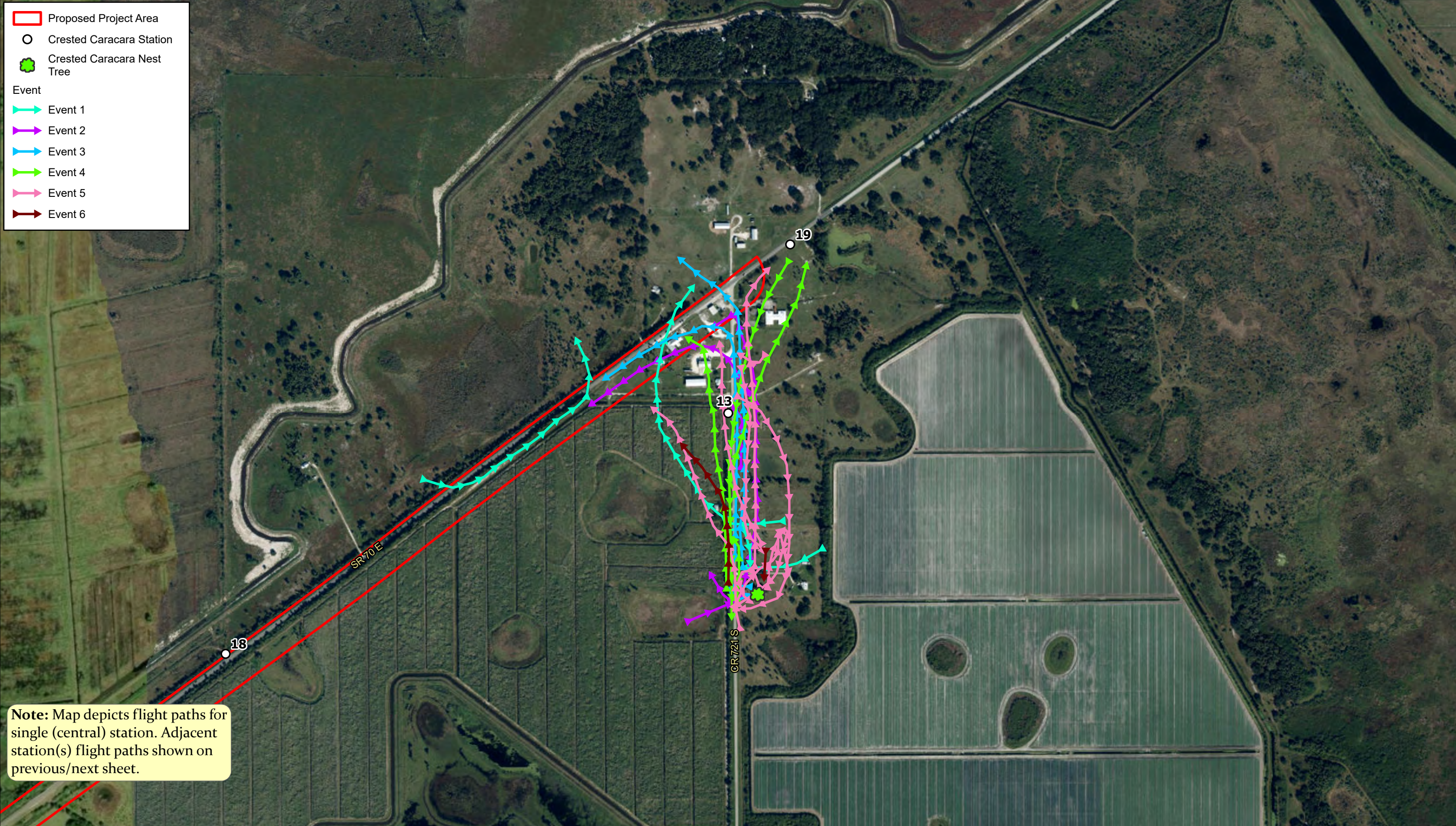
Event 2

Event 3

Event 4

Event 5

Event 6



Note: Map depicts flight paths for single (central) station. Adjacent station(s) flight paths shown on previous/next sheet.

Proposed Project Area

Crested Caracara Station

Crested Caracara Nest Tree

Event

Event 1

Event 2

Event 3

Event 4

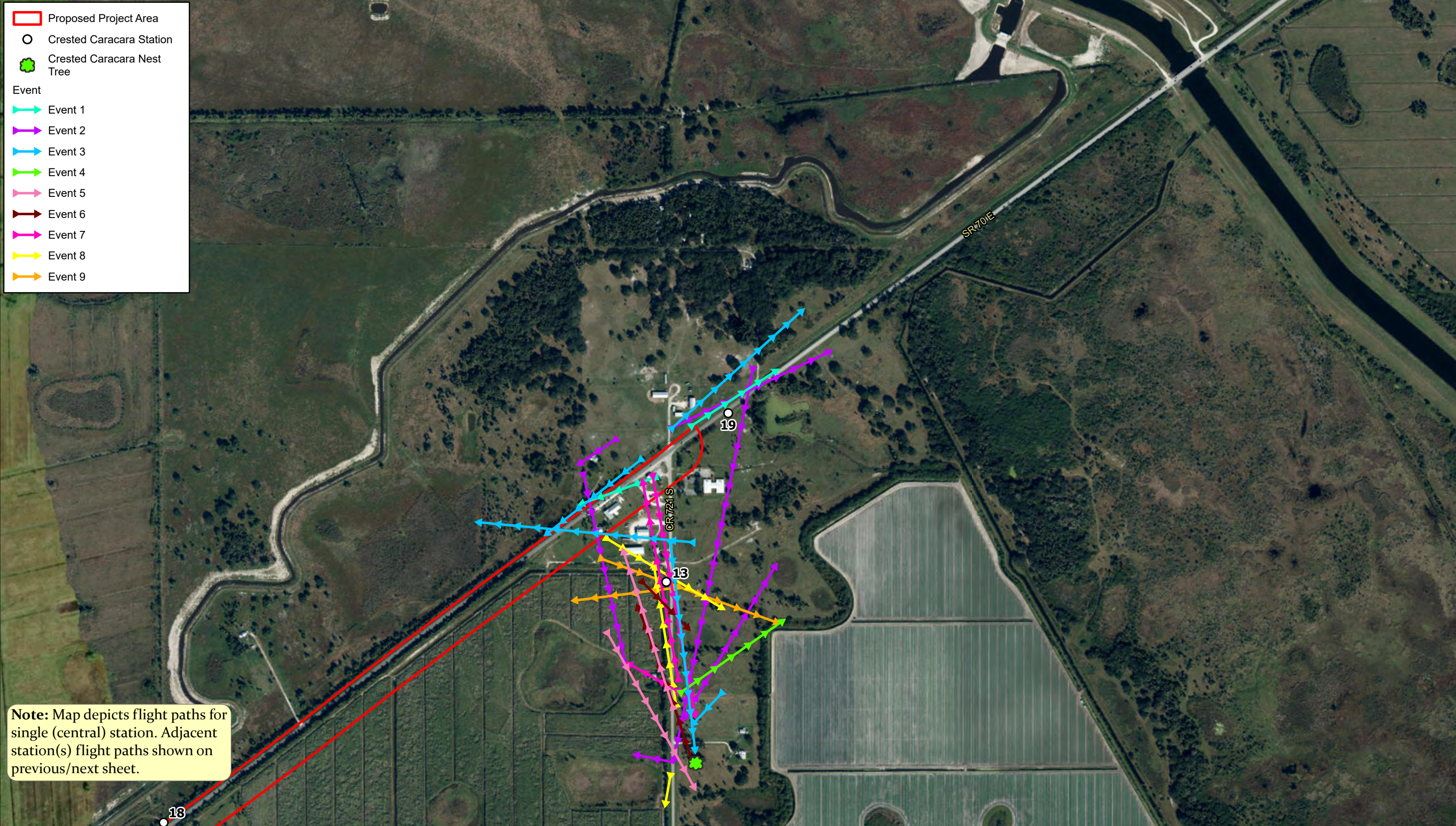
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Event 6

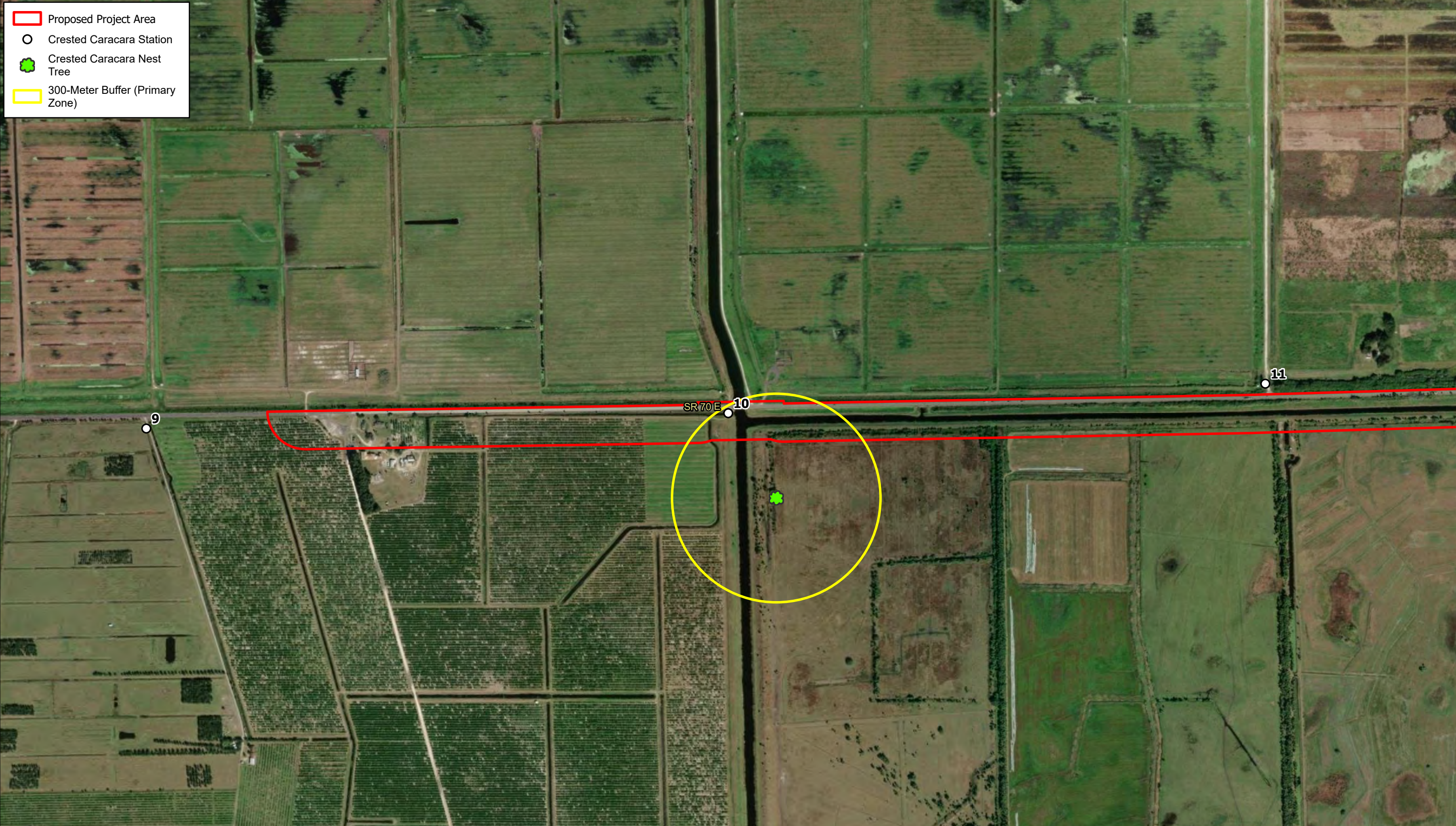
Event 7

Event 8

Event 9



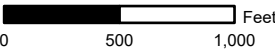
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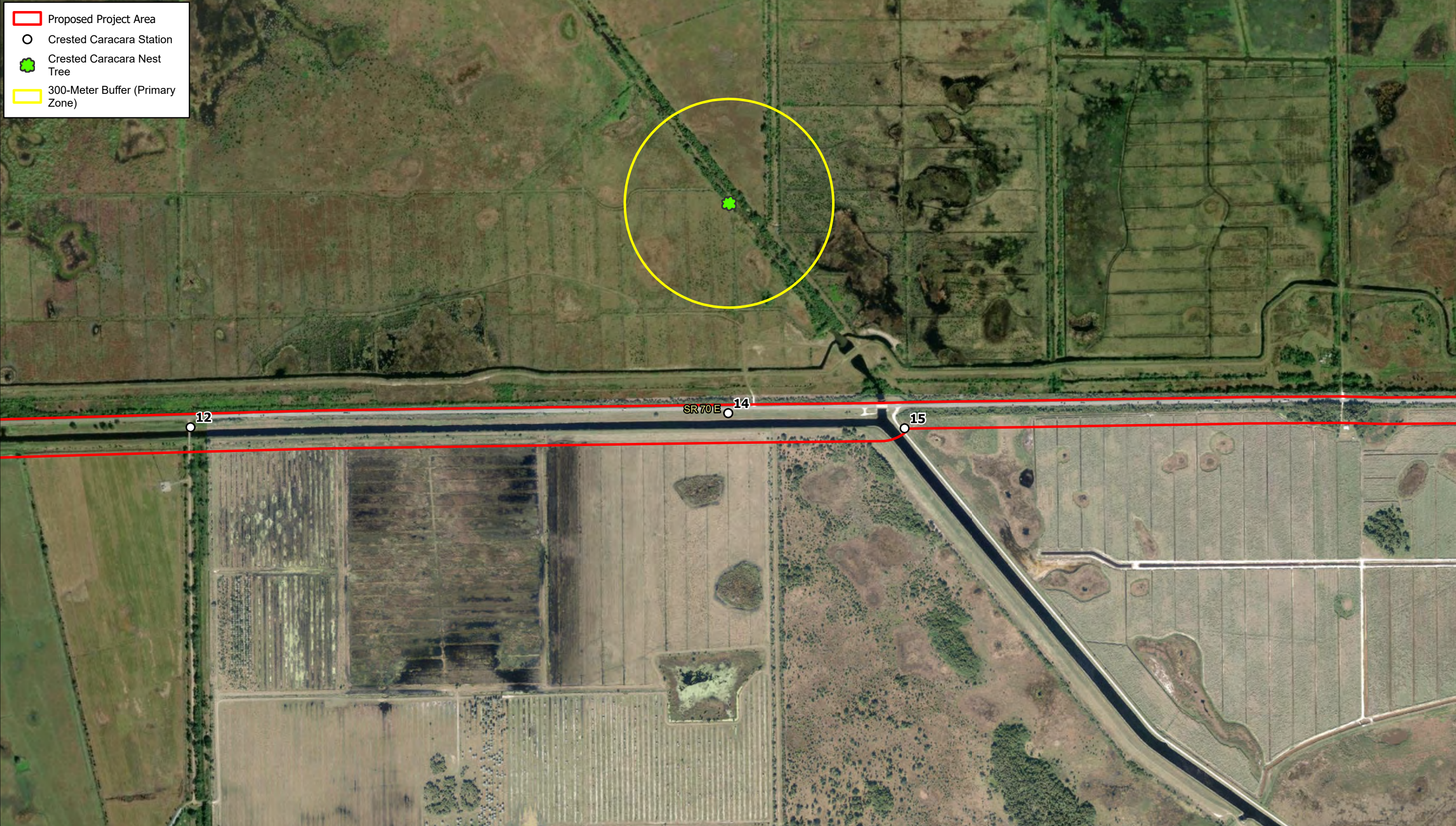


- Proposed Project Area
- Crested Caracara Station
- Crested Caracara Nest Tree
- 300-Meter Buffer (Primary Zone)

Figure 5 - 300-Meter Buffer (Primary Zone) of Nest Tree

Sheet 1 of 5
FPID#: 449851-1
SR 70 from Lonesome Island Road to CR 721 S
Highlands County, Florida

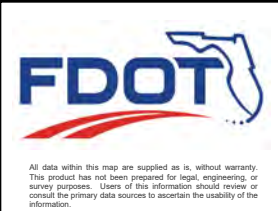
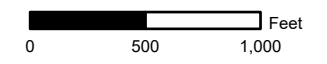




- Proposed Project Area
- Crested Caracara Station
- Crested Caracara Nest Tree
- 300-Meter Buffer (Primary Zone)

Figure 5 - 300-Meter Buffer (Primary Zone) of Nest Tree

Sheet 2 of 5
FPID#: 449851-1
SR 70 from Lonesome Island Road to CR 721 S
Highlands County, Florida



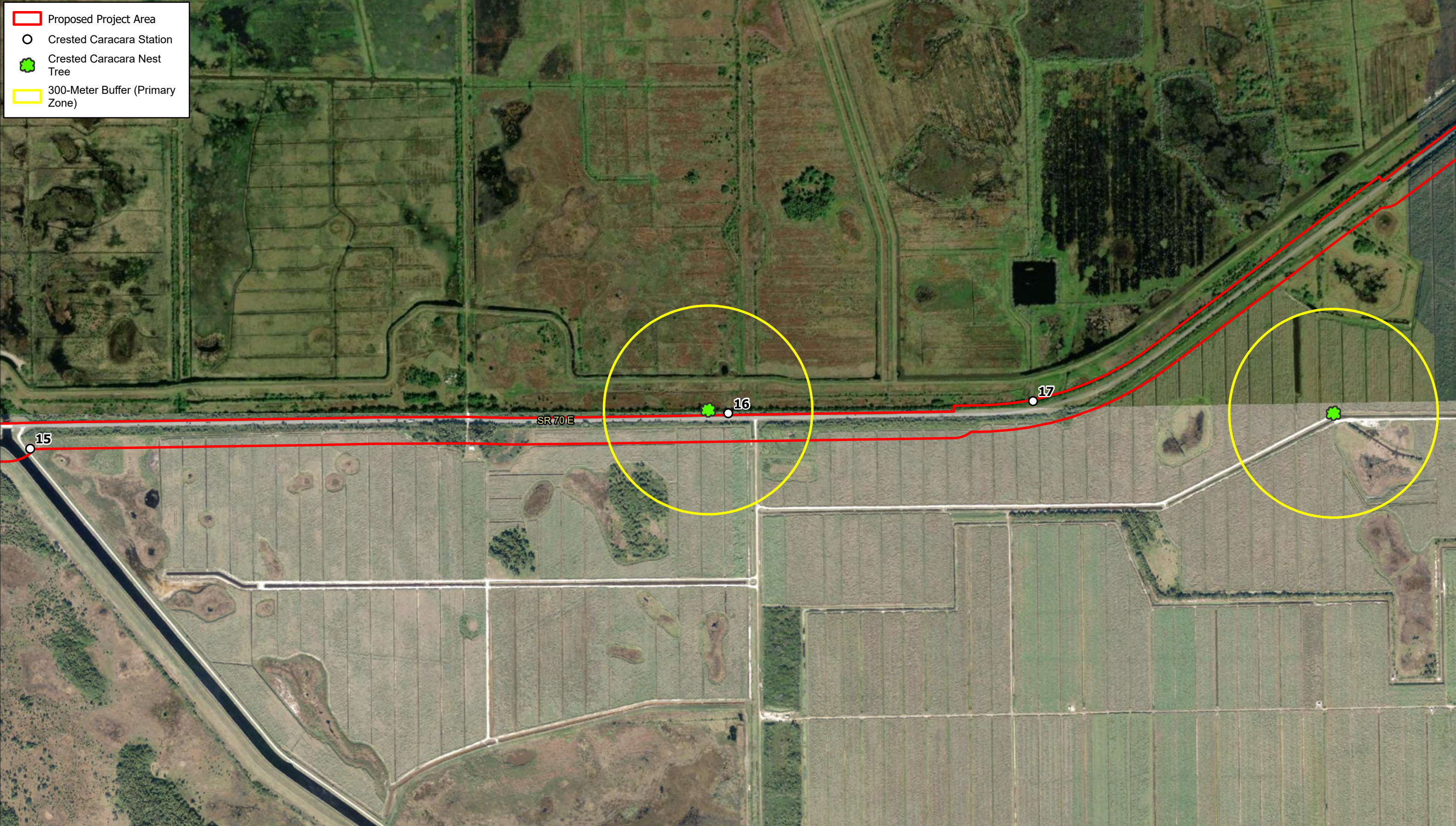
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Proposed Project Area

Crested Caracara Station

Crested Caracara Nest Tree

300-Meter Buffer (Primary Zone)

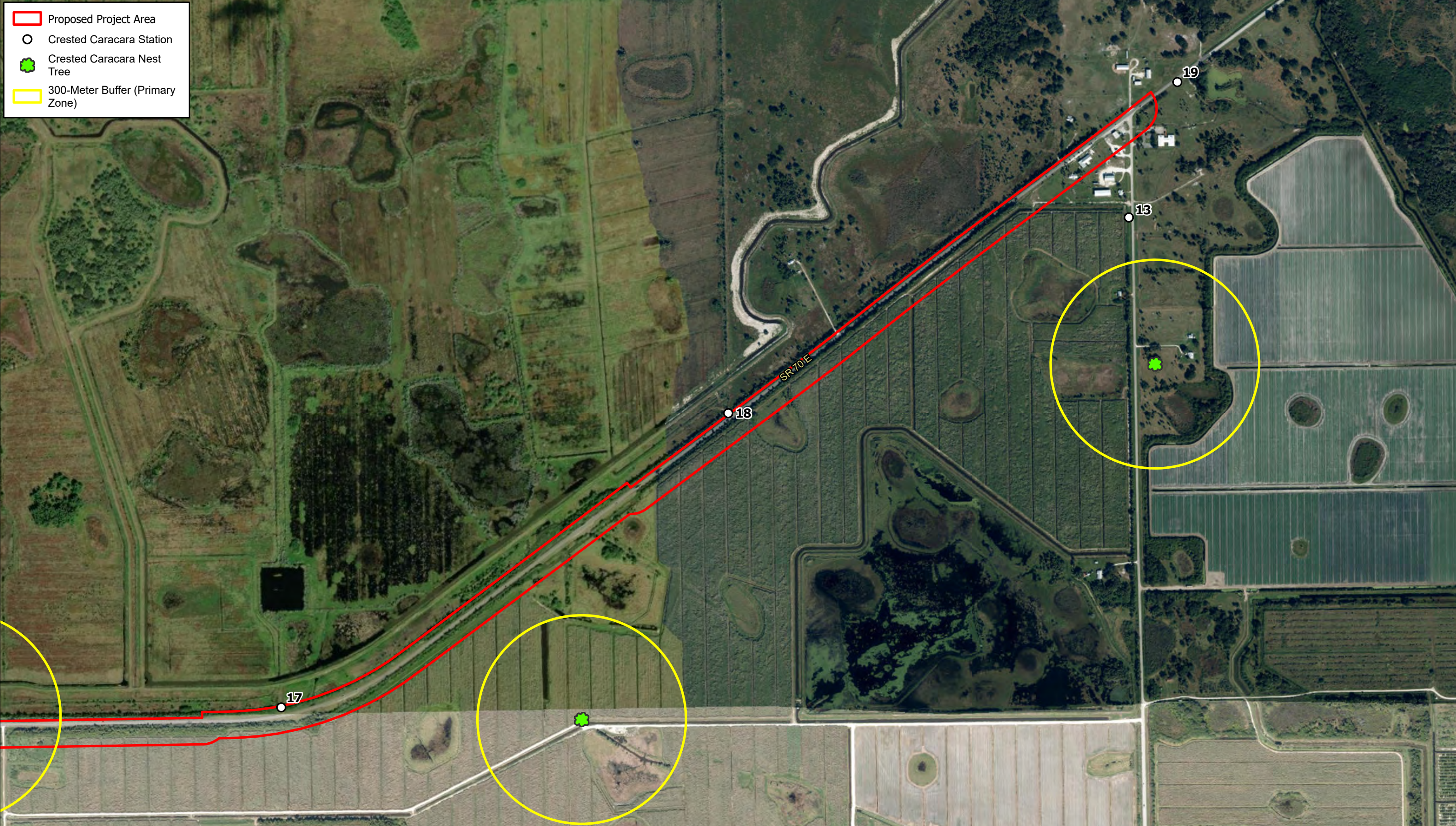


Proposed Project Area

Crested Caracara Station

Crested Caracara Nest Tree

300-Meter Buffer (Primary Zone)

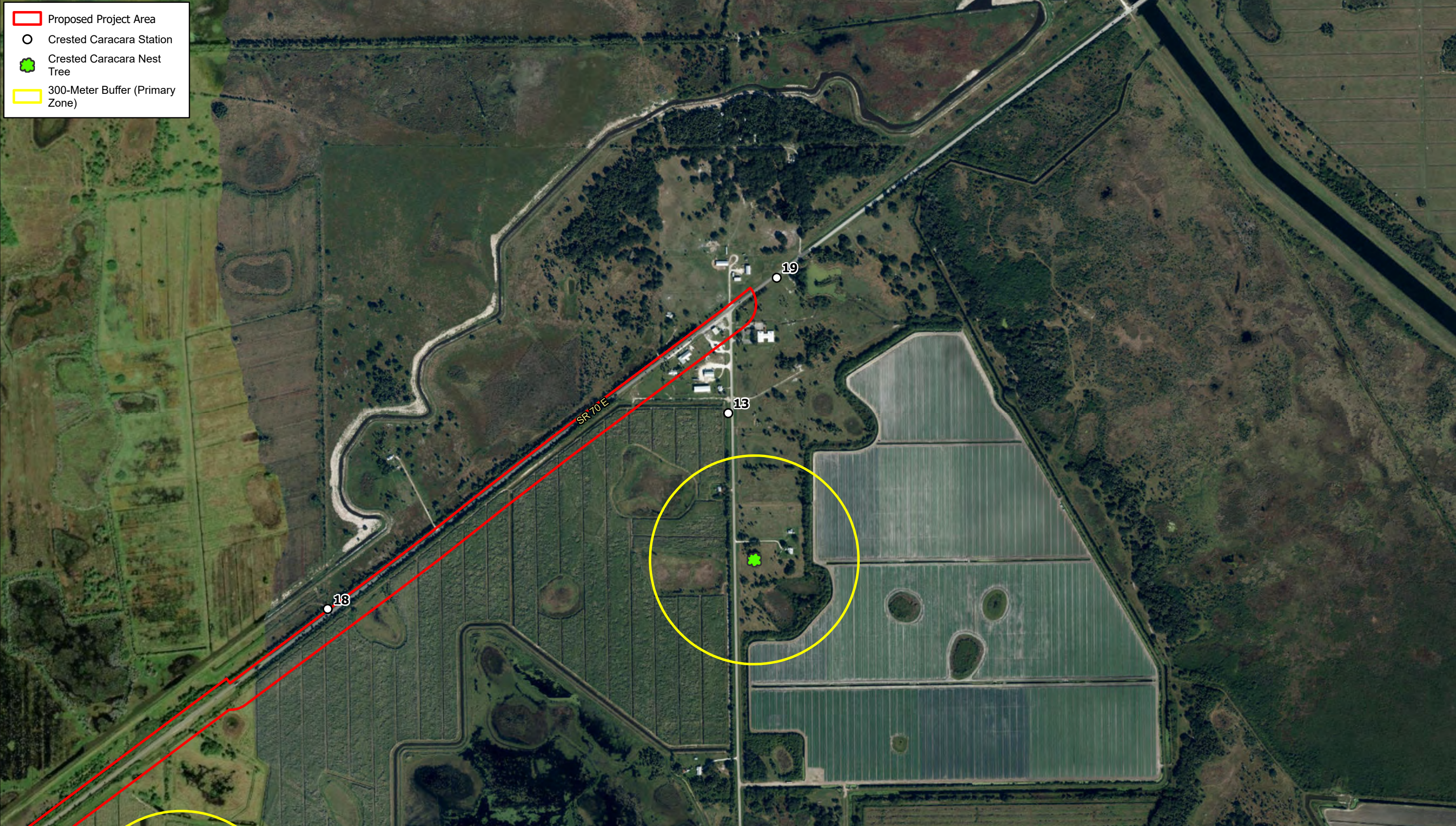


Proposed Project Area

Crested Caracara Station

Crested Caracara Nest Tree

300-Meter Buffer (Primary Zone)



Appendices

- A. USFWS Caracara Survey Forms
- B. Summary of Caracara Survey Data
- C. Representative Field of View Photographs for Survey Stations

Appendix A

USFWS Caracara Survey Forms

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: Station 9 Vehicle/BIK 9/

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1.8.2023	7:01 a.m	10:01 a.m	Alan Althouse 342 hrs

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:01	52°F	None	80%	Alto cumulus	None
Finish: 10:01	69°F	E 4mph	30%	Strato cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Station 9 on South side of SR 70, 130 Marcia Grove Rd address. North side of SR 70 tame grass pasture with occasional cabbage palm, cattle grazing. SW of SR 70 is tame grass pasture w/cattle grazing. Occasional Cabbage Palm 3 blocks of live oak grove (planted). SE of Station a recent mowed grove site preparation and active citrus grove. Canal & ditches

CC = Caracara

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Station 9	1-CC A	7:38 to 7:52 a.m	Flew from Sunday entrance (A), west to east toward Station 9, flew over vehicle and landed on south side of SR 70 ~ 50 ft east of vehicle. (X) pulled fresh road kill of edge of road into ROW ~ 10 ft from edge of pavement. Not effected by high speed traffic. Flew SW with piece of carion (B)
Station 9	1-CC A	7:55 to 9:00 a.m	One adult CC returned un-noticed and was feeding on a different piece of carion. CC was ~ 50 ft SE of vehicle in mowed grove. Flew SW towards oak grove, flew under canopy, chased by 2 crows. Crows and CC landed under canopy of oak grove. (D)

Other Wildlife Obsv:

Fish crow	Woodstork	Rd Str Hawk	Am Egret	Gallinule	Rock Dove
Kestrel	Cattle egret	RW BIK Bird	E King Bird	BT Grackle	
Morning Dove	Palm warbler	Fbis	Mocking Bird	Catbird	
		North Harrier		SHC	Meadow Lark

1.8.2023

Block 9, Station 9, Alan Alshouse

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

SR70

Station 9	2-cc A #1 A #2	8:05 to 8:21am	2 cc flying acrobatically at 600 ft south of station 9 along edge of mowed grove and mature citrus grove. #1 cc perched on top of mature citrus tree as sentinel. (E)
			#2 cc went to south side of SR70 ROW to feed on carion mentioned in 1st sighting. Observed #2 feeding then flew into mowed
			grove with carion (F). While #2 was feeding, #1 flew to #2 and assumed the breeding posture on top of #2. #1
			dis mounted and fed with #2. Both cc flew towards station within 100 ft and fed on carion (G). Departed flying to the SW
Station 9	3-cc A #1 A #2 A #3	8:48 to 9:15am	3 cc flew from the SW. #1 continued to fly east toward Sun Ray Farm entrance (H) #2 cc flew perched atop citrus tree (E)
			#3 cc flew to carion in ROW of SR70 (X) #3 cc flew west along SR70 until out of sight. #2 a few min later also
			flew west along SR70 until out of sight. (F)

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: Station 10 Vehicle / BIK 10 /

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1.9.2023	7:01	10:01	Alan Alshouse Primary 392 hrs

Weather Mike Poniatowski Secondary

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:01	55°F	None	80%	stratocumulus	None
Finish: 10:01	72°F	N - 3 mph	0	None	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Parked at SR70, south side, along Harnay Pond Canal.
N of SR70. Tame grass pasture cattle grazing. Sporadic cab palm.
North of SR70. SW corner mowed grove site prepared and mature citrus.
Power poles on N & S side of SR70.

cc = Caracara

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
10	#1 cc Juv	7:23 to 8:58	Atop powerpole south of station ~100 ft. preening. Stayed for 1 hr 35 min. Flew SE over canal into pasture.
10	#2 cc A	7:30	Flying high, arrived from the south. Flew over cc on power pole, across SR70 and departed in a NE direction until out of sight.
10	#3 cc Juv	8:20	Arrived from the east, flew around #1 cc sitting on power pole. Continue to fly high in a NW direction over SR70 until out of sight.
10	#4 cc	8:37	Flying high in NE direction

Kingfisher
Fishcrow
Kestrel
BT Grackle

Rd Str HK
N Harrier
Tree swallows
GBH

Cattle egret
SHC
wd HK
Am Egret

Red Tailed HK
m dove
BK Vulture
Anhinga

Cormorant

BLK 10, Station 10, SR 70

1.9.2023

Alan Alshouse
Mike Poniatowski

page 2

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

10	# 5cc Juv	9:47 to 9:55	Perched on power pole unnoticed (A) Flew North until out of sight.

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: Station 11 Vehicle/BLK 11

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1.10.23	7:00 am	10:00 am	Alan Althouse 342 hr

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:00	54°F	None	30%	Alto cumulus	light fog
Finish: 10:00	73°F	NW-N 3mph	60%	Cirrus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Address 870 Green brier Ln. NE is follow rough pasture with a few scattered young cab palm 2-8 ft tall to the bud. Shell road going north with mix of young and older cab palm, not dense. 11 Mature cab palm at station under high power - power line. NW-tame grass pasture w/ cattle grazing. Wildlife camera at the gate. Pair of Rd Sldr HK building nest in 11-mature cab palm. South of SR 70 is a tame grass pasture with cattle grazing. Sporadic cab palms.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Station 11	Clark 1cc 2cc 3cc	7:18 am	#1 cc perched on telephone pole south side of SR 70. #2 flew by #1 and #1 vocalized. #2 flew over SR 70 in NE direction. #2 followed and #3 followed #2.
			The cc flew between me and the rising sun so could not identify Ad Juv.

Fish Crow Rd Sldr HK Northern Harrier Mocking bird B/K Vulture
 BT Grackle Cattle egret Yellow Rump Warb white-tailed-deer
 Catbird Tree Swallow Parula warb. 8 Anhinga
 BG Nuthatch Rd Wg B/K Bird SHC

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 **Station 12**
Location/Observation Block/Lat-Long: 112 / 27°12'29" 81°10'11"

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/9/23	7:05	10:25	Emily Keenan, Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:05	57	E 0 MPH	40	cirrus	0
Finish: 10:25	67	NNW 4	<5	cirrus	0

CBH
BV
WE
SE
Hawk
LE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Pastureland, numerous cabbage palm on perimeter
 Canal E/W through site Pasture SW of site actively managed
 active cattle ranch
 cell tower adjacent to site.

cleared

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No caracara observed

LBB
Cardinal
Crow
Pigeon
Sparrow
RWBB

Note: Park to side, Active Access Road

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

87.2219429,

Location/Observation Block/Lat-Long: Station 13

- 81.0945943

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
11/9/2023	7:13		T. Kuba - Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:13	54°F	NW 1 mph	40%	cirrostratus	—
Finish: 10:13	67°F	NNW 4 mph	0%	—	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Adjacent to CR 721, sugarcane to SW, open pasture w/ occasional c. palm to NE, some commercial development @ SR 70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
vehicle	A1	8:31	From NW headed NE along SR 70 tree line then N out of sight
vehicle	A2	8:52 - 9:03	flew across CR 721 for road kill several times would perch on fence post
vehicle	A2	9:03	Flew across CR 721 + into c. palm group lost sight of A2
vehicle	A3	9:46 - 10:17	obs. A3 per on utility pole ear c. palm group flew south stirred some crows then

obs. wildlife: meadow lark, mocking bird, crow, black vulture, ibis, 8 cattle egret, snowy egret, wood stork, glossy ibis, little blue heron, bittern

back w/ crows perched too

USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70

Location/Observation Block/Lat-Long: Site 14

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/7/23	700	1000	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	47	NNW 9	0	N/A	N/A
Finish:	62	NE	0	N/A	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture ± scattered cabbage palms
to north & south of SR 70, canals on both
sides of C-40 canal running N/S

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	716	adult flew in from NE & perched on power pole. RSHA flew up & took perch at 718 & circled. flew over to perch on next power pole
①	A	723	adult flew east along roadway scanning for carrion. Followed up to station 15 but but then got stuck by traffic but bird continued east out of sight
②	A, Im	752	an ^{1st yr} adult flew east along road then perched on power pole next road
			adult. adult threw head back then started preening itself. Same power pole as observed perched at Site 15 during 1/6/23

Other species observed

BLVD AMUR MHA TRSW WENI PEFA
TUVU GRBE PWA DCA MUA Coyote
GREY GRIB BTAR RBWD CAREW TAVIE SNAKE
WHIB AMLE LIMP GRCA

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2021-2022 Breeding Season)**

②	Im	805	The 1st yr young adult flew east & north away from adult that stayed perched on power pole
②	A	839	adult flew from perch on power pole & landed on next power pole to the east
②	A	841	adult flew N down from pole out of sight
①	-	-	do not see any activity by possible nest tree marked yesterday on station 15 survey, but does appear there is an active territory overlapping Stations 14 & 15 & nest tree needs to be located
②	A	929	adult is back perched on eastern power pole. other flew to @ 839 then flew NE

USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70
Location/Observation Block/Lat-Long: Site 5

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
11/6/23	700	1000	J. Klein

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	58	NNW 7	2	Stratus	N/A
Finish:	63	NNW 9	0	N/A	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
pasture & scattered cabbage palms near SR 70. Heavy forest canal running south & pasture & sugar cane crops to east & west

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	750	1 adult caracara flew north from behind observer & went NW out of sight. There is a nice clump of cabbage palms in direction bird was heading. May have had small bit of food in beak.
①	A	808	adult flew from behind observer north across SR 70 to perch on power pole. An adult was observed on this pole on 1/6/23 while observer was leaving Site 16. May be sentinel / perch & nest nearby. Based on observations of just one adult @ time, seems likely pair would be @ incubation stage.

Other species observed

AMCR TRSW RSITA ANKE MCA
 COAR PAWA MHA MOJO BAOR KILL STHA
 GIBIE BLV LIMP GREG GREA EAPH
 YRNA ANKI BGIN TUVV BEKI

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2020-2021 Breeding Season)**

①	A	832	adult on pole flew NNW & down 1m from pole. Could see past vegetation along road
②	A	844	located possible nest @ 484817 3010230 approx 1/3 mile north of SE70 of inside Riverat property. A Flatwoods Condalia tree & individual were inside property & appeared to be monitoring the nest. Difficult to tell stages the pair @ this distance. One adult (at least) can be seen moving around in tree. Need to bring scope @ next survey to confirm w/ nest building/incubating, etc. The amount of movement of observed bird seems most likely would be nest building
①	A	904	adult caracara eating carrion walking after 2 BLVU & TUVU looking on
①	A	910	same adult flew SW across canal & landed by BLVU looking for food
①	A	913	same adult flew back across canal & took food from BLVU
①	A	935	same adult flew SE along canal, then short territorial display & 2nd adult flying from North, then one flew east & landed & other flew SW out of sight SW

① A 939 one that landed flew across canal & landed by Vulture then walked up to berm

Summary: there is likely a nest tree ~ 5 mi. NW from survey station 2 as marked on map; also likely a nest tree ~ 1.7 mi. to the East by Station 16. Perhaps another territory to the SW where an adult was observed flying after territorial interaction.

USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70

Location/Observation Block/Lat-Long: Site 16

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
658 1/18/23	658	958	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	69	58	100	fog	dense fog
Finish:	74	56	85	stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture & scattered cabbage palms on north side. Sugar cane/row crop & some pasture on south side.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	933	adult flew in low from north & landed in oak on north side of road where mate already sitting. Spent 10 minutes all preening & mated/copulated.
①	A	945	male flew west & landed on pole then flew low south but not across SR 70.
①	A	948	female flew low & north, lost sight.
①		950	checked cabbage palms in area & one seems possible for nest. Will confirm on next survey.

Summary: there is likely a territory & first seen in vicinity of Station 16.

Other species observed:

CIRCA	PANA	GREG	GLEG	marsh	about 1	AMKE	KOWA
NOLA	YKWA	SHUG	LOST	BLW	EAPH	RBWO	
DEGN	AMER	FAHE	TRSW	PINA	BACR	TRSW	
CARN		LIMP					

**USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: FDUT SC70

Location/Observation Block/Lat-Long: Site 17

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/4/23	658	758	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	66	NNE5	10	stratus	103 just starting to disperse
Finish:	76	59	40	stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture & scattered cabbage palm north of SK70, low crop (cayenne cane) & pasture south of SK70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No caracara observed

Other Species Observed

NOZA GLIB EAPR MODU NOBA AUBA
 TRSW BTGR ERCA SACR LAMP PAWA
 RWBL AMUR YRNA TRHE GBIH NUHA
 ANHT AREH BGMN MSF AEBE EAME

**USFWS Crested Caracara Survey Protocol
(2021-2023 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: FDOT SR 70

Location/Observation Block/Lat-Long: Site 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/3/23	659	759	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	66	E4	3	stratus	hazy
Finish:	75	NE4	2/5	stratus cumulus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

2 lane highway w no shoulder, pasture & scattered cabbage palms to north; pasture & old van prop to south (sugarcane)

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	712	1 adult caracara flying ^{South} West (north of SR70), may have landed in patch of cabbage palms but could not view directly
			no other caracara observed

Other species observed

AMOR NOTA GLIB FUCD EAPIF TRSW EAME RSHA AMKE
 PAWA EUST WIEVE BGIN RBWD 1 CABE BLW NANO
 GREY MRCR MODU NDIA YRNA DOWD YRWA BCU
 WLSB BTGR PABU BMTA COYE ANHE RASP WOST

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 27°13'35.32"N 81°5'36.58"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-3-2012	7:00	10	Ornithologist

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	66	ESE 4 mph	30		NA
Finish: 10	73	SSE 11	30		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic on SR 70 & 721

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
C1 70/721	A?	0716	Possible adult observed at 70/721 flying East along 70
C2 19	A	0726	Adult perched on pole north of 721/70
C2 19	A	0727	A dropped to ground out of view
C3 19	A	8:51	A flew around north & south of 70/721, perched in grass south of 70/721, flew east along 70

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 (Station #9)

Location/Observation Block/Lat-Long: _____

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/24/23	0654am	1015am	Brett Solomon

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0654	49	Calm	20	Cumulus	None
Finish: 1015	63	9mph NE	50	Stratus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
#9	A	0710	Caracara flew from perched on oak (approx 50 yds west to SR 70) and flew N out of sight to the W)
#9	A	0720	Single adult approaching from S approx 300 yds SW then passed up and continued W out of sight
#9	A	0722	Flew overhead from E and continuing W parallelly SR 70 out of sight
#9	A	0738	Flew from N heading S across SR 70 and flew S out of sight parallelly the groves

USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

[illegible]

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: Sta 10/BK10 / 27.20882°N
81.20129°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1.24.23	6:59	9:59	Alan Althouse

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 06:59	50°	North 2 mph	30%	Altostratus	0
Finish: 09:59	66°	NE 5-6 mph	80%	Altostratus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Harney Pond Canal. Cabbage Palms line the south side of the E-W canal and the east side of the North-South canal south of SR70. Cattle pasture N+S of SR70, Citrus grove SW of station 10.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
10	A #1	0705 - 0709	Flew from the east over cabbage palms lined along south bank of E-W canal to live oak tree on east bank of N-S canal. Flew low into pasture to the east near #2.
10	Im #2	0709 - 0712	Perched in large Brazilian Pepper. Flew to power pole on south side of E-W canal
10	Im #2	0712 - 0731	Perched on Power Pole. Tree obstructing view somewhat but still visible, preening, Flew away in an unknown direction
10	Im #3	0805	Flying high North to South then flew over tops of cabbage palms on south side of E-W canal

GBH	Red Shd HK	Wht Egret	Palm warbler	Mocking bird
BT Grackle	Crow	Wood Stork	Meadow lark	Scissor-tailed flycatcher
Kestrel	N. Harrier	Wild turkey	Sandhill Crane	Rd Wg Bk Bird
m Dove	White-tail-deer	Cormorants	Glossy Ibis	Little Blue Heron
		Blk Vulture		Bald Eagle

USFWS Crested Caracara Draft Survey Protocol –
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Observer Location	Age A/Hm	Time	Description of behavior, flight path
10	Im #4	0830	Flew from the east to tractor-brush mower mowing in grove west of canal. Followed mower by fly + walking behind mower with cattle egrets
10	Im #5	0914	Flew from grove to power pole + the flew low thru cabbage palms along N-scand + over pasture out of sight
10	#6 same ↓	0930	Flew from pasture to power pole
10	#6	0935	Flew from power pole over/on highway and picked up something flying to next power pole east.
			Feeding on cawion at the power pole
10	#6	0940	Flew from power pole over highly and to where tractor-brush mower is mowing in grove
			Following mower with a group of cattle egrets.

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 27.20964°N
Location/Observation Block/Lat-Long: Sta 11 / BIK 11 91.18535°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1.25.23	0659	10:00	Alan Alshouse 342 hrs

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0659	64	0	10%	Cirrus	1st grd fog
Finish: 10:00	78°	SE 10mph	20%	Cumulus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Cattle pastures N and S with SR 70 bisecting
Heavy traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
11	Im #1	8:55 9:00	Flew to Roadkill Possum ^x on SR 70 ~20 yd from station. Crows buzzing CC. Flew south w/ mouth full of cation
11	Im #2	9:03 9:15	Feeding on cation in SR 70. Possibly same bird as above. Fly up & down as traffic approaches & leaves. Flew SW
11	Unk CC #3	9:20 9:23	CC perched on telephone pole. Sunglare prohibiting age determination. Flew west out of site.

Catbird
Fish Crow

Robin
Boat-tailed Grackle

B-G Nighthawk
E Kingbird
M Dove
Rd Shd HK
Red Wg BK Bird

Bluegray Gnatcatcher
Cardinal
8 Tree Swallow
Woodstork
Mockingbird

N. Harrier
Cattle Egret
BK Vulture
Cormorant
Red-tailed HK

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 27.20929° N
Location/Observation Block/Lat-Long: Station 12/BK12 81.16972° W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1.26.23	0659	1000	Alan Althouse 342 hrs

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0659	65°	NW 1-2 mph	100%	Nimbo stratus	0
Finish: 10:00	65°	NW 10-12 mph	100%	Altostratus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Cattle pasture N + S of SR 70. Sporadic cabbage palms in pastures. Radio tower ~100 yd south of station. Cabbage palm + live oak line DC Bar Ranch Rd going south from station. Canal 39 + SR 70 east + west.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
12	Im #1	0942	Flew from south over canal and SR 70 then flew south over canal and perched in oak tree for 3 min then flew south and landed in pasture ditch. Row of hay bales, blocked view Corsiage bag

Pigeon	Cattle egret	Boat tailed Grackle	Catbird
M Dove	RWBK Bird	Osprey	Mockingbird
Am Egret	Eur Collared Dove	Cormorant 8	Cardinal
Ibis	Crow	Little Blue Heron	Yellow Rump Warbler
	BK Vulture	GBH	Woodstork

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Station 13

Project Name: SR 70

Location/Observation Block/Lat-Long:

27.22242°N
81.09456°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1.27.23	0657	1000	Alan Althouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0657	52°	North 11mph	70%	Altostratus	0
Finish: 1000	64°	North 12-14mph	50%	Altostratus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Near intersection of SR 70 and CR 721 South
Horse pasture east of CR 721

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
13	Im	7:07 #1	Flew from the south along 721 and landed 10 yd from my position next to the road with a crow
13	A	7:08 #2	Flew from the south and joined #1 along road then flew + perched on fence post. 1+2 flew south.
13	Unk	7:09 #3	1+2 flew south along 721 and met up with #3. All 3 cc perched on top of power poles on east side of 721
13	↓	↓	1 of the cc mounted a cc in breeding posture both flew away together east over hammock then back to power pole. One of the cc flew down into the

hammock while the other two remained on top of power poles. Next page....

TU Kestrel
GBH Mockingbird
Crow Cattle egret

Red Shd HK

SR 70 1-27-2023 Alan Althouse

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Observer Location	Age A/Im	Time	Description
13	#1 #2	End time 0718	Continued from Page 1. The remaining two CC flew towards SR 70/721 intersection then west what appeared to be along SR 70 until out of sight
13	A #4 #5	0740	moved to closer position in front of power building (A) Feeding on carion in live oak tree south side of driveway. X flew to top of power pole. 2nd CC walking on ground in Nammark
13	↓	↓	and cabbage palm head
13	Im #6	0805 → 0809 →	Perched on power pole, looking moved to next power pole to the south
13	#6 #6	0817 0819	Flew north to power pole near intersection Flew west out of sight
13	#7 Im	0835	Flew up from oak/cab palms on east side of 721 to top of power pole next to driveway. looking
13	A #8	0840	Bringing food in beak flew to oak/cab palms. #7 followed
13	↓	0842	Both #7 & #8 flew back to power pole #8 had no food

0845 7+8 flew west out of sight.

5270 1.27.2023 Alan Althouse

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Observer	Age	Time	Description
13	A #9	0915	Flew W to E with food
13	Im A and	0920	cc Flew from Oak/Cab Palm heard to power pole tops at driveway entrance
13	Im + A	0925	Flew to fence post along driveway
13	A A Im	0935	2 Adults 1 Im fly together acrobatically over house, horse barn area

**USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70
Location/Observation Block/Lat-Long: Site 14

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/20/23	659	1006	J Korman

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	68	WNW 5	95	stratus	N/A
Finish:	72	NNW 5	95	stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

<p>pasture + north of SR 70 sugar cane & pasture to south C-40 canal running SE</p>

NEST LOCATED 484741 3010307

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	700	adult perched on zinc fence pole as 1/19/23
①	A	710	adult flew to road to dead grass. I moved grass to grass on S of road
			because caracara was almost getting hit by car. try to see grass on road
①	A	715	adult took piece of grass to flew in but could not follow through trees along road. But nest is suggested

in that area

Other birds
observed

PINK GRCA SUKE
 GREY PAWA BGEN
 GRBK YRNA CARW
 GBLF RSHA EAPH
 LEAF TRSW
 BGR BLVU NO HA
 MDDU PIWA WEUI

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2020-2021 Breeding Season)**

①	A	720	adult returned to roost & ate
①	A	745	adult flew north to food, was able to follow & entered nest tree
①	A	750	left nest tree to food & entered tree to west to cache, then flew to nearby tree & perched
			(in the first species on previous survey) Nest confirmed incubating since 2nd adult not seen. coordinates approx since pin marked on map to NW corner of property
②	A	755	adult left & flew WSW
②	A	851	adult sitting on edge of nest tree preening then entered nest
			Estimated hatching sometime between 1/30 - 2/6/23
			_____ _____ _____ _____

~~_____~~
~~_____~~
~~_____~~
~~_____~~

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2022-2023 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: Site 15

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
11/19/23	658	958	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	55	N4	10	stratus	light fog
Finish:	76	SE7	5	stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture to north of SR70 Sugar cane to pasture to south C-40 canal running SE

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	706	adult caracara sitting on power line
②	A	715	adult flew in into fog & could not follow
②	A	727	adult returned to perch on power pole (from east) from unknown direction, preening
②	A	900	adult from power pole flew SE & landed along canal then flew East down road, tried to follow but lost bird because of height & northern to pull off

Other Species Observed

WEVE AMKE LIMP SNKE GRCA BLVD
NOCA AMCR CARW KEC EAME
TRSW AMR2 RSNA CAEA
MTHP AMR2H

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

		9/5	caracara did not return but behavior resembled a several perch then leaning for food. Perch Still seems likely there is a nest in this area

**USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70

Location/Observation Block/Lat-Long: Site 14

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
11/18/23	658	958	J. Kohn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	52	SSE4	100	—	heavy fog
Finish:	68	ENE5	5	stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
pasture on north side of SR70 sugar cane & pasture on S side NEST LOCATED 487230 3009709

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	658	1 adult perched on top of power pole then flew S across rd through heavy fog
①	A	759	adult flew from wire & landed on top of oak
①	A	801	adult flew S across road & landed in another oak & preened
①	A	809	adult flew east low, difficult to tell if along road or thru a cabbage palm due to fog

Other species observed

MOZL AMCR DOWD PAWA GBIKE C.AEM
CARW COYE AMRO YRLWA GREY AMLE
GRCA RWBL BTER SNKE AMHI

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2021-2022 Breeding Season)**

②	A	805	found adult far from any road to east sitting on power line
②	A	817	adult then flew east & lost in fog
②	A	821	located adult again on another power pole, preening
②	A	855	perched adult flew S toward area where believe nest is located on Site 17, could not follow to see destination
①	A	932	adult flew E toward NW & landed on low power pole; 2nd adult flew from nest tree & went East & landed then went to somewhere in between. Adult E flew entered nest tree then flew west
		940	adult returned & landed on low power pole near nest
-	-	-	Because pair were observed together & copulated 1/17/23 the nest stage is most likely egg laying or very start of incubation. Adult bringing food would have been for the other adult & not young.

Nest structure possible is there but no young seen or heard

Nest located @ 487230 3009709
earliest hatching estimated week 8 2/15/23

① A 954 adult perched on sentinel pole
flew ² west east but prob week of 2/22

USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70
Location/Observation Block/Lat-Long: Site 17

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/17/23	700	1000	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	44	NE 4	2	stratus	light haze
Finish:	63	WNW 6	50	N/A	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
pasture to north of SR 70 sugar cane crop to south NEST LOCATED, need to return coordinates

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	715	adult flew in from nest along south of road, crossed then landed on top power pole
①	A	719	2nd adult flew east along road the south across field out of sight
①	A	725	adult flew south to tree on far side of sugar cane & perched & other adult lost them when repositioning
①	A Im	847	subadult flew N, circled & 2 adults but no interaction

1 adult then flew S across sugar cane

Other Species Observed

AMER PAMA BLWA ANHE SACK
GREY YKWA GRCA CABH AMKE
LIMP SUKE BTAR AMKE FAGE

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2021-2022 Breeding Season)**

①	A	851	adult that flew S is perched in oak that previously perched in @ 725 (nest area?) possible sentinal? tree?
①	A	906	perched adult flew down into tree unable to see from this distance
①	A Im	925	an adult & subadult flew west along road the adult went N. & subadult circled 1E
②	A	931	2 adults landed in tree & vocalized, 3rd adult flew from west & perched adult flew to it & had territorial display. 3rd adult continued east. 2nd adult landed back to mate & copulated then both flew low N same area 2 adults observed copulating @ Site 16 survey & looking N
①	A	938	adult that continued east went to sentinal tree from 857 & mated & copulated observed when 1 adult flew low into tree unable to see which one seems likely a nest in this area approx 1100 feet from road
①	A	948	2nd adult pad within 2 to made & aligned.

① A 957 1 adult flew ~~SE~~ ESE & entered a
cabbage palm @ approximately
488436 3009400 (need to refine
these coordinates on future
surveys)

**USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70 E
Location/Observation Block/Lat-Long: Site 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
11/14/23	700	1000	J. Korman

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	40	N 2	0	N/A	Some fog
Finish:	53	NW 2	0	N/A	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture to north of SR 70, sugar cane to south

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	710	adult caracara flew east
②	A	741	adult flew from S, circled around dead cotton then flew N + W
②	A	940	adult flew E along road then SE out of sight over trees, possibly landed nearby

Other species observed

NOHA AMKE GREG AMKE GREG RBWD NOME
 GIBIE LIMP NOHA KELL RWBL CARW EAPH
 BLW COHR PAWA GLEB TRHE RSHA MODU
 WITIB SNKE (group) AMKE WOST BAGR MODU
 DECC YRWA

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 5270

Location/Observation Block/Lat-Long: 19/27.226N-81.093W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-16-23	7	10	Church

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	39	NNE4	15		
Finish: 10	52	W 9	0		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic J rubble

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
19	?	7:13	possible A observed flying E on 70 then S
19	?	7:45	possible A flying W, N of 70, then S along 721 out of view
19	?	7:55	2 possible A's 7,000' S of 70/71
19	?	8:40	3 C's flying >2000' S of 721/70

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

19	♂	8:13	perched briefly on power pole, fly & hear chatter if flying
19	♂	8:20	3 c' F flying E of 721, ♂ perched on power pole on 721
19	♂	8:28	♂ flew NE into pasture out of view
19	♂	8:45	Adult perched on power pole along 721
19	♂	8:50	♂ flew NE over pasture and view
19	♂?	9:50	possible ♂ observed N of 70, flew south to same pole on 721

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SE 70

Location/Observation Block/Lat-Long: Station 9 27.2088545, -81.2182431

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/8/23	6:50AM	9:50 AM	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	60°	6 mph W	5%	stratus	none
Finish:	73°	8 mph W	0%	N/A	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
This station is located in the ROW of SE 70. North, South, East + West consists mostly of improved pasture and agricultural land. Other than heavy traffic on SE 70 there was no other activity.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Vehicle	Adult	7:11AM	one adult was spotted flying from the north to SE 70 then turning East following the road out of sight.
Vehicle	Adult	7:21AM	one adult flew from the East over truck and landed on a telephone pole west of me. 7:26 flew from perch west out of sight.
Pedestrian	Adult	7:22AM	one adult flew from East and continued west out of sight.
Vehicle	Adult	7:47AM	one adult flying East on the north ROW of SE 70. It cleared the road flying East then turned and meandered back west out of sight.

Eastern Phoebe, Wood Stork, Palm Warbler, Gray Catbird, meadow lark, Am. Crow, Cattle egret, White Woodpecker, Redwing blackbird, Tricolored heron, Boat-tailed grackle, Redstart, Black vulture, Common Moorhen, Loggerhead Shrike,

Caracara Survey Form (updated 12/9/2016)

27.20882° W
81.20129° N

Weather

Observation Point Information

Harney Pond Canal + SR 70
Cattle pastures NW, NE + SE Qtrs
Citrus Grov SW Qtr

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Crow
 BT Grackle
 Red trel
 Meadow lark
 Palm warbler
 Common Yellow throat
 Mocking Bird
 Morning Dove
 RWBB
 Yellow ramp Warb
 tree swallow
 8
 Red tailed hawk
 Cormorant
 Anhinga
 Red Bellied WAPK
 GBH
 Bk Vulture
 Turkey Vulture
 Am Egret
 Scissor tailed
 flycatcher

Sta 10 SR 70 2.7.2023 Alan Alshouse

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Obs loc	Age	Time	
10	Im #5	0800	Flew from Pasture South to land atop of high voltage power pole Flew down to SR70 RdW
10	Im #6	0826 0838	Flew from grove to power pole top. Preening → Flew west to edge of citrus grove
10	Im #7	0942	Flew across SR70 flying north into pasture. Landed in pasture near heavily vegetated ditch/canal west side of HP canal
10	#8 A	0943 0948	#8 at the location where #7 landed Both birds feeding on carion. #8 flew with food south across SR70
10	#9 A	0952	cc Returning from location #8 Flew to suspect #9 is #8 bird. Returning w/ no food in beak.
10	#10 A	0955	Flew from carion in pasture site with large piece of carion across canal and dropped carion on bank. Returned to carion site
10	#11 A	1000	Flew across SR70 with food in beak to same location as #8 + #9. Flying low. Seems to land north of big oak tree on east side of levee berm

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: Sta 11/BK 11

27.20964°N
81.18535°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2.8.23	0652	1000	Alan Alshouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0652	55°	E 6mph	0	0	0
Finish: 1000	76°	E-10mph	0	0	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

North West Quad - cattle pasture, NE Quad - fallow/rough pasture
south of SR 70 cattle pasture

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
11	unk	0708	Flying East along SR 70
11	A #2	0728	Flying over SR 70 then NE over pasture until out of sight

Catbird
 Crow
 Robin
 Rd Shdr HK
 Boat tailed Grackle
 Yellow Warb
 SHC
 Cattle egret
 BK Vulture
 Tree Swallow
 Rdw s BB
 BG Gnat catcher
 Am Egret
 Turkey Vul
 G-BH
 Cormorant
 Rd Shdr HK feeding chicks in nest
 Little Blue Heron
 Mocking bird
 Red bellied WP
 Indore
 No Parula
 E. King Bird
 Sparrow
 Yellowthroat
 Pinp warb
 Cardinal
 N. Harrier
 Wood stork

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: Sta 12/BK 12

27.20929° N
81.16972° W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2.9.23	0651	1000	Alan Althouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0651	64°	E 1-2 mph	0	0	0
Finish: 0955	72°	SE 8-10 mph	20%	cumulus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

DC Bar Ranch Rd going south of SR70 is lined with cabbage palms and live oaks. South of SR70 is active cattle pasture, 100 ft canal south side of SR70. North of SR70 cattle pasture.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
12	Im #1	0750	Flew north along ranch road to SR70 then flew west over SR70 until out of sight.

BT Grackle
Tree Sparrow
m Dove
Pigeon
BK Vulture

N. Harrier
T. B. 3
Am. Osprey
cattle egret
BG Gnatcatcher

SHC
Eur. Collared Dove
8
Fish Crow
Palm Warbler
Robin

Limpkin
Redtailed HK
Redshoulder HK
Meadowlark
Turkey Vulture
Cuckoo

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70 27.22242°N
Location/Observation Block/Lat-Long: Sta 13/BIK 13 81.09456°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2.10.23	0651		Alan Althouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0651	65°	0	50%	Alto stratus	46rd fog
Finish:					

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Sugarcane field west side of CR 721
 East of CR 721 is cattle/horse pasture. East of pasture is
 a cabbage turn field. Power line on east side of 721

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head
 throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
13	A #1	0649	Flew from hammock, circled low over road (721) then back into hammock.
13	A #2	0653	Perched on top of power pole in front of hammock (Potential nest site)
13	A #3	0657 0659	Flew north over 721 and then west along SR70 Returned fly so on 721 + perch on power pole
13	A #4	0710	Flew north along 721 and west over SR70

(row) Cattle egret Meadow lark
 m Dove B+ Grackle
 BIK Owl E. Kingbird
 T-bis Yellow rump Warb

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

observer loc	Age	Time	Description
13	A #5	0756	Flew from SW to power pole in front of pot nest site
13	A #6	0757	Flew low out of pot. nest site and then right back in.
13	A #7	0800	Flew off power pole south along 721 then veered to the SW
13	A #8	0805	Perched on top of power pole near pot nest site looking around
13	A #9	0815	Flew off pole low over Row and into pot nest site
13	IM #10	0819 0859	Flew out of pot nest site to top of power pole Flew south along 721 until out of sight
13	A #11	0848 0849	Flew out from pot nest site and perched 2 poles south of IM bird Flew SE out of sight towards cabbage field
13	A #12	0908 0912	Flew from nest site to power pole closest to driveway Flew north over 721, Lykes work center until out of sight
13	A #13	0955	Drove by nest site Adult perched in cabbage palm on the south side of hammock

The 3rd bird

USFWS Crested Caracara Survey Protocol

2022-2023 (Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70

Location/Observation Block/Lat-Long: Site 14

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/3/23	055	1030	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	67	SW 2	5	stratus	light fog
Finish:	79	WSW 5	0	N/A	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture, canal, N of SR70 sugar cane S of SR70 C-40 canal running N to SE

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	820	1 adult perched on power pole by highway
①	A	853	perched adult flew down to road
①	A	902	adult flying east along power line, landed & perched on pole
①	A	931	perched adult flew in along power line then landed & perched on pole farther west

Other Species

BLVV NODU RSHA PAWH DCCC 1
EAME AAIH EAPH YRWA
AMCR BTGR WEST GREAT
HOWR

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2022-2023 Breeding Season)**

		939	
①	A	939	perched aduice flew east to position fence pole pole
②	A	943	perched aduice flew east then N towards nest then landed behind c/s to the east of nest on grass & perched in a CP to east of nest.
		955	pair are possibly @ end of incubation, or possibly have very small hatchlings. though ^{then} not observed taking food to nest today. Should definitely be feeding young by next survey event

**USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70
Location/Observation Block/Lat-Long: Site 15

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/2/23	615	915	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	66	SW 6	10	stratus	heavy fog
Finish:	73	WNW 4	0	NA	NA

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
pasture on N side SR70 sugar cane crops on S side SR70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
1	A	930	1 adult perched in the pyramid; flew NW toward Site 14 which

Other species

GREY BREA COYE RSWO BEKE
 AMBL BLUU PAWA RTHT WEVS
 LIMP TUVU YRWA AMKE HAWK

**USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70

Location/Observation Block/Lat-Long: Site 17

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/31/23	658	1000	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	65	NEZ	10	stratus	light fog
Finish:	77	SEZ	40	stratus intermediate	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture to N of SR70
sugar cane crop to S of SR70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	704	adult caracara perched in dead tree by canal then flew NE along road
①	A	718	1 adult perched in oak near sugarcane field then fog thickened & could no longer see
①	A	740	adult flew from NW along road then landed in tree from 704 then flew low over sugar
①	A	847	adult perched on power pole

Other species

BLUU	BTERK	YRWA	LIMP	MOCA
TUVU	TRSW	RSIA	RWBZ	BGGN
WITB	GLFB	COYE	PAWA	OSPR
AMUR	SMKE	GREEN	AMKE	SACK
	FAPA			

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2021-2022 Breeding Season)**

③	A	848	2nd aduice flew & joined 1st on power pole & adlopreened
②	A	902	1 adult flew NE along road then looped S & W, lost in distance
②	A	905	adult perched on power pole, likely on from 902
②	A	910	followed aduice 2 feet (other 2 still on poles) w/ along road to Site 16 nest, then aduice entered then exited & dead caracara chick? in beak
			I searched ground for chick but couldn't find it (this pair then observed young feeding young on 2/1)
③	A	914	adult flew SE & anything in beak
①	A	951	adult caracara sitting on same power pole as 905
			There is a mated pair in Site 17 vicinity. Did not see taking food anywhere, but were together too long to be incubating. Either haven't laid, or are feeding young (but just no observed today)
			Still need to locate nest. So either opposite to S as earlier suspected or to the E near Site 18

photo
uploaded

Need to confirm if birds seen 1/30 & 1/31 are same pair or two different

USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70

Location/Observation Block/Lat-Long: Site 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/30/23	658	940 1040	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	64	NZ	20	stratus	moderate fog
Finish:	79	NZ	10	stratus	d/f

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture N of SR 70; sugar cane crop
S of SR 70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	911	adult caracara at perched on power pole. Preening & lifting one leg up under chest
①	A	927	adult flew S then W & back to power pole one pole down in from previous perch
①	A	930	2nd adult flew from S of tree island & to tree to land on 1st power pole
①	A	934	2nd adult flew, did 102 sec duration

Other Species

ETWE	PAWA	SNKE	CARW	WIST	SACK	BAEA
GREG	YRWA	WHJB	FAPH	BAGN ¹	KSHA	GLIB
LIMP	TUTI	GOHE	BTAR	cricket		
BLUV	AMCR	COYE	TRSW	RWBZ		
TUVU	COGR	ANHI	DECO			

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2021-2022 Breeding Season)**

①	A	945	perched adult flew E across tree line out of sight then flew S & landed directly in front of truck, picked @ truck then flew S & E, crossed road & flew E behind tree line
②	A	1005	adult on power pole west of previous perches same bird? or site 17 bird? unknown
			As stated in previous surveys, pretty certain there is a nest in this vicinity as indicated on map. Both adults seen on survey today so either have not started incubating, or already have young. Need to confirm & locate nest on future surveys
③	A	1010	adult flew NE & landed on previous perch near site 18
			or perhaps the 930 9434 observations were the search out for incubation & the 2nd adult perched briefly before returning to rest? 2nd adult only seen briefly

② A 1030 RSTA flew & landed on pole as adult chick flew S on sugar cane & landed N & W & land on new pole RSTA flew to pole & adult chick flew N out of sight. Then S & W to perch on next power pole

② ④ 1035 flew to ground behind tree line
Will confirm nest on next survey

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 19/ 27°13'11.5"N/81°5'41.31"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-30-23	7	10	Church

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	68	E 4	35		Light fog
Finish: 10	75	SSE 4	25		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Based on observations Clicks have likely had used - NEST Tree Coordinates 27°13'8.33"N 81°5'38.78"W

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
19	A	7:08	A fly 5 along 70
19	A	7:16	A perched on pole with food
19	A	7:18	A flew into palm w/ food
19	A	7:23	A back on pole

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

19	A	7:36	Flew NW w ovd of view
19	A	7:50	A on pole
19	A	8	A flew w ovd of view
19	A	8:16	A on pole near bait
19	A	8:17	A has brief interaction w BK Vulture north of potential nest
19	2A	8:27	2 A's near bait
19	A	8:29	A flew to nest w/ food

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: Station 9 27.2688545, -81.2182431

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/23/23	7:10AM	10:10AM	Zack Yawn & Mike M. "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	66°F	6MPH N	10%	Cirrus	Foggy
Finish:	79°F	8MPH N	25%	Cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Weather conditions this morning provided foggy conditions postponing survey start time. no other activities to mention.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Pedestrian	8:20AM	Adult	Feeding on carion on East bound ROW of SR 70 to the East of station 9. Spotted on the ground. Running South away from road as cars passed. Could not locate where it went 8:28am
Pedestrian	8:37AM	Adult	Feeding on carion on Eastbound ROW of SR 70 to East of station 9. spotted on the ground. Running South away from road as cars passed. Potentially same carion as before. Feeding activity continued until 9:15 am.

Other species: meadow lark, Redwinged black bird, Cattle egret, Boat-tailed grackles, Eastern Phoebe, Common yellow throat, white ibis, night heron,

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat- Long: Station 10: 27.20882°N, 81.20129°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2.21.23	0642	1025	Alan Als house Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0642	62°F	SW 5-6mph	100	Alto stratus	Light fog
Finish: 1025	71°F	W 7mph	100	Alto stratus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR 70 - Harney Pond Canal
NE, NW, SE quarters are cattle pasture
SW qtr citrus grove

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
10	unk #1	0858	Flying over SR 70
10	Im #2	0910	Flying then perched on top of power line pole
10	Adult #3	0912	Flying with food in beak. Flew behind Cabbage Palm out of sight.
10	Adult #4	0918	Flying until out of sight

Boat tailed grackle
RWBB
crow
Yellow ramp warbler

Anhinga
M Dove
Cormorant
meadow lark

Catbird
GBH
BIR VUL
Mocking bird

cattle egret
tree swallow

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

10	Adult #5	0932 0935	Flew to top of power pole, Preening Flew into cabbage palms
10	Im #6	0937	Flew to oak tree with carion. Throwing head back vocalizing with food in mouth
10	11	11	Other vocalizing could be heard. #6 was constantly looking N-NE.(X) Two Adults flew from where #6
10	Adults 7 & 8	0944 #7 & 8	Was looking ^(X) , flying around #6. Both adults fly Northeast.
			#6 Flew east out of sight a short distance behind cabbage palms
10	1 Adult 1 Im #9	1015 1025	Flew to power pole Adult was preening Im around neck Im was tossing head back vocalizing Flew North over canal

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat- Long: Station 11: 27.20964°N, 81.18535°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2.22.23	0640	0940	Alan Althouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0640	61°F	W-2mph	0	0	4 Fog
Finish: 0940	78°F	SE-7mph	0	0	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR 70 NW, SE & SW Quadrant Active Cattle Pasture
NE Quadrant Fallow/Pough pasture
NW pasture appeared burned from recent fire

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
11	A #1	8:43	Flying to burned pasture NW Quadrant
11	A x 2 #2	8:45	Two caracara Flew low over line rock road, landed and were out of sight
11	A x 2 #3	9:00	Two CC flying, high & low, landed in pasture
11	A #4	9:07	Flying high High = ~ 50-75 ft

Rd Sldr Hawk Outbird RWBB Cardinal Bk Vulture
 Crow Common yellow throat GBH BT Grackle M Dove
 BG gnatcatcher Snipe 8 cattle egret Mocking bird Grd Dove
 Robin Bullfrog Palm warbler Tree swallow White-tailed deer
 Painted Bunting Northern Harrier Limpkin SHC

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat- Long: Station 12: 27.20929°N, 81.16972°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2.23.2023	0639	0939	Alan Althouse Qualified

Weather

Time		Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0639		64°F	SE - 4mph	10%	Cirrus	Lt grd fog
Finish: 0939		81°F	SE - 8-10mph	10%	Cumulus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR 70 + Harney Pond Canal E and West
North Fallow/rough pasture
South Active tame grass cattle pasture

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
12	A ₁	0845	Fly + Soaring

Kestrel
 Meadow lark
 M Dove
 Red-tailed Grackle
 Am Egret
 Crow
 cattle egret
 Limpkin
 Osprey
 Cat Bird
 Anhinga
 Grd Dove
 Greenback Heron
 Bk Vulture
 Pigeon
 Palm Warbler
 Cardinal
 Little Blue Heron
 mottled Ducks
 Marsh rabbit

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat- Long: Station 13: 27.22242°N, 81.09456°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2.24.23	0637	0937	Alan Alshouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0637	64°F	None	0	0	Lt Fog
Finish: 0937	76°F	SE - 8-10mph	20%	Cumulus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Secondary Observation location (SOL) = P on map 27.22059°N Cattle/Horse pasture on east side of CR 721 81.09454 W Sugarcane field on west side of 721. Heavy traffic on CR 721

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
13	A #1	0644	Flew to power pole from suspected nest site. Looking
13 SOL-P	A #2 ★	0648	Flew down to road (721) looking for food. Would fly to adjacent fence post as cars drove by then back to road.
13 P	A #3	0655	Flew back to telephone pole #1 - #3 is the same CC.
"	"	"	★ Flew within 20 yds of observation vehicle. Seemed unaffected by my presence.

CROW Glossy Ibis Bk Vulture Yellow Rump Warbler
 Meadowlark Ibis Red Shdr HK Am Egret
 Boat-tail grackle Humkin
 Cattle egret Mocking bird 8
 SHC
 Eur Collard Dove

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

13-P	Unk #4	0733	Observed CC 3 poles south of #3 CC. CC was on top of power pole feeding
13-P	A #5	0734	Flew off power pole in northerly direction. (Perched for 39 min)
13-P	A #6	0755	Feeding on fresh kill in road ~20yd behind (North of) observation vehicle. Fighting off crows trying to steal food
13-P	A #7	0800	Flew in NE direction and returned flying south over CR721 then perched on telephone pole
13-P	A #8	0815	Perched on telephone pole south of drive way. (B)
13-P	Im #9	0835	A second CC perched on top of power pole (A) preening
13-P	A Im	0855	Flew down into suspect nest location.
13-P	A	0859 0937	Flew from suspect nest location to power pole A; looking Remained on top of power pole
←		0945	Post Survey note → Drove by nest location on CR721 and Im was on power pole 2 poles south of where Adult remained.

Note: Vehicles Leaving residence at 0750 S/E 4th St. CC
Nem un affected by residents activities

**USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SK 70
Location/Observation Block/Lat-Long: Site 14

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/7/23	645	1030	J Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	63	55	5	stratus	possibly fog
Finish:	76	59	40	stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

<p>pasture to N of SK70 sugar cane + pasture to S of SK70 C-40 canal running NW-SE possibly productivity - feeding young?</p>

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	700	adult perched on power pole
①	A	745	perched adult flew west along road
①	A	816	adult (2nd?) exited rose tree & perched to the W where unable to see. Likely feeding young
①	A	950	adult returned to perch on power pole

Other Species

BLUU RSHA AMER SACK
LIMP CAEG ANTHI TUVU
BEKI GRPC TRSW

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2020-2021 Breeding Season)**

①	1	1600	perched above flew to nest & pecked nearby
			Did not observe feeding, but difficult to see @ this distance. If not, then there will certainly be watched by nest survey

**USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70
Location/Observation Block/Lat-Long: Site 15

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/16/23	0500	1000	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	62	ESE 6	5	stratus	light fog
Finish:	72	SE 9	10	stratus stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

<p>pasture to N of SR70 sugar cane to S of SR70 C-40 canal running NW-SE</p>
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Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	745	1 adult perched on power pole. almost 100% certainly one of the pair from the nest N of Site 14
①	A	800	adult flew low into N behind trees
		815	small kite flew SSW carrying sticks (nesting material)
			no other caracaras observed in Site 15

Other species

BLVU AMCR OSPR CABC
PAMA LIMP GREEN GIBITE
YREWA RITA

USFWS Crested Caracara Survey Protocol
(2021-2023 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70
Location/Observation Block/Lat-Long: Site 17

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/14/23	650	950	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	45	SE 1	1	stratus	light fog, passing
Finish:	56	SSE 6	5	stratus	

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture to N of SR70
 sugar cane to S of SR70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			no caracara observed
			no activity seen in the area to the S where previously suspected there may have been a nest

Other Species

BLVV PAWA WTSB DECO
 AMUR GRWA RSTA AME
 LIMP BTAR EAPF

**USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70
Location/Observation Block/Lat-Long: Site 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/13/23	645	1000	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	52	SE NW 9	0	N/A	light haze
Finish:	63	N 2	0	N/A	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture to NW of SR 70
 Sugar cane to SE of SR 70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	700	adult caracara perched on power pole along road (where seen perched on previous survey)
①	A	711	perched adult flew N low behind trees where it landed & see where landed
①	A	715	adult appeared & perched on power pole directly w of previous pole
①	A	718	adult flew w along road, followed, but lost sight of it entered a tree along road of farm across field

Other species

BLU LIMP EAME ANTI
 TUVU MODO DOO GIBIE
 BTGR WEIR AMER RSHA
 GIREM SNKE GLIB

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2020-2021 Breeding Season)**

①	A	728	adult returned to perch on power pole a little further W 078 map then flew out of sight

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70
Location/Observation Block/Lat-Long: 19/27°13'06"N 81°05'40"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2-13-23	7	10	Church

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	52	NW 9	0		
Finish: 10	68	NW 8	0		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
19	A	7:43	A Fly into nest
19	A	8:01	A leaves nest & perches on pole
19	A	8:07	A Flies north along 721 to another pole
19	A	8:10	A Flies ENE out of view

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

19	A	8:31	A return to nest, not sure if carrying food
19	A	8:32	Second A on pole by nest
19	A	8:38	A on Pole drops into field to east end of view
19	A	8:39	A observed taking food into nest

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: Station 9 (27.2086264, -81.2120133)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/10/23	6:44 AM	9:44 AM	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	61°F	3 mph N	15%	Altostratus	Light fog
Finish:	74°F	7 mph N	15%	Altostratus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Fog was light + at a distance from this station. Weather was clear + sunny. I set up East of previous location because I did not want to block the driveway I previously used and this was the next safest spot nearby.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
none			

Other wildlife: Am. crow, common grackle, mourning dove, red shoulder hawk, vesper sparrow, woodpecker, woodstork, mocking bird, red winged black bird, cattle egret, black vulture, N. harrier

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

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Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat- Long: Station 10: 27.20882°N, 81.20129°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.7.23	0628	0928	Alan Als house Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0628	67°F	NW 5mph	0	None	ctgroggy
Finish: 0928	75°F	NW 6-7mph	10%	cumulus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
SR 70, Active cattle pastures in NW, NE & SE quadrants. SW Quadrant citrus grove. Harney Pond Canal on south side of SR 70 and perpendicular to station

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
10	A	0648 #1	Flying over SR 70, Landed where a crow was feeding in the road (X), continued to fly West over SR 70
10	Im	0700 #2	Perched on top of power pole, preening.
10	Im	0717 #2	Flew off power pole, pickup cawing in road, flew to nest area
10	Im	0720 #3	Flew from nest area to power pole

Catbird
Bout tail Grack
GBH
Crow

RWB B
Red Bel Wd Pkr
Red H HK
Yel Rump Warb
Wild Turkey

Limkin
Anhinga
Little Blue Heron
MDove
Limkin

Green back heron
Forney Vcl
Osprey
BG great catcher

Wood stork

**USFWS Crested Caracara Draft Survey Protocol –
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10	A	0723 #4	Perched in small oak with food. Flew in to cabbage palms east of small oak.
10	Im	0727 #5	Did not see fly off power pole but flew to nest area (cabbage palms east of small oak) with food.
10	A	0730 #6	Flew out of nest area, circled low and flew back to nest area
			Range Finder: 214 yd to large oak on fence line 186 yd to small oak
10	NA	0928	End of Survey: No activity since 0730 #6 above.
			Note: A range finder was used to triangulate nest site.

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat- Long: Station 11: 27.20964°N, 81.18535°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.8.2023	0627	0927	Alan Althouse Qualified

Weather

Time		Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0627		66°F	N - 3mph	90%	Stratus	At ground level
Finish: 0927		84°F	N - 8mph	20%	Cumulus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR70 E+W. Hurray Pond Canal on South side off SR70
South and NW quadrants active cattle pasture.
NE quadrant fallow/rough pasture.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
U	A #1	0815	Flying West to east over SR70

G-BH Catbird Boat-tailed Grackle Cooper Hawk Tree Swallow
 Bull Frog Yel Throat Warb Am Egret Osprey Red bellied WP Yellow-rump
 Crow Red Shell Hk Woodstork 8 156 Great Catcher
 SHC Bobwhite Quail Pigeon Robin
 RWBB Anhinga Cardinal Cattle Egret Wild Turkey
 Cormorant Ibis Rabbit Grd Dove

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat- Long: Station 12: 27.20929°N, 81.16972°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.9.23	0625	0925	Alan Althouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0625	63°F	NE 5mph	0	0	0
Finish: 0925	72°F	E-NE-8-10mph	0	0	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR 70 East to West. Active cattle pasture south of SR 70. Harney Pond Canal on south side of SR 70. Fallow/rough pasture north side of SR 70.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
12	A	0743	Flying East to West over SR 70. Landed on hwy briefly and then continued flying West over SR 70.
			— END —

GBH
Am Egret
BT Grackle
Osprey

Cimkin
meadow lark
Tree Swallow
Pigeon
Cormorant

Indigo
Little Blue Heron
RWBB 8
Blk Vulture
Crow

Cattle Egret

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

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Project Name: SR 70

Location/Observation Block/Lat- Long: Station 13: 27.22242°N, 81.09456°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.10.23	0624	0924	Alan Alshouse - Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0624	56°F	SSW 3mph	0	0	0
Finish: 0924	72°F	S 6mph	20%	Altostratus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR70 / CR 721 Intersection. West side of CR 721 is tame grass pasture, residence + livestock barn. East side of CR 721 sugarcane. Cabbage field east of pasture

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
13	A	0630 #1	Flew from nest site to top of power pole
13	A	0644 #2	Flew over CR 721 then over sugarcane field towards SR 70
13	unk	0649 #3	Flew from nest site across pasture (flying low). Flew towards SR70/721 intersection then headed east
13	Im	0652 #4	Flew in from east + landed in road feeding on carion. (X)

M Dove
Mottled Duck
Bik Vul

Ibis
Cattle Egret
(row)
Red bellied WP

Eurasian collared Dove

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Additional Guidance (2016-2017 Breeding Season)

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Obs Loc	Hze	Time	
13	A #4	0654	Flew from North side of nest site, circled low and flew back in nest site.
13	Im #5	0706	Flying with large piece of carion and cached it in low cabbage palm in pasture north of nest site
"	"	"	Then flew high toward SR 70
13	Im #6	0735	Sitting on top of power pole
13	Im #7	0804	Flew to power pole in front of nest site.
13	Im #8	0812	Flew from power pole to pasture and landed on ground
13	A #9	0815	Appeared on top of power pole to the north of drive way
13	Im #10	0817	Flew low from pasture to fence post North side of Drive way
13	Im 11	0824	Flew to power pole in front of nest site

13 A #12 0829 Flew into pasture on ground to the location where #8 landed. Picked up carion and flew to drive way and fed a fledgling

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Obs Loc	Age	Time	
13	A #13 2x Juv	0835	SUV pulled into driveway. 1 Juv flew to the other Juv and Adult to the north side of the driveway.
			Watched the A and 2-Juvs walk and hop-fly across pasture to the north foraging & looking around. They eventually met up with the Im in the pasture. Observed in
			pasture until 0915 where the made their way
			back to nest site south of the driveway by walking and hop-flying.

**USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70

Location/Observation Block/Lat-Long: S14 15

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/3/23	635	935	J Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	64	SSE 12	10	stratus stratus	fog
Finish:	78	S 20	20	stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture to N of SR 70
sugar cane to S of SR 70
C-40 canal running SE

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	820	adult flying to the west headed N, likely Site 14 adult

Other Species

RSJA SNKE AMRO GRCA
BLUU PAWA AMCR BOBW
TUVU YRWA EATA
BTR BASW

**USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70

Location/Observation Block/Lat-Long: Site 17

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/28/23	705	1015	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	67	WSW 4	40	stratus	heavy fog
Finish:	75	NNW 4	70	stratus	10% H

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

<p>pasture N of SR70 sugar cane S of SR70</p>

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	749	adult caracara on side of road eating carrion
③	A	752	picked up piece of corn & flew west, followed to site 16 where it showed food & fledgling
①	A	756	adult returned from NW to the carrion, chased off a few crows
①	A	759	adult picked up piece of corn & flew west to site 16 & fed young

Other Species

BLW NHA BCO COYE CAEG 1 NAVE DECO
PAWA BTAR ANHI MCKE BTAR MOW BTGR
MICA AMCR GLTB SNKE PSIT
WHIB

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (:2020-2021 Breeding Season)**

①	A	812	adult returned to from nest & picked @ carrion & ate
①	A	831 812	adult picked up piece of carrion & flew west back to Site 11
④	A	929	2 adult caracaras sitting on power pole autopruning
①	A	929	1 flew east & landed on road & picked up some carrion 2nd adult flew in & both flew east then to the field & lost sight
			Pair flew into an area previously suspected of possibly having a nest but unable to confirm this area far due to difficulty seeing into private lands across trees along road

**USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70
Location/Observation Block/Lat-Long: Site 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/27/23	646	946	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	57	W 2	100	stratus	heavy fog
Finish:	72	W 5	0	N/A	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture N of SR 70
 Auger cane S of SR 70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	852	adult caracara flew in from west + landed on road + grabbed remnants of roadkill + took to side of road
①	A	859	adult flew west + food, followed it to Site 16 where it landed on Sentinel pole. One large immature could be seen in nest, close to fledging
			no other caracaras seen in Site 18

Other Species

AMER BITER TWO DECO SKUE
 PFWA WHTA RWHTA FREG EUCO
 GLIB MONB ANTI

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: 19

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2-27-20	6:55	9:45	Church

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:55	59	WNW 2	60		Early fog
Finish: 9:45	70	SSW 6	10		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
19	2A	6:58	2 A's near nest on poles along SR70
19	A	7:44	1A Flew W, other moved to W to another pole
19	A	7:55	other A Flew N, still foggy
19	A	8:40	A returns to near nest w/food, FEELS <u>Fledgling</u> on ground

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

19	A	8:55	A still feeding fledgling
19	A	9:00	A on pole, fledgling on ground
19	A	9:25	both A's on poles near nest, fledgling on ground

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: Station 9

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/23/2023	0720	1020	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	57 F	E 2 mph	0	0	light fog
Finish:	72 F	E 8 mph	0	0	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Chilly morning but warmed up quickly.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No caracara observed.

Other wildlife: common grackle, mourning dove, Northern mockingbird, black vulture, turkey vulture, American crow

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

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Caracara Survey Form (updated 12/9/2016)

Project Name: **SR 70**

ESA

Location/Observation Block/Lat- Long: **Station 10: 27.20882°N, 81.20129°W**

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.21.13	0713	1013	Alan Althouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0713	44°F	NNE 4mph	0	0	Said Key
Finish: 1013	64°F	NNE 6-7mph	0	0	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR 70 East-West, Harvey Pond Canal south side of SR 70 and North-South under SR 70. NW, NE & SE quadrant is active cattle pasture; SW quadrant Citrus grove

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
10	A + Im ₁	07:20	Flew to power pole from nest site (X). An Im followed and perched on same power pole. Preening, Power Pole west of nest site.
10	A ₂	07:22	Flew West over SR 70 until out of site. IAA remained, standing on one leg. Holding up (R) leg.
10	A ₃	07:30	Flew from West to east over SR 70 until out of site flying to the east
10	Unk ₄	07:32	Perched on power pole east of nest site

RWB
Kestrel
MDove
Cattle Egret

Am Egret
BT Grackle
Tree Swallow
Mockingbird

8 Northern Harrier
6-BH
Cormorant
Turkey Vulture

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

10	Im 5	0740	Flew off power pole west over SR70, then citrus office, landed on power pole by citrus office, then flew over citrus grove
10			landed on top of citrus trees in grove.
10	Unk 6	0742	Flew past from power pole over SR70 until out of site
10	Im & A 7	0757	Im & A flying over citrus grove and grove office. landed and perched together on power pole by office.
10	A 8	0820	Flew to power pole north of SR70 along canal.
10	A 9	0848	Flew from power pole to citrus grove landed on top of citrus trees
10	Im 10	0850	Atop power pole along canal
10	Im 11	0915	Flew SW to citrus grove
10	Im 12	0935	Flew to power pole. crow hazing CC.

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

10	# ₁₃	0945	Flew from citrus grove to power pole with food
10	A ₁₄	0949	Flew from power pole to nest site
10	# ₁₅	0955	Emerg'd from back side (South) of nest site and flew to power pole
10	A ₁₆	0957	Flew to citrus grove
10		1013	End of Survey

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 ESA

Location/Observation Block/Lat- Long: Station 11: 27.20964°N, 81.18535°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.22.23	0711	1011	Alan Alshouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0711	52°F	NE 3mph	0	0	smokey
Finish: 1011	71°F	E-SE 9mph	0	0	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR 70 east & west, Harney Pond canal on south side of SR 70 NW, SW & SE quadrants are active cattle pasture. NE quadrant is fallow/rough pasture.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
11			No caracara observed

Mocking bird
Rd Shldr HK
cat bird
RWBB

Tree Swallow
Lumpkin
SHC
crow

Pigeon
cardinal
Cattleegret 8
Turkey Vulture

Am egret
Red Bel Wd PKr
Ground Dove
Cm Yel throat

N. Harrier
BG Gnat Catcher

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat- Long: Station 12: 27.20929°N, 81.16972°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.23.23	0711	10 11	Alan Alshouse Qualified

Weather

Time		Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0711		57°F	E 2mph	0	0	light grd fog smokey
Finish: 1011		72°F	E-SE 8mph	0	0	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR 70 East & West. Harney Pond Canal on south side of SR 70. Fallow on rough pasture north of SR 70. Active cattle pasture south of SR 70. Sporadic cabbage palms north & south. Micro Wave tower on south side of Harney Pond Canal.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
12	A	0723	Flying from West to East over SR 70 then turned around and flew back west over SR 70 until out of site.
12		1011	End of Survey

RWBB
BTorackle
Am Egret
Pigeon

SHC
Crow
GBH
Cattle egret
Tricolor Heron

Turkey Vulture
Tree Swallow
M Dove
Kingbird

Cardinal
Crested Gnatcatcher
Mocking bird
Catbird

Eurasian Col Dove
Little Blue Heron
Red Bellied Pk
Anhinga
Cormorant
Red Shldr Hawk

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

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Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

ESA

13 27.22242°N, 81.09456°W

Location/Observation Block/Lat- Long: Station 12: 27.20929°N, 81.16972°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.24.23	0709	1009	Alan Alshouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0709	59°	E-6 mph	0	0	0
Finish: 1009	71°	SE-8 mph	0	0	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR70 north of primary observation location. Observer stationed at secondary location (P) on map. Horse pasture to the east of "P". CR721 north & south. Sugar cane fields west of CR721. Cabbage field east of horse pasture. Intermittent cabbage palms.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
13 (P)	A	07:41	Flew out from nest site to power pole on east side of CR721. Activity occurred when vehicle started up and was leaving residence on the east side of nest site.
13 (P)	A	0749	Flew NW towards SR70
13 (P)	Juv	0815	one fledgling walking around in pasture exploring, pecking at the ground. Unaffected by the cattle egret on the ground with it,
	↓	↓	the horse nearby and the traffic on the highway. mingling with crow on the ground. Fly up to fence post & preen.

Eurasian Cld Dove
Crow
Tbi's
Cattle egret

Red bellied Wd Pk
Loggerhead Shrike
Red Shldr HK
Turkey Vulture

Mocking bird
BT Grackle
RW BB
Bobwhite Quail
catbird

Lumpkin
Meadow lark
MDove

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Location	Age	Time	
13 (P)	Juv	0940	Flew from pasture towards nest site
13 (P)		1009	End of Survey

USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70
Location/Observation Block/Lat-Long: Site 15

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/16/23	725	1025	J Koon

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	50	NE 7	5	stratus	N/A
Finish:	61	ENE 10	2	stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
pasture n of SR70 Sugar cane to S of SR70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	712	Site 14 adult sitting on power pole then flew NW towards nest
①	A	801	adult adult flew in from west & continued east down road & out of view (Site 14 adult foraging on road)
①	A	811	1 adult perched on power pole (Site 14 adult foraging along road)
①	A	921	1 adult flying to south end pasture

Other species

BASW AMER GRCA Ambr
TRSW PAWA with SNK
BLVV NOLA GRCA MARD

**USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70
Location/Observation Block/Lat-Long: Site 17

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/14/23	720	1025	J. Koen

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	67	N 8	97	stratocumulus	n/a
Finish:	67	N N 9	98	stratus	n/a

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
pasture N of SR70 sugar cane S of SR70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	949	adult flew from east & went north into pasture then west to Site 17 & landed in the S. of road
			motor operating in area south of road, likely deterring the adult
			no other caracara observed

Other species

TRUV LIMP AREG RWBL FVBLT DCR
 BLW ABCK BTBR PAWT GRCA WHTA
 MZAT AMKE YRWA

USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: J. Korn

Location/Observation Block/Lat-Long: Site 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/13/23	725	1025	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	70	SSW 7	2	Stratus	light fog
Finish:	75	SSW 13	12	Stratocumulus	n/a

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture N of SR 70
Sugar cane S of SR 70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	737	adult caracara flying east along road, turned around - started back west harassed by Antio
		739	landed on road & perched @ base of canyon then flew west followed & returned to Antio by road
		900	prayed dead baby raccoon off side of road (over)
		954	2 adult caracaras to the west flying NE & interacting. Couldn't follow where they went behind trees

Other Species

BTAR GLIB RSTH Cridul 1 fog low
A-MOR WHIB marsh about 400E 05AR DECO AMIB AMKE
PAWA MOOD ABITE RWBL GIBBY TUVU BLDV SNKI

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 19°27'13"06"N 81°05'40"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-13-23	7:10	10	Chuck

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:10	70	SW 8	50		
Finish: 10	75	SW 10	30		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Ym	Time	Description of behavior, flight path, etc
19	A	7:20	Two A's leave from area of nest & fly N
19	A	7:36	A flew S along 721, perched on pole, flew N to another pole
19	A	8:20	Two A's perched on poles along 721
19	A	8:40	1 A flew S to ground, followed & saw 2 A's & 2 fledglings

on ground 300' N of nest

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

19	A	8:55	Both A's flew N
19	A	9:20	A flew in from W, perched on pole by fledgling
19	A	9:35	A flew N, on pole near 70/72

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: Station 9

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/6/23	7:15AM	10:15AM	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	69°F	E 3 mph	50%	Altostratus	Light fog
Finish:	79°F	E 8 mph	60%	Cumulus + Altostratus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Light fog burned off by 9:10AM.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Pedestrian	Adult	7:41pm	Flew from west to East down Row before U-turning and flying back West and out of sight
Pedestrian	Adult	7:42AM	Adult Spotted Perched in dead cabbage palm in Eastbound Row of SR 70. 7:52AM flew from Perch headed South out of sight.

Other Wildlife: Cattle egret, Red winged BB, Am. crow

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

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Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 ESA

Location/Observation Block/Lat- Long: Station 10: 27.20882°N, 81.20129°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4.7.11	0654	0954	Han Alshouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0654	64°	ENE 3mph	80%	cumulonimbus/ cumulus	smoke
Finish: 0954	77°	ESE 8mph	80%	cumulonimbus/ cumulus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR 70 East & West, Harney Pond Canal on south side of SR 70 and also perpendicular going North and South. Active cattle pastures in NE, NW, and SE quadrants. Citrus grove in SW quadrant. Scattered cabbage palms along canal levees

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
10	A #1	0654	Adult on top of power pole when arrived.
10	A #2	0704	Flew from group of cabbage palm to power pole with A #1. Preening
10	A + A 3A 3B	0709	CC flew off power pole together. A 3A flew south over SR 70, A 3B flew North along Harney Pond Canal
10	A #4	0721	Flying West over SR 70 and landed on power pole.

RWBB
Tree Swallow
MDove

Anhinga
Cattle egret
osprey

Com Yellowthroat
Meadow lark
Rd Shldr HK

Bobwhite quail
Pigeon
Turkey Vulture
Red bellied WP

Alligator

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

10	A #5	0722	Flew from citrus grove to power pole.
10	2 JuV #6	0726	Two juveniles making short hop fly overs and walking in pasture
10	A #7	0730	Flew to power pole with A #5
10	A #8	0810	Flew to power pole
10	A A #9 #6	0845	Flew south Two fledglings continue to walk on the ground at #6
10	A #10	0849	Adult returned to power pole
10	A #11	0851	Adult returned to power pole with other adult, looking + preening
10	A A 12 A 12 B 12	0900	Flew SW to confront 3rd CC. Lots of Diving and Chasing. then returned to power pole.
10	A 13	0915	Flew West over SR70 while other remained on power pole.

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

10	A 14	0929	Adult returned to location of Fledgling at #6 with food. Fledglings feeding on the ground with food from adult
			Vocalization by fledglings and Adult. Fledglings sound like red-tailed hawk shrills. Adult with a chattering-clacking voice
		↓	Adult remained with Fledglings and second adult on power pole until end of survey.
10		0954	END

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 ESA

Location/Observation Block/Lat- Long: Station 11: 27.20964°N, 81.18535°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4.6.23	0655	0955	Alan Alshouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0655	70°F	E 6mph	50%	Cirrostratus	0
Finish: 0955	77°F	ESE 12mph	60%	Cirrostratus and Cumulus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
SR 70 East + West. Harvey Pond Canal on south side of SR 70. Active cattle pasture NW quad, Fallow/Rough pasture NE quad, Active cattle pasture south of SR 70. Scattered Cabbage palm along roadway and in pastures.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
11	A #1	0719	Flying over SR70, E to West then north and NW over pasture until out of sight.
11	A #2	0720	When #1 was almost out of sight, #2 followed behind flying in same direction.
11	A #3	0940	Flying south along Cabbage palm tree line.
		0955	END

Catbird
Rd Shld HK
Crow
SHC

Cattle Egret
Bobwhite Quail
RWBB
Palm Warbler
Boat-tail Grackle

Cardinal
M. Dove
Wild Turkey
8
Grd Dove

Eurasian Collared Dove
Osprey
Meadow lark

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 ESA

Location/Observation Block/Lat- Long: Station 12: 27.20929°N, 81.16972°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4.5.23	0656	0956	Alan Althouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0656	69°F	None	20%	cirro stratus	0
Finish: 0956	77°F	ESE 11mph	10%	cumulus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
SR 70 East-West. North of SR 70 is fallow/rough pasture. South of SR 70 is Harney Pond Canal and active cattle pasture. Scattered Cabbage Palms on roadways and pastures.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
12	A #1	0756	Flying from SR 70, SE, then low over a line of cabbage palms + live oak on the north-south ranch road.
12	Im #2	0816	Flying over SR 70 and Harney Pond Canal west to east, then turned around and flew west over SR 70 + Harney Pond Canal until out of sight.
12	2-Im 3A+B	0905	Landed in SR 70. Unk which direction arrived. CC-3A flew to tree location described in #1. CC-3B flew to canal bank to feed on something then flew to large oak tree.
12	Im 3B	0926	3B flew east at ground level to tree location.

Boat-tailed Grackle Cattle Egret Pigeon SHC Cardinal
 Turkey Vulture Eurasian Collared Dove RWBB Red Shd HK Osprey
 Crow Tree Swallow 8 Catbird Bobwhite Quail
 Crested Gnatcatcher Ibis Glossy Ibis Grd Dove
 Limpkins Mourning Dove

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

12	Continued from Page 1 3B		Used range finder to approximate distance off location where CCs were flying into line of trees. 400 yds. (1,200 ft)
		0956	END

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2022-2023 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SK70
Location/Observation Block/Lat-Long: Site 15

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/29/23	700	1000	J Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	70	NW 5	40	stratus	light fog
Finish:	76	NS	60	stratocumulus	N/A ✓

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture to N of SK70
sugar cane to S of SK70
C-40 canal running SE

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	735	monitored some roadkill from road near Site 14. one caracara approaching to consume it. flew spooked then circled around, chased by crows
②	A	739	landed on side of canal. flying roadkill but crows still mobbing
⑤	A	744	adult flew to roadkill & began eating. 2 crows still walking around
⑥	A	747	adult flew to piece of carrion & returned to Site 14 nest & fed young which has fledged

Other species

BASW resting under bridge NRWS
AMCR BLWS TAVU CAEG GREG
DECO NOCA WHIB BTGR
LIMP SNKE AWHI

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

①	A	752	an adult returned to roadkill & ate then removed a piece & flew S mobbed by crows then. back N to Site 14 nest
①	A	757	an adult returned to roadkill & ate
①	A	801	adult picked up piece of carrion & flew N
①	A	806	adult returned & ate carrion
①	A	808	adult took piece of carrion & flew SW across canal, possibly the cached food then flew to oak & perched
①	A	813	adult took food N to Site 14 nest & fed fledgling ^{perched then returned to roadkill}
①	A	817	adult returned to roadkill, 2nd adult flew SE toward canal both adults then flew back to nest
①	A	822	adult sitting on power pole to east
①	A	834	adult flew west from power pole & landed @ roadkill, then flew N
①	A	959	adult caracara perched on power pole to the east

**USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70

Location/Observation Block/Lat-Long: Site 17

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/28/23	705	1015	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	67	WSW 4	40	stratus	heavy fog
Finish:	75	NNW 4	70	stratus	10% H

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

<p>pasture N of SR70 sugar cane S of SR70</p>

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	749	adult caracara on side of road eating carrion
③	A	752	picked up piece of corn & flew west, followed to site 16 where it showed food & fledgling
①	A	756	adult returned from NW to the carrion, chased off a few crows
①	A	759	adult picked up piece of corn & flew west to site 16 & fed young

Other Species

BLW NHA BCO COYE CAEG 1 NAVE DECO
PAWA PTAR ANHI MCKE BTAR MOW BTGR
MICA AMCR GLTB SNKE PSIT
WHIB

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (:2020-2021 Breeding Season)**

①	A	812	adult returned to from nest & picked @ carrion & ate
①	A	831 812	adult picked up piece of carrion & flew west back to Site 11
④	A	929	2 adult caracaras sitting on power pole autopruning
①	A	929	1 flew east & landed on road & picked up some carrion 2nd adult flew in & both flew east then N into field & lost sight
			Pair flew into an area previously suspected of possibly having a nest but unable to confirm this area far due to difficulty seeing into private lands across trees along road

**USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70

Location/Observation Block/Lat-Long: Site 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/27/23	705	1005	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	67	NNW 4	10	stratus	light fog
Finish:	80	S 9	2	scattered	no fog

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture N of SR70
sugar cane S of SR70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
(1)	A	838	1 adult flying N, carried in a cabbage palm briefly then continued N (noisy while in the CP)

Other seen

BLVU ACIB COYE SNKE GRCA marsh wadabout
TUVU EAME LIMA MODU NOCA TRHE
AMOR BTAR RUBL ACFL BCCO
MODO

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: 19°27'13"23"N 81°05'40"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-27-23	7:10		Chuck

weather					
Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:10	68	56	20		
Finish: 9:40	72	58	10		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic - 1 fledgling observed flying & eating

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, near throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc.)

Observer	Age	Time	Description of behavior, flight path, etc.
19	A	7:20	A Feeding on RK along 721 N of road, other A on pole
19	A	7:30	Moved RK off road, A's flew off, 1 A returned on pole
19	A	7:34	A on pole flew WNW out of view
19	A	7:36	A on pole, dropped down to RK

19	A/F	7:40	A & fledgling both feeding on RK
19	A/F	7:44	A & F both flew N, A carrying food
19	A	7:55	A back on RK, another C(F) flew into field east of 721
19	A/F	8:00	A carried food to east pasture with F, A then returns to RK
19	A	8:02	A flew W w/food into palm N of 70
19	A	8:04	A N of 70 flew w/food to pasture E of 721 w/fledgling
19	A	8:20	A on pole near RK, on to RK @ 8:30

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Station 9 27.20848° N
Location/Observation Block/Lat-Long: Block/Station 9 81.21819° W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4.20.23	06:41 am	09:41 am	Alan Althouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0641	63°F	NE 6mph	20%	cirrostratus	0
Finish: 0941	73°F	NE 6mph	0	NONE	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

130 Marcia Grove Rd + SR 70. Active cattle pasture in NW, NE + SW quadrants. SR 70 going East-West. Marcia Grove Rd. goes south. Active Citrus Grove in SE quad.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
9		0941	No caracara observed

Crow
RWBB
M Dove
Bullfrog

TV
Bobwhite Quail
Greenback Heron
Cattle egret
Jbis

Am Egret
Mottled Ducks
Marsh rabbit
Palm Warbler

Purple gallinule
Blk Crown Night Heron
Anhinga
Tree Swallow
Cardinal
Meadow lark

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Page 1 of 2

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 **ESA**

Location/Observation Block/Lat- Long: Station 11: 27.20964°N, 81.18535°W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4.19.23	0642	0942	Alan Althouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0642	61°F	NE 6mph	80%	Altostratus	0
Finish: 0942	71°F	NE 7mph	50%	Altostratus + Cumuli	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
SR70 East & West. Harney Pond Canal on south side. NW Quadrant is active cattle pasture, NE Quadrant is active cattle pasture SE & SW Quadrants active cattle pasture.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
11	A 1	0729	Flying West to east over SR70 looking for roadkill, landed on fence post on south side of Canal
11	5-A 9-Jul 2	0800 - 0942	Walking & feeding in recent mowed pasture. Not bothered by cattle, flipping cattle chips and pecking on cattle
			laying down. Adults acting as sentinels while fledgling feed. Some adults assisting with scratching for food
			with fledglings. Occasionally vocalizing. Relocated to (P) at 0800

Red shoulder HK
Catbird

RWB

8+tailed Grackle

Crow
Am Egret
M King Bird

Bobwhite Quail

TU

Red Bellied Wd Pkr
m Doves

8
mottled Duck
Grd Dove

Red tail hawk
Grd Dove

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Page 2 of 2

11	3-A #3	0925	Flying from #2 to #3 location and back several times until end of survey period. Landing in pasture to forage
		0942	End of Survey

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Page 1 of 2

Caracara Survey Form (updated 12/9/2016)

Project Name: **SR 70** **ESA**

Location/Observation Block/Lat- Long: **Station 12: 27.20929°N, 81.16972°W**

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4.18.23	0643	0943	Alan Althouse Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0643	59°	N 7mph	0	0	0
Finish: 0943	72°	N 9mph	0	0	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

SR70 E + West. Harney Pond Canal on south side of SR70. Fallow pasture north side of SR70. Active cattle pastures on south side of SR70.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
12	A #1	0716	Flying west to east over SR70 then circled back to the west and landed on levy.
12	A #2	0845	standing on canal bank then flew down into canal inlet. Same location as #1.
12	A #3	0855	Flew south to perch on fence post. Red wing black bird chasing behind CC.
12	A #4	0900	Another CC flew in to perch 4 fence post south of #3.

Turkey Vulture
BT Grackle
Cattle Egret
SHC

Bluewing Teal
MDove
Bobwhite Quail
Redbelly WPKR

Pigeon
Crow
8
Tree Swallow
Ibis

Am Egret
Crested Gnatcatcher
Greenback Heron
RWBB

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

12	A #5	0920	Flew south and landed in pasture.
12	A #6	0920	Flew south and perched on fence post
12	A #7	0925	Flew to fence post on south side of canal
12	A #8	0931	Flew west over SR 70 until out of sight.
		0943	END Survey

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2022-2023 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: ED07 District 1 SR70

Location/Observation Block/Lat-Long: Site 15

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/11/23	650	950	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	64	NE 10	40	stratus	N/A
Finish:	74	NE 15	70	stratocumulus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture N of SR70
sugar cane & pasture S of SR70
6-40 canal running SE

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	650	1 adult flying east along road then N
①	A	710	1 adult perched on power pole near Site 14
①	A	714	1 adult flew in from east, perched, adult joined a hawk flew west along road
①	A	881	adult caracara perched to west on power pole

Other Species A 940 adult perched on power pole @ canal then flew SE

BLWS TLVV CSPR WEUT RSHH 1 SPKE WTDAR
GREG BLWS GREG HOWR CASH ARHI
BLVV AMCR EPME RWBL GLIB BTGR
feeding under bridge (colony)

USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70
Location/Observation Block/Lat-Long: Site 17

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/13/23	650	950	J. Kohn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	72	SSE4	100	stratus?	light fog
Finish:	77	SSE9	98	stratocumulus	some fog haze

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture N of SR70 sugar cane S of SR70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	737	caracara sitting on power pole N of road, placed opossum rodent in row & farthest from it
①	A	748	flew N down into field, could not follow through row vegetation
4	A	801	adult flew in from N, passed over opossum then circled back & landed in tree near truck
①	A	806	flew over roadkill & landed in pepper close to it

Other species

BLVK COYE TRSW WEVI CAEG 1
TUVU NACA OSPR AMER BHWAT
WTHB GIREG BRCA GRIE
BGRR CAGR SNKI

marsh relative

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2021-2022 Breeding Season)

①	A	810	flew down & started feeding on opossum
①	A	816	flew NW, but then circled back & resumed eating BLUE flew near & caracara vocalized & threw head back
①	A	825	flew N then west, possibly toward Site 16 fledgling? tried to follow but lost through vegetation
①	A	829	resumed to feed
①	A	832	flew over west to food followed but lost behind trees
①	A	838	returned from west to feed, crows harassing while it feeds
②	A	845	flew west to Site 16 (was able to follow)
①	A, Im	900	returned from west to Site 16 juvenile & both landed & started feeding, purple crows still harassing
			thus is pretty good indication there isn't likely a nest in Site 17 area no other caracara seen today, only Site 16 adult & juvenile

① A 915 adult flew west, multi up, vultures & crows descended on the caracara & began feeding

**USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70
Location/Observation Block/Lat-Long: Side 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/12/23	800	1100	J. Klein

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	68	ENE 15	100	Altostratus	light rain
Finish:	75	ENE 10	11	11	light rain

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture N of SR70
 sugar cane S of SR70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	Im	815	1st yr ^{immature} juvenile flew across road from S then left. Second bird (unable to tell if adult or juv) flew same direction then R.
①	Im	824	1st year perched on power pole then moved to next pole east.
①	Im	842	1st yr bird flew from perch & went west, followed until it appeared to drop down appeared to fly low to N near Site 17.
①	A	935	1 adult flying NW over 2nd flight

Other Species

BLU. WOO. SNKE WOOD
 TOWN BIRD. WHTB RWB
 AMER GLTB. MODO
 B-TWR. DCO

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2021-2022 Breeding Season)**

②	A	1014	adult caracara perched on pine pole to east. Moved rapidly cat to side of road away from road being harassed by BTGR
②	A	1025	adult flew east + landed on pole in Lykes Brighton pasture Bird is likely from nest located South of intersection by observer e Site 19 Pruned
②	A	1047	Adult still perched, leaning to return to Site 18

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 19°27'13"06"N 81°05'40"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4-18-23	6:55		Church

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:55	68	NNE 7	60		
Finish: 9:55	73	NE 12	35		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic - 1 fledgling observed in
pasture 800' N of nest

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
19	A	6:55	A on pole near nest
19	A	6:59	A flew S along 721
19	A	7:16	A on pole N of nest, flew off to NW
19	A	8:26	A observed carrying food into field NW of nest

19 A 8:33 A flew in from west, w/food into field east of 721 - fledgling in field calling for food

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

**USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70
Location/Observation Block/Lat-Long: Site 15

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/25/23	6:50	1000	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	70	E6	95	stratus	N/A
Finish:	75	E7	25	stratus + stratocumulus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture N of SR70
 pasture & sugar cane S of SR70
 C-40 canal

Update
 Site 14
 to have
 fledged
 3 young

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	808	adult caracara flying N toward Site 14 nest area
①	A Im	840	juvenile caracara perched on South side of canal (likely Site 14 young)
①	A Im	841	juvenile flew SW into field
①	A	854	adult caracara on side of road eating carrion

Other Species

BASW (chattering under bridge) ABHE 1 WT Deer
 BLVU ANCR RSNA SNKI ANHS SNEG
 TUVU DCCO BTGR SACL
 GLIB EAME CASW (chattering under bridge) GREG

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2020-2021 Breeding Season)**

①	Imm Sub A	858	adult flew to power pole 3 juveniles on beam of canal N of road
			Site 14 apparently fledged 3 young not 1? one adult nearby unbothered by the juveniles (like they were underlings) - another adult flew N toward nest
②	Imm A	906	
②	Imm A	907	adult flew onto dirt pile to the juveniles
②	Imm A	911	adult brought piece of food to one of the juveniles. Seems to confirm there are Site 14 young or they fledged 3 total

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2022-2023 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: Site 17

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/26/23	640	940	J. Koon

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	66	NWES	0	N/A	light fog/smoke
Finish:	79	N4	15	Stratus Stratocumulus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture NW of SR70 sugar cane S of SR70
--

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	Im	715	1 juvenile on fallen tree opp side of road
①	Im	728	juvenile picked up piece of food from ground & flew a few feet away & landed & started eating. This is area that adult & juvenile from site 16 came to eat carrion on last survey, so this is likely the site 16 young
①	Im	822	juvenile had been eating for past hour, now walking around around when I laid down in the grass

Other species

BZUU	NOCA	ANHI	GRCA		
LBHE	COYE	BIGR	COGR	CARE	NUHA
WEVE	AMCR	BBWD	RBWD	GREY	SNKE
			SACR	MORO	OSPR

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

①	Im	830	juvenile flew & perched in tree near where was eating
①	A	835	1 adult perched on power pole to NE of juvenile
①	A	842	adult flew S & lost it across field
			drove down to Site 16 or did not readily see either adult on juvenile, so it is possible they is the Site 16 juvenile being observed today
①	Im	858	juvenile still sitting in tree S of road
①	Im	859	juvenile flew across road & perched on power pole then flew NE out of sight
②	A	902	adult on power pole to NE near Site 18
②	A	908	adult flew S across field then arched back & flew NW

② A 916 adult flew to perch on power pole, then flew down low into field

No nest confirmed at Site 17 but ② it is possible there was one to the south as indicated on railroad survey. Unable to confirm because of poor visibility through the vegetation along canal

*see map for potential nest area but not confirmed

USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70

Location/Observation Block/Lat-Long: Site 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/27/23	640	1000	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	70	ENES	40	stratus	N/A
Finish:	80	E7	10	stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Posture N to SR70
Sugar cane S of SR70
* Nest confirmed, coordinates approximate, difficult to tell @ distance exactly which tree

approx. Nest
489094 3009635

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	650	adult perched on power pole near Site 17
②	A	727	harvesting gonyer or south of Site 18, heavy equipment drawing in birds. adult caracara flew west across field then N toward road & landed in large pine just S of road
②	A	752	adult flew S then west to south across field then landed in cabbage patch then down to ground

Other species

Amur CAEG COYE Marsh Wablar
BLUU WHITE ABITE cricket frog GLIB MIDU
TUUV BTAR WRA
ADHA RWB L SUKI GREAT BOWN GRITE

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2021-2022 Breeding Season)

②	A	804	adult caracara sitting on pole N of road (not same one that just flew SW)
①	A	813	perched adult flew SW & landed in same cabbage palm & sat on edge looking around
②	A	8128	another adult flew in from west, adult life tree 2nd adult came from unknown location, territorial display flying back west. One adult stayed back & flew east & landed on ground
②	A	834	2 caracaras perched on pole N of road to the west then flew unknown direction
②	A	844	adult flew west across field & landed in CP, appeared to be feeding very small young (can't see them). 2nd adult landed in tree & first adult flew out & went N. 2nd adult appeared to be feeding small young or may be egg, laying & about incubating?
		851	1st adult perched on pole N of road
		851	1st adult that was perched flew unknown direction

900 adult flying east, 2nd adult
following

918 2 adults flying SW in territorial display

920 1 adult entered nest tree, followed
by 2nd adult, both stayed in there
flew out & circled field together
heading N
possibly nest building?

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

②	A	935	adult pair one S of road going to diff CP's then circling equipment clearing fields then flying by nest site. Haven't seen any obvious signs of carrying food or nesting material, but behavior seems most like end of nest building when about to start incubating. Pair likely had nest fail in area where I could not see well & did not confirm before. This is likely a re-nest attempt. Would need additional survey to confirm status of this new nest (building, incubating, or feeding)
②	A	912	adult flying S
			Approximate nest tree 489094 3009635

**USFWS Crested Caracara Survey Protocol
(2022-2023 Breeding Season)**

Caracara Survey Form (updated 1/23/2019)

Project Name: SR 70

Location/Observation Block/Lat-Long: Site 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
5/11/23	7:15	8:45	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	75	NNE4	0	N/A	N/A
Finish:	76	NNE4	0	N/A	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture N of SR 70
sugar cane S of SR 70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No caracara observed unable to determine if new nest active. may be incubating but is why no caracara seen. will attempt 1 more survey to determine status

Other species

GRATE BTGR GIBHE BBWD 1 Cuckoo Fly NOBDO
RWBL BLVU LIMP KILL WT Peew NOCT
LATEL MODU RBMP ANTE OSIR
AMK GLIB

USFWS Crested Caracara Survey Protocol
(2021-2022 Breeding Season)

Caracara Survey Form (updated 1/23/2019)

Project Name: SR70

Location/Observation Block/Lat-Long: Site 18

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
5/26/23	700	920	J. Korn

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	70	N6	1	stratus	N/A
Finish:	77	N5	5	stratus	11

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture on N side of SR70
sugar cane on S side of SR70

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
①	A	839	1 adult flew SE from N 7 road, late suspected nest tree then looped back & went west out to sight
①	A	910	1 adult flying SE, 2nd adult came up from trees & both flew S together
			No caracara observed by new nest tree, so likely was unsuccessful. Does not appear this pair was successful this season but there is an active territory here.

Other species

GREY WHB GLIA BLU SNKE LBITE 1 chick frog
BRND RBW MUDU PSHT BNST AMCR RWBL
EUCD GBTE CREG BENH BTMR ADITE

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR78

Location/Observation Block/Lat-Long: 19°27'13"07"N 81°05'40" W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4-21-23	7	9:30	Chanel

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7	66	NE 3	10		
Finish: 9:30	73	11	5		

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Basic traffic

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
19	A	7:40	A observed flying SE along 721, east into pasture out of view
19	A	7:42	2nd A flew in from N perched on pole along 721
19	A	7:50	A on pole flew W out of view
19	A	8:10	Drove S on 721, A on pole 2,000' S of nest

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

19	A	8:35	A flew in from W side land past the end of view
19	A	8:52	A on pole N of nest
19	A	9:00	A flew NW end of view

Appendix B

Summary of Crested Caracara Survey Data

Bi-Weekly Survey Period	Survey Station	Survey Date	Time	Number of Caracaras Observed	Activity Observed
Event 1 January 2, 2023 to January 10, 2023	Survey Station 9	January 8, 2023	7:38 AM	1	One adult caracara flew from SunRay entrance, west to east toward Station 9, flew over vehicle and landed on south side of SR 70 approximately 50 feet east of vehicle. Pulled fresh roadkill on edge of road into ROW approximately 10 feet from edge of pavement. Not affected by high speed traffic. Flew southwest with piece of carrion.
			7:55 AM	1	One adult caracara returned un-noticed and was feeding on a different piece of carrion. Caracara was approximately 50 feet southeast of vehicle in mowed grove. Flew southwest towards oak grove, flew under canopy, chased by two crows. Crows and caracara landed under canopy of oak grove.
			8:05 AM	2	Two adult caracaras flying acrobatically approximately 600 feet south of Station 9 along edge of mowed grove and mature citrus grove. #1 adult caracara perched on top of mature citrus tree as sentinel. #2 adult caracara went to south side of SR 70 ROW to feed on carrion mentioned in first sighting. Observed #2 caracara feeding then flew into mowed grove with carrion. While #2 caracara was feeding, #1 caracara flew to #2 and assumed the breeding posture on top of #2. #1 caracara dismounted and fed with #2. Both caracaras flew towards station within 100 feet and fed on carrion. Departed flying to the southwest.
			8:48 AM	3	Three adult caracara flew from the southwest. #1 caracara continued to fly east toward SunRay entrance. #2 caracara flew and perched a top citrus tree. #3 caracara flew to carrion in ROW of SR 70. #3 flew west along SR 70 until out of sight. #2, a few minutes later also flew west along SR 70 until out of sight.
	Survey Station 10	January 9, 2023	7:23 AM	1	A juvenile caracara (#1) atop power pole south of station approximately 100 feet, preening. Stayed for 1 hour 35 minutes. Flew southeast over canal into pasture.
			7:30 AM	2	An adult caracara (#2) flying high, arrived from the south. Flew over juvenile caracara on power pole, across SR 70 and departed in a northeast direction until out of sight.
			8:20 AM	3	A juvenile caracara (#3) arrived from the east, flew around #1 caracara sitting on power pole. Continued to fly high in a northwest direction over SR 70 until out of sight.
			8:37 AM	1	A caracara (#4) flying high in northeast direction.
	Survey Station 11	January 10, 2023	9:47 AM	1	A juvenile caracara (#5) perched on power pole unnoticed. Flew north until out of sight.
			7:18 AM	3	A caracara (#1) perched on telephone pole south side of SR 70. Another caracara (#2)flew by #1 and #1 vocalized. #2 flew over SR 70 in northeast direction, #2 followed and another caracara #3 followed #2. The caracaras flew between the observer and the rising sun, so could not identify if adults of juveniles.
	Survey Station 12	January 9, 2023	N/A	N/A	No caracara observations.
	Survey Station 13	January 9, 2023	8:31 AM	1	One adult caracara (A1) flew from northwest headed northeast along SR 70 tree line then north out of sight.
			8:52 AM	1	One adult caracara (A2) flew across CR 721 from road kill several times, would perch on fence post.
			9:03 AM	1	A2 flew across CR 721 and into cabbage palm group, lost sight of A2.
			9:46 AM	1	One adult caracara (A3) perched on utility pole near cabbage palm group, flew south stirred some crows then back with crows, perched.
	Survey Station 14	January 7, 2023	7:16 AM	1	One adult caracara flew in from northeast and perched on power pole. Red-shouldered hawk flew up and took perch at 7:18 am and caracara flew west to perch on next power pole.
			7:23 AM	1	One adult caracara flew east along roadway scanning for carrion until out of sight.
			7:52 AM	2	A first year young adult flew east along road then perched on power pole next to an adult. Adult threw head back then started preening itself. Note: Caracara observed on same power pole from Station 15 survey on 1/6/2023.
			8:05 AM	2	The first year young adult flew east and north away from adult that stayed perched on power pole.
			8:39 AM	1	Adult caracara flew from perch on power pole and landed on next power pole to the east.
			8:41 AM	1	Adult caracara flew from north down from pole out of sight. Note : Observer did not see any activity by possible nest tree marked near Station 15 on 1/6/2023, but does appear that there is an active territory overlapping Stations 14 and 15.
			9:29 AM	1	Adult caracara is back perched on eastern power pole where flew to at 8:39 am then flew northeast.
	Survey Station 15	January 6, 2023	7:50 AM	1	One adult caracara flew north from behind observer and went northwest out of sight toward clump of cabbage palms. May have had small bit of food on beak.
			8:08 AM	1	One adult caracara flew from behind observer north across SR 70 to perch on power pole. An adult was observed on this pole on 1/5/2023 while observer was leaving Station 16. May be sentinel perch and nest nearby.
			8:32 AM	1	One adult caracara on pole flew north-northwest down low from pole. Could not see where it went past vegetation along road.
			8:44 AM	1	Located suspected nest at Lat: 26.216343, Long: -81.154887. Approximately 1/3 mile north of SR 70 and inside private property. One adult (at least) can be seen moving around in tree.
			9:04 AM	1	One adult caracara eating carrion, walking catfish, black vulture and turkey vulture looking on.
			9:10 AM	1	Same adult flew southwest across canal and landed by black vulture looking for food.
			9:13 AM	1	Same adult flew back across canal and took food from black vulture.
			9:35 AM	2	Same adult flew southeast along canal, then showed territorial display. Second adult flying from north, then one flew east and landed and other flew southwest out of sight.
	Survey Station 16	January 5, 2023	9:39 AM	1	One caracara that landed flew across canal and landed by vultures then walked up to berm.
			9:33 AM	2	One adult caracara flew in low from north and landed on oak on north side of road where mate already sitting. Spent ten minutes allopreening and mated/copulated.
			9:45 AM	1	Male caracara flew west and landed on pole then flew low south but not across SR 70.
			9:48 AM	1	Female caracara flew low and north, lost sight.
	Survey Station 17	January 4, 2023	N/A	N/A	Checked cabbage palms in area and one seems possible for nest. Note: There is likely a territory and nest tree in vicinity to Station 16.
	Survey Station 18	January 3, 2023	N/A	N/A	No caracara observations.
	Survey Station 19	January 3, 2023	7:12 AM	1	One adult caracara flying southwest (north of SR 70), may have landed in patch of cabbage palms but could not view directly.
			7:10 AM	1	One caracara, possible adult (A1), observed at SR 70/CR 721. Flying east along SR 70.
			7:26 AM	1	One adult caracara (A2) perched on pole north of SR 70/CR 721.
			7:27 AM	1	A2 dropped to ground out of view.
			8:51 AM	1	One adult caracara (A3) flew around north of SR 70/CR 721, flew east along SR 70.
			7:10 AM	1	One adult caracara flew from perch on oak (approximately 50 yards to the west) next to SR 70 and flew north and out of sight.
			7:20 AM	1	One adult caracara approaching from south approximately 300 yards southwest. Then paired up and continued west out of sight.
Event 2 January 16, 2023 to January 27, 2023	Survey Station 9	January 24, 2023	7:22 AM	1	One adult caracara flew overhead from east and continuing west parallel to SR 70 and out of sight.
			7:38 AM	1	One adult caracara flew from north heading south across SR 70 and flew south out of sight parallel to the groves.
			8:44 AM	1	One adult caracara flew from tree line approximately one mile west towards station on the north side of SR 70, circled and dropped to the pasture, foraging.
	Survey Station 10	January 24, 2023	7:05 AM	2	One caracara (A#1) flew from the east over cabbage palms lined along south bank of east-west canal to live oak tree on east bank of north-south canal. Flew low into pasture to the east near immature caracara (I#2)
			7:09 AM	1	One immature caracara (I#2) perched in large Brazilian pepper. Flew to power pole on south side of east-west canal.
			7:12 AM	1	One immature caracara (I#2) perched on power pole. Tree obstructing view somewhat but still visible. Preening. Flew away in unknown direction.
			8:05 AM	1	One immature caracara (I#3) flying high north to south then flew over tops of cabbage palms on south side of east-west canal.
	Survey Station 11	January 25, 2023	8:55 AM	1	One immature (I#1) caracara flew to roadkill opossum on SR 70 approximately 20 yards from station. Crows buzzing caracara. Flew south with mouthful of carrion.
			9:03 AM	1	One immature (I#2) feeding on carrion in SR 70. Possibly same bird as above. Flying up and down as traffic approaches and leaves. Flew southwest.
			9:20 AM	1	One caracara perched on telephone pole. Sun glare prohibiting age determination. Flew west out of sight.
	Survey Station 12	January 26, 2023	9:42 AM	1	One immature caracara flew from south over canal and SR 70 then flew south over canal and perched in oak tree for three minutes, then flew south and landed in pasture ditch. Row of hay bales or silage bag, blocked view.
	Survey Station 13	January 27, 2023	7:07 AM	1	One immature caracara (I#1) flew from the south along CR 721 and landed 10 yards from observer's post, next to the road with a crow.
			7:08 AM	2	One immature caracara (I#2) flew from the south and joined I#1 along road then flew and perched on fence post. Both flew south.
			7:09 AM	3	I#1 and I#2 flew south along CR 721 and met up with a third caracara (A#3). All three caracaras perched on top of power poles on east side of CR 721. One of the caracaras mounted another caracara in breeding posture, both flew away together east over hammock then back to power pole. One of the caracaras flew back down into the hammock while the other two remained on top of power poles. The remaining two caracaras flew towards SR 70/CR 721 intersection then west what appeared to be along SR 70 until out of sight. Observer moved to a closer position in front of block building.
			7:40 AM	2	One caracara (A#4) feeding on carrion in love oak tree, south side of driveway. Flew to top of power pole. Second caracara (A#5) walking on ground in hammock and cabbage palm head.
			8:05 AM	1	One immature caracara (I#6) perched on power pole looking.
			8:09 AM	1	I#6 moved to next power pole to the south.
			8:17 AM	1	I#6 flew north to power pole near intersection.
			8:19 AM	1	I#6 flew west out of sight.
			8:35 AM	1	One immature caracara (I#7) flew up from oak/cabbage palms on east side of CR 721 to top of power pole next to driveway. Looking.
			8:40 AM	2	One adult caracara (A#8) bringing food in beak, flew for oak/cabbage palms. I#7 followed.
			8:42 AM	2	I#7 and A#8 flew back to power pole. A#8 had no food.
			8:45 AM	2	I#7 and A#8 flew out of sight.
			9:15 AM	1	One adult caracara (A#9) flew west to east with food.
			9:20 AM	2	Immature and adult caracara flew from oak/cabbage palm head to power pole tops at driveway entrance.
			9:25 AM	2	Immature and adult caracara flew for fence post along driveway.
	Survey Station 14	January 20, 2023	9:35 AM	3	Two adult and one immature caracaras fly together acrobatically over house/horse barn area.
			7:00 AM	1	One adult caracara perched on same power pole as on 1/19/2023 survey.
			7:10 AM	1	One adult caracara flew to north to dead opossum and fed on carrion. Opossum moved to grass on south of road to prevent caracara collision.
			7:15 AM	1	One adult caracara took piece of carrion and flew north but could not follow through trees along road. But a nest suspected in that area.
			7:20 AM	1	One adult caracara returned to roadkill and ate.
			7:45 AM	1	One adult caracara flew north of road with food and entered suspected nest tree.
			7:50 AM	1	One adult caracara left suspected nest tree with food and entered tree to west to cache, then flew to nearby tree and perched. Nest confirmed. Incubating since second adult caracara not seen.
			7:55 AM	1	One adult caracara left and flew west-southwest.
			8:51 AM	1	One adult caracara sitting on edge of nest tree preening then entered nest. Note: Based on activity estimated hatching somewhere between 1/30 - 2/6/2023.
	Survey Station 15	January 19, 2023	7:06 AM	1	One adult caracara sitting on power pole.
			7:15 AM	1	One adult caracara flew north into fog and could not follow.
			7:27 AM	1	One adult caracara returned to perch on power pole (to the east) from unknown direction, preening.
			9:00 AM	1	One adult caracara from power pole flew southeast and landed along canal then flew east down road, observer tried to follow but lost bird because of traffic.
	Survey Station 16	January 18, 2023	9:58 AM	1	Adult caracara did not return but behavior resembled a sentinel perch then leaving for food.
			6:58 AM	1	Adult caracara perched on top of power pole then flew south across road through fog.
			7:59 AM	1	One adult caracara flew from west and landed on top of oak.
			8:01 AM	1	One adult caracara flew south across road and landed in another oak and preening.
			8:09 AM	1	One adult caracara flew east low, difficult tell if along road or into cabbage palm due to fog.
			8:15 AM	1	Observed adult caracara further along road to east sitting on power line.
			8:17 AM	1	One adult caracara then flew east and lost in fog.
			8:21 AM	1	Observer located adult caracara again on another power pole, preening.
			8:55 AM	1	Perched adult flew south toward area where suspected nest is located near Station 17, could not follow to see destination.
			9:32 AM	2	One adult caracara flew with food to northwest and landed on low power pole, second adult caracara flew from nest tree and went east and landed. Then went somewhere unknown. Adult with food entered suspected nest tree then flew west.
			9:40 AM	2	One adult caracara returned and landed on low power pole near suspected nest. Nest structure visible in tree but no young seen or heard. Nest located at 48.7230/30.09709. Because pair were observed together and copulated on 1/17/2023, the nest stage is most likely egg laying or very start of incubation, earliest hatching estimated week of 2/15/2023, but probably week of 2/22/2023.
			9:54 AM	1	One adult caracara perched in sentinel pole, flew east.

Bi-Weekly Survey Period	Survey Station	Survey Date	Time	Number of Caracaras Observed	Activity Observed
	Survey Station 17	January 17, 2023	7:15 AM	1	One adult flew from west and along south of road. Crossed then landed on power pole.
			7:19 AM	1	Second adult flew east along road then south across field out of sight.
			7:25 AM	1	One adult flew south to tree on far side of sugar cane and perched with other adult. Lost them while repositioning.
			8:51 AM	1	One adult caracara that flew south is perched in oak that previously perched in at 7:25 am, possible nest area or sentinel tree.
			9:06 AM	1	One adult caracara perched, then flew down into tree unable to see from this distance.
			9:25 AM	2	One adult caracara and one subadult caracara flew west along road then adult went north and subadult circled east.
			9:31 AM	3	Two adult caracaras landed in tree and vocalized, third adult caracara flew from west and one perched adult flew to it and had territorial display. Third adult continued east. Second adult landed back to mate and copulated then both flew low north. Note: Same area two adults observed copulating at Station 16 survey two weeks before.
			9:38 AM	2	One adult caracara that continued east went to sentinel tree from 8:51 am and met mate and copulated. Observed then one adult caracara flew low to tree, unable to see which one.
			9:48 AM	2	Second adult caracara back in tree with mate and allopreened.
	Survey Station 18	January 16, 2023	9:57 AM	1	One adult caracara flew east-southeast and entered a cabbage palm at approximately 48.8436/30.09400.
			7:16 AM	1	One adult caracara flew east.
			7:41 AM	1	One adult caracara flew from south circled around dead otter then flew north and west.
	Survey Station 19	January 16, 2023	9:40 AM	1	One adult caracara flew east along road then southeast out of sight over trees. Probably landed nearby.
			7:13 AM	1	Possible adult flying east on SR 70, then flew south.
			7:45 AM	1	Possible adult flying west, north of SR 70, then south along CR 721 out of view.
			7:55 AM	2	Two possible adults observed 2,000' south of CR 721/SR 70.
			8:10 AM	3	Two adult caracaras chasing another caracara (2,000' south of CR 721/SR 70).
			8:13 AM	1	Adult perched briefly on power pole, flew east hear defensive calls.
			8:23 AM	3	Two adults chasing/fighting with another caracara, one adult returned to power pole.
			8:28 AM	1	Adult on pole flew NE into pasture out of view.
			8:45 AM	1	Adult observed on pole along CR 721.
			8:50 AM	1	Adult on pole flew NE out of view.
			9:50 AM	1	Possible adult observed north of SR 70, flew south along CR 721 to pole.
			7:11 AM	1	One adult caracara was observed flying from the north to SR 70, then turning east, following the road, out of sight.
			7:21 AM	1	One adult caracara flew from the east over the truck and landed on a telephone pole west of observer.
			7:22 AM	1	One adult caracara flew from east and continued west out of sight.
			7:26 AM	1	The adult caracara from 7:21 observation flew from perch west out of sight.
Event 3 January 30, 2023 to February 10, 2023	Survey Station 9	February 8, 2023	7:47 AM	1	One adult caracara flying west on the north ROW of SR 70. The caracara crosses the road flying east then turned and meandered back west out of sight.
	Survey Station 10	February 7, 2023	7:10 AM	1	One adult caracara (A#1) flying west over SR 70. Appear to have landed in ROW.
			7:15 AM	2	One caracara (C#2) flew from pasture south of SR 70. Met with another caracara (C#3) at SR 70 ROW. Then flew to top of power pole.
			7:15 AM	2	One caracara (C#3) flying over SR 70, landed in ROW met with C#2. Observer looking into sunrise, hard to tell age of caracaras #2 and #3.
			7:50 AM	1	One immature caracara (I#4) flew west along SR 70 then landed in top of citrus trees. Flew down into rows of citrus trees.
			8:00 AM	1	One immature caracara (I#4) flew from pasture south to land a top of high voltage power pole. Flew down into SR 70 ROW.
			8:26 AM	1	One immature caracara (I#6) flew from grove to power pole top. Preening.
			8:38 AM	1	I#6 flew west to edge of citrus grove.
			9:42 AM	1	One immature caracara (I#7) flew across SR 70 flying north into pasture. Landed in pasture near heavily vegetated ditch/canal west side of HP canal.
			9:43 AM	2	One adult caracara (A#8) at the location where I#7 landed.
			9:48 AM	2	Both birds feeding on carrion. I#8 flew with food south across SR 70.
			9:52 AM	1	One adult caracara (A#9) returning from location A#8 flew to, suspect A#9 is same bird as A#8. Returning with no food in beak.
			9:55 AM	1	One adult caracara (A#10) flew from carrion in pasture site with large piece of carrion across canal and dropped carrion on bank. Returned to carrion site.
			10:00 AM	1	One adult caracara (A#11) flew across SR 70 with food in beak to same location as A#8 and A#9. Flying low. Seems to land north of big oak tree on east side of levee berm.
	Survey Station 11	February 8, 2023	7:08 AM	1	One caracara (C#1) flying east along SR 70.
	Survey Station 12	February 9, 2023	7:28 AM	1	One adult caracara (A#2) flying over SR 70 then NE over pasture until out of sight.
	Survey Station 13	February 10, 2023	7:50 AM	1	One immature caracara (I#1) flew north along ranch road to SR 70 then flew west over SR 70 until out of sight.
			6:49 AM	1	One adult caracara (A#1) flew from hammock, circled low over road (CR 721), then back into hammock.
			6:53 AM	1	One adult caracara (A#2) perched on top of power pole in front of hammock (potential nest site).
			6:57 AM	1	One adult caracara (A#3) flew north over CR 721 and then west along SR 70.
			6:59 AM	1	A#3 returned flying south on CR 721 and perched on power pole.
			7:10 AM	1	One adult caracara (A#4) flew north along CR 721 and west over SR 70.
			7:56 AM	1	One adult caracara (A#5) flew from southwest to power pole in front of potential nest site.
			7:57 AM	1	One adult caracara (A#6) flew low out of potential nest site and then right back in.
			8:00 AM	1	One adult caracara (A#7) flew off power pole south along CR 721 then veered to the southwest.
			8:05 AM	1	One adult caracara (A#8) perched on top of power pole near potential nest site, looking around.
			8:15 AM	1	One adult caracara (A#9) flew off pole low over ROW and into potential nest site.
			8:19 AM	1	One immature caracara (I#10) flew out of potential nest site to top of power pole.
			8:48 AM	1	One adult caracara (A#11) flew out from potential nest site and perched two poles south of immature bird.
			8:49 AM	1	A#11 flew southeast out of sight towards cabbage field.
			8:59 AM	1	I#10 flew south along CR 721 until out of sight.
			9:08 AM	1	One adult caracara (A#12) flew from nest site to power pole closest to driveway.
			9:12 AM	1	A#12 flew north over CR 721, Lykes work center, until out of sight.
	Survey Station 14	February 3, 2023	9:55 AM	1	One adult caracara (A#13) drove by nest site and adult perched in cabbage palm on the south side of hammock. The third bird.
			8:20 AM	1	One adult caracara perched on power pole by highway.
			8:53 AM	1	One adult caracara that was perched, flew down to road.
			9:02 AM	1	One adult caracara flying east along power line, landed and perched on pole.
			9:31 AM	1	One adult caracara that was perched, flew west along power line then landed and perched on pole farther west.
			9:39 AM	1	One adult caracara that was perched, flew east to perch on first power pole.
			9:43 AM	1	One adult caracara that was perched, flew east then north towards nest then landed behind cabbage palms and perched in a cabbage palm to east of nest.
	Survey Station 15	February 2, 2023	9:55 AM	N/A	Note: Pair of caracaras are possibly at end of incubation, or possibly have very small hatchlings, though were not observed taking food to nest today.
	Survey Station 16	February 1, 2023	9:30 AM	1	One adult caracara perched in tree by road, flew northwest toward Station 14 nest.
			7:04 AM	1	One adult caracara flying east along road.
			7:30 AM	2	One adult caracara flew in from east, with food and entered nest. One adult caracara perched in tree slightly east by gate. Fed young, could hear chicks sounds.
			9:30 AM	1	One adult caracara returned from east and perched on power pole, occasionally preening or scratching.
	Survey Station 17	January 31, 2023	10:35 AM	1	One adult caracara still perched on same pole.
			7:04 AM	1	One adult caracara perched on dead tree by canal then flew northeast along road.
			7:18 AM	1	One adult caracara perched on oak near suspect nest area but then fog thickened and observer could no longer see.
			7:40 AM	1	One adult caracara flew from northwest along road then landed in tree from 7:04 am observation then flew low out of sight.
			8:47 AM	1	One adult caracara perched on power pole.
			8:48 AM	2	A second adult caracara flew and joined the first on power pole and allopreened.
			9:02 AM	1	One adult caracara flew northeast along road then looped south and west, lost in distance.
			9:05 AM	1	One adult caracara perched on power pole, likely the same bird from 9:02 am observation.
			9:10 AM	3	Observer followed one adult caracara with food (other two caracaras still on poles), west along road to Station 16 nest, adult entered then exited with dead caracara chick (possibly) in beak. This pair then observed feeding young on 2/1/2023 (from Station 16).
			9:14 AM	1	One adult caracara flew southeast without anything in beak.
	Survey Station 18	January 30, 2023	9:51 AM	1	One adult caracara sitting on same power pole as 9:05 am observation.
			9:11 AM	1	One adult caracara perched on power pole. Preening and sitting with one leg up under chest.
			9:27 AM	1	One adult caracara flew south then west and back to power pole west from previous pole.
			9:30 AM	1	A second adult caracara flew from south of tree island and to the north to land on power pole.
			9:34 AM	1	The second adult caracara flew, did not see direction.
			9:45 AM	1	The perched adult caracara flew east across tree line out of sight then flew south and landed directly in front of truck, perched at road then flew south and east, crossed road and flew east behind tree line.
			10:05 AM	1	One adult caracara on power pole, west of previous perches.
			10:10 AM	1	One adult caracara flew northeast and landed on previous perch near Site 18.
	Survey Station 19	January 30, 2023	10:30 AM	1	Red-shouldered hawk flew and landed on pole as adult caracara flew south over sugar cane and looped north and west to land on next pole. Red-shouldered hawk flew north to pole and adult caracara flew north out of sight. Then south and west to preen on next power pole.
			10:35 AM	1	One adult caracara flew to ground behind tree line.
			7:08 AM	1	Adult flew south along SR 70.
			7:16 AM	1	Adult perched on pole with food.
			7:18 AM	1	Adult flew into palm with food.
			7:23 AM	1	Adult back on pole.
			7:36 AM	1	Adult flew northwest out of view.
			7:50 AM	1	Adult on pole.
			8:00 AM	1	Adult flew west out of view.
			8:10 AM	1	Adult on pole near roadkill.
			8:17 AM	1	Adult has brief interaction with black vulture north of palm with potential nest.
			8:27 AM	2	Two adults near roadkill.
			8:29 AM	1	Adult flew into nest tree with food.
	Survey Station 9	February 23, 2023	8:20 AM	1	One adult caracara feeding on carrion on eastbound ROW of SR 70 to the east of Station 9. Spotted on the ground. Running south away from road as cars passed. Could not located where it went at 8:28 am.
	Survey Station 10	February 21, 2023	8:37 AM	1	One adult caracara feeding on carrion on eastbound ROW of SR 70 to the east of Station 9. Spotted on the ground. Running south away from road as cars passed. Potentially same caracara as 8:20 am observation. Feeding activity continued until 9:15 am.
			8:58 AM	1	One caracara (C#1) flying over SR 70.
			9:10 AM	1	One immature caracara (I#2) flying then perched on top of power line pole.
			9:12 AM	1	One adult caracara (A#3) flying with food in beak. Flew behind cabbage palm out of sight.
			9:18 AM	1	One adult caracara (A#4) flying until out of sight.
			9:32 AM	1	One adult caracara (A#5) flew to top of power pole, preening.
			9:35 AM	1	A#5 flew into cabbage palms.
			9:37 AM	3	One immature caracara (I#6) flew to oak tree with carrion. Throwing head back vocalizing with food in mouth. Other vocalizing could be heard. I#6 was constantly looking north-northeast. Two adult caracaras (A#7 and A#8) flew from where I#6 was looking, crossed, flying around I#6.
			9:44 AM	3	Both adults (A#7 and A#8) flew northeast. I#6 flew east out of sight a short distance behind palms.
			10:15 AM	2	One adult caracara (A#9) flew to power pole. Adult was preening immature caracara around neck. Immature caracara was tossing head back vocalizing.
			10:25 AM	1	A#9 flew north over canal.
	Survey Station 11	February 22, 2023	8:43 AM	1	One adult caracara (A#1) flying to burned pasture. Northwest quadrant.
			8:45 AM	2	Two adult caracaras (A#2) flew low over lime rock road, landed and were out of sight.
			9:00 AM	2	Two adult caracaras flying, one high and one low, landed in pasture.
			9:07 AM	1	One adult caracara (A#4) flying high (50-75 ft.).

Bi-Weekly Survey Period	Survey Station	Survey Date	Time	Number of Caracaras Observed	Activity Observed
Event 4 February 13, 2023 to February 24, 2023	Survey Station 12	February 23, 2023	8:45 AM	1	One adult caracara (A#1) flying and soaring.
	Survey Station 13	February 20, 2023	6:44 AM	1	One adult caracara (A#1) flew to power pole from suspected nest site. Looking.
			6:48 AM	1	One adult caracara (A#2) flew down to road (CR 721), looking for food. Would fly to adjacent fence post as cars drove by then back to road.
			6:55 AM	1	One adult caracara (A#3) flew back to pole. Note - A#1-A#3 is same caracara. Flew within 20 yards of observation vehicle. Seemed unaffected by observer presence.
			7:33 AM	2	One caracara (C#4) observed three poles south of A#3. C#4 was on top of power pole feeding.
			7:34 AM	1	One adult caracara (A#5) flew off power pole in northerly direction. (Perched for 39 minutes).
			7:50 AM	N/A	Vehicles leaving residence, SE 4th St, caracara seemed unaffected by resident's activities.
			7:55 AM	1	One adult caracara (A#6) feeding on fresh kill in road, approximately 20 yards behind (north of) observation vehicle. Fighting off crows trying to steal food.
			8:00 AM	1	One adult caracara (A#7) flew in northeast direction and returned flying south over CR 721 then perched on telephone pole.
			8:15 AM	1	One adult caracara (A#8) perched on telephone pole south of driveway.
			8:35 AM	2	One immature caracara (I#9) perched on top of power pole with A#8. Immature was preening.
			8:55 AM	1	I#9 flew down into suspect nest location.
			8:59 AM	1	One adult caracara flew from suspect nest location to power pole. Looking.
			9:37 AM	1	One adult caracara remained on top of power pole.
			9:45 AM	2	Post survey note - Observer drove by nest location on CR 721 and immature caracara was on power pole, two poles south of where adult caracara remained.
	Survey Station 14	February 17, 2023	7:00 AM	0	One adult caracara perched on power pole.
			7:45 AM	1	One adult caracara that was perched, flew west along road.
			8:10 AM	1	One adult caracara, possibly second, exited nest tree and perched to the west in tree, unable to see. Likely feeding young based on timing.
			9:50 AM	1	One adult caracara returned to perch on power pole.
			10:00 AM	1	One adult caracara that was perched, flew to nest and perched nearby. Did not observe feeding but difficult to see at this distance. If not, then will certainly be hatched by next survey.
	Survey Station 15	February 16, 2023	7:45 AM	1	One adult caracara perched on power pole. Almost certainly one of the pair from the nest north of Station 14.
			8:00 AM	1	One adult caracara flew low and to north behind trees.
	Survey Station 16	February 15, 2023	7:52 AM	1	One adult caracara flying from north over road and to the south out of sight.
			8:30 AM	1	One adult caracara returned from west and entered nest with food, then flew out and perched on sentinel post (old power pole and pecked at remaining food). Can hear chick(s) crying, potentially sounds like more than one, but need to confirm as they get older and are visible.
			9:00 AM	1	One adult caracara flew east.
			10:00 AM	1	One adult caracara returned from east and entered nest with food and fed young. Large prescribed fire started just west of Station 14 at approximately 10:15 am.
	Survey Station 17	February 14, 2023	N/A	N/A	No caracara observations. No activity seen in this area to the south where previously suspected there may have been a nest.
	Survey Station 18	February 13, 2023	7:00 AM	1	One adult caracara perched on power pole along road (where seen perched on previous survey).
			7:11 AM	1	One adult caracara that was perched, flew north low behind trees, where unable to see where landed.
			7:15 AM	1	One adult caracara appeared and perched on power pole, slightly west of previous pole.
			7:18 AM	1	One adult caracara flew west along road, followed, but lost whether it entered a tree along road or flew south across field.
			7:28 AM	1	One adult caracara returned to perch on power pole a little further west off map then flew out of sight.
	Survey Station 19	February 13, 2023	7:43 AM	1	One adult caracara fly into nest (near Station 13).
			8:01 AM	1	One adult caracara leaves nest (near Station 13) and perches on pole.
			8:04 AM	1	One adult caracara flies north along CR 721 to another pole.
			8:10 AM	1	One adult caracara flies east-northeast out of view.
			12:00 AM	1	One adult caracara returned to nest (near Station 13), not sure if carrying food.
			8:32 AM	2	A second adult caracara on pole by nest (near Station 13).
			8:38 AM	1	The adult caracara on pole drops into a field to the east out of view.
			8:39 AM	1	One adult caracara observed taking food into the nest (near Station 13).
Event 5 February 26, 2023 to March 11, 2023	Survey Station 9	March 10, 2023	N/A	N/A	No caracara observations.
	Survey Station 10	March 7, 2023	6:48 AM	1	One adult caracara (A#1) flying over SR 70, landed where a crow was feeding in the road, continued to fly west over SR 70.
			7:00 AM	1	One immature caracara (I#2) perched on top of power pole, preening.
			7:17 AM	1	I#2 flew off power pole, pick up carrion in road, flew to nest area.
			7:20 AM	1	One immature caracara (I#3) flew from nest area to power pole.
			7:23 AM	1	One adult caracara (A#4) perched in small oak with food. Flew in to cabbage palms east of small oak.
			7:27 AM	1	One immature caracara (I#5) - observer did not see fly off power pole but flew to nest area (cabbage palms east of small oak) with food.
			7:30 AM	1	One adult caracara (A#6) flew out of nest area, circled low and flew back to nest area.
			9:28 AM	N/A	End of survey - No activity since 7:30 am (A#6 observation). A range finder was used to triangulate nest site. 214 yards to large oak on fence line, 186 yards to small oak.
	Survey Station 11	March 8, 2023	8:15 AM	1	One adult caracara (A#1) flying west to east over SR 70.
	Survey Station 12	March 9, 2023	7:43 AM	1	One adult caracara flying east to west over SR 70. Landed on highway briefly and then continued flying west over SR 70.
			6:30 AM	1	One adult caracara (A#1) flew from nest site to top of power pole.
	Survey Station 13	March 10, 2023	6:44 AM	1	One adult caracara (A#2) flew over CR 721 then over sugar cane field towards SR 70.
			6:49 AM	1	One caracara (C#3) flew from nest site across pasture (flying low). Flew towards SR 70/CR 721 intersection then headed east.
			6:52 AM	1	One immature caracara (I#4) flew in from east and landed in road feeding on carrion.
			6:59 AM	1	One adult caracara (A#4) flew from north side of nest site, circled low and flew back in nest site.
			7:06 AM	1	One immature caracara (I#5) flying with large piece of carrion and cached it in lone cabbage palm in pasture north of nest site. Then flew high towards SR 70.
			7:35 AM	1	One immature caracara (I#6) sitting on top of power pole.
			8:04 AM	1	One immature caracara (I#7) flew to power pole in front of nest site.
			8:12 AM	1	One immature caracara (I#8) flew from power pole to pasture and landed on ground.
			8:15 AM	1	One immature caracara (I#9) appeared on top of power pole to the north of driveway.
			8:17 AM	1	One immature caracara (I#10) flew low from pasture to fence post north side of driveway.
			8:24 AM	1	One immature caracara (I#11) flew to power pole in front of nest site.
			8:29 AM	2	One adult caracara (A#12) flew into pasture on ground to the location where I#8 landed. Picked up carrion and flew to driveway and fed a fledgling.
			8:35 AM	3	An SUV pulled into driveway. One juvenile caracara flew to the other juvenile and adult (A#13) to the north side of the driveway. Observer watched the adult and two juveniles walk and hop-fly across pasture to the north, foraging and looking around. They eventually met up with the immature in the pasture. Observed in pasture until 9:15 am, where they made their way back to the nest site south of the driveway by walking and hop-flying.
	Survey Station 14	March 2, 2023	7:36 AM	1	One adult caracara flying west-southwest.
			8:23 AM	1	One adult caracara flew in from west and landed on power pole.
			8:29 AM	1	Perched adult flew south and landed in tree in pasture next to equipment working in field.
			8:30 AM	2	Second adult caracara joined the other in tree then flew to ground then second adult flew to ground.
			8:48 AM	1	One adult caracara flew from field with food and returned to nest and entered.
			8:50 AM	1	One adult caracara flew north.
	Survey Station 15	March 3, 2023	9:15 AM	1	One adult caracara returned with food and entered nest. Feeding young, appears to just be one approximately two weeks old. Earliest possible fledgling would be by or on next survey date but most likely around 3/31/23.
			8:20 AM	1	One adult caracara flying to the west headed north, likely Station 14 adult.
			7:15 AM	1	One adult caracara flew east out of sight.
	Survey Station 16	March 1, 2023	8:20 AM	2	One adult caracara returned from east carrying food, entered nest and fed immature, exited and flew to berm slightly north and landed, then flew east.
			9:23 AM	2	One adult caracara returned from east carrying food and landed on sentinel pole, immature crying in nest, adult entered nest, then exited and flew east.
	Survey Station 17	February 28, 2023	8:20 AM	1	One adult caracara flew in from west and landed on power pole.
			8:37 AM	1	One adult caracara that was perched flew northeast and landed on road and picked up piece of carrion, took to shoulder, and began eating.
			8:44 AM	2	One adult caracara took carrion and flew southwest then west and took it to Station 16 nest and fed immature then flew to sentinel pole, then flew east, only one immature seen in nest.
	Survey Station 18	February 27, 2023	8:52 AM	1	One adult caracara flew in from west and landed in road and grabbed remnants of roadkill and took it to side of road.
			8:59 AM	2	One adult caracara flew west carrying food, followed caracara to Station 16 nest where it landed on sentinel pole. One large immature caracara could be seen in Station 16 nest, close to fledgling. No other caracara seen at Station 18.
	Survey Station 19	February 27, 2023	6:58 AM	2	Two adult caracaras near nest on poles along SR 70.
			7:44 AM	2	One adult caracara flew north, other moved to north to another pole.
			7:55 AM	1	Other adult caracara flew north, still foggy.
			8:40 AM	2	One adult caracara returns to near nest (near Station 13) with food, feeds fledgling on ground.
			8:55 AM	2	Adult caracara still feeding fledgling.
			9:00 AM	2	Adult caracara on pole, fledgling on ground.
			9:25 AM	3	Both adult caracaras on poles near nest (near Station 13), fledgling on ground.
	Survey Station 9	March 23, 2023	N/A	N/A	No caracara observations.
	Survey Station 10	March 21, 2023	7:20 AM	2	One adult caracara (A#1) flew to power pole from nest site. An immature caracara (I#1) followed and perched on same power pole. Preening. Power pole west of nest site.
			7:22 AM	2	One adult caracara (A#2) flew west over SR 70 until out of sight. Immature (I#1) remained. Standing on one leg. Holding up right leg.
			7:30 AM	1	One adult caracara (A#3) flew from west to east over SR 70 until out of site, flying to the east.
			7:32 AM	1	One caracara (C#4) perched on power pole east of nest site.
			7:40 AM	1	I#1 flew off power pole west over SR 70, then citrus offices, then landed on power pole by citrus office, then flew over citrus grove landed on top of citrus trees in grove.
			7:42 AM	1	One caracara (C#6) flew past from power pole over SR 70 until out of site.
			7:57 AM	2	Immature caracara (I#7) and adult caracara (A#7) flying over citrus grove and grove office. Landed and perched together on power pole by office.
			8:20 AM	1	One adult caracara (A#8) flew to power pole north of SR 70 along canal.
			8:48 AM	1	One adult caracara (A#9) flew from power pole to citrus grove landed on top of citrus trees.
			8:50 AM	1	One immature caracara (I#10) a top power pole along canal.
			9:15 AM	1	I#10 flew southwest to citrus grove.
			9:35 AM	1	I#10 flew to power pole. Crow hazing caracara.
			9:45 AM	1	One adult caracara (A#11) flew from citrus grove to power pole with food.
			9:49 AM	1	A#11 flew from power pole to nest site.
			9:55 AM	1	A#11 emerged from back side (south) of nest site and then flew to power pole.
			9:57 AM	1	A#11 flew to citrus grove.
			10:13 AM	N/A	End of survey.
	Survey Station 11	March 22, 2023	N/A	N/A	No caracara observations.
	Survey Station 12	March 23, 2023	7:23 AM	1	One adult caracara flying from west to east over SR 70 then turned around and flew back west over SR 70 until out of site.
	Survey Station 13	March 24, 2023	7:41 AM	1	One adult caracara flew out from nest site to power pole on east side of CR 721. Activity occurred when vehicles started up and was leaving residence on the east side of nest site.
			7:49 AM	1	One adult caracara flew northwest towards SR 70.
			8:15 AM	1	One juvenile/fledgling walking around in pasture, exploring, pecking at the ground. Unaffected by the cattle egrets on the ground with it, the horse nearby, and the traffic on the highway. Mingling with crow on the ground. Fly up to fence post and preen.
			9:40 AM	1	One juvenile caracara flew from pasture towards nest site.

Bi-Weekly Survey Period	Survey Station	Survey Date	Time	Number of Caracaras Observed	Activity Observed
Event 6 March 12, 2023 to March 25, 2023	Survey Station 14	March 17, 2023	7:41 AM	1	One adult caracara sitting on tall power pole by highway southeast of nest.
			7:44 AM	2	Second adult caracara flew east along road then landed on pole next to mate and copulated.
			7:46 AM	2	Both adult caracaras then flew east along road out of sight.
			7:57 AM	1	One adult caracara perched on power pole east of nest area.
			8:02 AM	2	Second adult returned from low behind trees and perched on power pole to west of mate.
			8:04 AM	2	First adult caracara left perch and flew down to road out of view (likely foraging for roadkill). Second adult caracara then followed.
			8:40 AM	2	One adult caracara perched on tall power pole to west and one adult caracara flying slow to east just north of road (foraging) then landed on tall power pole.
			8:48 AM	2	One adult caracara perched to west flew towards nest to north then east and south back towards road, other adult caracara still perched.
			8:59 AM	1	Perched adult caracara flew southwest into pasture.
			9:30 AM	2	One adult caracara flew into nest with food then exited and flew into adjacent cabbage palm. Saw individual fly down and back up to adjacent tree (possible fledged).
	Survey Station 15	March 16, 2023	7:52 AM	1	Station 14 adult caracara sitting on power pole then flew northwest towards nest.
			8:01 AM	2	One adult caracara flew in from west and continued east down road and out of view (Station 14 adult caracara foraging on road).
			8:11 AM	2	One adult caracara perched on power pole (Station 14 adult caracara foraging along road).
			9:21 AM	1	One adult caracara flying to south into pasture.
	Survey Station 16	March 15, 2023	7:20 AM	1	One juvenile caracara sitting on low pole by nest. Young has fledged (sentinel post).
			7:30 AM	1	One juvenile caracara flew west over trees by road and probably landed nearby but lost over the trees.
			8:32 AM	2	One juvenile caracara flew west and was followed by adult caracara, adult caracara being more aggressive than would seem usual if it was parent and young.
			8:37 AM	1	One juvenile caracara circled back and landed to perch on small power pole to east of nest.
			9:03 AM	1	One juvenile caracara flew west over by nest and landed on sentinel pole.
			9:10 AM	1	One juvenile caracara flying back and forth between each pole.
			9:57 AM	2	One adult caracara returned from east and landed in area by tree, then flew near nest and juvenile caracara joined and begged for food.
			10:07 AM	2	One adult caracara flew to tree south of road and perched and remained there until end of survey. Immature caracara flew to low pole to east of nest and perched there until end of survey.
	Survey Station 17	March 14, 2023	9:49 AM	1	One adult caracara flew from east and went nearby into pasture then west to Station 16 and landed in the south of road. Mower operating in area south of road, likely attracting the Station 16 adult. No other caracara observations.
	Survey Station 18	March 13, 2023	7:37 AM	1	One adult caracara flying east along road, turned around and started back west, harassed by American crow.
			7:39 AM	1	One adult caracara landed in road and picked at piece of carrion then flew west followed and returned to Station 16 nest and fed young.
			9:00 AM	1	One adult caracara placed dead baby raccoon off side of road (bait).
			9:54 AM	2	Two adult caracaras to the west flying northeast and interacting possible territorial display. Observer could not follow where they went behind trees.
	Survey Station 19	March 13, 2023	7:20 AM	2	Two adults fly north from nest area.
			7:36 AM	1	Adult flew south along 70, perched on pole, flew north to another pole.
			8:20 AM	2	Two adults perched on poles along CR 721.
			8:40 AM	5	Both adults flew east into pasture, one with food, 300' north of nest (near Station 13), two fledglings observed in pasture.
			8:55 AM	2	Both adults flew north.
			9:20 AM	3	Adult flew in from west, perched on pole by fledglings.
			9:35 AM	1	Adult flew north, on pole near SR 70/CR 721.
			7:41 AM	1	Flew from west to east down ROW before U-turning and flying back west and out of sight.
Event 7 March 26, 2023 to April 8, 2023	Survey Station 9	April 6, 2023	7:42 AM	1	Adult spotted perched in dead cabbage palm in eastbound ROW of SR 70.
	Survey Station 10	April 7, 2023	7:52 AM	1	Flew from perch headed south out of sight.
			6:54 AM	1	One adult caracara (A#1) on top of power pole when observer arrived at station.
			7:04 AM	2	One adult caracara (A#2) flew from group of cabbage palm to power pole with A#1. Preening.
			7:09 AM	3	A#1 and A#2 flew off power pole together. A third adult caracara (A#3) flew south over SR 70. A#3 flew north along Harney Pond Canal.
			7:21 AM	1	One adult caracara (A#4) flying west over SR 70 and landed on power pole.
			7:22 AM	2	One adult caracara (A#5) flew from citrus grove to power pole.
			7:26 AM	2	Two juvenile caracaras (I#6, I#7) making short hop flyovers and walking in pasture.
			7:30 AM	2	One adult caracara (A#7) flew to power pole with A#5.
			8:10 AM	1	One adult caracara (A#8) flew to power pole.
			8:45 AM	3	One adult caracara (A#9) flew south. I#6 and I#7 continue to walk on the ground.
			8:49 AM	1	One adult caracara (A#10) returned to power pole.
			8:51 AM	2	One adult caracara (A#11) returned to power pole with other adult. Looking and preening.
			9:00 AM	3	One adult caracara (A#12) flew southwest to confront third caracara. Lots of diving and chasing. Then returned to power pole.
			9:15 AM	2	One adult caracara (A#13) flew west over SR 70 while other remained on power pole.
			9:29 AM	4	One adult caracara (A#14) returned to location of immature caracaras (I#6 and I#7) with food. Immatures/fledglings feeding on ground with food from adult. Vocalization by fledglings and adult. Fledglings sound like red-tailed hawk shrills. Adult with a chattering clacking voice. Adult remained with fledglings and second adult on power pole until end of survey.
	Survey Station 11	April 6, 2023	7:19 AM	1	One adult caracara (A#1) flying over SR 70 east to west then north and northwest over pasture until out of sight.
			7:20 AM	2	When A#1 was almost out of sight, one adult caracara (A#2) followed behind flying in same direction.
			9:40 AM	1	One adult caracara (A#3) flying south along cabbage palm tree line.
	Survey Station 12	April 5, 2023	7:56 AM	1	One adult caracara (A#1) flying from SR 70, southeast, then low into a line of cabbage palms and live oak on the north-south ranch road.
			8:16 AM	1	One immature caracara (I#2) flying over SR 70 and Harney Pond Canal west to east, then turned around and flew west over SR 70 and Harney Pond Canal until out of sight.
			9:05 AM	3	I#2 Landed in SR 70. Unknown which direction arrived One adult caracara (A#3A) flew into tree location in first observation. One adult caracara (A#3B) flew to canal bank to feed on something, then flew to large oak tree.
			9:26 AM	1	A#3B flew east at ground level to tree location. Used range finder to approximate distance of location where caracaras were flying into line of trees. Approximately 400 yards/1200 feet.
	Survey Station 13	N/A	N/A	N/A	Last survey 3/24/2023, confirmed fledged two young.
	Survey Station 14	N/A	N/A	N/A	Last survey 3/17/2023 when observed fledged. Confirmed three young fledged from nest on 4/25/2023.
	Survey Station 15	March 29, 2023	7:35 AM	1	One caracara attempting to fly into roadkill moved over from near Station 14, flew south chased by crows.
			7:39 AM	1	One caracara landed on site of canal eying the roadkill but being harassed by crows.
			7:44 AM	1	The adult flew to the roadkill and began eating; two crows walking around following the caracara.
			7:47 AM	1	The adult flew north with a piece of food and went to the Station 14 nest and fed young which appeared fledged.
			7:52 AM	1	An adult returned to roadkill and ate then removed a piece and flew south mobbed by crows, then flew north to Station 14 nest.
			7:57 AM	1	An adult returned to the roadkill and ate.
			8:01 AM	1	The adult picked up piece of carrion and flew north.
			8:06 AM	1	An adult returned and ate carrion.
			8:08 AM	1	The adult took piece of carrion and flew southwest across canal, possibly cached food, then flew to an oak and perched, then returned to roadkill.
			8:13 AM	1	The adult took food and flew north to Station 14 and fed fledgling(s).
			8:17 AM	2	Adult returned to roadkill; second adult flew southeast toward canal. Both adults then flew north back to nest.
			8:22 AM	1	One adult sitting on power pole to the east.
			8:34 AM	1	One adult flew west from power pole and landed at roadkill, then flew north.
			9:59 AM	1	One adult sitting on power pole to the east.
	Survey Station 16	N/A	N/A	N/A	Last survey 3/15/2023, confirmed fledged one young
	Survey Station 17	March 28, 2023	7:49 AM	1	One adult on side of road eating carrion.
			7:52 AM	2	Adult picked up piece of carrion and flew west, took food to Station 16 and shared with fledgling.
			7:56 AM	1	One adult returned from northwest to the carrion and chased off a few American crows.
			7:59 AM	2	The adult picked up piece of carrion and flew west to Station 16 and fed young.
			8:12 AM	1	One adult returned from west to the carrion and ate.
			8:31 AM	2	The adult picked up piece of carrion and flew west to Station 16 and fed young.
			9:29 AM	2	Two adults sitting on power pole allopreening.
			9:29 AM	2	One of perched adults flew east and landed on road and picked up some carrion. Second of perched adults flew in and both flew east then north into field and lost sight. The pair flew toward an area previously suspected to possibly have a nest but unable to confirm due to low visibility through vegetation along side of road.
	Survey Station 18	March 27, 2023	8:38 AM	1	One adult flying north, landed in a cabbage palm briefly, then continued north (nothing visible in the cabbage palm).
	Survey Station 19	March 27, 2023	7:20 AM	2	One adult caracara feeding on roadkill along CR 721, north of nest. Other adult caracara on pole.
			7:30 AM	2	Adult caracara moved roadkill off road, adult caracara flew off, one adult caracara returned on pole.
			7:34 AM	1	Adult caracara on pole flew west-northwest out of view.
			7:36 AM	1	Adult caracara on pole, dropped down to the roadkill.
			7:40 AM	2	Adult caracara and fledgling both feeding on roadkill.
			7:44 AM	2	Adult caracara and fledgling both flew north, adult carrying food.
			7:55 AM	2	Adult caracara back on roadkill, another caracara (fledgling), flew into field east of CR 721.
			8:00 AM	2	Adult caracara carried food to east pasture with fledgling. Adult caracara then returns to the roadkill.
			8:02 AM	1	Adult caracara flew north with food into palm north of SR 70.
			8:04 AM	2	Adult caracara north of SR 70 flew with food to pasture east of CR 721 with fledgling.
			8:20 AM	1	Adult caracara on pole near roadkill, on roadkill at 8:30 am.
	Survey Station 9	April 20, 2023	N/A	N/A	No caracara observations.
	Survey Station 10	N/A	N/A	N/A	Last survey 4/7/2023. Confirmed successful nest with two fledglings.
	Survey Station 11	April 19, 2023	7:29 AM	1	One adult caracara flying west to east over SR 70 looking for roadkill. Landed on fence post on south side of canal.
			8:00 AM	14	Five adult caracaras and nine juvenile caracaras walking and feeding in recent mowed pasture. Not bothered by cattle. Flipping cattle chips and pecking on cattle laying down. Adults acting as sentinels while fledglings feed. Some adults assisting with scratching for food with fledglings. Occasionally vocalizing.
			9:25 AM	1	One adult caracara flying from two different locations back and forth several times until end of survey period. Landing in pasture to forage.
			9:42 AM	14	End of survey. Five adult caracaras and nine juvenile caracaras still in pasture.
	Survey Station 12	April 18, 2023	7:16 AM	1	One adult caracara (A#1) flying west to east over SR 70 then circled back to the west and landed on levy.
			8:45 AM	1	One adult caracara (A#2) standing on canal bank then flew down bank into canal inlet. Same location as observation 1.
			8:55 AM	1	One adult caracara (A#3) flew south to perch on fence post. Red wing blackbird chasing behind caracara.
			9:00 AM	2	One adult caracara (A#4) flew in to perch four fence posts south of A#3.
			9:20 AM	2	One adult caracara (A#5) flew south and landed in pasture. One adult caracara (A#6) flew south and landed on fence post.
			9:25 AM	1	One adult caracara (A#7) flew to fence post on south side of canal.
			9:31 AM	1	One adult caracara (A#8) flew west over SR 70 until out of sight.
	Survey Station 13	N/A	N/A	N/A	Last survey 3/24/2023, confirmed fledged two young.
	Survey Station 14	N/A	N/A	N/A	Last survey 3/17/2023 when observed fledged. Confirmed three young fledged from nest on 4/25/2023.
	Survey Station 15	April 11, 2023	6:50 AM	1	One adult flying east along road then north.
			7:10 AM	1	One adult perched on power pole near Station 14.
			7:14 AM	2	One adult flew in from east, perched adult the new adult, and both flew west along road.
			8:51 AM	1	One adult perched to the west on power pole.
			9:40 AM	1	One adult perched on power pole at canal then flew southeast.
	Survey Station 16	N/A	N/A	N/A	Last survey 3/15/2023, confirmed fledged one young.

Bi-Weekly Survey Period	Survey Station	Survey Date	Time	Number of Caracaras Observed	Activity Observed
Event 8 April 9, 2023 to April 22, 2023	Survey Station 17	April 11, 2023	7:33 AM	1	One adult perched on power pole on road. Placed opossum roadkill nearby in ROW.
			7:48 AM	1	Perched adult flew north down into field and lost sight.
			8:01 AM	1	One adult flew in from north, went over opossum, landed in tree near truck.
			8:06 AM	1	The adult flew over near the roadkill and landed in a pepper tree.
			8:10 AM	1	The adult flew down and started feeding on the roadkill.
			8:16 AM	1	The adult flew northwest, circled back and returned to carcass to eat. Black vulture flew near, caracara vocalized and threw head back.
			8:25 AM	1	The adult flew north then to the west out of sight.
			8:29 AM	1	One adult returned to carcass to feed.
			8:32 AM	1	The adult flew west with food, lost sight of behind trees.
			8:38 AM	1	One adult returned from west to feed. American crows harassing it while it fed.
			8:45 AM	1	One adult flew west to Station 16 (was able to follow and confirm).
			9:00 AM	2	One adult returned from west with the Station 16 fledged juvenile. Both landed and started feeding. Couple of American crows still harassing. This seems like good indication that there isn't an active territory or nest near this area since Station 16 pair and juvenile unbothered using the area.
	Survey Station 18	April 12, 2023	9:15 AM	1	The adult flew west, juvenile wandered into trees/brush along canal to south. Black vulture and American crow descend on carcass and start feeding.
			8:15 AM	2	A first year immature flew across road from south then went east. A second bird (unable to determine age) flew same direction then to north.
			8:24 AM	1	The first year perched on power pole then flew to next pole to the east.
			8:42 AM	1	First year flew from perch and went west, followed until traffic wouldn't allow. It appeared to fly low into area near Station 17.
			9:35 AM	1	One adult flying northwest out of sight.
			10:14 AM	1	One adult perched on power pole to the east. Moved a roadkill cat to the side of road nearby, caracara being harassed by boat-tailed grackle.
	Survey Station 19	April 10, 2023	10:25 AM	1	Perched adult flew east and landed on pole in middle of Lykes Brighton pasture on north of road and preened. Bird is likely from nest in Station 13/Station 19 to the south.
			10:47 AM	1	Adult still perched.
			6:55 AM	1	One adult caracara on pole near nest (near Station 13).
			6:59 AM	1	One adult caracara flew south along CR 721.
			7:16 AM	1	One adult caracara on pole north of nest (near Station 13), flew off to northwest.
			8:20 AM	1	One adult caracara observed carrying food into field northwest of nest.
Event 9 April 23, 2023 to May 6, 2023	Survey Station 9	N/A	N/A	N/A	One adult caracara flew in from west, with food, into field east of CR 721 - fledgling in field calling for food.
			8:33 AM	2	One adult caracara flew northwest out of view.
			9:18 AM	1	One adult caracara flew northwest out of view.
			N/A	N/A	Last survey 4/20/2023.
			N/A	N/A	Last survey 4/7/2023. Confirmed successful nest with two fledglings.
			N/A	N/A	Last survey 4/19/2023.
	Survey Station 10	N/A	N/A	N/A	Last survey 4/18/2023.
			N/A	N/A	Last survey 3/24/2023, confirmed fledged two young.
			N/A	N/A	Last survey 3/17/2023 when observed fledged. Confirmed three young fledged from nest on 4/25/2023.
			N/A	N/A	One adult flying north toward Station 14 nest area.
			N/A	N/A	One juvenile perched on south side of road and canal (likely Station 14 young).
			N/A	N/A	The juvenile flew southwest into pasture.
	Survey Station 11	N/A	N/A	N/A	One adult on side of road eating carrion.
			N/A	N/A	One adult flew from power pole; three juveniles on berm of canal north of road on Lykes property. These are likely the Station 14 fledglings, which confirms they had three young fledge.
			N/A	N/A	One adult and three juveniles still around berm. Second adult flew north toward Station 14 nest.
			N/A	N/A	The first adult flew onto dirt pile with the three juveniles.
			N/A	N/A	The adult brought a piece of food to one of the juveniles which further confirms these must be Station 14 adult and their fledged young.
			N/A	N/A	Last survey 3/15/2023, confirmed fledged one young.
	Survey Station 12	N/A	N/A	N/A	One juvenile on fallen log on south side of road.
			N/A	N/A	The juvenile picked up piece of food from ground and flew a few feet and landed and started eating. Most likely Station 16 young because this is same spot from previous survey where Station 16 adult and young fed on provided roadkill.
			N/A	N/A	Juvenile had been eating for past hour, now walking around then laid down in grass briefly.
			N/A	N/A	Juvenile flew and perched in tree near where it was eating.
			N/A	N/A	One adult perched on power pole to the northeast of the juvenile.
			N/A	N/A	Perched adult flew south and lost sight of it across the field.
	Survey Station 13	N/A	N/A	N/A	Juvenile still sitting in tree on south side of the road.
			N/A	N/A	Juvenile flew across road and perched on power pole then flew northeast out of sight.
			N/A	N/A	One adult on power pole to the northeast near Station 18.
			N/A	N/A	The adult flew south across field then circled back and flew north then west.
			N/A	N/A	One adult flew to perch on power pole, then flew down low into field.
			N/A	N/A	One adult perched on power pole near Station 17.
	Survey Station 14	N/A	N/A	N/A	Harvesting going on south of Station 18, heavy equipment drawing in birds. One adult caracara flew west across field then north toward road and landed in large pine just south side of road.
			N/A	N/A	Adult caracara flew south, then west and south across field and landed in a cabbage palm, then down to ground.
			N/A	N/A	One adult caracara sitting on power pole north of road (not same bird that just flew southwest).
			N/A	N/A	Perched adult caracara flew southwest and landed in same cabbage palm and sat on edge looking around.
			N/A	N/A	Another adult caracara flew in from west, adult caracara in cabbage palm left tree. An adult caracara came in from unknown direction, territorial display flying back to the west. One adult caracara stayed back and flew east and landed on ground.
			N/A	N/A	Two adult caracaras perched on power pole north of road to the west then flew in an unknown direction.
	Survey Station 15	N/A	N/A	N/A	One adult caracara flew west across field and landed in same cabbage palm. Second adult caracara landed in tree and first adult flew out and went north.
			N/A	N/A	First adult perched on power pole north of road.
			N/A	N/A	First adult that was perched flew in unknown direction.
			N/A	N/A	One adult flying east; second adult following.
			N/A	N/A	Two adults flying southwest in territorial display.
			N/A	N/A	One adult entered nest tree, followed by second adult, both stayed in then both flew out together heading north. Possibly nest building.
	Survey Station 16	N/A	N/A	N/A	Adult pair south of road going into different cabbage palms then circling equipment clearing the fields, then flying by nest tree. Did not see any obvious signs of carrying food as if to feed young, or nesting material. Behavior seems most like when nest building complete and about to egg lay and incubate. Pair likely had a nest fail on north side of road where I suspected but could not confirm earlier. This would be their second nest attempt and will need additional surveys to confirm status (fledge, fail, etc.). New suspected nest tree approximately UTM's: 48.9094, 30.09635
			N/A	N/A	One adult flying south.
	Survey Station 17	N/A	N/A	N/A	One adult caracara observed flying southeast along CR 721, east into pasture out of view.
			N/A	N/A	One adult caracara flew in from north, perched on pole along CR 721.
			N/A	N/A	One adult caracara on pole flew west out of view.
			N/A	N/A	Observer drove south on CR 721. One adult caracara on power pole 2000 ft. south of nest (near Station 13).
			N/A	N/A	One adult caracara flew in from west into east pasture and out of view.
	Survey Station 18	N/A	N/A	N/A	One adult caracara on pole north of nest (near Station 13).
			N/A	N/A	One adult caracara flew northwest out of view.
Event 10 May 7, 2023 to May 20, 2023	Station 18	May 11, 2023	8:45 AM	N/A	No caracara observed. Unable to determine if new nest active. May be incubating which is why no caracara seen. Will attempt additional survey to determine status.
			8:39 AM	1	One adult caracara flew southeast from north of road, past suspected nest tree, and then looked back and went west out of sight.
Event 11 May 21, 2023 to June 3, 2023	Station 18	May 26, 2023	9:10 AM	2	One adult caracara flying southeast, second adult came up from trees and both flew south together. No caracara observed by new nest tree, so likely was unsuccessful. Does not appear this pair was successful this season, but there is an active territory here.

Appendix C

Representative Field of View Photographs for Survey Stations



Survey Station No. 9 – Facing North



Survey Station No. 9 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix D

Representative Field of View at Survey Stations



Survey Station No. 9 – Facing South



Survey Station No. 9 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix D

Representative Field of View at Survey Stations



Survey Station No. 10 – Facing North



Survey Station No. 10 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix D

Representative Field of View at Survey Stations



Survey Station No. 10 – Facing South



Survey Station No. 10 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix D

Representative Field of View at Survey Stations



Survey Station No. 11 – Facing North



Survey Station No. 11 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix D

Representative Field of View at Survey Stations



Survey Station No. 11 – Facing South



Survey Station No. 11 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix D

Representative Field of View at Survey Stations



Survey Station No. 12 – Facing North



Survey Station No. 12 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix D

Representative Field of View at Survey Stations



Survey Station No. 12 – Facing South



Survey Station No. 12 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix D

Representative Field of View at Survey Stations



Survey Station No. 13 – Facing North



Survey Station No. 13 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 13 – Facing South



Survey Station No. 13 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 14 – Facing North



Survey Station No. 14 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 14 – Facing South



Survey Station No. 14 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 15 – Facing North



Survey Station No. 15 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 15 – Facing South



Survey Station No. 15 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 16 – Facing North



Survey Station No. 16 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 16 – Facing South



Survey Station No. 16 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 17 – Facing North



Survey Station No. 17 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 17 – Facing South



Survey Station No. 17 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 18 – Facing North



Survey Station No. 18 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 18 – Facing South



Survey Station No. 18 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 19 – Facing North



Survey Station No. 19 – Facing East



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations



Survey Station No. 19 – Facing South



Survey Station No. 19 – Facing West



SR 70 from Lonesome Island Rd. to
CR 721 South
FPID No.: 449851-1

Appendix C

Representative Field of View at Survey Stations

Appendix M: Wood Stork Effect Determination Key



United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960



May 18, 2010

Donnie Kinard
Chief, Regulatory Division
Jacksonville District Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service Federal Activity Code: 41420-2007-FA-1494
Service Consultation Code: 41420-2007-I-0964
Subject: South Florida Programmatic
Concurrence
Species: Wood Stork

Dear Mr. Kinard:

This letter addresses minor errors identified in our January 25, 2010, wood stork key and as such, supplants the previous key. The key criteria and wood stork biomass foraging assessment methodology have not been affected by these minor revisions.

The Fish and Wildlife Service's (Service) South Florida Ecological Services Office (SFESO) and the U.S. Army Corps of Engineers Jacksonville District (Corps) have been working together to streamline the consultation process for federally listed species associated with the Corps' wetland permitting program. The Service provided letters to the Corps dated March 23, 2007, and October 18, 2007, in response to a request for a multi-county programmatic concurrence with a criteria-based determination of "may affect, not likely to adversely affect" (NLAA) for the threatened eastern indigo snake (*Drymarchon corais couperi*) and the endangered wood stork (*Mycteria americana*) for projects involving freshwater wetland impacts within specified Florida counties. In our letters, we provided effect determination keys for these two federally listed species, with specific criteria for the Service to concur with a determination of NLAA.

The Service has revisited these keys recently and believes new information provides cause to revise these keys. Specifically, the new information relates to foraging efficiencies and prey base assessments for the wood stork and permitting requirements for the eastern indigo snake. This letter addresses the wood stork key and is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). The eastern indigo snake key will be provided in a separate letter.

Wood stork

Habitat

The wood stork is primarily associated with freshwater and estuarine habitats that are used for nesting, roosting, and foraging. Wood storks typically construct their nests in medium to tall



trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991, 1996; Rodgers et al. 1996). Successful colonies are those that have limited human disturbance and low exposure to land-based predators. Nesting colonies protected from land-based predators are characterized as those surrounded by large expanses of open water or where the nest trees are inundated at the onset of nesting and remain inundated throughout most of the breeding cycle. These colonies have water depths between 0.9 and 1.5 meters (3 and 5 feet) during the breeding season.

Successful nesting generally involves combinations of average or above-average rainfall during the summer rainy season and an absence of unusually rainy or cold weather during the winter-spring breeding season (Kahl 1964; Rodgers et al. 1987). This pattern produces widespread and prolonged flooding of summer marshes, which maximize production of freshwater fishes, followed by steady drying that concentrate fish during the season when storks nest (Kahl 1964). Successful nesting colonies are those that have a large number of foraging sites. To maintain a wide range of foraging sites, a variety of wetland types should be present, with both short and long hydroperiods. The Service (1999) describes a short hydroperiod as a 1 to 5-month wet/dry cycle, and a long hydroperiod as greater than 5 months. During the wet season, wood storks generally feed in the shallow water of the short-hydroperiod wetlands and in coastal habitats during low tide. During the dry season, foraging shifts to longer hydroperiod interior wetlands as they progressively dry-down (though usually retaining some surface water throughout the dry season).

Wood storks occur in a wide variety of wetland habitats. Typical foraging sites for the wood stork include freshwater marshes and stock ponds, shallow, seasonally flooded roadside and agricultural ditches, narrow tidal creeks and shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey. Through tactolocation, or grope feeding, wood storks in south Florida feed almost exclusively on fish between 2 and 25 centimeters [cm] (1 and 10 inches) in length (Ogden et al. 1976). Good foraging conditions are characterized by water that is relatively calm, uncluttered by dense thickets of aquatic vegetation, and having a water depth between 5 and 38 cm (5 and 15 inches) deep, although wood storks may forage in other wetlands. Ideally, preferred foraging wetlands would include a mosaic of emergent and shallow open-water areas. The emergent component provides nursery habitat for small fish, frogs, and other aquatic prey and the shallow, open-water areas provide sites for concentration of the prey during seasonal dry-down of the wetland.

Conservation Measures

The Service routinely concurs with the Corps' "may affect, not likely to adversely affect" determination for individual project effects to the wood stork when project effects are insignificant due to scope or location, or if assurances are given that wetland impacts have been avoided, minimized, and adequately compensated such that there is no net loss in foraging potential. We utilize our *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (Service 1990) (Enclosure 1) (HMG) in project evaluation. The HMG is currently under review and once final will replace the enclosed HMG. There is no designated critical habitat for the wood stork.

The SFESO recognizes a 29.9 kilometer [km] (18.6-mile) core foraging area (CFA) around all known wood stork colonies in south Florida. Enclosure 2 (to be updated as necessary) provides locations of colonies and their CFAs in south Florida that have been documented as active within the last 10 years. The Service believes loss of suitable wetlands within these CFAs may reduce foraging opportunities for the wood stork. To minimize adverse effects to the wood stork, we recommend compensation be provided for impacts to foraging habitat. The compensation should consider wetland type, location, function, and value (hydrology, vegetation, prey utilization) to ensure that wetland functions lost due to the project are adequately offset. Wetlands offered as compensation should be of the same hydroperiod and located within the CFAs of the affected wood stork colonies. The Service may accept, under special circumstances, wetland compensation located outside the CFAs of the affected wood stork nesting colonies. On occasion, wetland credits purchased from a “Service Approved” mitigation bank located outside the CFAs could be acceptable to the Service, depending on location of impacted wetlands relative to the permitted service area of the bank, and whether or not the bank has wetlands having the same hydroperiod as the impacted wetland.

In an effort to reduce correspondence in effect determinations and responses, the Service is providing the Wood Stork Effect Determination Key below. If the use of this key results in a Corps determination of “no effect” for a particular project, the Service supports this determination. If the use of this Key results in a determination of NLAA, the Service concurs with this determination¹. This Key is subject to revisitation as the Corps and Service deem necessary.

The Key is as follows:

A. Project within 0.76 km (0.47 mile)² of an active colony site³ “may affect⁴”

Project impacts Suitable Foraging Habitat (SFH)⁵ at a location greater than 0.76 km (0.47 mile) from a colony site..... “go to B”

¹ With an outcome of “no effect” or “NLAA” as outlined in this key, and the project has less than 20.2 hectares (50 acres) of wetland impacts, the requirements of section 7 of the Act are fulfilled for the wood stork and no further action is required. For projects with greater than 20.2 hectares (50 acres) of wetland impacts, written concurrence of NLAA from the Service is necessary.

² Within the secondary zone (the average distance from the border of a colony to the limits of the secondary zone is 0.76 km (2,500 feet, or 0.47 mi).

³ An active colony is defined as a colony that is currently being used for nesting by wood storks or has historically over the last 10 years been used for nesting by wood storks.

⁴ Consultation may be concluded informally or formally depending on project impacts.

⁵ Suitable foraging habitat (SFH) includes wetlands that typically have shallow-open water areas that are relatively calm and have a permanent or seasonal water depth between 5 to 38 cm (2 to 15 inches) deep. Other shallow non-wetland water bodies are also SFH. SFH supports and concentrates, or is capable of supporting and concentrating small fish, frogs, and other aquatic prey. Examples of SFH include, but are not limited to freshwater marshes, small ponds, shallow, seasonally flooded roadside or agricultural ditches, seasonally flooded pastures, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs.

Project does not affect SFH..... “no effect”.

B. Project impact to SFH is less than 0.20 hectare (one-half acre)⁶.....NLAA¹”

Project impact to SFH is greater in scope than 0.20 hectare (one-half acre).....go to C

C. Project impacts to SFH not within the CFA (29.9 km, 18.6 miles) of a colony sitego to D

Project impacts to SFH within the CFA of a colony sitego to E

D. Project impacts to SFH have been avoided and minimized to the extent practicable; compensation (Service approved mitigation bank or as provided in accordance with Mitigation Rule 33 CFR Part 332) for unavoidable impacts is proposed in accordance with the CWA section 404(b)(1) guidelines; and habitat compensation replaces the foraging value matching the hydroperiod⁷ of the wetlands affected and provides foraging value similar to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance⁸..... NLAA¹”

Project not as above..... “may affect”

E. Project provides SFH compensation in accordance with the CWA section 404(b)(1) guidelines and is not contrary to the HMG; habitat compensation is within the appropriate CFA or within the service area of a Service-approved mitigation bank; and habitat compensation replaces foraging value, consisting of wetland enhancement or restoration matching the hydroperiod⁷ of the wetlands affected, and provides foraging value similar

⁶ On an individual basis, SFH impacts to wetlands less than 0.20 hectare (one-half acre) generally will not have a measurable effect on wood storks, although we request that the Corps require mitigation for these losses when appropriate. Wood storks are a wide ranging species, and individually, habitat change from impacts to SFH less than one-half acre are not likely to adversely affect wood storks. However, collectively they may have an effect and therefore regular monitoring and reporting of these effects are important.

⁷ Several researchers (Flemming et al. 1994; Ceilley and Bortone 2000) believe that the short hydroperiod wetlands provide a more important pre-nesting foraging food source and a greater early nestling survivor value for wood storks than the foraging base (grams of fish per square meter) than long hydroperiod wetlands provide. Although the short hydroperiod wetlands may provide less fish, these prey bases historically were more extensive and met the foraging needs of the pre-nesting storks and the early-age nestlings. Nest productivity may suffer as a result of the loss of short hydroperiod wetlands. We believe that most wetland fill and excavation impacts permitted in south Florida are in short hydroperiod wetlands. Therefore, we believe that it is especially important that impacts to these short hydroperiod wetlands within CFAs are avoided, minimized, and compensated for by enhancement/restoration of short hydroperiod wetlands.

⁸ For this Key, the Service requires an analysis of foraging prey base losses and enhancements from the proposed action as shown in the examples in Enclosure 3 for projects with greater than 2.02 hectares (5 acres) of wetland impacts. For projects with less than 2.02 hectares (5 acres) of wetland impacts, an individual foraging prey base analysis is not necessary although type for type wetland compensation is still a requirement of the Key.

to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance⁸ “NLAA¹”

Project does not satisfy these elements “may affect⁴”

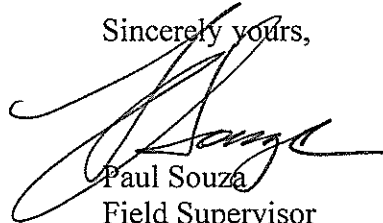
This Key does not apply to Comprehensive Everglades Restoration Plan projects, as they will require project-specific consultations with the Service.

Monitoring and Reporting Effects

For the Service to monitor cumulative effects, it is important for the Corps to monitor the number of permits and provide information to the Service regarding the number of permits issued where the effect determination was: “may affect, not likely to adversely affect.” We request that the Corps send us an annual summary consisting of: project dates, Corps identification numbers, project acreages, project wetland acreages, and project locations in latitude and longitude in decimal degrees.

Thank you for your cooperation and effort in protecting federally listed species. If you have any questions, please contact Allen Webb at extension 246.

Sincerely yours,



Paul Souza
Field Supervisor
South Florida Ecological Services Office

Enclosures

cc: w/enclosures (electronic only)
Corps, Jacksonville, Florida (Stu Santos)
EPA, West Palm Beach, Florida (Richard Harvey)
FWC, Vero Beach, Florida (Joe Walsh)
Service, Jacksonville, Florida (Billy Brooks)

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Appendix N: Florida Bonneted Bat Consultation Key



United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960
October 22, 2019



Shawn Zinszer
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Subject: Consultation Key for the Florida bonneted bat; 04EF2000-2014-I-0320-R001

Dear Mr. Zinszer:

This letter replaces the December 2013, Florida bonneted bat guidelines provided to the U.S. Army Corps of Engineers (Corps) to assist your agency with effect determinations within the range of the Florida bonneted bat (*Eumops floridanus*). This October 2019 revision supersedes all prior versions. The enclosed *Florida Bonneted Bat Consultation Guidelines* and incorporated *Florida Bonneted Bat Consultation Key* (Key) are provided pursuant to the U.S. Fish and Wildlife Service's (Service) authorities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*). This letter, guidelines, and Key have been assigned Service Consultation Code: 41420- 04EF2000-2014-I-0320-R001.

The purpose of the guidelines and Key is to aid the Corps (or other Federal action agency) in making appropriate effect determinations for the Florida bonneted bat under section 7 of the Act, and streamline informal consultation with the Service for the Florida bonneted bat when the proposed action is consistent with the Key. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key, applicants do not wish to implement the identified survey or best management practices, or if there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiate traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

This Key uses type of habitat (*i.e.*, roosting or foraging), survey results, and project size as the basis for making determinations of "may affect, but is not likely to adversely affect" (MANLAA) and "may affect, and is likely to adversely affect" (LAA). The Key is structured to focus on the type(s) of habitat that will be affected by a project. When proposed project areas provide features that could support roosting of Florida bonneted bats, it is considered roosting habitat. If evaluation of roosting habitat determines that roosting is not likely, then the area is subsequently evaluated for its value to the species as foraging habitat.

Roosting habitat

The guidelines describe the features of roosting habitat. When a project is proposed in roosting habitat, the likelihood that roosting is occurring is evaluated through surveys (*i.e.*, full acoustic or limited roost). When a roost is expected and the proposed activity will affect that roost, formal consultation is required. This is because the proposed activity is expected to take individuals through the destruction of the roost and the appropriate determination is that the project may affect, and is likely to adversely affect (LAA) the species. When roosting is expected, but all impacts to the roost can be avoided, and only foraging habitat (without roost structure) will be affected, the Service finds that it is reasonable to conclude that the proposed action is not likely to impair feeding, breeding, or sheltering. Thus, the proposed project may affect, but is not likely to affect the Florida bonneted bat (MANLAA).

The exception to this logic path is if the proposed action will affect more than 50 acres of foraging habitat in proximity to the roost. Under this scenario, we anticipate that the loss of the larger amount of foraging habitat near the roost could significantly impair feeding of young and overall breeding (*i.e.*, LAA). Consequently, these projects would require formal consultation to analyze the effect of the incidental take.

If the roost surveys demonstrate that roosting is not likely, the project is then evaluated for its effects to foraging habitat. Our evaluation of these actions is described below. The exception is for projects less than or equal to 5 acres if a limited roost survey is conducted. Limited roost surveys rely on peeping and visual surveys to determine whether roosting is likely. On these small projects, this survey strategy is believed to be more economical and is considered a reasonable effort to evaluate the potential for roosting. The Service acknowledges that this approach is less reliable in evaluating the likelihood of roosting when it is not combined with acoustic surveys. Therefore, when limited roost surveys are conducted for projects that are less than or equal to 5 acres in size and the determination is that roosting is not likely, we conclude that the proposed project may affect, but is not likely to adversely affect the species (MANLAA).

Foraging habitat

The guidelines describe the features of foraging habitat. Data informing the home range size of the Florida bonneted bats is limited. Global Positioning System (GPS) and radio-telemetry data for Florida bonneted bats documents that they move large distances and likely have large home ranges. Data from recovered GPS satellite tags on Florida bonneted bats tagged at Babcock-Webb Wildlife Management Area (BWWMA) found the maximum distance detected from a capture site was 24.2 mi (38.9 km); the greatest path length travelled in a single night was 56.3 mi (90.6 km) (Ober 2016; Webb 2018a-b). At BWWMA, researchers found that most individual locations were within one mile of the roost (point of capture) (Ober 2015). Additional data collected during the month of December documented the mean maximum distance Florida bonneted bats (n=8) with tags traveled from the roost was 9.5 mi (Webb 2018b).

The Service recognizes that the movement information comes from only one site (BWWMA and vicinity), and data are from small numbers (n=20) of tagged individuals for only short periods of time (Webb 2018a-b). We expect that across the Florida bonneted bat's range differences in

habitat quality, prey availability, and other factors will result in variable habitat use and home range sizes between locations. Foraging distances and home range sizes in high quality habitats are expected to be smaller while foraging distances and home range sizes in low quality habitat would be expected to be larger. Regardless, we use these studies as our best available information to evaluate when changes to foraging habitat may have an effect on the species ability to feed, breed, and shelter and subsequently result in incidental take. When considering where most of the nightly activity was observed, we calculate a foraging area centered on a roost with a 1 mile radius would include approximately 2,000 acres, and a foraging area centered on a 9.5 mile radius would encompass approximately 181,000 acres, on any given night.

Given the Service's limited understanding of how the Florida bonneted bat moves throughout its home range and selects foraging areas, we choose to use 50 acres of habitat as a conservative estimate to when loss of foraging habitat may affect the fitness of an individual to the extent that it would impair feeding and breeding. Projects that would remove, destroy or convert less than 50 acres of Florida bonneted bat foraging habitat are expected to result in a loss of foraging opportunities; however, this decrease is not expected to significantly impair the ability of the individual to feed and breed. Consequently, projects impacting less than 50 acres of foraging habitat that implement the identified best management practices in the Key would be expected to avoid take, and the appropriate determination is that the project may affect, but is not likely to adversely affect the species (MANLAA).

Next, the Service incorporated the level of bat activity into our Key to evaluate when a foraging area may have greater value to the species. When surveys document high bat activity, we deduce that this area has increased value and importance to the species. Thus, when high bat activity is detected in parcels with greater than 50 acres of foraging habitat, we anticipate that the loss, destruction, or conversion of this habitat could significantly impair the ability of an individual to feed and breed (*i.e.*, LAA); thus formal consultation is warranted.

If surveys do not indicate high bat activity, we anticipate that loss of this additional foraging habitat may affect, but is not likely to adversely affect the species (MANLAA). This is because although the acreage is large, the area does not appear to be important at the landscape scale of nightly foraging. Therefore, its loss is not anticipated to significantly impair the ability of an individual to feed or breed.

The exception to this approach is for projects greater than 50 acres when they occur in potential roosting habitat that is not found to support roosting or high bat activity. Under this scenario, the Service concludes that the loss of the large acreage of suitable roosting habitat has the potential to significantly impair the ability of an individual to breed or shelter (*i.e.*, LAA) because the species is cavities for roosting are expected to be limited range wide and the project will impair these limited opportunities for roosting.

Determinations

The Corps (or other Federal action agency) may reach one of several determinations when using this Key. Regardless of the determination, when acoustic bat surveys have been conducted, the Service requests that these survey results are provided to our office to increase our knowledge of

the species and improve our consultation process. Surveys results and reports should be transmitted to the Service at FBBsurveyreport@fws.gov or mail electronic file to U.S. Fish and Wildlife Service, Attention Florida bonneted bat surveys, 1339 20th Street, Vero Beach, Florida 32960. When formal consultation is requested, survey results and reports should be submitted with the consultation request to verobeach@fws.gov.

No effect: If the use of the Key results in a determination of “no effect,” no further consultation is necessary with the Service. The Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach the determination in the project record and proceeds with other species analyses as warranted.

May Affect, Not Likely to Adversely Affect (MANLAA): In this Key we have identified two ways that consultation can conclude informally, MANLAA-P and MANLAA-C.

MANLAA-P: If the use of the Key results in a determination of “MANLAA- P,” the Service concurs with this determination based on the rationale provide above, and no further consultation is necessary for the effects of the proposed action on the Florida bonneted bat. The Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach the determination in the project record and proceeds with other species analyses as warranted.

MANLAA-C: If the use of the Key results in a determination of MANLAA-C, further consultation with the Service is required to confirm that the Key has been used properly, and the Service concurs with the evaluation of the survey results. Survey results should be submitted with the consultation request.

May Affect, Likely to Adversely Affect (LAA) - When the determination in the Key is “LAA” technical assistance with the Service and modifications to the proposed action may enable the project to be reevaluated and conclude with a MANLAA-C determination. Under other circumstance, “LAA” determinations will require formal consultation.

Working with the Fish and Wildlife Foundation of Florida, the Service has established a fund to support conservation and recovery for the Florida bonneted bat. Any project that has the potential to affect the Florida bonneted bat and/or its habitat is encouraged to make a voluntary contribution to this fund. If you would like additional information about how to make a contribution and how these monies are used to support Florida bonneted bat recovery please contact Ashleigh Blackford, Connie Cassler, or José Rivera at 772-562-3909.

This revised Key is effective immediately upon receipt by the Corps. Should circumstances change or new information become available regarding the Florida bonneted bat and/or implementation of the Key, the determinations herein may be reconsidered and this Key further revised or amended. We have established an email address to collect comments on the Key and the survey protocols at: FBBguidelines@fws.gov.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. If you have any questions regarding this Key, please contact the South Florida Ecological Services Office at 772-562-3909.

Sincerely,



Roxanna Hinzman
Field Supervisor
South Florida Ecological Services

Enclosure

Cc: electronic only

Corps, Jacksonville, Florida (Dale Beter, Muriel Blaisdell, Ingrid Gilbert, Alisa Zarbo, Melinda Charles-Hogan, Susan Kaynor, Krista Sabin, John Fellows)

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**U.S. Fish and Wildlife Service
South Florida Ecological Services Office**

FLORIDA BONNETED BAT CONSULTATION GUIDELINES

October - 2019

The U.S. Fish and Wildlife Service's South Florida Ecological Services Field Office (Service) developed the Florida Bonneted Bat Consultation Guidelines (Guidelines) to assist in avoiding and minimizing potential negative effects to roosting and foraging habitat, and assessing effects to the Florida bonneted bat (*Eumops floridanus*) from proposed projects. The Consultation Key within the Guidelines assists applicants in evaluating their proposed projects and identifying the appropriate consultation paths under sections 7 and 10 of the Endangered Species Act of 1973 (Act), as amended (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). These Guidelines are primarily for use in evaluating regulatory projects where development and land conversions are anticipated. These Guidelines focus on conserving roosting structures in natural and semi-natural environments. The following Consultation Area map (Figure 1 and Figure 2, Appendix A), Consultation Flowchart (Figure 3), Consultation Key, Survey Framework (Appendices B-C), and **Best Management Practices (BMPs)** (Appendix D) are based upon the best available scientific information. As more information is obtained, these Guidelines will be revised as appropriate. If you have comments, or suggestions on these Guidelines or the Survey Protocols (Appendix B and C), please email your comments to FBBguidelines@fws.gov. These comments will be reviewed and incorporated in an annual review.

Terms in bold are further defined in the Glossary.

Wherever possible, proposed development projects within the Consultation Area should be designed to avoid and minimize take of Florida bonneted bats and to retain their habitat. Applicants are encouraged to enter into early technical assistance/consultation with the Service so we may provide recommendations for avoiding and minimizing adverse effects. Although these Guidelines focus on the effects of a proposed action (*e.g.*, development) on natural habitat, (*i.e.*, non-urban), Appendix E also provides Best Management Practices for Land Management Projects.

If you are renovating an existing artificial structure (*e.g.*, building) within the urban environment with or without additional ground disturbing activities, these Guidelines do not apply. The Service is developing separate guidelines for consultation in these situations. Until the urban guidelines are complete, please contact the Service for additional guidance.

The final listing rule for the Florida bonneted bat (Service 2013) describes threats identified for the species. Habitat loss and degradation, as well as habitat modification, have historically affected the species. Florida bonneted bats are different from most other Florida bat species because they are reproductively active through most of the year, and their large size makes them capable of foraging long distances from their roost (Ober *et al.* 2016). Consequently, this species is vulnerable to disturbances around the roost during a greater portion of the year and considerations about foraging habitat extend further than the localized roost.

Use of Consultation Area, Flowchart, and Key

Figure 1 shows the Consultation Area for the Florida bonneted bat where this consultation guidance applies. For information on how the Consultation Area was delineated see Appendix A. The Consultation Flowchart (Figure 3) and Consultation Key direct project proponents through a series of couplets that will provide a conclusion or determination for potential effects to the Florida bonneted bat. *Please Note: If additional listed species, or candidate or proposed species, or designated or proposed critical habitat may be affected, a separate evaluation will be needed for these species/critical habitats.*

Currently, the Consultation Flowchart (Figure 3) and Consultation Key cannot be used for actions proposed within the urban development boundary in Miami-Dade and Broward County. The urban development boundary is part of the Consultation Area, but it is excluded from these Guidelines because Florida bonneted bats use this area differently (roosting largely in artificial structures), and small natural foraging areas are expected to be important. Applicants with projects in this area should contact the Service for further guidance and individual consultation.

Determinations may be either “no effect,” “may affect, but is not likely to adversely affect” (**MANLAA**), or “may affect, and is likely to adversely affect” (**LAA**). An applicant’s willingness and ability to alter project designs could sufficiently minimize effects to Florida bonneted bats and allow for a **MANLAA** determination for this species (informal consultation). The Service is available for early technical assistance/consultation to offer recommendations to assist in project design that will minimize effects. When take cannot be avoided, applicants and action agencies are encouraged to incorporate compensation to offset adverse effects. The Service can assist with identifying compensation options (*e.g.*, conservation on site, conservation off-site, contributions to the Service’s Florida bonneted bat conservation fund, *etc.*).

Using the Key and Consultation Flowchart

- “No effect” determinations do not need Service concurrence.
- “May affect, but is not likely to adversely affect” **MANLAA**. Applicants will be expected to incorporate the appropriate BMPs to reach a **MANLAA** determination.
 - **MANLAA-P** (in blue in Consultation Flowchart) have programmatic concurrence through the transmittal letter of these Guidelines, and therefore no further consultation with the Service is necessary unless assistance is needed in interpreting survey results.
 - **MANLAA-C** (in black in Consultation Flowchart) determinations require further consultation with the Service.
- “May affect, and is likely to adversely affect” (**LAA**) determinations require consultation with the Service. Project modifications could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA**. When take cannot be avoided, **LAA** determinations will require a biological opinion.
- The Service requests copies of surveys used to support all determinations. If a survey is required by the Consultation Key and the final determination is “no effect” or “MANLAA-P”, send the survey to FBBsurveyreport@fws.gov, or mail electronic file to U.S. Fish and Wildlife Service, Attention Florida bonneted bat surveys, 1339 20th Street, Vero Beach, Florida 32960. If a survey is required by the Consultation Key and the determination is “MANLAA-C” or “LAA”, submit the survey in the consultation request.

For the purpose of making a decision at Couplet 2: If any potential roosting structure is present, then the habitat is classified as **potential roosting habitat**, and the left half of the flowchart should be followed (see Figure 3). We recognize that roosting habitat may also be used by Florida bonneted bats for foraging. If the project site only consists of **foraging habitat** (*i.e.*, no suitable roosting structures), then the right side of the flowchart should be followed beginning at step 13.

For couplets 11 and 12: **Potential roosting habitat** is considered **Florida bonneted bat foraging habitat** when a determination is made that roosting is not likely.

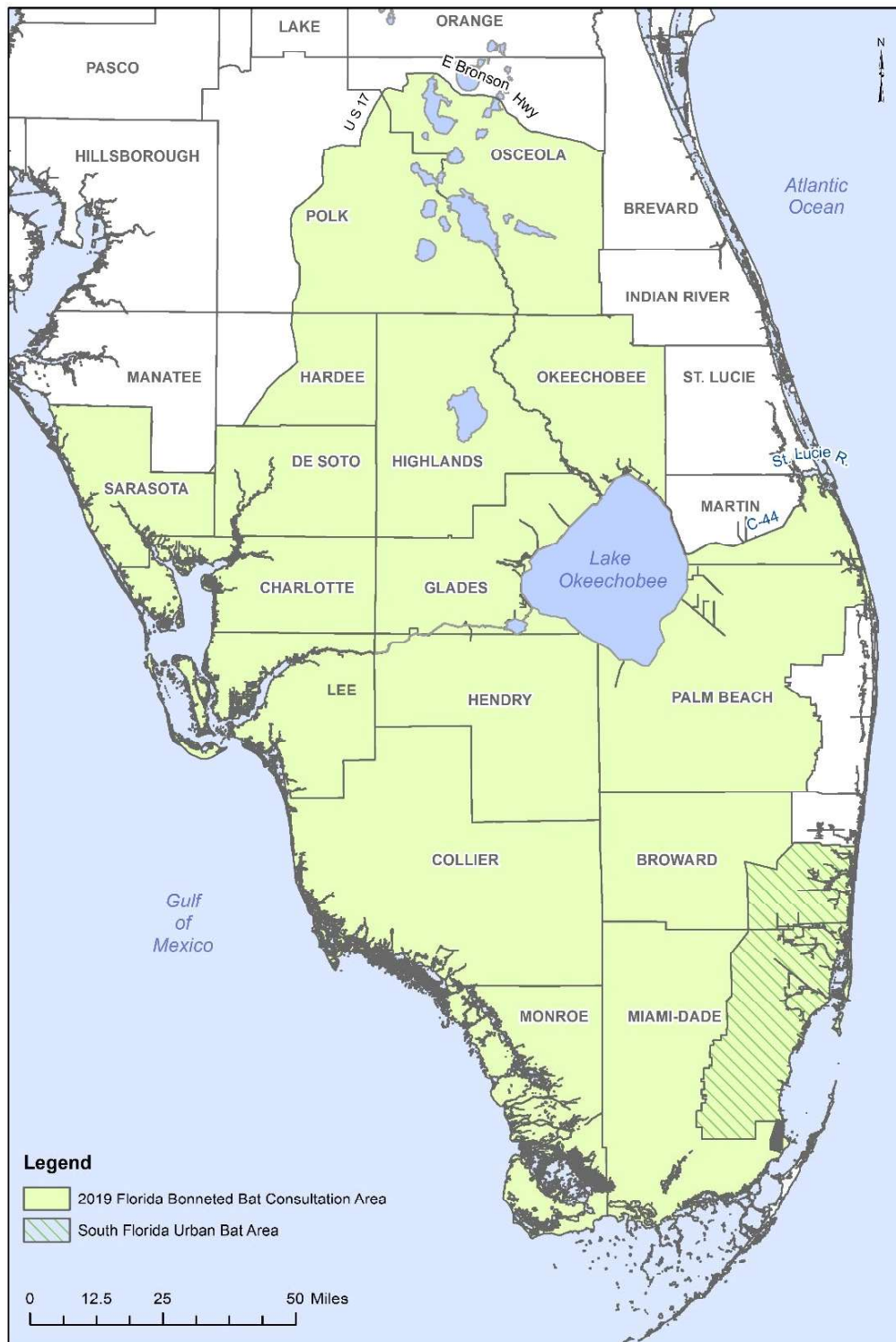


Figure 1. Florida Bonneted Bat Consultation Area. Hatched area (Figure 2) identifies the urban development boundary in Miami-Dade and Broward County. Applicants with projects in this area should contact the Service for specific guidance addressing this area and individual consultation. The Consultation Key should not be used for projects in this area.

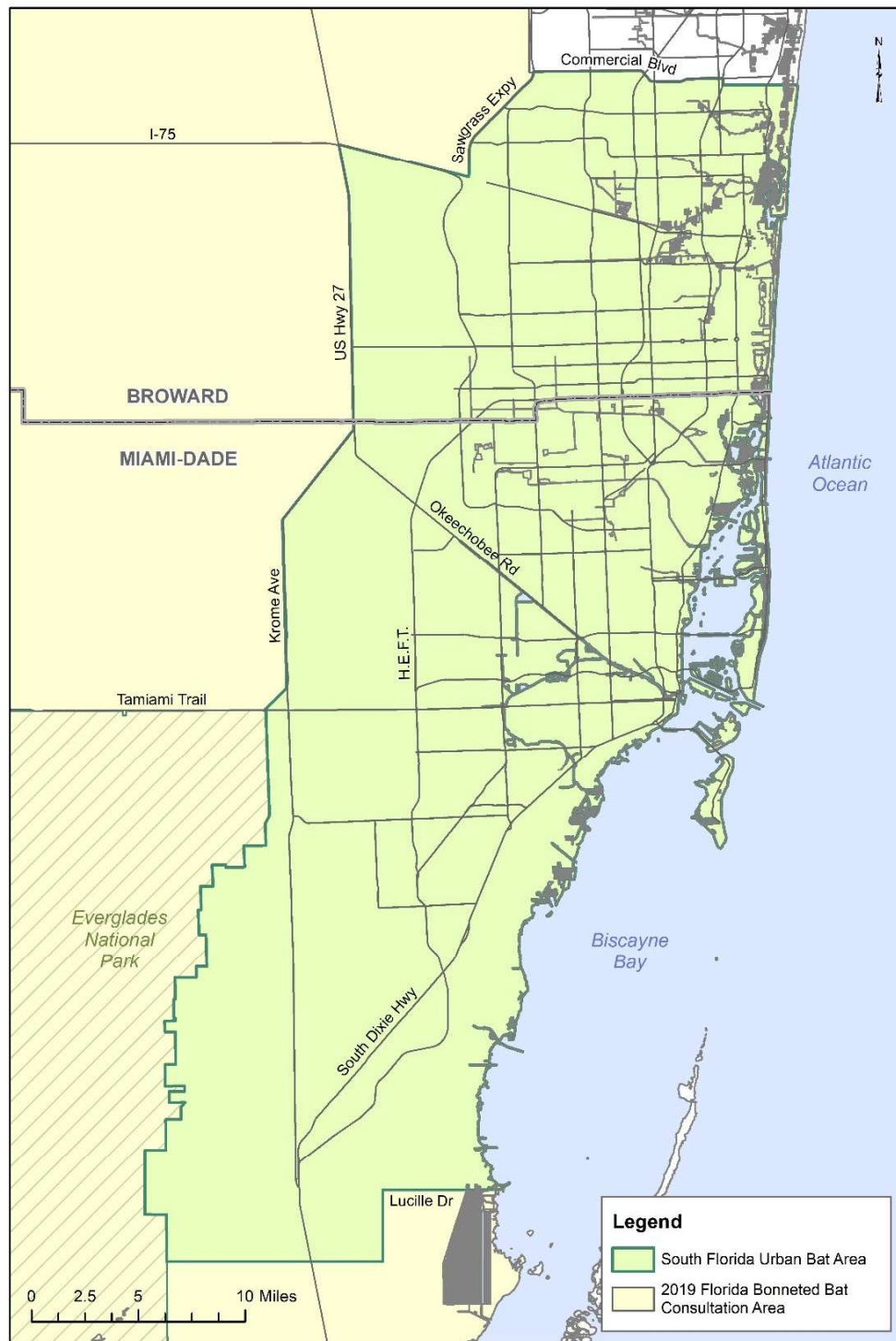


Figure 2. Urban development boundary in Miami-Dade and Broward County. The Consultation Key should not be used for projects in this area. Applicants with projects in this South Florida Urban Bat Area should contact the Service for specific guidance addressing this area and individual consultation.

Florida Bonneted Bat Consultation Key[#]

Use the following key to evaluate potential effects to the Florida bonneted bat (FBB) from the proposed project. Refer to the Glossary as needed.

- 1a. Proposed project or land use change is partially or wholly within the Consultation Area (Figure 1).....Go to 2
- 1b. Proposed project or land use change is wholly outside of the Consultation Area (Figure 1).....No Effect
- 2a. Potential FBB roosting habitat exists within the project area.....Go to 3
- 2b. No potential FBB roosting habitat exists within the project area.....Go to 13
- 3a. Project size/footprint* \leq 5 acres (2 hectares)..... Conduct Limited Roost Survey (Appendix C) then Go to 4
- 3b. Project size/footprint* $>$ 5 acres (2 hectares).....Conduct Full Acoustic/Roost Surveys (Appendix B) then Go to 6
- 4a. Results show FBB roosting is likelyGo to 5
- 4b. Results do not show FBB roosting is likely.....MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.
- 5a. Project will affect roosting habitat.....LAA⁺ Further consultation with the Service required.
- 5b. Project will not affect roosting habitat..... MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.
- 6a. Results show some FBB activity.....Go to 7
- 6b. Results show no FBB activity.....No Effect
- 7a. Results show FBB roosting is likely.....Go to 8
- 7b. Results do not show FBB roosting is likely.....Go to 10
- 8a. Project will not affect roosting habitat.....Go to 9
- 8b. Project will affect roosting habitat.....LAA⁺ Further consultation with the Service required.
- 9a. Project will affect* $>$ 50 acres (20 hectares) (wetlands and uplands) of foraging habitat.....LAA⁺ Further consultation with the Service required.
- 9b. Project will affect* \leq 50 acres (20 hectares) (wetlands and uplands) of foraging habitat..... MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.
- 10a. Results show high FBB activity/use.....Go to 11
- 10b. Results do not show high FBB activity/use.....Go to 12
- 11a. Project will affect* $>$ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... LAA⁺ Further consultation with the Service required.
- 11b. Project will affect* \leq 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.
- 12a. Project will affect* $>$ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... LAA⁺ Further consultation with the Service required.
- 12b. Project will affect* \leq 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.

- 13a. FBB foraging habitat exists within the project area and foraging habitat will be affected.....**Go to 14**
- 13b. FBB foraging habitat exists within the project area and foraging habitat will not be affected **OR** no FBB foraging habitat exists within the project area.....**No Effect**
- 14a. Project size* > 50 acres (20 hectares) (wetlands and uplands)**Go to 15**
- 14b. Project size* ≤ 50 acres (20 hectares) (wetlands and uplands) **MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**
- 15a. Project is within 8 miles (12.9 kilometers) of high quality potential roosting areas^.....**Conduct Full Acoustic Survey (Appendix B) and Go to 16**
- 15b. Project is not within 8 miles (12.9 kilometers) of high quality potential roosting area^.....**MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**
- 16a. Results show some FBB activity.....**Go to 17**
- 16b. Results show no FBB activity.....**No Effect**
- 17a. Results show high FBB activity/use.....**LAA+ Further consultation with the Service required.**
- 17b. Results do not show high FBB activity/use..... **MANLAA-P if BMPs (Appendix D) used and survey reports submitted. Programmatic concurrence.**

If you are within the urban environment and you are renovating an existing artificial structure (with or without additional ground disturbing activities), these Guidelines do not apply. The Service is developing separate guidelines for consultation in these situations. Until the urban guidelines are complete, please contact the Service for additional guidance

*Includes wetlands and uplands that are going to be altered along with a 250- foot (76.2- meter) buffer around these areas if the parcel is larger than the altered area.

*Project modifications could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA** determinations.

^Determining if **high quality potential roosting areas** are within 8 mi (12.9 km) of a project is intended to be a desk-top exercise looking at most recent aerial imagery, not a field exercise.

GLOSSARY

BMPs – Best Management Practices. Recommendations for actions to conserve roosting and foraging habitat to be implemented before, during, and after proposed development, land use changes, and land management activities.

FBB Activity – Florida bonneted bat (FBB) activity is when any Florida bonneted bat calls are recorded during an acoustic survey or human observers see or hear Florida bonneted bats on a site.

FORAGING HABITAT - Comprised of relatively open (*i.e.*, uncluttered or reduced numbers of obstacles, such as fewer tree branches and leaves, in the flight environment) areas to find and catch prey, and sources of drinking water. In order to find and catch prey, Florida bonneted bats forage in areas with a reduced number of obstacles. This includes: open fresh water, permanent or seasonal freshwater wetlands, within and above wetland and upland forests, wetland and upland shrub, and agricultural lands (Bailey *et al.* 2017). In urban and residential areas drinking water, prey base, and suitable foraging can be found at golf courses, parking lots, and parks in addition to relatively small patches of natural habitat.

FULL ACOUSTIC/ROOST SURVEY - This is a comprehensive survey that will involve systematic acoustic surveys (*i.e.*, surveys conducted 30 minutes prior to sunset to 30 minutes after sunrise, over multiple consecutive nights). Depending upon acoustic results and habitat type, targeted roost searches through thorough visual inspection using a tree-top camera system or observations at emergence (*e.g.*, looking and listening for bats to come out of tree cavities around sunset) or more acoustic surveys may be necessary. See Appendix B for a full description.

HIGH FBB ACTIVITY/USE - High Florida bonneted bat (FBB) activity/use or importance of an area can be defined using several parameters (*e.g.*, types of calls, numbers of calls). An area will be considered to have high FBB activity/use if **ANY** of the following are found: (a) multiple FBB feeding buzzes are detected; (b) FBB social calls are recorded; (c) large numbers of Florida bonneted bat calls (9 or more) are recorded throughout one night. Each of these parameters is considered to indicate that an area is actively used and important to FBBs, however, the Service will further evaluate the activity/use of the area within the context of the site (*i.e.*, spatial distribution of calls, site acreage, habitat on site, as well as adjacent habitat) and provide additional guidance.

HIGH QUALITY POTENTIAL ROOSTING AREAS - Sizable areas (>50 acres) [20 hectares] that contain large amounts of high-quality, natural roosting structure – (*e.g.*, predominantly native, mature trees; especially pine flatwoods or other areas with a large number of cavity trees, tree hollows, or high woodpecker activity).

LAA - May Affect, and is Likely to Adversely Affect. The appropriate conclusion if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not: discountable, insignificant, or

beneficial [see definition of “may affect, but is not likely to adversely affect” (**MANLAA**)]. In the event the overall effect of the proposed action is beneficial to the listed species, but also is likely to cause some adverse effects, then the proposed action is “likely to adversely affect” the listed species. If incidental take is anticipated to occur as a result of the proposed action, an “is likely to adversely affect” (**LAA**) determination should be made. An “is likely to adversely affect” determination requires the initiation of formal section 7 consultation.

LIMITED ROOST SURVEY - This is a reduced survey that may include the following methods: acoustics, observations at emergence (*e.g.*, looking and listening for bats to come out of tree cavities around sunset), and visual inspection of trees with cavities or loose bark using tree-top cameras (or combination of these methods). Methods are fairly flexible and dependent upon composition and configuration of project site and willingness and ability of applicant and partners to conserve roosting structures on site. See also Appendix C for a full description.

MANLAA - May Affect, but is Not Likely to Adversely Affect. The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. To use these Guidelines and Consultation Key applicants must incorporate the appropriate **BMPs** (Appendix D) to reach a **MANLAA** determination.

In this Consultation Key we have identified two ways that consultation can conclude informally, **MANLAA-P** and **MANLAA-C**:

MANLAA-P: programmatic concurrence is provided through the transmittal letter of these Guidelines, no additional consultation is required with the Service for Florida bonneted bats. All survey results must be submitted to Service.

MANLAA-C: further consultation with the Service is required to confirm that the Consultation Key has been used properly, and the Service concurs with the evaluation of the survey results. Request for consultation must include survey results.

NO EFFECT - The appropriate conclusion when the action agency determines its proposed action will not affect listed species or designated critical habitat.

POTENTIAL ROOSTING HABITAT - Includes forest and other areas with tall, mature trees or other areas with suitable roost structures (*e.g.*, utility poles, artificial structures). Forest is defined as all types including: pine flatwoods, scrubby flatwoods, pine rocklands, royal palm hammocks, mixed or hardwood hammocks, cypress, sand pine scrub, or other forest types. (Forrest types currently include exotic forests such as melaleuca, please contact the Service for additional guidance as needed). More specifically, this includes habitat in which suitable structural features for breeding and sheltering are present. In general, roosting habitat contains one or more of the following structures: tree snags, and trees with cavities, hollows, deformities, decay, crevices, or loose bark. Structural characteristics are of primary importance.

Florida bonneted bats have been found roosting in habitat with the following structural features, but may also occur outside of these parameters:

- trees greater than 33 feet (10 meters) in height, greater than 8 inches (20 centimeters) in diameter at breast height (DBH), with cavity elevations higher than 16 feet (5 meters) above ground level (Braun de Torrez 2019);
- areas with a high incidence of large or mature live trees with various deformities (*e.g.*, large cavities, hollows, broken tops, loose bark, and other evidence of decay) (*e.g.*, pine flatwoods);
- rock crevices (*e.g.*, limestone in Miami-Dade County); and/or
- artificial structures, mimicking natural roosting conditions (*e.g.*, bat houses, utility poles, buildings), situated in natural or semi-natural habitats.

In order for a building to be considered a roosting structure, it should be a minimum of 15 feet high and contain one or more of the following features: chimneys, gaps in soffits, gaps along gutters, or other structural gaps or crevices (outward entrance approximately 1 inch (2.5 centimeters) in size or greater. Structures similar to the above (*e.g.*, bridges, culverts, minimum of 15 feet high) are expected to also provide roosting habitat, based upon the species' morphology and behavior (Keeley and Tuttle 1999). Florida bonneted bat roosts will be situated in areas with sufficient open space for these bats to fly (*e.g.*, open or semi-open canopy, canopy gaps, above the canopy, and edges which provide relatively uncluttered conditions [*i.e.*, reduced numbers of obstacles, such as fewer tree branches and leaves, in the flight environment]).

For the purpose of this Consultation Key: Roosting habitat refers to habitat with structures that can be used for daytime and maternity roosting. Roosting at night between periods of foraging can occur in a broader range of structure types. For the purposes of this guidance we are focusing on day roosting habitat.

ROOSTING IS LIKELY—Determining likelihood of roosting is challenging. The Service has provided the following definition for the express purpose of these Guidelines. Researchers use additional cues to assist in locating roosts. As additional indicators are identified and described we expect our Guidelines will be improved.

In this Consultation Key the Service will consider the following evidence indicative that roosting is likely nearby (*i.e.*, reasonably certain to occur) if **ANY** of the following are documented: (a) Florida bonneted bat calls are recorded within 30 minutes before sunset to 1½ hours following sunset or within 1½ hours before sunrise; (b) emergence calls are recorded; (c) human observers see (or hear) Florida bonneted bats flying from or to potential roosts; (d) human observers see and identify Florida bonneted bats within a natural roost or artificial roost; and/or (e) other bat sign (*e.g.*, guano, staining, etc.) is found that is identified to be Florida bonneted bat through additional follow-up.

In addition to the aforementioned events, researchers consider roosting likely in an area when (1) large numbers of Florida bonneted bat calls are recorded throughout the night (*e.g.*, ≥ 25 files per night at a single acoustic station when 5 second file lengths are recorded); (2) large numbers of FBB calls are recorded over multiple nights (*e.g.*, an average of ≥ 20 files per night from a single detector when 5 second file lengths are recorded); or (3) social calls are recorded. Because social calls and large numbers of calls recorded over one or more nights can be indicative of high

FBB activity/use or when roosting is likely, the Service is choosing not to use these as indicators to make the determination that roosting is likely. Instead we are relying on the indicators that are only expected to occur at or very close to a roost location [(a)-(e) above].

TAKE - to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. [ESA §3(19)] Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by the Service as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. [50 CFR §17.3].

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Appendix A. Delineation and Justification for Consultation Area

The Consultation Area (Figure 1) represents the general range of the species. The Consultation Area represents the area within which consideration should be given to potential effects to Florida bonneted bats from proposed projects or actions. Coordination and consultation with the Service helps to determine whether proposed actions and activities may affect listed species. This Consultation Area defines the area where proposed actions and activities may affect the Florida bonneted bat.

This area was delineated using confirmed presence data, key habitat features, reasonable flight distances and home range sizes. Where data were lacking, we used available occupancy models that predict probability of occurrence (Bailey *et al.* 2017). Below we describe how each one of these data sources was used to determine the overall Consultation Area.

Presence data: Presence data included locations for: (1) confirmed Florida bonneted bat acoustic detections; (2) known roost sites (occupied or formerly occupied; includes natural roosts, bat houses, and utility poles); (3) live Florida bonneted bats observed or found injured; (4) live Florida bonneted bats captured during research activities; and (5) Florida bonneted bats reported as dead. The Geographic Information Systems (GIS) dataset incorporates information from January 2003 to May 2019.

The vast majority of the presence data came from acoustic surveys. The species' audible, low frequency, distinct, echolocation calls are conducive for acoustic surveys. However, there are limitations in the range of detection from ultrasonic devices, and the fast, high-flying habits of this species can confound this. Overall, detection probabilities for Florida bonneted bats are generally considered to be low. For example, in one study designed to investigate the distribution and environmental associations of Florida bonneted bat, Bailey *et al.* 2017 found overall nightly detection probability was 0.29. Based on the estimated detection probabilities in that study, it would take 9 survey nights (1 detector per night) to determine with 95% certainty whether Florida bonneted bat are present at a sampling point. Positive acoustic detection data are extremely valuable. However, it is important to recognize that there are issues with false negatives due to limitations of equipment, low detection probabilities, difference in detection due to prey availability and seasonal movement over the landscape, and in some circumstances improperly conducted surveys (*i.e.*, short duration or in unsuitable weather conditions).

Key habitat features: We considered important physical and biological features with a focus on potential roosting habitat and applied key concepts of bat conservation (*i.e.*, need to conserve roosting habitat, foraging habitat, and prey base). To date, all known natural Florida bonneted bat roosts (n=19) have been found in live trees and snags of the following types: slash pine, longleaf pine, royal palm, and cypress (Braun de Torrez 2018). Several of the recent roost discoveries are located in fire-maintained vegetation communities, and it appears that Florida bonneted bats are fire-adapted and can benefit from prescribed burn regimes that closely mimic historical fire patterns (Ober *et al.* 2018).

From a landscape and roosting perspective, we consider key habitat features to include forested areas and other areas with mature trees, wetlands, areas used by red-cockaded woodpeckers

(*Picoides borealis*; RCW), and fire-managed and other conservation areas. However, recent work suggests that Florida bonneted bats do not use pinelands more than other land cover types (Bailey *et al.* 2017). In fact, Bailey *et al.* 2017 detected Florida bonneted bats in all land cover types investigated in their study (e.g., agricultural, developed, upland, and wetland). For the purposes of these consultation guidelines, we are focusing on the conservation of potential roosting habitats across the species' range. However, we also recognize the need for comprehensive consideration of foraging habitats, habitat connectivity, and long-term suitability.

Flight distances and home range sizes: Like most bats, Florida bonneted bats are colonial central-place foragers that exploit distant and scattered resources (Rainho and Palmeirim 2011). Morphological characteristics (narrow wings, high wing-aspect ratio) make *Eumops* spp. well-adapted for efficient, low-cost, swift, and prolonged flight in open areas (Findley *et al.* 1972, Norberg and Rayner 1987). Other *Eumops* including Underwood's mastiff bat (*Eumops underwoodi*), and Greater mastiff bat or Western mastiff bat (*Eumops perotis*) are known to forage and/or travel distances ranging from 6.2 miles to 62 miles from the roost with multiple studies documenting flight distances approximately 15- 18 miles from the roost (Tibbitts *et al.* 2002, Vaughn 1959 as cited in Best *et al.* 1996, Siders *et al.* 1999, Siders 2005, Vaughan 1959 as cited in Siders 2005.)

Like other *Eumops*, Florida bonneted bats are strong fliers, capable of travelling long distances (Belwood 1992). Recent Global Positioning System (GPS) and radio-telemetry data for Florida bonneted bats documents that they also move large distances and likely have large home ranges. Data from recovered GPS satellite tags on Florida bonneted bats tagged at Babcock-Webb Wildlife Management Area (WMA), found the maximum distance detected from a capture site was 24.2 mi (38.9 km); the greatest path length travelled in a single night was 56.3 mi (90.6 km) (Ober 2016; Webb 2018a-b). Additional data collected during the month of December documented the mean maximum distance of Florida bonneted bats (n=8) with tags traveled from the roost was 9.5 mi (Webb 2018b). The Service recognizes that the movement information comes from only one site (Babcock-Webb WMA and vicinity), and data are from small numbers (n=20) of tagged individuals for only short periods of time (Webb 2018a-b). We expect that across the Florida bonneted bat's range differences in habitat quality, prey availability, and other factors will result in variable habitat use and home range sizes between locations. Foraging distances and home range sizes in high quality habitats are expected to be smaller while foraging distances and home range sizes in low quality habitat would be expected to be larger. Consequently, because Babcock-Webb WMA provides high quality roosting habitat, this movement data could represent the low end of individual flight distances from a roost.

Given the species' morphology and habits (e.g., central-place forager) and considering available movement data from other *Eumops* and Florida bonneted bats discussed above, we opted to use 15 miles (24 km) as a reasonable estimate of the distance Florida bonneted bats would be expected to travel from a roost on any given night. For the purposes of delineating a majority of the Consultation Area, we used available confirmed presence point location data and extended out 15 miles (24 km), with modifications for habitat features (as described above). As more movement data are obtained and made available, this distance estimate may change in the future.

Occupancy model – Research by Bailey *et al.* (2017) indicates the species' range is larger than previously known. Their model performed well across a large portion of the previously known

range when considering confirmed Florida bonneted bat locations; thus it is anticipated to be useful where limited information is available for the species.

We used the model output from Bailey *et al.* (2017) to more closely examine areas where we are data-deficient (*i.e.*, areas where survey information is particularly lacking). We considered 0.27 probability of occurrence a filter for high likelihood of occurrence because 0.27 was the model output for Babcock-Webb WMA, an area where Florida bonneted bats are known to occupy and heavily use. Large portions of Sarasota, Martin, and Palm Beach counties were identified as having probability of occurrence of 0.27. The consultation area should include areas where the species has a high likelihood of occurring. Based on this reasoned approach, all of Sarasota County, portions of Martin County, and greater parts of Palm Beach County were included in the Consultation Area.

We recognize that there are areas in the northern portion of the range where the model is less successful predicting occurrence based on the known Florida bonneted bat locations (*i.e.*, the model predicts low likelihood of occurrence on Avon Park Air Force range, where the species is known to roost). Consequently, the Service is proactively working with partners to conduct surveys in the areas added based on the model to confirm that inclusion of these portions of the aforementioned counties is appropriate. The Consultation Area may be adjusted based on changes in this information.

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Appendix B: Full Acoustic / Roost Survey Framework

Purpose: The purpose of this survey is to: (1) determine if Florida bonneted bats are likely to be actively roosting or using the site; (2) locate active roost(s) and avoid the loss of the structure, if possible; and, (3) avoid or minimize the take of individuals. In some cases, changes in project designs or activities can help avoid and minimize take. For example, project proponents may be able to retain suspected roosts or conserve roosting and foraging habitats. Changing the timing or nature of activities can also help reduce the losses of non-volant young or effects to pregnant or lactating females. If properly conducted, acoustic surveys are the most effective way to determine presence and assess habitat use. If the applicant is unable to follow or does not want to follow the Full Acoustic/Roost Survey framework when recommended according to the Key, the Corps (or other Action Agency) will not be able to use these Guidelines and will need to provide a biologically supported rationale using the best available information for their determination in their request for consultation.

General Description: This is a *comprehensive survey effort*, and robust acoustic surveys (*i.e.*, surveys conducted 30 minutes prior to sunset to 30 minutes after sunrise, over multiple nights) are a fundamental component of the approach. Depending upon acoustic results and habitat type, it may also include: observations at emergence (*e.g.*, emergence surveys during which observers look and listen for bats to come out of roost structures around sunset), visual inspection of trees/snags (*i.e.*, those with cavities, hollows, and loose bark) and other roost structures with tree-top cameras, or follow-up targeted acoustic surveys. Methods are dependent upon composition and configuration of project site and willingness and ability of applicant and partners to conserve roosting and foraging habitats on site.

General Survey Protocol:

[Note: The Service will provide more information in separate detailed survey protocols in the near future. This will include specific information on: detector types, placement, orientation, verification of proper functioning, analysis, reporting requirements, etc.]

- Approach is intended for project sites > 5 acres (2 hectares).
- For sites containing roosting habitat, acoustic surveys should primarily focus on assessing roosting habitat within the project site that will be lost or modified (*i.e.*, areas that will not be conserved), and locations on the property within 250 feet (76.2 meters) of areas that will not be conserved. This will help avoid or minimize the loss of an active roost and individuals. Secondly, since part of the purpose is to determine if Florida bonneted bats are using the site, acoustic devices should also be placed near open water and wetlands to maximize chances of detection and aid in assessing foraging habitat that may be lost.
- For sites that do not contain ANY roosting habitat, but do contain foraging habitat (see Figure 3 - Consultation Flowchart and Key, Step 2 [no], Step 13 [yes]), efforts should focus on assessing foraging habitat within the project site that will be lost or modified (*i.e.*, areas that will not be conserved).
- Acoustic surveys should be performed by those who are trained and experienced in setting up, operating, and maintaining acoustic equipment; and retrieving, saving,

analyzing, and interpreting data. Surveyors should have completed one or more of the available bat acoustic courses/workshops, or be able to show similar on-the-job or academic experience (Service 2018).

- Due to the variation in the quality of recordings, the influence of clutter, the changing performances of software packages over time, and other factors, manual verification is recommended (Loeb *et al.* 2015). Files that are identified to species from auto-ID programs must be visually reviewed and manually verified by experienced personnel.
- Acoustic devices should be set up to record from 30 minutes prior to sunset to 30 minutes after sunrise for multiple nights, under suitable weather conditions.
- Acoustic surveys can be conducted any time of year as long as weather conditions meet the criteria. If any of the following weather conditions exist at a survey site during acoustic sampling, note the time and duration of such conditions, and repeat the acoustic sampling effort for that night: (a) temperatures fall below 65°F (18.3°C) during the first 5 hours of survey period; (b) precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period; and (c) sustained wind speeds greater than 9 miles/hour (4 meters/second; 3 on Beaufort scale) for 30 minutes or more during the first 5 hours of the survey period (Service 2018). At a minimum, nightly weather conditions for survey sites should be checked using the nearest NOAA National Weather Service station and summarized in the survey reports. Although not required at this time, it has been demonstrated that conducting surveys on warm nights late in the spring can help maximize detection probabilities (Ober *et al.* 2016; Bailey *et al.* 2017).
- Acoustic devices should be calibrated and properly placed. Microphones should be directed away from surrounding vegetation, not beneath tree canopy, away from electrical wires and transmission lines, away from echo-producing surfaces, and away from external noises. Directional microphones should be aimed to sample the majority of the flight path/zone. Omnidirectional microphones should be deployed on a pole in the center of the flight path/zone and oriented horizontally. For monitoring possible roost sites, microphones should be directed to maximize likelihood of detection.
- To standardize recordings, acoustic device recordings should have a 2-second trigger window and a maximum file length of 15 seconds.
- The number of acoustic survey sites and nights needed for the assessment is dependent upon the overall acreage of suitable habitat proposed to be impacted by the action.
 - For non-linear projects, a minimum of 16 detector nights per 20 acres of suitable habitat expected to be impacted is recommended.
 - For linear projects (*e.g.*, roadways, transmission lines), a minimum of five detector nights per 0.6 mi (0.97 km) is recommended. Detectors can be moved to multiple locations within each kilometer surveyed, but must remain in a single location throughout any given night.
 - For any site, and in particular for sites > 250 acres, please contact the Service to assist in designing an appropriate approach.
- If results of acoustic surveys show **high Florida bonneted bat activity** or **Florida bonneted bat roosting likely** (*e.g.*, high activity early in the evening) (see definitions in Glossary), follow-up methods such as emergence surveys, visual inspection of the roosting structures, or follow-up acoustic surveys are recommended to locate potential roosts. Using a combination of methods may be helpful.

- For bat emergence surveys, multiple observers should be stationed at potential roosts if weather conditions (as above) are suitable. Surveyors should be quietly stationed 30 minutes before sunset so they are ready to look and listen for emerging FBBs from sunset to 1½ hours after sunset. When conducting emergence surveys it is best to orient observers so that the roost is silhouetted in the remaining daylight; facing west can help maximize the ability to notice movement of animals out of a roost structure.
- Visual inspection of trees with cavities and loose bark during the day may be helpful. Active RCW trees should not be visually inspected during the RCW breeding season (April 15 through June 15).
- Visual inspection alone is not recommended due to the potential for roosts to be too high for cameras to reach, too small for cameras to fit, or shaped in a way that contents are out of view (Braun de Torrez *et al.* 2016).
- If roosting is suspected on site, use tree-top cameras during the day to search those trees/snags or other structures that have potential roost features (*i.e.*, cavities, hollows, crevices, or other structure for permanent shelter). If unsuccessful (*e.g.*, cannot see entire contents within a given cavity, cannot reach cavity, cannot see full extent of cavity) OR occupied roosts are found with the tree-top camera within the area in which high Florida bonneted bat activity/likely Florida bonneted bats roosting were identified, we recommend emergence surveys and/or acoustics to verify occupancy and/or identify bat species.
- Provide report showing effort, methods, weather conditions, findings, and summary of acoustic data relating to Florida bonneted bats (*e.g.*, # of calls, time of calls, and station number) organized by the date on which the data were collected. Sonograms of all calls with signatures at or below 20kHz shall be included in the report. The report shall be provided to the Corps project manager assigned to the project for which the survey was conducted and to the Service via the email address **verobeach@fws.gov**. **Raw acoustic data should be provided to the Service for all surveys. Raw acoustic data should be provided as “all raw data” and “all raw data with signatures at or below 20kHz”. Data can be submitted to the Service via flash drive, memory stick, or hard drive. Data can be submitted digitally to verobeach@fws.gov or via mail to U.S. Fish and Wildlife Service, Attn: Florida bonneted bat data manager, 1339 20th Street, Vero Beach, Florida 32960.**
- Negative surveys are valid for 1 year after completion of the survey.

If you have comments, or suggestions on this survey protocols, please email your comments to FBBguidelines@fws.gov. These comments will be reviewed and incorporated in an annual review.

Literature Cited – Appendix B

- Bailey, A.M., H.K. Ober, A.R. Sovie, and R.A. McCleery. 2017. Impact of land use and climate on the distribution of the endangered Florida bonneted bat. *Journal of Mammalogy*. 98:1586-1593.
- Braun de Torrez, E.C., H.K. Ober, and R.A. McCleery. 2016. Use of a multi-tactic approach to locate and endangered Florida bonneted bat roost. *Southeastern Naturalist* 15(2):235-242.
- Loeb, S.C., T.J. Rodhouse, L.E. Ellison, C.L. Lausen, J.D. Reichard, K.M. Irvine, T.E. Ingersoll, J.T.H. Coleman, W.E. Thogmartin, J.R. Sauer, C.M. Francis, M.L. Bayless, T.R. Stanley, and D.H. Johnson. 2015. A plan for the North American bat monitoring program (NABat). United States Department of Agriculture. Forest Service. Research & Development, Southern Research Station. General Technical Report SRS-208.
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- U.S. Fish and Wildlife Service. 2018. Range-wide Indiana bat survey guidelines. <https://www.fws.gov/midwest/endangered/mammals/inba/surveys/pdf/2018RangewideIBatSurveyGuidelines.pdf>

Appendix C: Limited Roost Survey Framework

Purpose: The purpose of this survey is to: (1) determine if Florida bonneted bats are likely to be actively roosting within suitable structures on-site; (2) locate active roost(s) and avoid the loss of the structure, if possible; and, (3) avoid or minimize the take of individuals. In some cases, changes in project designs or activities can help avoid and minimize take. For example, applicants and partners may be able to retain the suspected roosts or conserve roosting and foraging habitats. Changing the timing of activities can also help reduce the losses of non-volant young or effects to pregnant or lactating females.

General Description: This is a *reduced survey effort* that may include the following methods: visual inspection of trees/snags (*i.e.*, those with cavities, hollows, and loose bark) and other roost structures with tree-top cameras, observations at emergence (*e.g.*, emergence surveys during which observers look and listen for bats to come out of roost structures around sunset), acoustic surveys, or a combination of these methods. Methods are fairly flexible and dependent upon composition and configuration of project site and willingness and ability of applicant and partners to conserve roosting habitat on site.

General Survey Protocol:

[Note: The Service will provide more information in separate, detailed survey protocols in the near future. This will include specific information on: detector types, placement, orientation, verification of proper functioning, analysis, reporting requirements, etc.]

- Approach is **intended only for small project sites** (*i.e.*, sites ≤ 5 acres [2 hectares]).
- Efforts should focus on assessing potential roosting structures within the project site that will be lost or modified (*i.e.*, areas that will not be conserved), or are located on the property within 250 feet (76.2 meters) of areas that will not be conserved.

Identification of potential roost structures

- This step is necessary prior to any of the methods that follow.
- Run line transects through roosting habitat close enough that all trees and snags are easily inspected. Transect spacing will vary with habitat structure and season from a maximum of 91 m (300 ft) between transects in very open pine stands to 46 m (150 ft) or less in areas with dense mid-story. Transects should be oriented north to south, to optimize cavity detectability because many RCW cavity entrances are oriented in a westerly direction (Service 2004).
- Visually inspect all trees and snags or other structures for evidence of cavities, hollows, crevices that can be used for permanent shelter. Using binoculars, examine structures for cavities, loose bark, hollows, or other crevices that are large enough for Florida bonneted bats (diameter of opening $>$ or $=$ to 1 inch (2.5 cm) (Braun de Torrez *et al.* 2016).
- When potential roosting structures are found, record their location in the field using a Global Positioning System (GPS) unit.

Visual Inspection of trees and snags with tree-top cameras

- Visually inspect all cavities using a video probe (peeper) and assess the cavity contents.

Active RCW trees should not be visually inspected during the RCW breeding season (April 15 through June 15).

- Visual inspection alone is valid only when the entire cavity is observed and the contents can be identified. Typically, acoustics at emergence will also be needed to definitively identify bat species, if bats are present or suspected.
- If bats are suspected, or if contents cannot be determined, or if the entire cavity cannot be observed with the video probe; follow methods for an Acoustic Survey or an Emergence Survey (below). If the Corps (or other action agency) or applicant does not wish to conduct acoustic or emergence surveys, the Corps (or other action agency) cannot use the key and must request formal consultation with the Service.
- Record tree species or type of cavity structure, tree diameter and height, cavity height, cavity orientation and cavity contents.

Emergence Surveys

- For bat emergence surveys, multiple observers should be stationed at potential roosts if weather conditions (as described below in Acoustic Surveys) are suitable.
- Surveyors should be quietly stationed 30 minutes prior to sunset so they are ready to look and listen for emerging Florida bonneted bats from sunset to 1½ hours after sunset.
- When conducting emergence surveys it is best to orient observers so that the roost is silhouetted in the remaining daylight; facing west can help maximize the ability to notice movement of animals out of a roost structure.
- Record number of bats that emerged, the time of emergence, and if bat calls were heard.

Acoustic surveys

- Acoustic surveys should be performed by those who are trained and experienced in setting up, operating, and maintaining acoustic equipment; and retrieving, saving, analyzing, and interpreting data. Surveyors should have completed one or more of the available bat acoustic courses/workshops, or be able to show similar on-the-job or academic experience (Service 2018).
- Due to the variation in the quality of recordings, the influence of clutter, and the changing performances of software packages over time, and other factors, manual verification is recommended (Loeb *et al.* 2015). Files that are identified to species from auto-ID programs must be visually reviewed and manually verified by experienced personnel.
- Acoustic devices should be set up to record from 30 minutes prior to sunset to 30 minutes after sunrise for multiple nights, under suitable weather conditions.
- Acoustic surveys can be conducted any time of year as long as weather conditions meet the criteria. If any of the following weather conditions exist at a survey site during acoustic sampling, note the time and duration of such conditions, and repeat the acoustic sampling effort for that night: (a) temperatures fall below 65°F (18.3°C) during the first 5 hours of survey period; (b) precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period; and (c) sustained wind speeds greater than 9 miles/hour (4 meters/second; 3 on Beaufort scale) for 30 minutes or more during the first 5 hours of the survey period (Service 2018). At a minimum, nightly weather conditions for survey sites should be checked using the nearest NOAA National Weather Service station and summarized in the survey reports. Although not required at this time, it has been demonstrated that conducting surveys on

warm nights late in the spring can help maximize detection probabilities (Ober *et al.* 2016; Bailey *et al.* 2017).

- Acoustic devices should be calibrated and properly placed. Microphones should be directed away from surrounding vegetation, not beneath tree canopy, away from electrical wires and transmission lines, away from echo-producing surfaces, and away from external noises. Directional microphones should be aimed to sample the majority of the flight path/zone. Omnidirectional microphones should be deployed on a pole in the center of the flight path/zone and oriented horizontally. For monitoring possible roost sites, microphones should be directed to maximize likelihood of detection.
- To standardize recordings, acoustic device recordings should have a 2-second trigger window and a maximum file length of 15 seconds.
- Acoustic surveys should be conducted over a minimum of four nights.
- If acoustic devices cannot be left in place for the entire night for multiple nights as above, then a combination of short acoustic surveys (from sunset and extending for 1½ hours), stationed observers for emergence surveys or visual inspection of trees/snags with tree-top cameras may be acceptable. Contact the Service for guidance under this circumstance.

Reporting

- Provide report showing effort, methods, weather conditions, findings, and summary of acoustic data relating to Florida bonneted bat by date (*e.g.*, # of calls, time of calls). Sonograms of all calls with signatures at or below 20kHz shall be included in the report. The report shall be provided to the Corps project manager assigned to the project for which the survey was conducted and to the Service via the email address **verobeach@fws.gov**. **Raw acoustic data should be provided to the Service for all surveys. Raw acoustic data should be provided as “all raw data” and “all raw data with signatures at or below 20kHz”. Data can be submitted to the Service via flash drive, memory stick, or hard drive. Data can be submitted digitally to verobeach@fws.gov or via mail to U.S. Fish and Wildlife Service, Attn: Florida bonneted bat data manager, 1339 20th Street, Vero Beach, Florida 32960.**
- Negative surveys are valid for 1 year after completion of the survey

If you have comments, or suggestions on this survey protocols, please email your comments to FBBguidelines@fws.gov. These comments will be reviewed and incorporated in an annual review.

Literature Cited – Appendix C

- Bailey, A.M., H.K. Ober, A.R. Sovie, and R.A. McCleery. 2017. Impact of land use and climate on the distribution of the endangered Florida bonneted bat. *Journal of Mammalogy*. 98:1586-1593.
- Braun de Torrez, E.C., H.K. Ober, and R.A. McCleery. 2016. Use of a multi-tactic approach to locate and endangered Florida bonneted bat roost. *Southeastern Naturalist* 15(2):235-242.
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- U.S. Fish and Wildlife Service. 2004. South Florida Ecological Services Office DRAFT July 12, 2004 Species Conservation Guidelines South Florida Red-cockaded Woodpecker. Appendix A. Red-cockaded Woodpecker South Florida Survey Protocol. July 12, 2004. South Florida Ecological Service Office, Vero Beach Florida.
<https://www.fws.gov/verobeach/BirdsPDFs/200407SlopesCompleteRedCockadedWoodpecker.pdf>
- U.S. Fish and Wildlife Service. 2018. Range-wide Indiana bat survey guidelines.
<https://www.fws.gov/midwest/endangered/mammals/inba/surveys/pdf/2018RangewideIBatSurveyGuidelines.pdf>

Appendix D: Best Management Practices (BMPs) for Development Projects

Ongoing research and monitoring will continue to increase the understanding of the Florida bonneted bat and its habitat needs and will continue to inform habitat and species management recommendations. These BMPs incorporate what is known about the species and also include recommendations that are beneficial to all bat species in Florida. These BMPs are intended to provide recommendations for improving conditions for use by Florida bonneted bats, and to help conserve Florida bonneted bats that may be foraging or roosting in an area.

The BMPs required to reach a “may affect, but is not likely to adversely affect” (MANLAA) determination vary depending on the couplet from the Consultation Key used to reach that particular MANLAA. The requirements for each couplet are provided below followed by the list of BMPs. If the applicant is unable or does not want to do the required BMPs, then the Corps (or other Action Agency) will not be able to use this Guidance and formal consultation with the Service is required.

Couplet Number for MANLAA from Consultation Key	Required BMPs
4b	BMP number 1 if more than 3 months has occurred between the survey and start of the project, and any 3 BMPs out of BMPs 4 through 13
5b	BMP number 2, and any 3 BMPs out of BMPs 3 through 13
9b	BMPs number 2 and 3, and any 4 BMPs out of BMPs 5 through 13
11b	BMPs number 1 and 4, and any 4 BMPs out of BMPs 5 through 13
12b	BMP number 1, and any 3 BMPs out of BMPs 3 through 13
14b	Any 2 BMPs out of BMPs 3 through 13
15b	Any 3 BMPs out of BMPs 3 through 13
17b	Any 4 BMPs out of BMPs 3 through 13

BMPs for development, construction, and other general activities:

1. If potential roost trees or structures need to be removed, check cavities for bats within 30 days prior to removal of trees, snags, or structures. When possible, remove structure outside of breeding season (*e.g.*, January 1 – April 15). If evidence of use by any bat species is observed, discontinue removal efforts in that area and coordinate with the Service on how to proceed.
2. When using heavy equipment, establish a 250 foot (76 m) buffer around known or suspected roosts to limit disturbance to roosting bats.
3. For every 5 acres of impact, retain a minimum of 1.0 acre of native vegetation. If upland habitat is impacted, then upland habitat with native vegetation should be retained.
4. For every 5 acres of impact, retain a minimum of 0.25 acre of native vegetation. If upland habitat is impacted, then upland habitat with native vegetation should be retained..
5. Conserve open freshwater and wetland habitats to promote foraging opportunities and avoid impacting water quality. Created/restored habitat should be designed to replace the function of native habitat.

6. Conserve and/or enhance riparian habitat. A 50-ft (15.2 m) buffer is recommended around water bodies and stream edges. In cases where artificial water bodies (*i.e.*, stormwater ponds) are created, enhance edges with native plantings especially in cases in which wetland habitat was affected.
7. Avoid or limit widespread application of insecticides (*e.g.*, mosquito control, agricultural pest control) in areas where Florida bonneted bats are known or expected to forage or roost.
8. Conserve natural vegetation to promote insect diversity, availability, and abundance. For example, retain or restore 25% of the parcel in native contiguous vegetation.
9. Retain mature trees and snags that could provide roosting habitat. These may include live trees of various sizes and dead or dying trees with cavities, hollows, crevices, and loose bark. See “Roosting Habitat” in “Background” above.
10. Protect known Florida bonneted bat roost trees, snags or structures and trees or snags that have been historically used by Florida bonneted bats for roosting, even if not currently occupied, by retaining a 250 foot (76 m) disturbance buffer around the roost tree, snag, or structure to ensure that roost sites remain suitable for use in the future.
11. Avoid and minimize the use of artificial lighting, retain natural light conditions, and install wildlife friendly lighting (*i.e.*, downward facing and lowest lumens possible). Avoid permanent night-time lighting to the greatest extent practicable.
12. Incorporate engineering designs that discourage bats from using buildings or structures. If Florida bonneted bats take residence within a structure, contact the Service and Florida Fish and Wildlife Conservation Commission prior to attempting removal or when conducting maintenance activities on the structure.
13. Use or allow prescribed fire to promote foraging habitat.

Appendix E: Additional Best Management Practices (BMPs) for Land Management Projects

Ecological Land Management

The Service reviews and develops Ecological Land Management projects that use land management activities to restore and maintain native, natural communities that are beneficial to bats. These activities include prescribed fire, mechanical treatments to reduce vegetation densities, timber thinning to promote forest health, trail maintenance, and the treatment of exotic vegetation. The following BMPs provide recommendations for conserving Florida bonneted bat roosting and foraging habitat during ecological land management activities. The Service recommends incorporating these BMP into ecological land management plans.

If potential roost trees need to be removed, check cavities for bats prior to removal of trees or snags. If evidence of use by any bat species is observed, discontinue removal efforts in that area and coordinate with the Service on how to proceed.

Ecological Land Management BMPs:

- Protect potential roosting habitat during ecological land management activities, if feasible. Avoid removing trees or snags with cavities.
- Rake and/or manually clear vegetation around the base of known or suspected roost trees to remove fuel prior to prescribed burning.
- If possible, use ignition techniques such as spot fires or backing fire to limit the intensity of fire around the base of the tree or snag containing the roost. The purpose of this action is to prevent the known or suspected roost tree or snag from catching fire and also to attempt to limit the exposure of the roosting bats to heat and smoke. A 250-ft (76 m) buffer is recommended.
- If prescribed fire is being implemented to benefit Florida bonneted bats, Braun de Torrez et al. (2018) noted that fire in the dry/spring season could be most beneficial.
- When creating firebreaks or conducting fire-related mechanical treatment, mark and avoid any known or suspected bat roosts.
- When using heavy equipment, establish a buffer of 250 feet (76 m) around known roosts to limit disturbance to roosting bats.
- Establish forest management efforts to maintain tree species and size class diversity to ensure long-term supply of potential roost sites.
- For every 5 acres (2 hectares) of timber that is harvested, retain a clump of trees 1-2 acres (0.4 - 0.8 hectare) in size containing potential roost trees, especially pines and royal palms (live or dead). Additionally, large snags in open canopy should be preserved.

Literature Cited – Appendix E

Braun de Torrez, E.C., H.K. Ober, and R.A. McCleery. 2018. Activity of an Endangered Bat Increases Immediately Following Prescribed Fire. *The Journal of Wildlife Management*.

Appendix O: Florida Bonneted Bat Survey Memorandum

**SR 70 FROM CR 721 S TO CR 599/128TH AVENUE
FPID 450334-1-22-01**

**Highlands and Okeechobee Counties, Florida
Florida Bonneted Bat Acoustic Survey Technical Report**

**Prepared for
Scalar Consulting Group Inc.
and
FDOT, District One**

September 2024



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SR 70 FROM CR 721 S TO CR 599/128TH AVENUE

Florida Bonneted Bat Acoustic Survey Technical Report

Introduction

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) Study, in accordance with the National Environmental Policy Act (NEPA), to assess the need for capacity and traffic operational improvements along a two-lane undivided section of SR 70 extending 8.6 miles from CR 721 S (western terminus) to CR 599/128th Avenue (eastern terminus) in Highlands and Okeechobee Counties, Florida. The project corridor is located in Sections 17-20 of Township 37 South in Range 34 East, Sections 24-30 of Township 37 South in Range 33 East, and Sections 25 and 26 of Township 37 South in Range 32 East (**Figure 1**).

This report summarizes the methods and results of a species-specific survey for the Florida bonneted bat (*Eumops floridanus*). The project limits fall within the U.S. Fish and Wildlife Service (USFWS) Florida bonneted bat consultation area (CA). This survey was conducted in accordance with the 2019 USFWS Florida Bonneted Bat Consultation Guidelines. The updated (2024) *USFWS Florida Bonneted Bat Consultation Guidelines* were released on June 5, 2024, after completion of the data collection for this project. However, coordination with USFWS occurred prior to this date with submittal of the proposed survey methodology, approved on April 18, 2024. The Methodology Memorandum and USFWS email correspondence is included as **Appendix A**.

Species Information

Species and Habitat Description

The Florida bonneted bat has a body length of 84 to 108 millimeters (mm) (approximately 3.75 inches) with a wingspan of 490 to 530 mm (approximately 20 inches), making it the largest species of bat in Florida. Its fur color can range from a dark grey to reddish brown. A distinguishing characteristic of the Florida bonneted bat is its large, rounded ears that are joined at the midline of the forehead. There is no significant difference in size or appearance between males and females. Florida bonneted bat echolocations have a minimum frequency of 10-18 kilohertz (kHz) and a maximum frequency of 16-22 kHz.

Very little is known about the life history and ecology of the Florida bonneted bat. Natural roosting habitat for this species includes forested areas containing tall mature trees such as pine flatwoods, mixed or hardwood hammocks, wetland forested systems, and sand pine scrub. In these natural habitats, Florida bonneted bats may roost in tree snags, tree cavities, tree crevices, under loose bark, or other deformities of mature trees. Documented roosts have occurred in trees greater than six meters (20 feet) tall, with a diameter-at-breast height (DBH) of 20.3 centimeters (cm) (8 inches) and having cavities higher than 4.6 meters (15 feet) above ground. Florida bonneted bats have also been documented roosting in urban/suburban areas. Roosting habitat in these areas includes the shafts of royal palm (*Roystonea regia*) leaves, underneath tiles in Spanish tile roofs, attics, rock or brick chimneys of buildings, utility poles, and manmade bat houses.

This species can cover large areas when foraging. Studies at the Babcock-Webb Wildlife Management Area (WMA) conducted with Florida bonneted bats fitted with Global Positioning System (GPS) satellite tags documented the maximum distance detected from a capture site was 24.2 miles and the longest path traveled in a single night was 56.3 miles. In a sample size of eight individuals, Florida bonneted bats were documented traveling a mean maximum distance of 9.5 miles from the roost.

Status

The Florida bonneted bat is listed as a federally designated endangered species by the USFWS and is protected by the Endangered Species Act, as amended (16 U.S. Code (U.S.C.) 1531-1544, 87 Stat. 884). In June 2020 the USFWS proposed draft language for designation of critical habitat (CH) for the species. Following a public comment and in response to new information, the USFWS revised the proposed rule designating CH in November 2022 and made the rule available for public comment through January 23, 2023. The revised rule includes nine CH units (Kissimmee, Peace River, Babcock, Fisheating Creek, Corkscrew, Big Cypress, Everglades Tree Islands, Long Pine Key, and Miami Rocklands) covering portions of 13 counties. On March 7, 2024, the USFWS officially designated the nine CH units for the Florida bonneted bat (2024 Federal Register Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Endangered Florida Bonneted Bat). The SR 70 project does not fall within the CH.

Florida bonneted bats are unique from other bat species in Florida because they are reproductively active through most of the year, and their large size makes them capable of foraging long distances from their roost. Consequently, this species is vulnerable to disturbances around the roost during the greater portion of the year and considerations about foraging habitat extend further than the localized roost. Furthermore, impacts to their foraging habitat can also have adverse effects, even if the impacts are located a significant distance from their roosts.

Methodology

Desktop Data Collection

A comprehensive literature and Geographic Information System (GIS) database search was conducted for the project area to determine if the Florida bonneted bat was previously documented

within the project limits and if suitable roosting or foraging habitat was available. The literature and database search included the following: 2017-2019 South Florida Water Management District (SFWMD) Land Use Land Cover spatial data, 2023 USFWS National Wetlands Inventory (NWI) spatial data, USFWS Florida Bonneted Bat Consultation Area spatial data, 2019 USFWS Consultation Key for the Florida Bonneted Bat, 2024 Federal Register Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Endangered Florida Bonneted Bat, and current aerial imagery.

Based on this preliminary data collection effort, findings related to the Florida bonneted bat and this project include the following:

- The project falls entirely within the USFWS Florida bonneted bat CA;
- The project does not fall within the South Florida Urban Bat Area;
- The project does not fall within the species' CH; and
- Potentially suitable foraging and roosting habitat was identified within the project boundary.

Field Surveys

The Florida bonneted bat acoustic surveys followed the protocol documented in the October 2019 USFWS South Florida Ecological Services Office - Florida Bonneted Bat Consultation Guidelines (USFWS 2019) for linear projects that contain potential roosting and foraging habitat and that are also greater than five acres in size. Based on the guidelines, the SR 70 project mainline will require surveys for a minimum of five detector nights per 0.6 miles. However, coordination with USFWS through a methodology memorandum prompted the team to collect data for nine detector nights, which is consistent with the 2024 consultation guidelines.

Per the Guidelines, the following weather conditions are required to be met for the first five hours of each survey night:

- Temperature at or above 65 degrees Fahrenheit;
- Precipitation events, including rain and/or fog cannot exceed 30 minutes in length; and
- Sustained wind speeds cannot be greater than nine miles per hour.

For the SR 70 from CR 721 S to CR 599/128th Avenue project, thirteen acoustic survey stations were established based on the minimum requirements of nine detector nights per 0.60 miles for linear projects. The acoustic survey station locations are depicted in **Figure 2**. Representative photos of the acoustic survey stations are provided in **Appendix B** and the survey locations and dates for each survey station are provided in **Table 1** below.

TABLE 1
EQUIPMENT DEPLOYMENT DETAILS

Station	Latitude	Longitude	Deployment Dates (2024)	Notes
1	27.234498	-81.080719	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
2	27.235973	-81.070389	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
3	27.236467	-81.061156	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
4	27.238017	-81.053974	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
5	27.235915	-81.041591	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
6	27.235904	-81.031739	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
7	27.236497	-81.021927	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
8	27.236383	-81.012718	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
9	27.23608	-81.002563	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
10	27.236108	-80.99268	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
11	27.238731	-80.983167	5/2/2024 (PM) – 5/15/2024 (AM)	Weather conditions did not meet criteria on May 8, 13, 14
12	27.243386	-80.971204	5/15/2024 (PM) – 5/29/2024 (AM)	Weather conditions did not meet criteria on May 16, 18, 20, 25, 27, 28
13	27.244759	-80.960993	5/15/2024 (PM) – 5/29/2024 (AM)	Weather conditions did not meet criteria on May 16, 18, 20, 25, 27, 28

Each acoustic survey station was placed in an area deemed to be a potentially suitable flight path for the Florida bonneted bat and where nearby habitat contained mature forested areas and an open water source to maximize chances of detecting foraging bats and potential roosting areas. At each survey station, a Wildlife Acoustics Song Meter SM4BAT Full Spectrum (FS) detector, set to automatically begin collecting data continuously from 30 minutes before sunset to 30 minutes after sunrise, was deployed and programmed to record 15-second file lengths with a two-second trigger window. Each detector was fitted with an omnidirectional Wildlife Acoustics SMM-U2 External Ultrasonic Microphone placed atop an adjustable pole. The microphones were not placed beneath tree canopies and were situated away from electrical wires and transmission lines, and echo-producing surfaces including open water, and away from potential external noise sources.

Data Analysis

The Wildlife Acoustics Song Meter SM4BAT Full Spectrum detector records bat echolocations as Waveform Audio (WAV) files. A single WAV file is made up of a series of pulses that are considered a single bat pass. The WAV files recorded at each survey station were analyzed using Wildlife Acoustics Kaleidoscope Pro version 5.6.6. The auto-identification parameters used by Kaleidoscope Pro were from Bats of North America (Version 5.4.0), region Florida, and the sensitivity setting was set to zero balanced (neutral). The species to be selected in the auto identification classifier included: big brown bat (*Eptesicus fuscus*), Florida bonneted bat (*Eumops floridanus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), northern yellow bat (*Lasiurus intermedius*), Seminole bat (*Lasiurus seminolus*), southeastern myotis (*Myotis austroriparius*), northern long-eared bat (*Myotis septentrionalis*), evening bat (*Nycticeius*

humeralis), tri-colored bat (*Perimyotis subflavus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*).

The bat acoustic data was retrieved, saved, analyzed, and interpreted by experienced biologists who have taken one or more bat acoustic courses/workshops and who have also previously reviewed Florida bonneted bat echolocations using Kaleidoscope Pro. All echolocations auto identified by Kaleidoscope Pro as being created by a Florida bonneted bat were visually reviewed and manually verified by experienced biologists. The following parameters were considered in manual verification of Florida bonneted bat echolocations:

- Whether the characteristic frequency of echolocations fall within the documented range for the Florida bonneted bat;
- Whether there are three or more echolocations where the time between echolocations remained consistent across the sequence of echolocations;
- Whether the minimum frequency remained consistent across the sequence of echolocations;
- Whether the slope and bandwidth remained consistent from echolocation to echolocation; and
- Whether there was good signal to noise ratio as evidenced by a crisp, clean oscillogram.

All WAV files with characteristic frequencies below 30 kHz not assigned an auto identification and classified by Kaleidoscope Pro as “No ID” were manually reviewed to determine if they could contain Florida bonneted bat echolocations i.e., pulses.

Results

Weather data was obtained from the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information Local Climatological Data for the Okeechobee County Airport Station (KOBK) weather station and filtered for the weather data capturing the time period from 30 minutes prior to sunset to 30 minutes after sunrise and is provided in **Appendix C** and start and end times for the five-hour surveys for each day is included in **Table 2** below. The Okeechobee County Airport Station weather station is approximately 10 miles west of the project site, north of Lake Okeechobee. Weather data was used from this station for the dates May 2-29, 2024.

A summary of the acoustic data collected at each survey station is listed in **Appendix D** and is detailed in the following sections. This summary includes the total number of nights the detectors were deployed and the nights during which the weather conditions met the requirements in the Guidelines. The results of the Florida bonneted bat call analysis were packaged as required and uploaded into the NABat database concurrent with data analysis. All WAV files were matched to the metadata files for each station and no errors were reported.

TABLE 2
SURVEY START AND END TIMES

Date	Sunset	Sunrise	Survey Start	Survey End
5/2/2024 – 5/3/2024	7:58:00 PM	6:43:00 AM	7:28:00 PM	7:13:00 AM
5/3/2024 – 5/4/2024	7:58:00 PM	6:43:00 AM	7:28:00 PM	7:13:00 AM
5/4/2024 – 5/5/2024	7:59:00 PM	6:42:00 AM	7:29:00 PM	7:12:00 AM
5/5/2024 – 5/6/2024	8:00:00 PM	6:41:00 AM	7:30:00 PM	7:11:00 AM
5/6/2024 – 5/7/2024	8:00:00 PM	6:40:00 AM	7:30:00 PM	7:10:00 AM
5/7/2024 – 5/8/2024	8:01:00 PM	6:40:00 AM	7:31:00 PM	7:10:00 AM
5/8/2024 – 5/9/2024	8:01:00 PM	6:39:00 AM	7:31:00 PM	7:09:00 AM
5/9/2024 – 5/10/2024	8:02:00 PM	6:39:00 AM	7:32:00 PM	7:09:00 AM
5/10/2024 – 5/11/2024	8:03:00 PM	6:38:00 AM	7:33:00 PM	7:08:00 AM
5/11/2024 – 5/12/2024	8:03:00 PM	6:37:00 AM	7:33:00 PM	7:07:00 AM
5/12/2024 – 5/13/2024	8:04:00 PM	6:37:00 AM	7:34:00 PM	7:07:00 AM
5/13/2024 – 5/14/2024	8:04:00 PM	6:36:00 AM	7:34:00 PM	7:06:00 AM
5/14/2024 – 5/15/2024	8:05:00 PM	6:36:00 AM	7:35:00 PM	7:06:00 AM
5/15/2024 – 5/16/2024	8:05:00 PM	6:35:00 AM	7:35:00 PM	7:05:00 AM
5/16/2024 – 5/17/2024	8:06:00 PM	6:35:00 AM	7:36:00 PM	7:05:00 AM
5/17/2024 – 5/18/2024	8:07:00 PM	6:34:00 AM	7:37:00 PM	7:04:00 AM
5/18/2024 – 5/19/2024	8:07:00 PM	6:34:00 AM	7:37:00 PM	7:04:00 AM
5/19/2024 – 5/20/2024	8:08:00 PM	6:33:00 AM	7:38:00 PM	7:03:00 AM
5/20/2024 – 5/21/2024	8:08:00 PM	6:33:00 AM	7:38:00 PM	7:03:00 AM
5/21/2024 – 5/22/2024	8:09:00 PM	6:33:00 AM	7:39:00 PM	7:03:00 AM
5/22/2024 – 5/23/2024	8:09:00 PM	6:32:00 AM	7:39:00 PM	7:02:00 AM
5/23/2024 – 5/24/2024	8:10:00 PM	6:32:00 AM	7:40:00 PM	7:02:00 AM
5/24/2024 – 5/25/2024	8:11:00 PM	6:31:00 AM	7:41:00 PM	7:01:00 AM
5/25/2024 – 5/26/2024	8:11:00 PM	6:31:00 AM	7:41:00 PM	7:01:00 AM
5/26/2024 – 5/27/2024	8:12:00 PM	6:31:00 AM	7:42:00 PM	7:01:00 AM
5/27/2024 – 5/28/2024	8:12:00 PM	6:31:00 AM	7:42:00 PM	7:01:00 AM
5/28/2024 – 5/29/2024	8:13:00 PM	6:30:00 AM	7:43:00 PM	7:00:00 AM

Acoustic Survey Station 1

Station 1 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 2,163 WAV files were recorded and, of these, 752 WAV files were auto-identified to the species level, 228 WAV files were not assigned an auto-identification, and 1,183 WAV files were classified as noise. Two WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and were confirmed to not be Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (63 WAV files)
- Eastern red bat (3 WAV files)
- Hoary bat (53 WAV files)
- Northern yellow bat (147 WAV files)
- Seminole bat (4 WAV files)
- Southeastern myotis (1 WAV file)
- Northern long-eared bat (0 WAV files)
- Evening bat (0 WAV files)
- Tricolored bat (11 WAV files)
- Brazilian free-tailed bat (467 WAV files)
- **Florida bonneted bat (2 WAV files with 0 confirmed WAV files)**

Acoustic Survey Station 2

Station 2 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 8,709 WAV files were recorded and, of these, 941 WAV files were auto-identified to the species level, 418 WAV files were not assigned an auto-identification, and 7,350 WAV files were classified as noise. Five WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and confirmed to not be Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (107 WAV files)
- Eastern red bat (0 WAV files)
- Hoary bat (64 WAV files)
- Northern yellow bat (228 WAV files)
- Seminole bat (25 WAV files)
- Southeastern myotis (1 WAV file)
- Northern long-eared bat (0 WAV files)
- Evening bat (5 WAV files)
- Tricolored bat (8 WAV files)
- Brazilian free-tailed bat (498 WAV files)
- **Florida bonneted bat (5 WAV files with 0 confirmed WAV files)**

Acoustic Survey Station 3

Station 3 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 4,213 WAV files were recorded and, of these, 847 WAV files were auto-identified to the species level, 252 WAV files were not assigned an auto-identification, and 3,114 WAV files were classified as noise. Two WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and were confirmed to not be Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (78 WAV files)
- Eastern red bat (2 WAV files)
- Hoary bat (94 WAV files)
- Northern yellow bat (97 WAV files)
- Seminole bat (0 WAV files)
- Southeastern myotis (0 WAV file)
- Northern long-eared bat (0 WAV files)
- Evening bat (0 WAV files)
- Tricolored bat (0 WAV files)
- Brazilian free-tailed bat (574 WAV files)
- **Florida bonneted bat (2 WAV files with 0 confirmed WAV files)**

Acoustic Survey Station 4

Station 4 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 7,668 WAV files were recorded and, of these, 535 WAV files were auto-identified to the species level, 107 WAV files were not assigned an auto-identification, and 7,026 WAV files were classified as noise. No WAV files were auto-identified as containing Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (29 WAV files)
- Eastern red bat (1 WAV files)
- Hoary bat (77 WAV files)
- Northern yellow bat (56 WAV files)
- Seminole bat (3 WAV files)
- Southeastern myotis (2 WAV file)
- Northern long-eared bat (0 WAV files)
- Evening bat (0 WAV files)
- Tricolored bat (2 WAV files)
- Brazilian free-tailed bat (365 WAV files)
- **Florida bonneted bat (0 WAV files)**

Acoustic Survey Station 5

Station 5 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 1,128 WAV files were recorded and, of these, 800 WAV files were auto-identified to the species level, 154 WAV files were not assigned an auto-identification, and 174 WAV files were classified as noise. Two WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and confirmed to not be Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (121 WAV files)
- Eastern red bat (1 WAV files)
- Hoary bat (92 WAV files)
- Northern yellow bat (149 WAV files)
- Seminole bat (1 WAV file)
- Southeastern myotis (1 WAV file)
- Northern long-eared bat (0 WAV files)
- Evening bat (0 WAV files)
- Tricolored bat (0 WAV files)
- Brazilian free-tailed bat (433 WAV files)
- **Florida bonneted bat (2 WAV files with 0 confirmed WAV files)**

Acoustic Survey Station 6

Station 6 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 679 WAV files were recorded and, of these, 416 WAV files were auto-identified to the species level, 98 WAV files were not assigned an auto-identification, and 165 WAV files were classified as noise. One WAV file was auto-identified as containing Florida bonneted bat echolocations. This WAV file was manually inspected and confirmed to not be a Florida bonneted bat echolocation. The following is a summary of the auto-identification data:

- Big brown bat (17 WAV files)
- Eastern red bat (0 WAV files)
- Hoary bat (58 WAV files)
- Northern yellow bat (47 WAV files)
- Seminole bat (0 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (0 WAV files)
- Tricolored bat (1 WAV file)
- Brazilian free-tailed bat (292 WAV files)
- **Florida bonneted bat (1 WAV file with 0 confirmed WAV files)**

Acoustic Survey Station 7

Station 7 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 4,929 WAV files were recorded and, of these, 732 WAV files were auto-identified to the species level, 296 WAV files were not assigned an auto-identification, and 3,901 WAV files were classified as noise. No WAV files were auto-identified as containing Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (49 WAV files)
- Eastern red bat (4 WAV files)
- Hoary bat (126 WAV files)
- Northern yellow bat (37 WAV files)
- Seminole bat (5 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (16 WAV files)
- Tricolored bat (1 WAV file)
- Brazilian free-tailed bat (494 WAV files)
- **Florida bonneted bat (0 WAV files)**

Acoustic Survey Station 8

Station 8 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 5,200 WAV files were recorded and of these, 675 WAV files were auto-identified to the species level, 381 WAV files were not assigned an auto-identification, and 4,144 WAV files were classified as noise. One WAV file was auto-identified as containing Florida bonneted bat echolocations. This WAV file was manually inspected and confirmed to not be Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (106 WAV files)
- Eastern red bat (10 WAV files)
- Hoary bat (90 WAV files)
- Northern yellow bat (65 WAV files)
- Seminole bat (26 WAV files)
- Southeastern myotis (1 WAV file)
- Northern long-eared bat (0 WAV files)
- Evening bat (9 WAV files)
- Tricolored bat (7 WAV files)
- Brazilian free-tailed bat (360 WAV files)
- **Florida bonneted bat (1 WAV file with 0 confirmed WAV files)**

Acoustic Survey Station 9

Station 9 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 6,397 WAV files were recorded and, of these, 1,667 WAV files were auto-identified to the species level, 686 WAV files were not assigned an auto-identification, and 4,044 WAV files were classified as noise. Three WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and confirmed to not be Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (138 WAV files)
- Eastern red bat (5 WAV files)
- Hoary bat (357 WAV files)
- Northern yellow bat (249 WAV files)
- Seminole bat (16 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (31 WAV files)
- Tricolored bat (9 WAV files)
- Brazilian free-tailed bat (859 WAV files)
- **Florida bonneted bat (3 WAV files with 0 confirmed WAV files)**

Acoustic Survey Station 10

Station 10 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 4,780 WAV files were recorded and, of these, 2,247 WAV files were auto-identified to the species level, 736 WAV files were not assigned an auto-identification, and 1,797 WAV files were classified as noise. Five WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and confirmed to not be Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (228 WAV files)
- Eastern red bat (26 WAV files)
- Hoary bat (461 WAV files)
- Northern yellow bat (163 WAV files)
- Seminole bat (10 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (18 WAV files)
- Tricolored bat (11 WAV files)
- Brazilian free-tailed bat (1,325 WAV files)
- **Florida bonneted bat (5 WAV files with 0 confirmed WAV files)**

Acoustic Survey Station 11

Station 11 was surveyed from May 2 through May 15, 2024. The nights with acceptable weather conditions were May 2-7 and 9-12, 2024. A total of 9,925 WAV files were recorded and, of these, 6,364 WAV files were auto-identified to the species level, 2,289 WAV files were not assigned an auto-identification, and 1,272 WAV files were classified as noise. One WAV file was auto-identified as containing Florida bonneted bat echolocations. This WAV file was manually inspected and confirmed to not be a Florida bonneted bat echolocation. The following is a summary of the auto-identification data:

- Big brown bat (244 WAV files)
- Eastern red bat (48 WAV files)
- Hoary bat (808 WAV files)
- Northern yellow bat (641 WAV files)
- Seminole bat (130 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (7 WAV files)
- Tricolored bat (561 WAV files)
- Brazilian free-tailed bat (3,924 WAV files)
- **Florida bonneted bat (1 WAV file with 0 confirmed WAV files)**

Acoustic Survey Station 12

Station 12 was surveyed from May 15 through May 29, 2024. The nights with acceptable weather conditions were May 15, 17, 19, 21-24, 26, and 29, 2024. A total of 5,333 WAV files were recorded and, of these, 1,031 WAV files were auto-identified to the species level, 305 WAV files were not assigned an auto-identification, and 3,997 WAV files were classified as noise. Two WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and confirmed to not be Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (304 WAV files)
- Eastern red bat (15 WAV files)
- Hoary bat (59 WAV files)
- Northern yellow bat (80 WAV files)
- Seminole bat (20 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (4 WAV files)
- Tricolored bat (37 WAV files)
- Brazilian free-tailed bat (510 WAV files)
- **Florida bonneted bat (2 WAV files with 0 confirmed WAV files)**

Acoustic Survey Station 13

Station 13 was surveyed from May 15 through May 29, 2024. The nights with acceptable weather conditions were May 15, 17, 19, 21-24, 26, and 29, 2024. A total of 13,280 WAV files were recorded and, of these, 1,248 WAV files were auto-identified to the species level, 499 WAV files were not assigned an auto-identification, and 11,533 WAV files were classified as noise. Two WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and confirmed to not be Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (41 WAV files)
- Eastern red bat (7 WAV files)
- Hoary bat (140 WAV files)
- Northern yellow bat (129 WAV files)
- Seminole bat (17 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (2 WAV files)
- Tricolored bat (27 WAV files)
- Brazilian free-tailed bat (883 WAV files)
- **Florida bonneted bat (2 WAV files with 0 confirmed WAV files)**

Conclusion

A total of 61,124 WAV files were recorded at the thirteen survey stations during Florida bonneted bat acoustic surveys for the proposed SR 70 widening project from CR 721 S to CR 559/128th Avenue. Of those, 26 WAV files were auto identified by Kaleidoscope Pro as containing Florida bonneted bat echolocations. Biologists manually verified each of the auto identified Florida bonneted bat WAV files and all files with frequencies between 8 kHz and 25 kHz classified by Kaleidoscope Pro as “No ID”. As a result, it was found that none of the files contain echolocations from the Florida bonneted bat. Many of the files were identified as noise (potentially from vehicular traffic, insects, or birds). **Appendix E** includes a table with the positive Florida bonneted bat WAV files and examples of the calls that were misclassified as Florida bonneted bat echolocations.

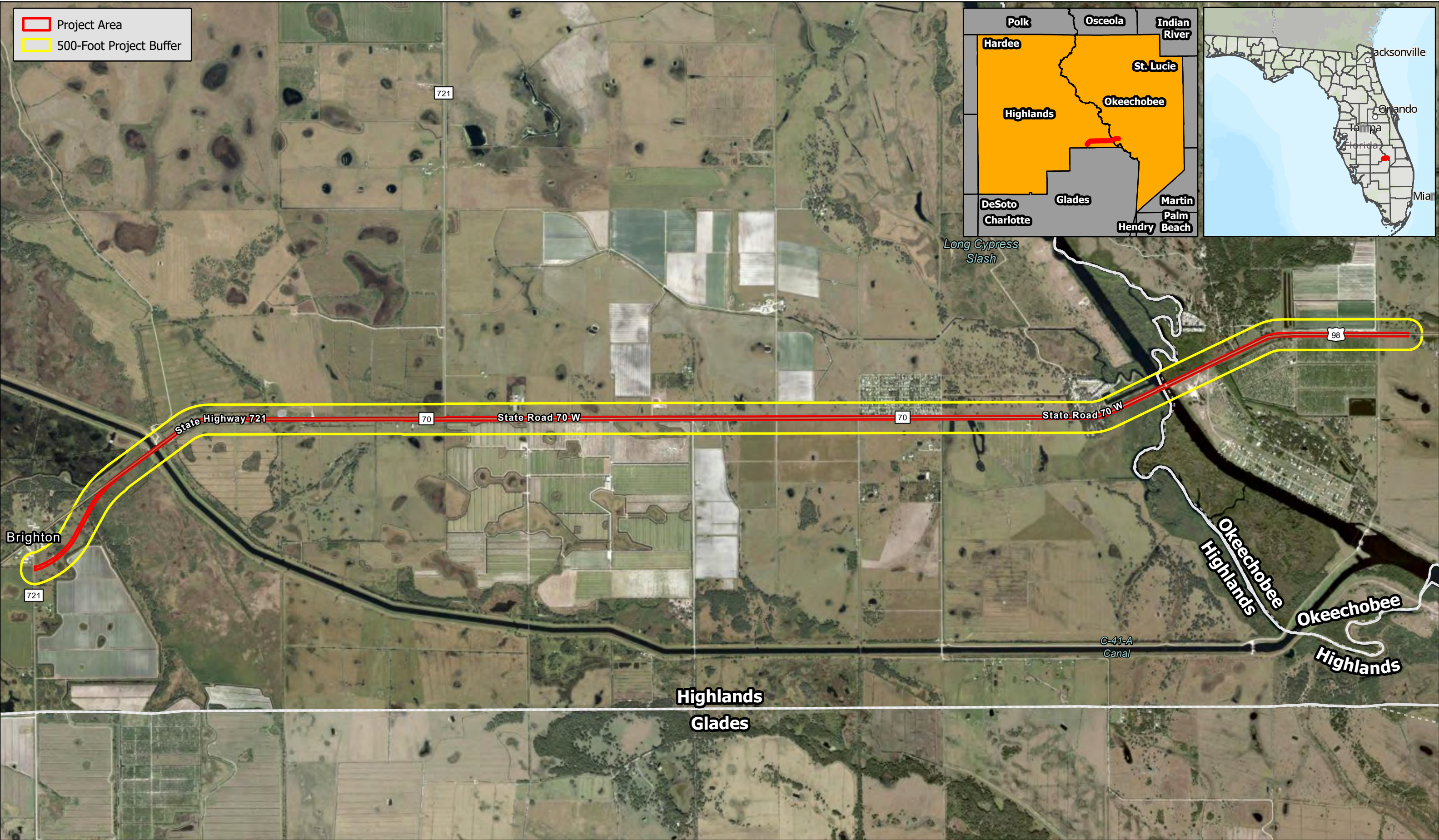
References

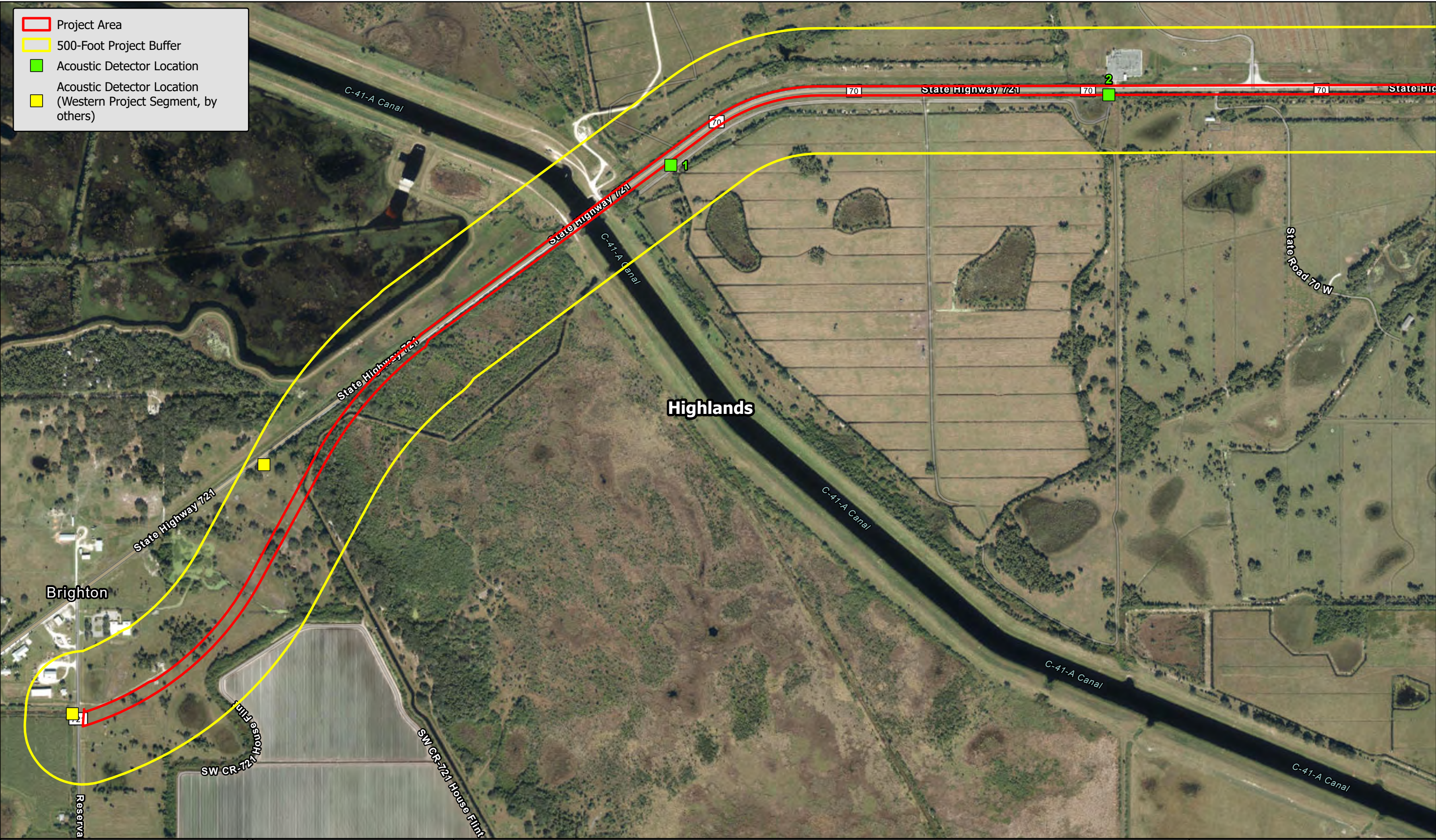
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FIGURES

FIGURE 1 PROJECT LOCATION MAP

**FIGURE 2 FLORIDA BONNETED BAT ACOUSTIC SURVEY STATION
LOCATION MAP**





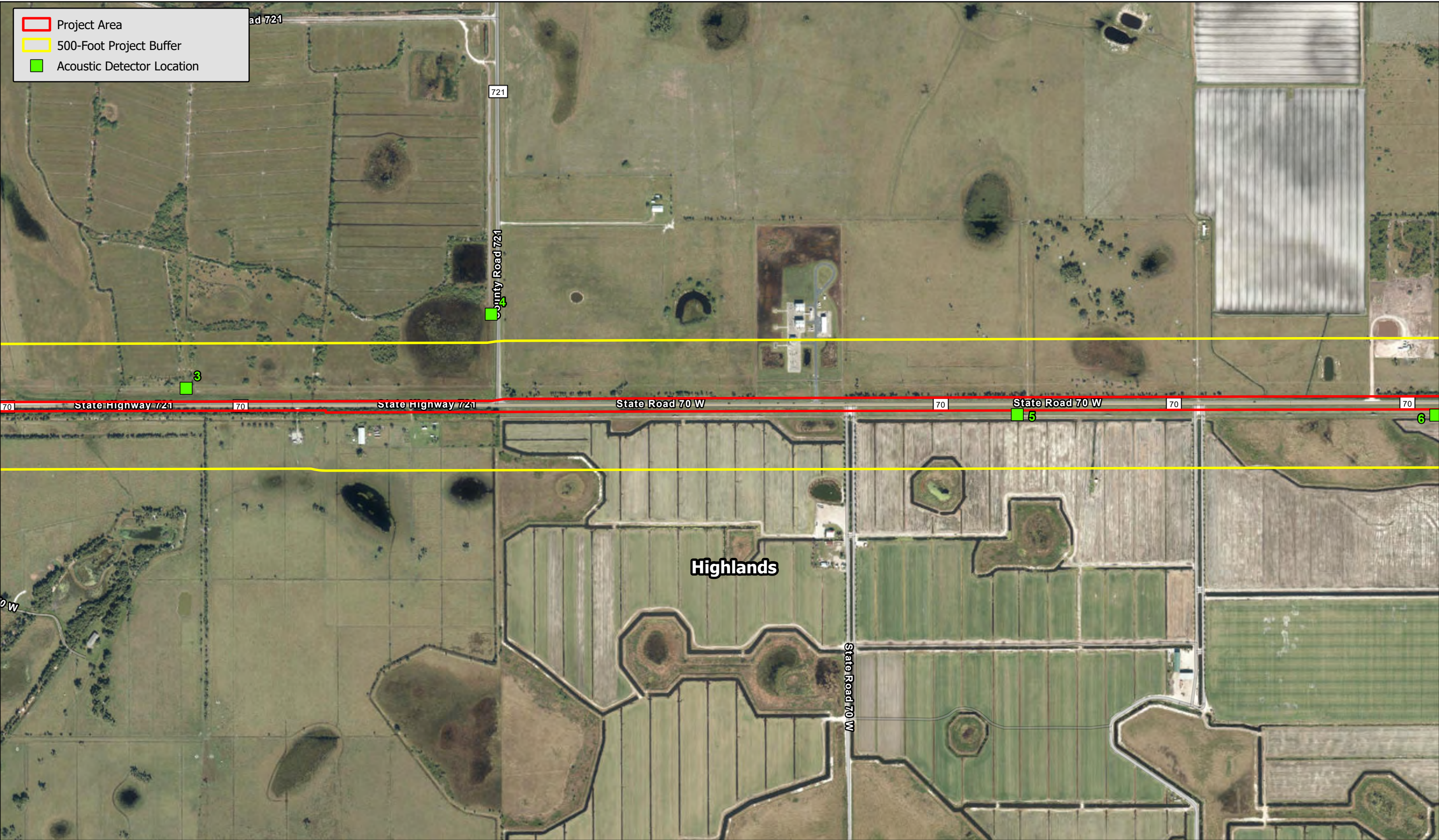


Figure 2. Florida Bonneted Bat Acoustic Survey Station Location Map

FPID #: 450334-1-22-01
State Road (SR) 70 from County Road (CR) 721 South to CR 599/128th Avenue
Highlands and Okeechobee Counties, Florida

0 0.25 0.5 Miles

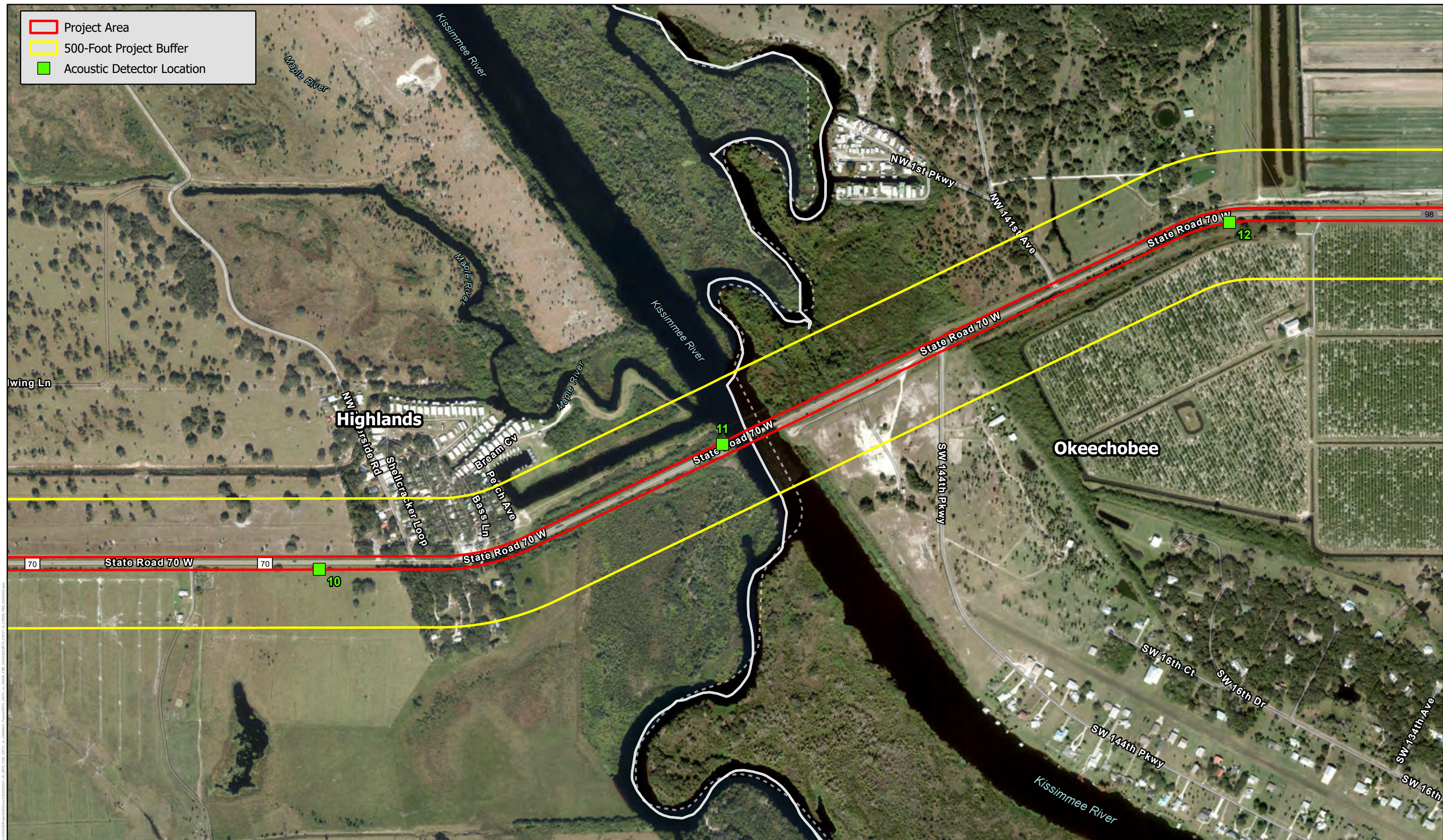


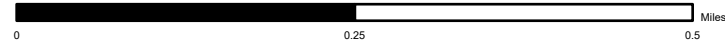
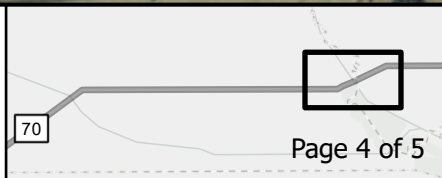
Figure 2. Florida Bonneted Bat Acoustic Survey Station Location Map

FPID #: 450334-1-22-01
 State Road (SR) 70 from County Road (CR) 721 South to CR 599/128th Avenue
 Highlands and Okeechobee Counties, Florida

Data Source(s): ESA, ESRI



All data within this map are supplied as is, without warranty. This product has not been prepared for legal, engineering, or survey purposes. Users of this information should review or consult the primary data sources to ascertain the usability of the information.



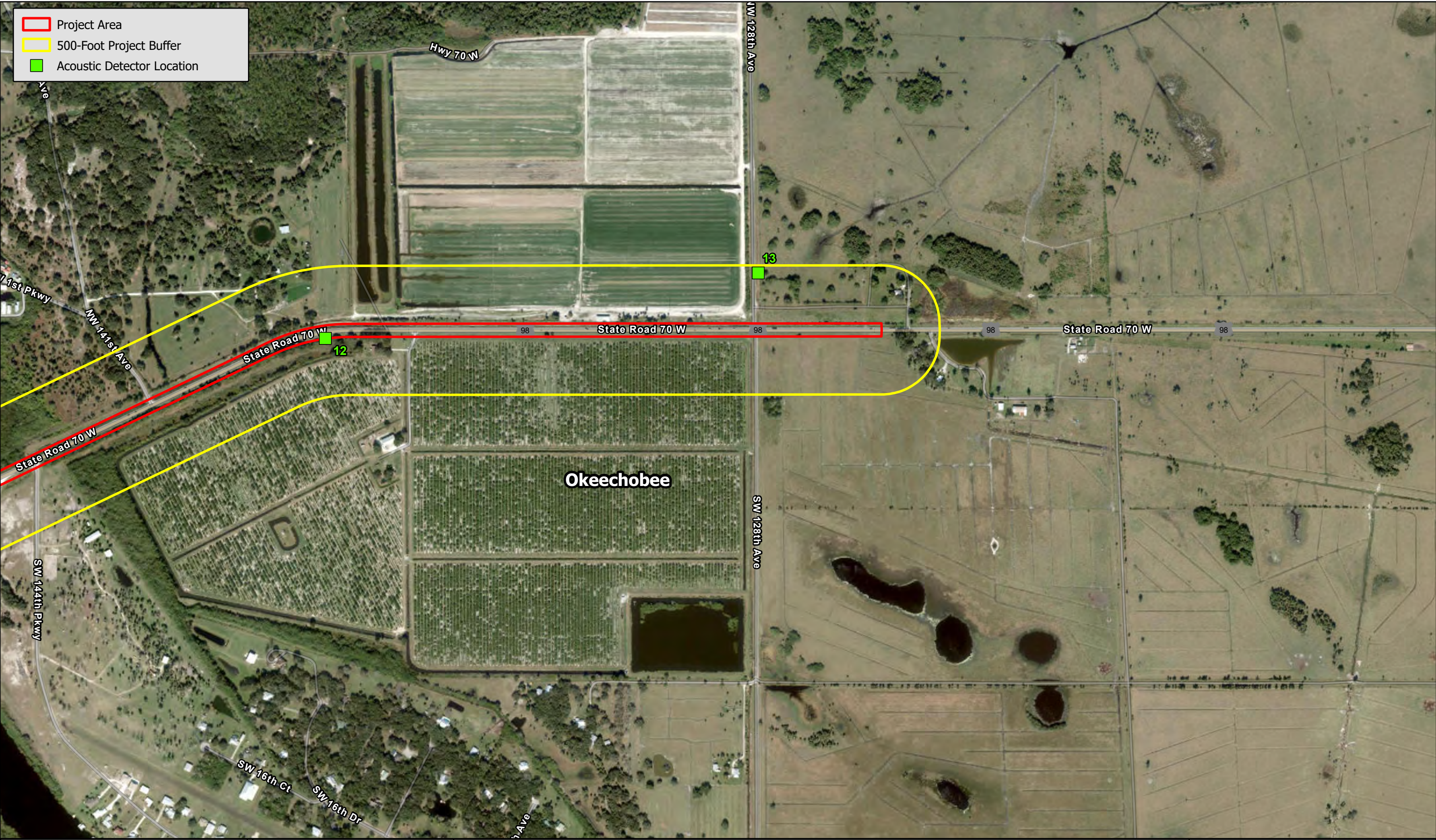


Figure 2. Florida Bonneted Bat Acoustic Survey Station Location Map

FPID #: 450334-1-22-01
State Road (SR) 70 from County Road (CR) 721 South to CR 599/128th Avenue
Highlands and Okeechobee Counties, Florida

0 0.25 0.5 Miles

Appendix A

SURVEY METHODOLOGY MEMORANDUM AND USFWS CORRESPONDENCE

memorandum

date April 16, 2024

to John Wrublik, U.S. Fish and Wildlife Service (USFWS)

cc Kristin Caruso, Scalar Consulting Group Inc., Consultant Environmental Lead
David C. Turley, Florida Department of Transportation (FDOT)
Jeffrey James, FDOT
Brooke Feagle, FDOT in-house support

from Tori Kuba, Environmental Science Associates

subject Florida Bonneted Bat Methodology Memorandum
SR 70 from CR 721 S to CR 599/128th Avenue
Highlands and Okeechobee Counties, Florida
FPID No. 450334-1-22-01

The Florida bonneted bat (*Eumops floridanus*) was federally designated as an endangered species by the USFWS in 2013 (Federal Register 2013) and is protected by the Endangered Species Act, as amended (16 U.S. Code (U.S.C.) 1531-1544, 87 Stat. 884). Based on the availability of potential roosting and foraging habitat, the project's size being greater than five acres, a species-specific Florida bonneted bat acoustic survey was determined to be necessary for this project.

Project Description

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) Study, in accordance with the National Environmental Policy Act (NEPA), to assess the need for capacity and traffic operational improvements along a two-lane undivided section of SR 70 extending 8.6 miles from CR 721 S (western terminus) to CR 599/128th Avenue (eastern terminus). The project corridor is located in Sections 17-20 of Township 37 South in Range 34 East, Sections 24-30 of Township 37 South in Range 33 East, and Sections 25 and 26 of Township 37 South in Range 32 East (**Figure 1**).

Alternatives to be evaluated include the widening of the existing two-lane undivided roadway with 10-foot travel lanes to a four-lane divided road with 12-foot travel lanes, the addition of paved shoulders and turn lanes, and possible multi-modal improvements (i.e., shared use path) along the corridor. The purpose of the study is to address traffic safety conditions on SR 70 from CR 721 S to CR 599/128th Avenue. Other goals of the project are to maintain important east-west connectivity within the regional transportation network and accommodate freight activity within this area of Highlands and Okeechobee Counties, Florida.

Preliminary Data Collection

A comprehensive literature and Geographic Information System (GIS) database search was conducted for the project area to determine if the Florida bonneted bat was previously documented within the project limits and if suitable roosting or foraging habitat was available. The literature and database search included the following: 2017-2019 South Florida Water Management District Land Use Land Cover spatial data, 2023 U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory spatial data, USFWS Florida Bonneted Bat Consultation Area spatial data, 2019 USFWS Consultation Key for the Florida Bonneted Bat, 2024 Federal Register Endangered and

Threatened Wildlife and Plants; Designation of Critical Habitat for the Endangered Florida Bonneted Bat, and current aerial imagery.

Based on this preliminary protected species data collection effort, Florida bonneted bat findings include the following:

- The project falls within the USFWS Florida bonneted bat Consultation Area (CA);
- The project does not fall within the South Florida Urban Bat Area;
- The project does not fall within the species' Critical Habitat (CH); and
- Potentially suitable foraging and roosting habitat was identified within the project boundary.

Proposed Field Survey Methodology

The Florida bonneted bat acoustic surveys will follow the protocol documented in the October 2019 USFWS South Florida Ecological Services Office - Florida Bonneted Bat Consultation Guidelines (USFWS 2019) for linear projects that contain potential roosting and foraging habitat and that are also greater than five acres in size. Based on the guidelines, the SR 70 project mainline will require surveys for a minimum of five (5) detector nights per 0.6 miles. However, based on recent communications with USFWS, data will be collected for nine (9) detector nights. A total of fourteen (14) acoustic monitoring stations were developed based on the guidelines, project length, and evaluation of habitat within the project area. Data from one acoustic monitoring station, which was sited for an adjacent project to the west, will be collected by others and incorporated into the survey results. The proposed 14 acoustic monitoring station locations are depicted in the attached figure (**Figure 2**).

To maximize the detection of Florida bonneted bats, each monitoring station will be placed in an area that could be used as a potential flight path for the Florida bonneted bat, which contains nearby mature forested areas that could serve as potential Florida bonneted bat roosting habitat and has an open water source in the vicinity that could be a potential source of drinking water for the bonneted bat. At each monitoring station, a Wildlife Acoustics Song Meter SM4BAT Full Spectrum (FS) acoustic detector will be deployed by ESA biologists who are trained and experienced in setting up, operating, and maintaining bat acoustic detection equipment. The detectors will be set to record 15-second file lengths and have a two-second trigger window based on training received from industry experts and the current 2019 USFWS Florida Bonneted Bat Consultation Guidelines. Each detector will be set to automatically begin collecting data continuously from 30 minutes before sunset to 30 minutes after sunrise for five (5) consecutive nights at each station. At each monitoring station, an omnidirectional Wildlife Acoustic SMM-U2 External Ultrasonic Microphone, placed on an extendable pole, will be deployed. The microphone will not be placed beneath tree canopies, and will be situated away from electrical wires and transmission lines, and away from echo-producing surfaces including open water, and away from potential external noise sources.

The Waveform Audio (WAV) files recorded at each monitoring station will be analyzed using Wildlife Acoustics Kaleidoscope Pro's latest version. The auto-identification parameters utilized via Kaleidoscope Pro include Bats of North America, region Florida, and the sensitivity setting utilized will be zero balanced (neutral). The species to be selected in the auto identification classifier include: big brown bat (*Eptesicus fuscus*), Florida bonneted bat, eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), northern yellow bat (*Lasiurus intermedius*), Seminole bat (*Lasiurus seminolus*), southeastern myotis (*Myotis austroriparius*), northern myotis (*Myotis septentrionalis*), evening bat (*Nycticeius humeralis*), tri-colored bat (*Perimyotis subflavus*), silverhaired bat (*Lasionycteris noctivagans*), velvety free-tailed bat (*Molossus molossus*), gray myotis (*Myotis grisescens*), and Brazilian free-tailed bat (*Tadarida brasiliensis*).

The bat acoustic data will be retrieved, saved, analyzed, and interpreted by experienced ESA biologists who have taken one or more bat acoustic courses/workshops and who have also previously reviewed Florida bonneted bat echolocations using Kaleidoscope Pro. All echolocations auto identified by Kaleidoscope Pro as being created by

a Florida bonneted bat will be visually reviewed and manually verified by experienced biologists. The parameters used to manually verify a sequence of echolocations as coming from a Florida bonneted bat include the following:

- Whether the characteristic frequency of echolocations fall within the documented range for the Florida bonneted bat,
- Whether there are three or more echolocations where the time between echolocations remains consistent across the sequence of echolocations,
- Whether the minimum frequency remains consistent across the sequence of echolocations,
- Whether the slope and bandwidth remains consistent from echolocation to echolocation, and
- Whether there is good signal to noise ratio as evidenced by a crisp, clean oscillogram.

If a series of echolocations only meet some of these requirements, and they are within the characteristic frequency of the Florida bonneted bat, we will classify these echolocations as potentially coming from a Florida bonneted bat. The WAV files not assigned an auto identification and classified by Kaleidoscope Pro as “No ID” with signatures at or below 30 kHz will also manually reviewed to determine if they were misclassified and could contain Florida bonneted bat echolocations.

The results of the Florida bonneted bat call analysis will be assembled as required and uploaded into the NABat database.

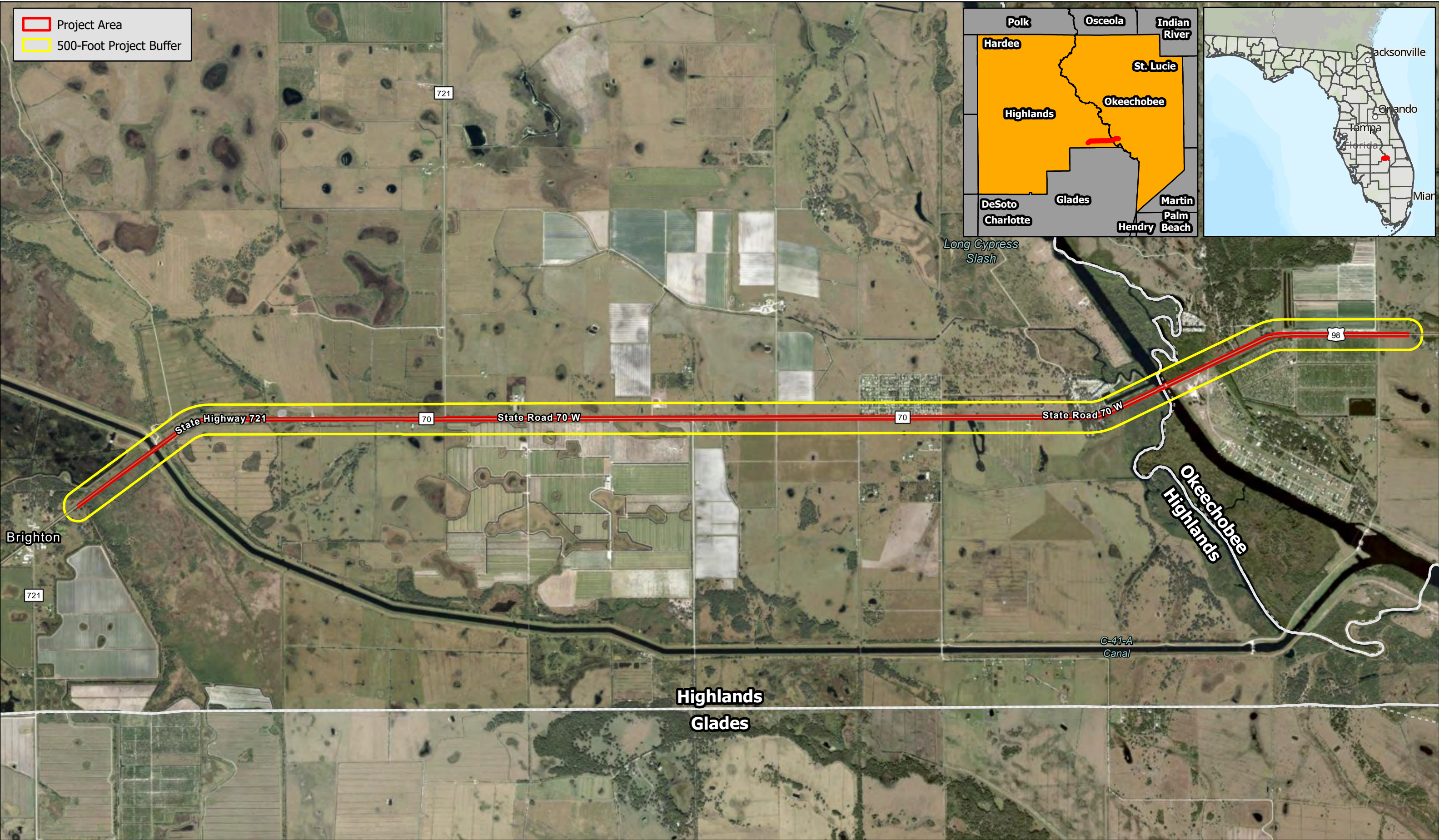
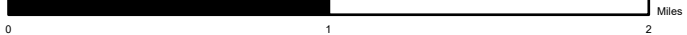


Figure 1. Project Location Map

FPID #: 450334-1-22-01

State Road (SR) 70 from County Road (CR) 721 South to CR 599/128th Avenue
Highlands and Okeechobee County, Florida



Data Source(s): ESA, ESRI



All data within this map are supplied as is, without warranty. This product has not been prepared for legal, engineering, or survey purposes. Users of this information should review or consult the primary data sources to ascertain the usability of the information.

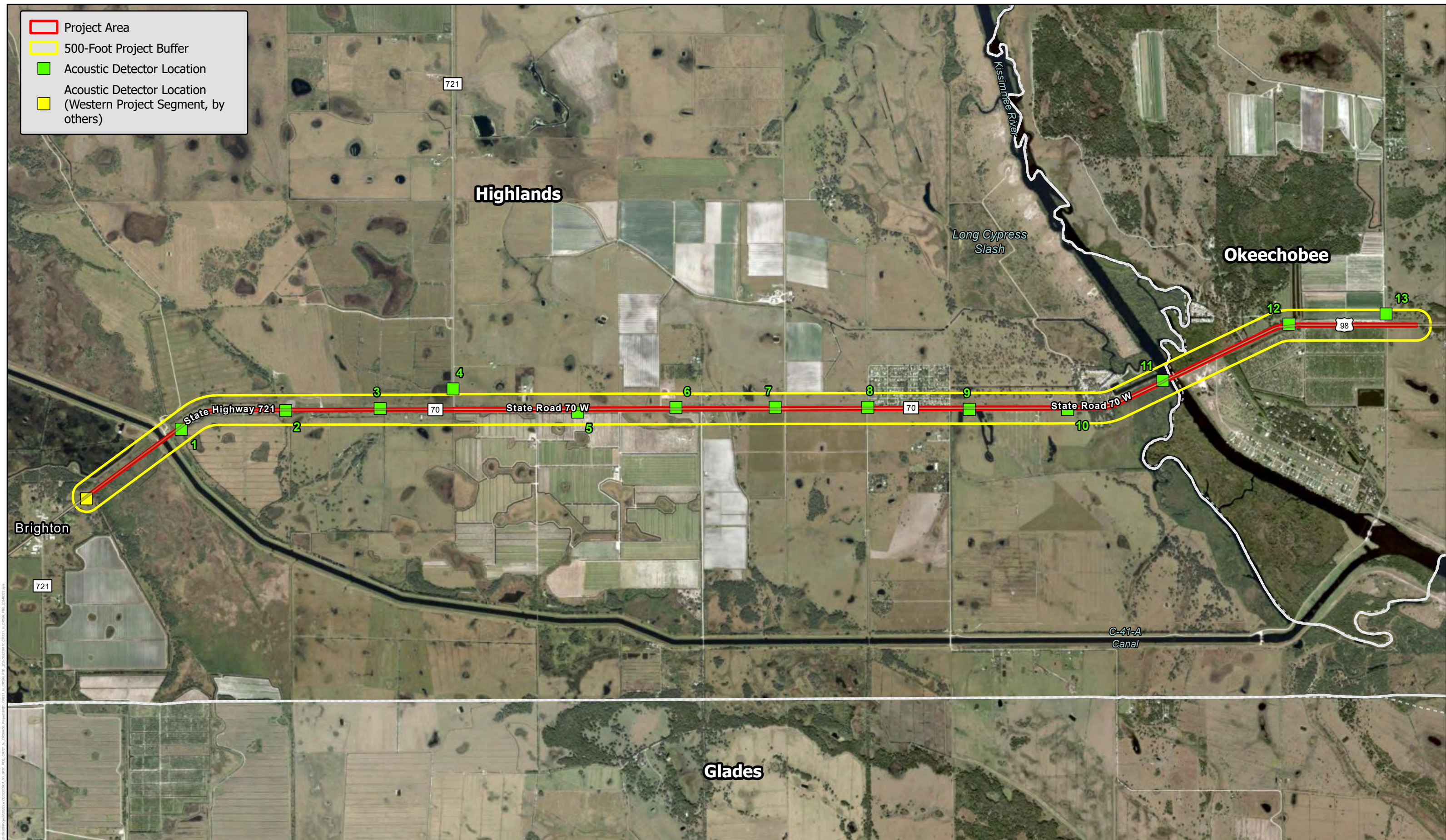


Figure 2. Florida Bonneted Bat (*Eumops floridanus*) Acoustic Survey Detector Locations Map

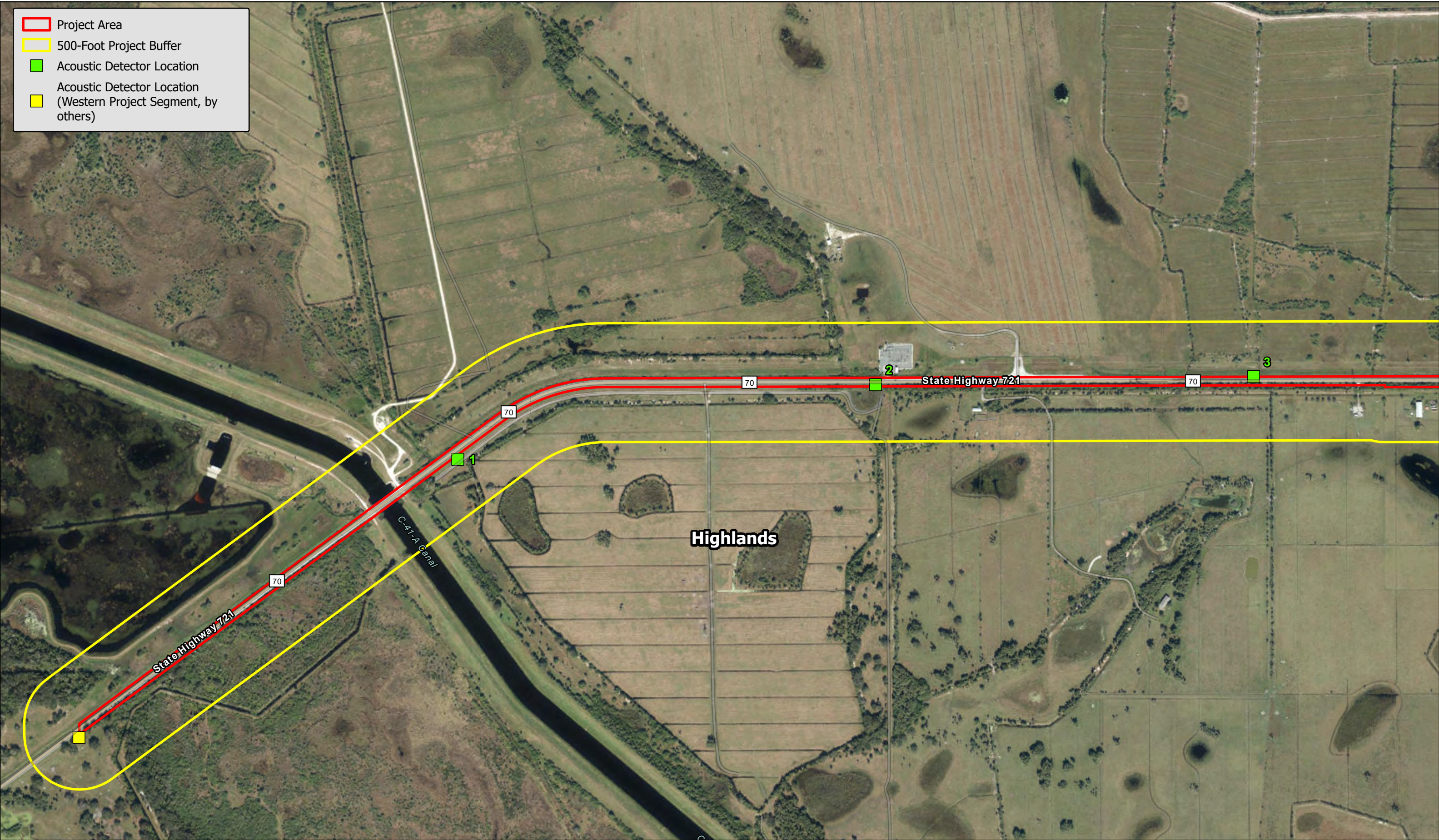
FPID #: 450334-1-22-01
 State Road (SR) 70 from County Road (CR) 721 South to CR 599/128th Avenue
 Highlands and Okeechobee County, Florida



Data Source(s): ESA, ESRI



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- Project Area
- 500-Foot Project Buffer
- Acoustic Detector Location
- Acoustic Detector Location (Western Project Segment, by others)



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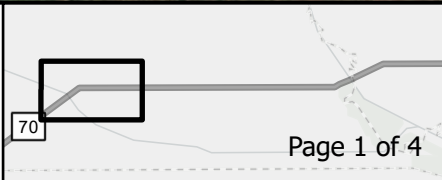


Figure 2. Florida Bonneted Bat (*Eumops floridanus*) Acoustic Survey Detector Locations Map

FPID #: 450334-1-22-01
State Road (SR) 70 from County Road (CR) 721 South to CR 599/128th Avenue
Highlands and Okeechobee County, Florida



Data Source(s): ESA, ESRI



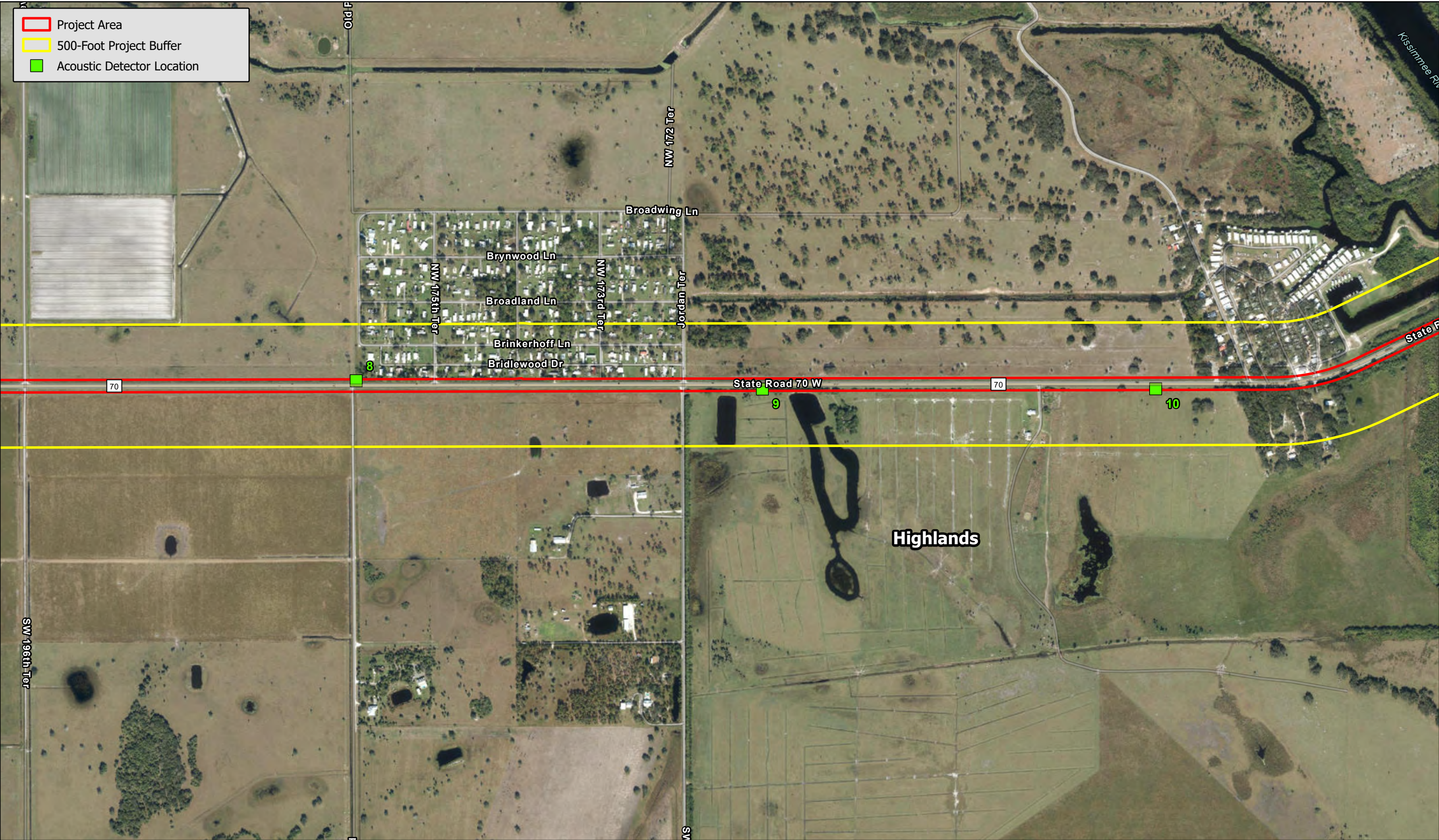


Figure 2. Florida Bonneted Bat (*Eumops floridanus*) Acoustic Survey Detector Locations Map

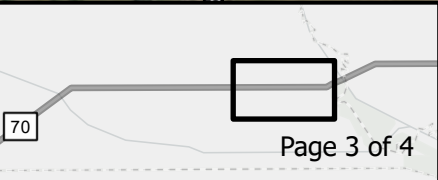
FPID #: 450334-1-22-01
State Road (SR) 70 from County Road (CR) 721 South to CR 599/128th Avenue
Highlands and Okeechobee County, Florida

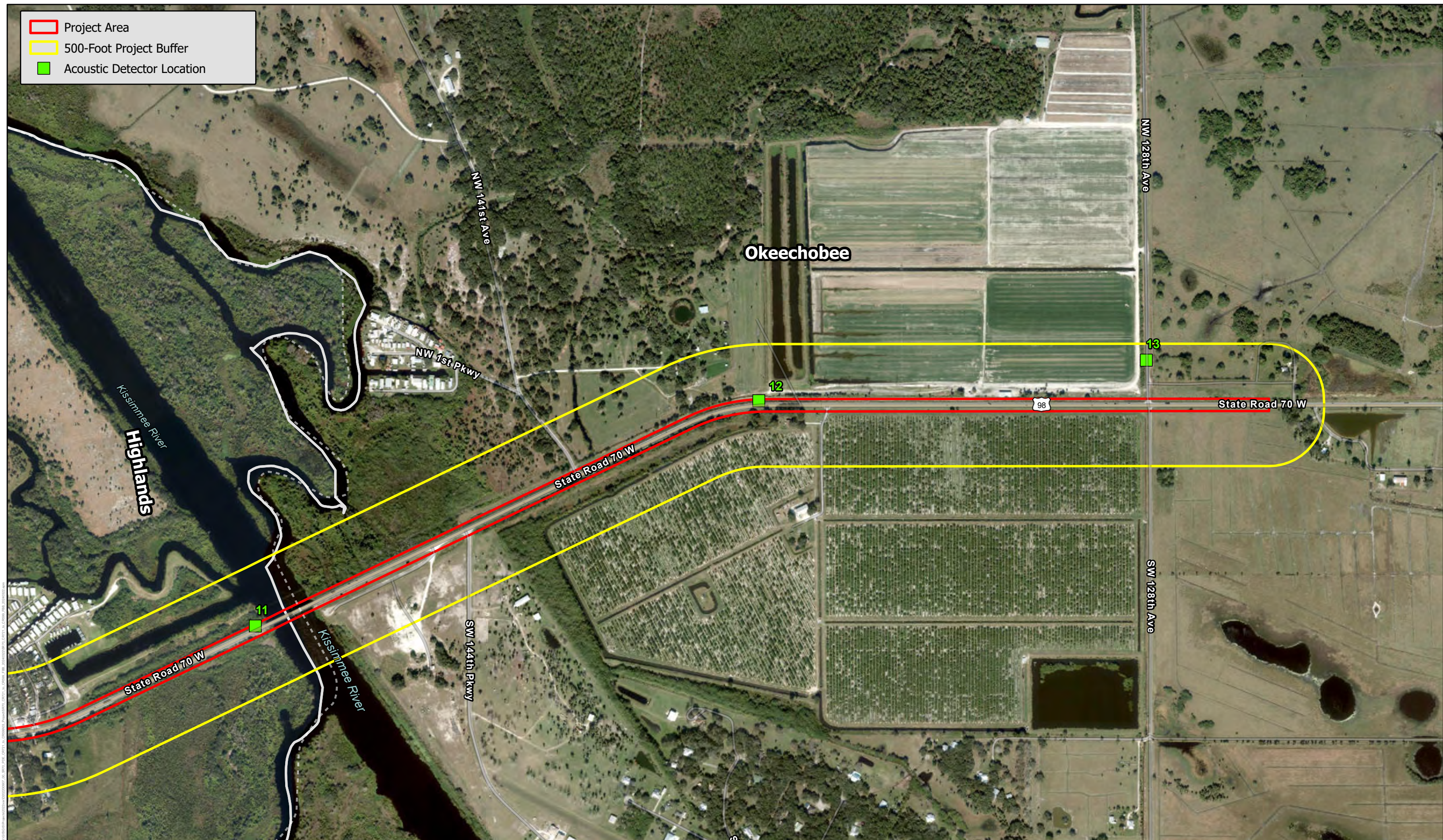


Data Source(s): ESA, ESRI



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- Project Area
- 500-Foot Project Buffer
- Acoustic Detector Location

Okeechobee

Highlands

State Road 70 W

State Road 70 W

State Road 70 W

Kissimmee River

SW 144th Pkwy

SW 128th Ave

NW 128th Ave

NW 141st Ave

NW 1st Pkwy

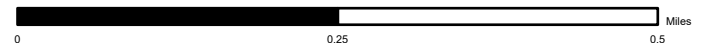
12

13

11

Figure 2. Florida Bonneted Bat (*Eumops floridanus*) Acoustic Survey Detector Locations Map

FPID #: 450334-1-22-01
State Road (SR) 70 from County Road (CR) 721 South to CR 599/128th Avenue
Highlands and Okeechobee County, Florida



Data Source(s): ESA, ESRI



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From: [Alex Hipolito](#)
To: [Alex Hipolito](#)
Subject: RE: [EXTERNAL] REVIEW: Survey Methodology for Florida Grasshopper Sparrow & Bonneted Bat, SR 70 PD&E from CR 721 to CR 559/128 Avenue, Highlands & Okeechobee Counties
Date: Wednesday, September 11, 2024 3:52:42 PM
Attachments: [image001.png](#)

From: Wrublik, John <john_wrublik@fws.gov>
Sent: Thursday, April 18, 2024 8:55 AM
To: James, Jeffrey W <Jeffrey.James@dot.state.fl.us>
Cc: Turley, David <David.Turley@dot.state.fl.us>; Caruso, Kristin <Kristin.Caruso@dot.state.fl.us>; Feagle, Autumn "Brooke" <Brooke.Feagle@dot.state.fl.us>
Subject: Re: [EXTERNAL] REVIEW: Survey Methodology for Florida Grasshopper Sparrow & Bonneted Bat, SR 70 PD&E from CR 721 to CR 559/128 Avenue, Highlands & Okeechobee Counties

EXTERNAL SENDER: Use caution with links and attachments.

Jeffrey,

I have reviewed the document for the SR 70 from County Road 721 to County Road 559 project. I agree that a site-specific survey for the endangered Florida grasshopper sparrow is not needed, and concur with survey methodology proposed for the Florida bonneted bat.

Sincerely,

John M. Wrublik
U.S. Fish and Wildlife Service
777 37th Street, Suite D-101
Vero Beach, Florida 32960
Office: (772) 226-8130
email: John_Wrublik@fws.gov

NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.

From: James, Jeffrey W <Jeffrey.James@dot.state.fl.us>
Sent: Wednesday, April 17, 2024 4:34 PM
To: Wrublik, John <john_wrublik@fws.gov>
Cc: Turley, David <David.Turley@dot.state.fl.us>; Caruso, Kristin <Kristin.Caruso@dot.state.fl.us>; Feagle, Autumn "Brooke" <Brooke.Feagle@dot.state.fl.us>
Subject: [EXTERNAL] REVIEW: Survey Methodology for Florida Grasshopper Sparrow & Bonneted Bat, SR 70 PD&E from CR 721 to CR 559/128 Avenue, Highlands & Okeechobee Counties

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

John – please see the attached Survey Methodology for Florida Grasshopper Sparrow & Bonneted Bat for review.

Thank you in advance for your review. If you have any questions or require additional information, please contact me.

Jeffrey W. James
Environmental Manager
Florida Department of Transportation, District 1
801 North Broadway Avenue
P.O. Box 1249
Bartow, FL 33831-1249
(863) 519-2625
Jeffrey.James@dot.state.fl.us



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Appendix B

REPRESENTATIVE PHOTOGRAPHS OF ACOUSTIC SURVEY STATIONS



Survey Station No. 1



Survey Station No. 2



Survey Station No. 3



Survey Station No. 4

SR 70 from CR 721 S to CR 599/128th Avenue
FPID No. 450334-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 5



Survey Station No. 6

SR 70 from CR 721 S to CR 599/128th Avenue
FPID No. 450334-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 7



Survey Station No. 8

SR 70 from CR 721 S to CR 599/128th Avenue
FPID No. 450334-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 9



Survey Station No. 10

SR 70 from CR 721 S to CR 599/128th Avenue
FPID No. 450334-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 11



Survey Station No. 12



Survey Station No. 13

SR 70 from CR 721 S to CR 599/128th Avenue
FPID No. 450334-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations

Appendix C

NOAA NATIONAL WEATHER SERVICE DATA

Survey Day	Date	Time	Temperature	Dew Point	Humidity	Wind Direction	Wind Speed	Wind Gust	Pressure	Precipitation	Conditions	Within FBB Parameters
1	Sunset	7:58 PM										Yes
	7:15 PM	81 °F	66 °F	61 %	E	8 mph	14 mph	29.88 in	0.0 in	Fair		
	7:35 PM	81 °F	66 °F	61 %	E	8 mph	15 mph	29.89 in	0.0 in	Partly Cloudy		
	7:55 PM	79 °F	66 °F	65 %	VAR	6 mph	0 mph	29.90 in	0.0 in	Partly Cloudy		
	8:15 PM	77 °F	68 °F	74 %	E	5 mph	0 mph	29.91 in	0.0 in	Fair		
	8:35 PM	75 °F	68 °F	78 %	VAR	3 mph	0 mph	29.91 in	0.0 in	Fair		
	8:55 PM	75 °F	68 °F	78 %	E	5 mph	0 mph	29.92 in	0.0 in	Fair		
	9:15 PM	73 °F	68 °F	83 %	VAR	5 mph	0 mph	29.92 in	0.0 in	Fair		
	9:35 PM	73 °F	68 °F	83 %	E	5 mph	0 mph	29.92 in	0.0 in	Fair		
	9:55 PM	73 °F	68 °F	83 %	VAR	3 mph	0 mph	29.92 in	0.0 in	Mostly Cloudy		
	10:15 PM	72 °F	68 °F	88 %	VAR	5 mph	0 mph	29.92 in	0.0 in	Mostly Cloudy		
	10:35 PM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Cloudy		
	10:55 PM	70 °F	68 °F	94 %	CALM	0 mph	0 mph	29.94 in	0.0 in	Cloudy		
	11:15 PM	70 °F	68 °F	94 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Cloudy		
	11:35 PM	68 °F	68 °F	100 %	E	3 mph	0 mph	29.93 in	0.0 in	Partly Cloudy		
	11:55 PM	68 °F	68 °F	100 %	E	3 mph	0 mph	29.92 in	0.0 in	Fair		
	12:15 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Fair		
	12:35 AM	68 °F	68 °F	100 %	E	3 mph	0 mph	29.92 in	0.0 in	Fair		
	12:55 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Fair		
	1:15 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Fair		
	1:35 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Fair		
	1:55 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair		
	2:15 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair		
	2:35 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair		
	2:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Mist		
	3:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair		
	3:35 AM	63 °F	63 °F	100 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair		
	3:55 AM	64 °F	64 °F	100 %	ENE	5 mph	0 mph	29.88 in	0.0 in	Fair		
	4:15 AM	63 °F	63 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Mist		
	4:35 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair		
	4:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair		
	5:15 AM	61 °F	61 °F	100 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair		
	5:35 AM	63 °F	63 °F	100 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair		
5:55 AM	64 °F	64 °F	100 %	NNE	5 mph	0 mph	29.91 in	0.0 in	Fair			
6:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.92 in	0.0 in	Fair			
6:35 AM	64 °F	64 °F	100 %	NE	5 mph	0 mph	29.93 in	0.0 in	Fair			
6:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.94 in	0.0 in	Fair			
7:15 AM	63 °F	63 °F	100 %	CALM	0 mph	0 mph	29.95 in	0.0 in	Light Rain			
Sunrise	6:43 AM											
2	Sunset	7:58 PM										Yes
	7:15 PM	81 °F	66 °F	61 %	E	8 mph	15 mph	29.91 in	0.0 in	Fair		
	7:35 PM	79 °F	66 °F	65 %	E	8 mph	17 mph	29.92 in	0.0 in	Fair		
	7:55 PM	77 °F	66 °F	69 %	VAR	7 mph	13 mph	29.92 in	0.0 in	Fair		
	8:15 PM	77 °F	68 °F	74 %	VAR	7 mph	13 mph	29.93 in	0.0 in	Fair		
	8:35 PM	75 °F	68 °F	78 %	E	3 mph	0 mph	29.93 in	0.0 in	Fair		
	8:55 PM	75 °F	68 °F	78 %	E	5 mph	0 mph	29.93 in	0.0 in	Fair		
	9:15 PM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.94 in	0.0 in	Fair		
	9:35 PM	73 °F	68 °F	83 %								

1

Yes

2

Yes

7	Sunset	8:01 PM										No - Wind over 9 mph within first 5 hours of survey.
	7:15 PM	90 °F	68 °F	49 %	SE	8 mph	14 mph	29.84 in	0.0 in	Fair		
	7:35 PM	86 °F	68 °F	55 %	ESE	7 mph	0 mph	29.84 in	0.0 in	Fair		
7:55 PM	84 °F	66 °F	55 %	ESE	9 mph	0 mph	29.84 in	0.0 in	Fair			
8:15 PM	82 °F	66 °F	58 %	VAR	7 mph	0 mph	29.85 in	0.0 in	Fair			
8:35 PM	82 °F	64 °F	54 %	SE	8 mph	14 mph	29.86 in	0.0 in	Fair			
8:55 PM	81 °F	66 °F	61 %	SE	7 mph	0 mph	29.86 in	0.0 in	Fair			
9:15 PM	81 °F	66 °F	61 %	SE	9 mph	0 mph	29.87 in	0.0 in	Fair			
9:35 PM	79 °F	68 °F	69 %	SE	8 mph	0 mph	29.87 in	0.0 in	Fair			
9:55 PM	79 °F	68 °F	69 %	SE	8 mph	15 mph	29.88 in	0.0 in	Fair			
10:15 PM	79 °F	70 °F	74 %	SSE	7 mph	0 mph	29.88 in	0.0 in	Fair			
10:35 PM	79 °F	70 °F	74 %	SSE	8 mph	17 mph	29.89 in	0.0 in	Fair			
10:55 PM	79 °F	70 °F	74 %	SSE	12 mph	0 mph	29.90 in	0.0 in	Fair			
11:15 PM	79 °F	70 °F	74 %	SSE	9 mph	15 mph	29.90 in	0.0 in	Fair			
11:35 PM	79 °F	70 °F	74 %	S	10 mph	0 mph	29.91 in	0.0 in	Fair			
11:55 PM	79 °F	72 °F	78 %	S	9 mph	16 mph	29.90 in	0.0 in	Fair			
12:15 AM	77 °F	72 °F	83 %	S	12 mph	17 mph	29.91 in	0.0 in	Fair			
12:35 AM	77 °F	72 °F	83 %	S	9 mph	16 mph	29.91 in	0.0 in	Fair			
12:55 AM	77 °F	72 °F	83 %	S	8 mph	16 mph	29.90 in	0.0 in	Fair			
1:15 AM	77 °F	72 °F	83 %	S	7 mph	17 mph	29.90 in	0.0 in	Fair			
1:35 AM	77 °F	72 °F	83 %	S	9 mph	15 mph	29.90 in	0.0 in	Fair			
1:55 AM	77 °F	72 °F	83 %	S	8 mph	15 mph	29.89 in	0.0 in	Fair			
2:15 AM	77 °F	72 °F	83 %	S	7 mph	0 mph	29.88 in	0.0 in	Partly Cloudy			
2:35 AM	77 °F	72 °F	83 %	S	7 mph	0 mph	29.88 in	0.0 in	Mostly Cloudy			
2:55 AM	77 °F	72 °F	83 %	S	8 mph	0 mph	29.87 in	0.0 in	Mostly Cloudy			
3:15 AM	77 °F	70 °F	78 %	S	8 mph	0 mph	29.87 in	0.0 in	Cloudy			
3:35 AM	77 °F	72 °F	83 %	S	7 mph	0 mph	29.87 in	0.0 in	Cloudy			
3:55 AM	75 °F	72 °F	89 %	S	7 mph	0 mph	29.87 in	0.0 in	Cloudy			
4:15 AM	75 °F	72 °F	89 %	S	8 mph	0 mph	29.87 in	0.0 in	Cloudy			
4:35 AM	75 °F	72 °F	89 %	S	7 mph	0 mph	29.87 in	0.0 in	Mostly Cloudy			
4:55 AM	75 °F	72 °F	89 %	S	7 mph	0 mph	29.87 in	0.0 in	Mostly Cloudy			
5:15 AM	75 °F	72 °F	89 %	S	7 mph	0 mph	29.86 in	0.0 in	Cloudy			
5:35 AM	75 °F	72 °F	89 %	S	9 mph	0 mph	29.86 in	0.0 in	Mostly Cloudy			
5:55 AM	75 °F	72 °F	89 %	S	6 mph	0 mph	29.87 in	0.0 in	Mostly Cloudy			
6:15 AM	75 °F	72 °F	89 %	S	6 mph	0 mph	29.87 in	0.0 in	Mostly Cloudy			
6:55 AM	73 °F	72 °F	94 %	SSW	5 mph	0 mph	29.88 in	0.0 in	Fair			
7:15 AM	75 °F	73 °F	94 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Partly Cloudy			
Sunrise	6:39 AM											
8	Sunset	8:02 PM										Yes
	7:15 PM	91 °F	68 °F	46 %	SSW	7 mph	0 mph	29.81 in	0.0 in	Fair		
	7:35 PM	90 °F	68 °F	49 %	SSW	7 mph	0 mph	29.81 in	0.0 in	Fair		
7:55 PM	88 °F	68 °F	52 %	SSW	6 mph	0 mph	29.82 in	0.0 in	Fair			
8:15 PM	86 °F	68 °F	55 %	CALM	0 mph	0 mph	29.83 in	0.0 in	Fair			
8:35 PM	84 °F	68 °F	58 %	W	6 mph	0 mph	29.84 in	0.0 in	Fair			
8:55 PM	86 °F	70 °F	58 %	W	7 mph	0 mph	29.86 in	0.0 in	Fair			
9:15 PM	84 °F	72 °F	66 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
9:35 PM	84 °F	72 °F	66 %	W	3 mph	0 mph	29.87 in	0.0 in	Fair			
9:55 PM	82 °F	72 °F	70 %	W	7 mph	0 mph	29.87 in	0.0 in	Fair			
10:15 PM	82 °F	72 °F	70 %	W	5 mph	0 mph	29.88 in	0.0 in	Fair			
10:35 PM	81 °F	72 °F	74 %	W	6 mph	0 mph	29.88 in	0.0 in	Fair			
10:55 PM	81 °F	70 °F	70 %	W	6 mph	0 mph	29.88 in	0.0 in	Fair			
11:15 PM	79 °F	72 °F	78 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair			
11:35 PM	79 °F	72 °F	78 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair			
11:55 PM	79 °F	73 °F	83 %	SSW	7 mph	0 mph	29.88 in	0.0 in	Fair			
12:15 AM	77 °F	73 °F	89 %	WSW	3 mph	0 mph	29.89 in	0.0 in	Mostly Cloudy			
12:35 AM	77 °F	73 °F	89 %	WSW	6 mph	0 mph	29.88 in	0.0 in	Mostly Cloudy			
12:55 AM	77 °F	73 °F	89 %	SW	7 mph	0 mph	29.87 in	0.0 in	Mostly Cloudy			
1:15 AM	77 °F	73 °F	89 %	SW	7 mph	0 mph	29.86 in	0.0 in	Fair			
1:35 AM	77 °F	73 °F	89 %	SW	9 mph	0 mph	29.85 in	0.0 in	Fair			
1:55 AM	75 °F	75 °F	100 %	WSW	9 mph	0 mph	29.85 in	0.0 in	Fair			
2:15 AM	75 °F	75 °F	100 %	WSW	9 mph	0 mph	29.85 in	0.0 in	Fair			
2:35 AM	75 °F	75 °F	100 %	W	9 mph	0 mph	29.84 in	0.0 in	Fair			
2:55 AM	75 °F	75 °F	100 %	W	8 mph	0 mph	29.84 in	0.0 in	Partly Cloudy			
3:15 AM	75 °F	75 °F	100 %	W	7 mph	0 mph	29.84 in	0.0 in	Fair			
3:35 AM	75 °F	75 °F	100 %	WSW	6 mph	0 mph	29.84 in	0.0 in	Mostly Cloudy			
3:55 AM	75 °F	75 °F	100 %	WSW	6 mph	0 mph	29.83 in	0.0 in	Cloudy			
4:15 AM	75 °F	75 °F	100 %	W	6 mph	0 mph	29.83 in	0.0 in	Partly Cloudy			
4:35 AM	75 °F	75 °F	100 %	WSW	5 mph	0 mph	29.83 in	0.0 in	Fair			
4:55 AM	73 °F	73 °F	100 %	WSW	5 mph	0 mph	29.83 in	0.0 in	Mostly Cloudy			
5:15 AM	75 °F	75 °F	100 %	WSW	6 mph	0 mph	29.82 in	0.0 in	Cloudy			
5:35 AM	73 °F	73 °F	100 %	WSW	5 mph	0 mph	29.82 in	0.0 in	Fog			
5:55 AM	73 °F	73 °F	100 %	WSW	5 mph	0 mph	29.82 in	0.0 in	Fog			
6:15 AM	73 °F	73 °F	100 %	SW	3 mph	0 mph	29.82 in	0.0 in	Mist			
6:35 AM	73 °F	73 °F	100 %	W	6 mph	0 mph	29.82 in	0.0 in	Fog			
6:55 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.83 in	0.0 in	Fog			
7:15 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.83 in	0.0 in	Mostly Cloudy			
Sunrise	6:39 AM											

No - Wind over 9 mph within first 5 hours of survey.

No - Wind over 9 mph within first 5 hours of survey.

17	Sunset		8:07 PM								
	5/18/2024 - 5/19/2024	7:35 PM	91 °F	68 %F	46 %	WNW	10 mph	0 mph	29.88 in	0.0 in	Fair
		7:55 PM	90 °F	68 %F	49 %	WNW	8 mph	0 mph	29.89 in	0.0 in	Fair
		8:15 PM	88 °F	68 %F	52 %	WNW	6 mph	0 mph	29.89 in	0.0 in	Partly Cloudy
		8:35 PM	88 °F	68 %F	52 %	WNW	3 mph	0 mph	29.89 in	0.0 in	Mostly Cloudy
		8:55 PM	82 °F	73 %F	74 %	VAR	7 mph	0 mph	29.90 in	0.0 in	Mostly Cloudy
		9:15 PM	81 °F	73 %F	79 %	NE	6 mph	0 mph	29.90 in	0.0 in	Cloudy
		9:35 PM	81 °F	72 %F	74 %	ENE	6 mph	0 mph	29.91 in	0.0 in	Cloudy
		9:55 PM	79 °F	72 %F	78 %	E	5 mph	0 mph	29.92 in	0.0 in	Cloudy
		10:15 PM	79 °F	72 %F	78 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Cloudy
		10:35 PM	79 °F	73 %F	83 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Cloudy
		10:55 PM	77 °F	73 %F	89 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Cloudy
		11:15 PM	77 °F	73 %F	89 %	SSE	3 mph	0 mph	29.93 in	0.0 in	Mostly Cloudy
		11:35 PM	77 °F	73 %F	89 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Mostly Cloudy
		11:55 PM	77 °F	73 %F	89 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Fair
		12:15 AM	79 °F	75 %F	89 %	S	3 mph	0 mph	29.93 in	0.0 in	Fair
		12:35 AM	79 °F	75 %F	89 %	CALM	0 mph	0 mph	29.92 in	0.0 in	Fair
		12:55 AM	79 °F	77 %F	94 %	S	3 mph	0 mph	29.91 in	0.0 in	Fair
		1:15 AM	77 °F	77 %F	100 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Fair
		1:35 AM	79 °F	79 %F	100 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair
		1:55 AM	77 °F	77 %F	100 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair
		2:15 AM	77 °F	77 %F	100 %	SW	5 mph	0 mph	29.89 in	0.0 in	Fair
		2:35 AM	79 °F	77 %F	94 %	SW	7 mph	0 mph	29.89 in	0.0 in	Fair
		2:55 AM	79 °F	77 %F	94 %	SSW	7 mph	0 mph	29.88 in	0.0 in	Fair
		3:15 AM	79 °F	75 %F	89 %	S	7 mph	0 mph	29.87 in	0.0 in	Fair
		3:35 AM	79 °F	75 %F	89 %	SSW	8 mph	0 mph	29.87 in	0.0 in	Fair
		3:55 AM	79 °F	75 %F	89 %	SSW	7 mph	0 mph	29.86 in	0.0 in	Fair
		4:15 AM	79 °F	77 %F	94 %	SW	6 mph	0 mph	29.87 in	0.0 in	Partly Cloudy
		4:35 AM	79 °F	77 %F	94 %	SSW	6 mph	0 mph	29.86 in	0.0 in	Mostly Cloudy
		4:55 AM	79 °F	77 %F	94 %	SW	6 mph	0 mph	29.87 in	0.0 in	Fair
		5:15 AM	79 °F	77 %F	94 %	SSW	7 mph	0 mph	29.86 in	0.0 in	Fair
		5:35 AM	79 °F	75 %F	89 %	SSW	8 mph	0 mph	29.87 in	0.0 in	Fair
		5:55 AM	79 °F	75 %F	89 %	SW	7 mph	0 mph	29.87 in	0.0 in	Fair
		6:15 AM	79 °F	75 %F	89 %	W	6 mph	0 mph	29.88 in	0.0 in	Fair
		6:35 AM	77 °F	75 %F	94 %	WSW	8 mph	0 mph	29.89 in	0.0 in	Fair
		6:55 AM	77 °F	75 %F	94 %	WSW	7 mph	0 mph	29.90 in	0.0 in	Fair
		7:15 AM	77 °F	75 %F	94 %	WSW	6 mph	0 mph	29.91 in	0.0 in	Fair
	Sunrise		6:34 AM								
18	Sunset		8:08 PM								
	5/19/2024 - 5/20/2024	7:35 PM	81 °F	72 %F	74 %	CALM	0 mph	0 mph	29.82 in	0.0 in	Mostly Cloudy
		7:55 PM	79 °F	72 %F	78 %	VAR	7 mph	0 mph	29.83 in	0.0 in	Mostly Cloudy
		8:15 PM	79 °F	72 %F	78 %	VAR	5 mph	12 mph	29.83 in	0.0 in	Mostly Cloudy
		8:35 PM	79 °F	72 %F	78 %	CALM	0 mph	0 mph	29.84 in	0.0 in	Cloudy
		8:55 PM	79 °F	72 %F	78 %	SSE	3 mph	0 mph	29.85 in	0.0 in	Cloudy
		9:15 PM	79 °F	73 %F	83 %	CALM	0 mph	0 mph	29.85 in	0.0 in	Cloudy
		9:35 PM	79 °F	73 %F	83 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Cloudy
		9:55 PM	79 °F	73 %F	83 %	CALM	0 mph	0 mph	29.85 in	0.0 in	Mostly Cloudy
		10:15 PM	77 °F	73 %F	89 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair
		10:35 PM	77 °F	73 %F	89 %	E	3 mph	0 mph	29.86 in	0.0 in	Partly Cloudy
		10:55 PM	75 °F	72 %F	89 %	VAR	3 mph	0 mph	29.86 in	0.0 in	Partly Cloudy
		11:15 PM	75 °F	70 %F	83 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair
		11:35 PM	73 °F	72 %F	94 %	SSE	3 mph	0 mph	29.87 in	0.0 in	Fair
		11:55 PM	73 °F	72 %F	94 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair
		12:15 AM	73 °F	72 %F	94 %	SSE	5 mph	0 mph	29.87 in	0.0 in	Fair
		12:35 AM	73 °F	72 %F	94 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair
		12:55 AM	73 °F	73 %F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair
		1:15 AM	72 °F	72 %F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair
		1:35 AM	73 °F	73 %F	100 %	CALM	0 mph	0 mph	29.85 in	0.0 in	Fair
		1:55 AM	72 °F	72 %F	100 %	CALM	0 mph	0 mph	29.84 in	0.0 in	Fair
		2:15 AM	72 °F	72 %F	100 %	CALM	0 mph	0 mph	29.83 in	0.0 in	Fair
		2:35 AM	72 °F	72 %F	100 %	CALM	0 mph	0 mph	29.82 in	0.0 in	Fair
		2:55 AM	73 °F	73 %F	100 %	WSW	5 mph	0 mph	29.81 in	0.0 in	Fair
		3:15 AM	73 °F	73 %F	100 %	CALM	0 mph	0 mph	29.80 in	0.0 in	Fair
		3:35 AM	73 °F	73 %F	100 %	SW	5 mph	0 mph	29.80 in	0.0 in	Fair
		3:55 AM	73 °F	73 %F	100 %	CALM	0 mph	0 mph	29.80 in	0.0 in	Fair
		4:15 AM	72 °F	72 %F	100 %	CALM	0 mph	0 mph	29.80 in	0.0 in	Fair
		4:35 AM	70 °F	70 %F	100 %	CALM	0 mph	0 mph	29.80 in	0.0 in	Fair
		4:55 AM	72 °F	72 %F	100 %	CALM	0 mph	0 mph	29.80 in	0.0 in	Fair
		5:15 AM	70 °F	70 %F	100 %	CALM	0 mph	0 mph	29.81 in	0.0 in	Fair
		5:35 AM	70 °F	70 %F	100 %	CALM	0 mph	0 mph	29.82 in	0.0 in	Mist
		5:55 AM	70 °F	70 %F	100 %	SSW	5 mph	0 mph	29.82 in	0.0 in	Fair
		6:15 AM	70 °F	70 %F	100 %	CALM	0 mph	0 mph	29.82 in	0.0 in	Fair
		6:35 AM	70 °F	70 %F	100 %	CALM	0 mph	0 mph	29.81 in	0.0 in	Fair
		6:55 AM	70 °F	70 %F	100 %	CALM	0 mph	0 mph	29.82 in	0.0 in	Fair
		7:15 AM	70 °F	70 %F	100 %	CALM	0 mph	0 mph	29.83 in	0.0 in	Fair
	Sunrise		6:33 AM								

No - Wind over 9 mph within first 5 hours of survey.

Yes

19	Sunset		8:08 PM								
	5/20/2024 - 5/21/2024	7:35 PM	77 °F	73 °F	89 %	ENE	6 mph	0 mph	29.80 in	0.0 in	Fair
		7:55 PM	77 °F	72 °F	83 %	ENE	6 mph	0 mph	29.82 in	0.0 in	Fair
		8:15 PM	75 °F	72 °F	89 %	ENE	7 mph	0 mph	29.83 in	0.0 in	Fair
		8:35 PM	75 °F	70 °F	83 %	NE	7 mph	0 mph	29.84 in	0.0 in	Fair
		8:55 PM	73 °F	70 °F	88 %	NE	6 mph	0 mph	29.85 in	0.0 in	Fair
		9:15 PM	73 °F	70 °F	88 %	NE	10 mph	0 mph	29.85 in	0.0 in	Fair
		9:35 PM	73 °F	68 °F	83 %	NE	10 mph	16 mph	29.86 in	0.0 in	Fair
		9:55 PM	73 °F	68 °F	83 %	NE	7 mph	0 mph	29.85 in	0.0 in	Haze
		10:15 PM	73 °F	68 °F	83 %	NE	5 mph	0 mph	29.86 in	0.0 in	Fair
		10:35 PM	73 °F	68 °F	83 %	NE	7 mph	0 mph	29.86 in	0.0 in	Mist
		10:55 PM	72 °F	70 °F	94 %	NNE	5 mph	0 mph	29.86 in	0.0 in	Fair
		11:15 PM	72 °F	68 °F	88 %	NNE	5 mph	0 mph	29.86 in	0.0 in	Fair
		11:35 PM	72 °F	70 °F	94 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair
		11:55 PM	72 °F	68 °F	88 %	NNW	5 mph	0 mph	29.87 in	0.0 in	Fair
		12:15 AM	72 °F	70 °F	94 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Partly Cloudy
		12:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Cloudy
		12:55 AM	70 °F	70 °F	100 %	N	6 mph	0 mph	29.86 in	0.0 in	Cloudy
		1:15 AM	70 °F	70 °F	100 %	N	7 mph	0 mph	29.86 in	0.0 in	Cloudy
		1:35 AM	70 °F	68 °F	94 %	N	6 mph	0 mph	29.86 in	0.0 in	Cloudy
		1:55 AM	70 °F	68 °F	94 %	NNW	5 mph	0 mph	29.85 in	0.0 in	Mostly Cloudy
		2:15 AM	68 °F	68 °F	100 %	NNW	6 mph	0 mph	29.85 in	0.0 in	Fair
		2:35 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	29.85 in	0.0 in	Partly Cloudy
		2:55 AM	68 °F	68 °F	100 %	N	7 mph	0 mph	29.84 in	0.0 in	Mostly Cloudy
		3:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	29.84 in	0.0 in	Cloudy
		3:35 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	29.84 in	0.0 in	Mostly Cloudy
		3:55 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	29.83 in	0.0 in	Fair
		4:15 AM	68 °F	68 °F	100 %	NNW	5 mph	0 mph	29.83 in	0.0 in	Fair
		4:35 AM	68 °F	68 °F	100 %	N	5 mph	0 mph	29.83 in	0.0 in	Fair
		4:55 AM	66 °F	66 °F	100 %	NW	3 mph	0 mph	29.83 in	0.0 in	Fair
		5:15 AM	66 °F	66 °F	100 %	NNW	3 mph	0 mph	29.83 in	0.0 in	Fair
		5:35 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	29.83 in	0.0 in	Fair
		5:55 AM	66 °F	66 °F	100 %	WNW	3 mph	0 mph	29.84 in	0.0 in	Fair
		6:15 AM	66 °F	66 °F	100 %	NNW	3 mph	0 mph	29.85 in	0.0 in	Fair
		6:35 AM	66 °F	66 °F	100 %	VAR	5 mph	0 mph	29.85 in	0.0 in	Fair
		6:55 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	29.85 in	0.0 in	Fair
		7:15 AM	66 °F	66 °F	100 %	VAR	3 mph	0 mph	29.86 in	0.0 in	Fair
	Sunrise		6:33 AM								
20	Sunset		8:09 PM								
	5/21/2024 - 5/22/2024	7:35 PM	82 °F	68 °F	62 %	ENE	6 mph	12 mph	29.85 in	0.0 in	Fair
		7:55 PM	81 °F	68 °F	65 %	ENE	8 mph	0 mph	29.86 in	0.0 in	Mostly Cloudy
		8:15 PM	79 °F	68 °F	69 %	NE	7 mph	0 mph	29.86 in	0.0 in	Partly Cloudy
		8:35 PM	79 °F	70 °F	74 %	VAR	5 mph	0 mph	29.87 in	0.0 in	Fair
		8:55 PM	77 °F	70 °F	78 %	ENE	3 mph	0 mph	29.87 in	0.0 in	Fair
		9:15 PM	77 °F	70 °F	78 %	VAR	5 mph	0 mph	29.88 in	0.0 in	Fair
		9:35 PM	77 °F	70 °F	78 %	ENE	5 mph	0 mph	29.88 in	0.0 in	Fair
		9:55 PM	75 °F	70 °F	83 %	VAR	5 mph	0 mph	29.89 in	0.0 in	Fair
		10:15 PM	75 °F	70 °F	83 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Partly Cloudy
		10:35 PM	75 °F	72 °F	89 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Cloudy
		10:55 PM	75 °F	72 °F	89 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Cloudy
		11:15 PM	73 °F	72 °F	94 %	NE	3 mph	0 mph	29.90 in	0.0 in	Cloudy
		11:35 PM	75 °F	72 °F	89 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Cloudy
		11:55 PM	73 °F	72 °F	94 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Cloudy
		12:15 AM	73 °F	72 °F	94 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Cloudy
		12:35 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Cloudy
		12:55 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Cloudy
		1:15 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Cloudy
		1:35 AM	72 °F	72 °F	100 %	NE	3 mph	0 mph	29.90 in	0.0 in	Cloudy
		1:55 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Cloudy
		2:15 AM	72 °F	72 °F	100 %	NE	5 mph	0 mph	29.88 in	0.0 in	Cloudy
		2:35 AM	72 °F	72 °F	100 %	NE	3 mph	0 mph	29.89 in	0.0 in	Cloudy
		2:55 AM	72 °F	72 °F	100 %	ENE	3 mph	0 mph	29.89 in	0.0 in	Cloudy
		3:15 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Cloudy
		3:35 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Cloudy
		3:55 AM	72 °F	72 °F	100 %	NE	5 mph	0 mph	29.88 in	0.0 in	Cloudy
		4:15 AM	72 °F	72 °F	100 %	NNE	6 mph	0 mph	29.88 in	0.0 in	Cloudy
		4:35 AM	72 °F	72 °F	100 %	NE	3 mph	0 mph	29.89 in	0.0 in	Cloudy
		4:55 AM	70 °F	70 °F	100 %	NNE	7 mph	0 mph	29.89 in	0.0 in	Cloudy
		5:15 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Cloudy
		5:35 AM	70 °F	70 °F	100 %	NE	6 mph	0 mph	29.89 in	0.0 in	Cloudy
		5:55 AM	70 °F	70 °F	100 %	NE	6 mph	0 mph	29.89 in	0.0 in	Mostly Cloudy
		6:15 AM	70 °F	70 °F	100 %	NE	5 mph	0 mph	29.90 in	0.0 in	Partly Cloudy
		6:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair
		6:55 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Fair
		7:15 AM	72 °F	72 °F	100 %	NNE	7 mph	0 mph	29.93 in	0.0 in	Fair
	Sunrise		6:33 AM								

No - Wind over 9 mph within first 5 hours of survey.

Yes

Yes

23	Sunset	8:11 PM										Yes		
	5/24/2024 - 5/25/2024	7:35 PM	86 °F	63 °F	45 %	VAR	7 mph	13 mph	29.85 in	0.0 in	Fair			
		7:55 PM	84 °F	63 °F	48 %	VAR	5 mph	0 mph	29.85 in	0.0 in	Fair			
		8:15 PM	82 °F	63 °F	51 %	VAR	6 mph	0 mph	29.86 in	0.0 in	Fair			
		8:35 PM	81 °F	64 °F	58 %	E	6 mph	0 mph	29.86 in	0.0 in	Fair			
		8:55 PM	81 °F	64 °F	58 %	E	5 mph	0 mph	29.87 in	0.0 in	Fair			
		9:15 PM	79 °F	66 °F	65 %	VAR	5 mph	0 mph	29.88 in	0.0 in	Fair			
		9:35 PM	79 °F	66 °F	65 %	VAR	5 mph	0 mph	29.88 in	0.0 in	Fair			
		9:55 PM	77 °F	66 °F	69 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair			
		10:15 PM	77 °F	66 °F	69 %	SSE	5 mph	0 mph	29.91 in	0.0 in	Mostly Cloudy			
		10:35 PM	75 °F	66 °F	73 %	SE	5 mph	0 mph	29.91 in	0.0 in	Partly Cloudy			
		10:55 PM	77 °F	66 °F	69 %	VAR	3 mph	0 mph	29.91 in	0.0 in	Mostly Cloudy			
		11:15 PM	77 °F	68 °F	74 %	SE	5 mph	0 mph	29.91 in	0.0 in	Cloudy			
		11:35 PM	77 °F	68 °F	74 %	SE	6 mph	0 mph	29.91 in	0.0 in	Cloudy			
		11:55 PM	77 °F	68 °F	74 %	VAR	5 mph	0 mph	29.91 in	0.0 in	Cloudy			
		12:15 AM	77 °F	68 °F	74 %	VAR	5 mph	0 mph	29.90 in	0.0 in	Cloudy			
		12:35 AM	77 °F	68 °F	74 %	ESE	5 mph	0 mph	29.90 in	0.0 in	Cloudy			
		12:55 AM	77 °F	68 °F	74 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Cloudy			
		1:15 AM	75 °F	68 °F	78 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Mostly Cloudy			
		1:35 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Partly Cloudy			
		1:55 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Partly Cloudy			
		2:15 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Partly Cloudy			
		2:35 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Mostly Cloudy			
		2:55 AM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Mostly Cloudy			
		3:15 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Partly Cloudy			
		3:35 AM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Partly Cloudy			
		3:55 AM	72 °F	70 °F	94 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
		4:15 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
		4:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
		4:55 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair			
		5:15 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
		5:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
		5:55 AM	70 °F	70 °F	100 %	WNW	5 mph	0 mph	29.87 in	0.0 in	Fair			
		6:15 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair			
	6:35 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair				
	6:55 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair				
	7:15 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair				
	Sunrise	6:31 AM												
	24	Sunset	8:11 PM										No - Wind over 9 mph within first 5 hours of survey.	
		5/25/2024 - 5/26/2024	7:35 PM	82 °F	72 °F	70 %	SSE	6 mph	0 mph	29.83 in	0.0 in			Light Rain
			7:55 PM	81 °F	73 °F	79 %	VAR	5 mph	12 mph	29.84 in	0.0 in			Light Rain
			8:15 PM	79 °F	73 °F	83 %	VAR	5 mph	12 mph	29.86 in	0.0 in			Mostly Cloudy
			8:35 PM	79 °F	73 °F	83 %	SSE	8 mph	0 mph	29.87 in	0.0 in			Mostly Cloudy
			8:55 PM	81 °F	73 °F	79 %	SSE	9 mph	0 mph	29.88 in	0.0 in			Mostly Cloudy
			9:15 PM	79 °F	73 °F	83 %	S	12 mph	21 mph	29.89 in	0.0 in			Cloudy
			9:35 PM	79 °F	75 °F	89 %	SSE	9 mph	0 mph	29.90 in	0.0 in			Cloudy
			9:55 PM	79 °F	73 °F	83 %	SSE	10 mph	21 mph	29.90 in	0.0 in			Mostly Cloudy
10:15 PM			79 °F	72 °F	78 %	SE	5 mph	14 mph	29.89 in	0.0 in	Mostly Cloudy			
10:35 PM			77 °F	72 °F	83 %	N	5 mph	0 mph	29.90 in	0.0 in	Cloudy			
10:55 PM			77 °F	72 °F	83 %	E	3 mph	0 mph	29.90 in	0.0 in	Cloudy			
11:15 PM			75 °F	72 °F	89 %	E	5 mph	0 mph	29.89 in	0.0 in	Partly Cloudy			
11:35 PM			75 °F	73 °F	94 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair			
11:55 PM			75 °F	73 °F	94 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Fair			
12:15 AM			73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair			
12:35 AM			73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair			
12:55 AM			73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair			
1:15 AM			73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair			
1:35 AM			73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair			
1:55 AM			73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair			
2:15 AM			72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair			
2:35 AM			72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
2:55 AM			72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
3:15 AM			72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
3:35 AM			72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
3:55 AM			72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
4:15 AM			70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
4:35 AM			72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair			
4:55 AM			70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair			
5:15 AM			72 °F	72 °F	100 %	ENE	5 mph	0 mph	29.87 in	0.0 in	Fair			
5:35 AM			72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.86 in	0.0 in	Fair			
5:55 AM			72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair			
6:15 AM			70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair			
6:35 AM		70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.87 in	0.0 in	Fair				
6:55 AM		70 °F	70 °F	100 %	NW	5 mph	0 mph	29.88 in	0.0 in	Fair				
7:15 AM		72 °F	72 °F	100 %	NNW	3 mph	0 mph	29.90 in	0.0 in	Fair				
Sunrise		6:31 AM												

25	Sunset		8:12 PM								
	5/26/2024 - 5/27/2024	7:35 PM	90 °F	66 °F	46 %	S	6 mph	0 mph	29.86 in	0.0 in	Fair
		7:55 PM	90 °F	68 °F	49 %	S	3 mph	0 mph	29.87 in	0.0 in	Mostly Cloudy
		8:15 PM	88 °F	70 °F	55 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Mostly Cloudy
		8:35 PM	90 °F	68 °F	49 %	W	6 mph	0 mph	29.89 in	0.0 in	Cloudy
		8:55 PM	90 °F	64 °F	43 %	W	7 mph	0 mph	29.89 in	0.0 in	Cloudy
		9:15 PM	88 °F	64 °F	46 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Cloudy
		9:35 PM	86 °F	64 °F	48 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Mostly Cloudy
		9:55 PM	84 °F	63 °F	48 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Partly Cloudy
		10:15 PM	84 °F	63 °F	48 %	CALM	0 mph	0 mph	29.92 in	0.0 in	Fair
		10:35 PM	82 °F	64 °F	54 %	N	6 mph	0 mph	29.92 in	0.0 in	Fair
		10:55 PM	81 °F	64 °F	58 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Fair
		11:15 PM	79 °F	66 °F	65 %	S	6 mph	0 mph	29.93 in	0.0 in	Fair
		11:35 PM	79 °F	66 °F	65 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Fair
		11:55 PM	77 °F	66 °F	69 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Fair
		12:15 AM	77 °F	66 °F	69 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Fair
		12:35 AM	75 °F	66 °F	73 %	CALM	0 mph	0 mph	29.92 in	0.0 in	Fair
		12:55 AM	75 °F	66 °F	73 %		0 mph	0 mph	29.92 in	0.0 in	Fair
		1:15 AM	72 °F	66 °F	83 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Fair
		1:35 AM	72 °F	66 °F	83 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair
		1:55 AM	73 °F	66 °F	78 %	WNW	3 mph	0 mph	29.91 in	0.0 in	Fair
		2:15 AM	73 °F	66 °F	78 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair
		2:35 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Fair
		2:55 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair
		3:15 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair
		3:35 AM	73 °F	68 °F	83 %	WNW	3 mph	0 mph	29.88 in	0.0 in	Fair
		3:55 AM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair
		4:15 AM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair
		4:35 AM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	29.88 in	0.0 in	Fair
		4:55 AM	72 °F	68 °F	88 %	W	5 mph	0 mph	29.89 in	0.0 in	Fair
		5:15 AM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Partly Cloudy
		5:35 AM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	29.89 in	0.0 in	Mostly Cloudy
		5:55 AM	70 °F	68 °F	94 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair
		6:15 AM	70 °F	68 °F	94 %	CALM	0 mph	0 mph	29.90 in	0.0 in	Fair
		6:35 AM	70 °F	68 °F	94 %	CALM	0 mph	0 mph	29.91 in	0.0 in	Fair
		6:55 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.92 in	0.0 in	Fair
		7:15 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	29.92 in	0.0 in	Fair
	Sunrise		6:31 AM								
26	Sunset		8:12 PM								
	5/27/2024 - 5/28/2024	7:35 PM	93 °F	64 °F	38 %	SSE	5 mph	0 mph	29.89 in	0.0 in	Fair
		7:55 PM	91 °F	64 °F	41 %	S	5 mph	0 mph	29.89 in	0.0 in	Fair
		8:15 PM	90 °F	66 °F	46 %	S	3 mph	0 mph	29.90 in	0.0 in	Fair
		8:35 PM	88 °F	66 °F	49 %	S	3 mph	0 mph	29.90 in	0.0 in	Fair
		8:55 PM	88 °F	68 °F	52 %	S	5 mph	0 mph	29.90 in	0.0 in	Fair
		9:15 PM	88 °F	70 °F	55 %	SSW	6 mph	0 mph	29.91 in	0.0 in	Mostly Cloudy
		9:35 PM	86 °F	72 °F	62 %	SSW	6 mph	0 mph	29.92 in	0.0 in	Cloudy
		9:55 PM	86 °F	72 °F	62 %	SSW	6 mph	0 mph	29.92 in	0.0 in	Mostly Cloudy
		10:15 PM	86 °F	72 °F	62 %	SSE	5 mph	12 mph	29.93 in	0.0 in	Fair
		10:35 PM	86 °F	73 °F	66 %	S	13 mph	0 mph	29.93 in	0.0 in	Mostly Cloudy
		10:55 PM	86 °F	73 °F	66 %	S	8 mph	14 mph	29.94 in	0.0 in	Fair
		11:15 PM	84 °F	75 °F	74 %	SSE	6 mph	0 mph	29.95 in	0.0 in	Fair
		11:35 PM	84 °F	75 °F	74 %	S	6 mph	0 mph	29.95 in	0.0 in	Fair
		11:55 PM	84 °F	75 °F	74 %	SSE	6 mph	0 mph	29.96 in	0.0 in	Fair
		12:15 AM	84 °F	75 °F	74 %	S	6 mph	12 mph	29.96 in	0.0 in	Fair
		12:35 AM	84 °F	73 °F	70 %	S	6 mph	0 mph	29.97 in	0.0 in	Mostly Cloudy
		12:55 AM	82 °F	73 °F	74 %	SSW	5 mph	0 mph	29.97 in	0.0 in	Cloudy
		1:15 AM	81 °F	73 °F	79 %	SW	5 mph	0 mph	29.97 in	0.0 in	Mostly Cloudy
		1:35 AM	81 °F	75 °F	84 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Fair
		1:55 AM	81 °F	75 °F	84 %	CALM	0 mph	0 mph	29.96 in	0.0 in	Fair
		2:15 AM	79 °F	75 °F	89 %	W	3 mph	0 mph	29.95 in	0.0 in	Fair
		2:35 AM	79 °F	73 °F	83 %	WNW	3 mph	0 mph	29.94 in	0.0 in	Partly Cloudy
		2:55 AM	79 °F	70 °F	74 %	CALM	0 mph	0 mph	29.94 in	0.0 in	Fair
		3:15 AM	77 °F	68 °F	74 %	NW	5 mph	0 mph	29.94 in	0.0 in	Fair
		3:35 AM	77 °F	68 °F	74 %	NW	3 mph	0 mph	29.94 in	0.0 in	Fair
		3:55 AM	77 °F	68 °F	74 %	NW	3 mph	0 mph	29.94 in	0.0 in	Partly Cloudy
		4:15 AM	77 °F	68 °F	74 %	CALM	0 mph	0 mph	29.94 in	0.0 in	Mostly Cloudy
		4:35 AM	75 °F	68 °F	78 %	NW	5 mph	0 mph	29.95 in	0.0 in	Cloudy
		4:55 AM	75 °F	70 °F	83 %	CALM	0 mph	0 mph	29.95 in	0.0 in	Cloudy
		5:15 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.95 in	0.0 in	Cloudy
		5:35 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.96 in	0.0 in	Cloudy
		5:55 AM	73 °F	70 °F	88 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Cloudy
		6:15 AM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Mostly Cloudy
		6:35 AM	73 °F	68 °F	83 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair
		6:55 AM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair
		7:15 AM	73 °F	70 °F	88 %	CALM	0 mph	0 mph	29.99 in	0.0 in	Fair
	Sunrise		6:31 AM								

Yes

No - Wind over 9 mph within first 5 hours of survey.

27	Sunset	8:13 PM										No - Wind over 9 mph and rain within first 5 hours of survey.
	7:35 PM	81 °F	73 °F	79 %	SE	8 mph	16 mph	29.93 in	0.0 in	Mostly Cloudy		
	7:55 PM	79 °F	72 °F	78 %	SSE	12 mph	0 mph	29.94 in	0.0 in	Mostly Cloudy		
	8:15 PM	79 °F	73 °F	83 %	SSE	9 mph	0 mph	29.94 in	0.0 in	Mostly Cloudy		
	8:35 PM	79 °F	73 °F	83 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Cloudy		
	8:55 PM	79 °F	77 °F	94 %	W	14 mph	0 mph	29.96 in	0.0 in	Rain		
	9:15 PM	75 °F	75 °F	100 %	SSW	12 mph	17 mph	29.96 in	0.0 in	T-Storm		
	9:35 PM	75 °F	75 °F	100 %	CALM	0 mph	0 mph	29.96 in	0.0 in	Cloudy		
	9:55 PM	75 °F	75 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.1 in	Mostly Cloudy		
	10:15 PM	75 °F	75 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Fair		
	10:35 PM	75 °F	75 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Fair		
	10:55 PM	75 °F	75 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Partly Cloudy		
	11:15 PM	75 °F	75 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair		
	11:35 PM	75 °F	75 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair		
	11:55 PM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair		
	12:15 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair		
	12:35 AM	75 °F	75 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Fair		
	12:55 AM	75 °F	75 °F	100 %	CALM	0 mph	0 mph	29.96 in	0.0 in	Fair		
	1:15 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Fair		
	1:35 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.96 in	0.0 in	Fair		
	1:55 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.96 in	0.0 in	Fair		
	2:15 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.95 in	0.0 in	Fair		
	2:35 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.95 in	0.0 in	Fair		
	2:55 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.94 in	0.0 in	Fair		
	3:15 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Fair		
	3:35 AM	73 °F	73 °F	100 %	WNW	3 mph	0 mph	29.93 in	0.0 in	Fair		
	3:55 AM	73 °F	73 °F	100 %	NW	3 mph	0 mph	29.92 in	0.0 in	Fair		
	4:15 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.92 in	0.0 in	Fair		
	4:35 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Fair		
	4:55 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Fair		
	5:15 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.93 in	0.0 in	Fair		
	5:35 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.94 in	0.0 in	Fair		
	5:55 AM	73 °F	73 °F	100 %	CALM	0 mph	0 mph	29.95 in	0.0 in	Fair		
	6:15 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Mist		
	6:35 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Mist		
	6:55 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Fog		
	7:15 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Mist		
	Sunrise	6:30 AM										
---: Data not reported by NOAA												
Survey days shaded gray indicate unacceptable weather conditions.												

No - Wind over 9 mph and rain within first 5 hours of survey.

Appendix D

ACOUSTIC DATA SUMMARY

Number of Kaleidoscope Pro Auto ID'd WAV files																Number of manually verified WAV files
Station	Total recorded files	Classified as noise	Not assigned auto ID	Total auto ID'd to species level	Big brown bat (<i>Eptesicus fuscus</i>)	Eastern red bat (<i>Lasiurus borealis</i>)	Hoary bat (<i>Lasiurus cinereus</i>)	Northern yellow bat (<i>Lasiurus intermedius</i>)	Seminole bat (<i>Lasiurus seminolus</i>)	Southeastern myotis (<i>Myotis austroriparius</i>)	Northern Long-Eared Bat (<i>Myotis septentrionalis</i>)	Evening bat (<i>Nycticeius humeralis</i>)	Tricolored bat (<i>Perimyotis subflavus</i>)	Brazilian free-tailed bat (<i>Tadarida brasiliensis</i>)	Florida bonneted bat (<i>Eumops floridanus</i>)	Florida bonneted bat
1	2163	1183	228	752	64	3	53	147	4	1	0	0	11	467	2	0
2	8709	7350	418	941	107	0	64	228	25	1	0	5	8	498	5	0
3	4213	3114	252	847	78	2	94	97	0	0	0	0	0	574	2	0
4	7668	7026	107	535	29	1	77	56	3	2	0	0	2	365	0	0
5	1128	174	154	800	121	1	92	149	1	1	0	0	0	433	2	0
6	679	165	98	416	17	0	58	47	0	0	0	0	1	292	1	0
7	4929	3901	296	732	49	4	126	37	5	0	0	16	1	494	0	0
8	5200	4144	381	675	106	10	90	65	26	1	0	9	7	360	1	0
9	6397	4044	686	1667	138	5	357	249	16	0	0	31	9	859	3	0
10	4780	1797	736	2247	228	26	461	163	10	0	0	18	11	1325	5	0
11	9925	1272	2289	6364	244	48	808	641	130	0	0	7	561	3924	1	0
12	5333	3997	305	1031	304	15	59	80	20	0	0	4	37	510	2	0
13	13280	11533	499	1248	41	7	140	129	17	0	0	2	27	883	2	0

Total	74404
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NOTE:
The following species were not included in Kaleidoscope Pro analysis due to rarity in South Florida: silver haired bat, fringed myotis, Palla's mastiff bat, gray myotis, and little brown myotis.

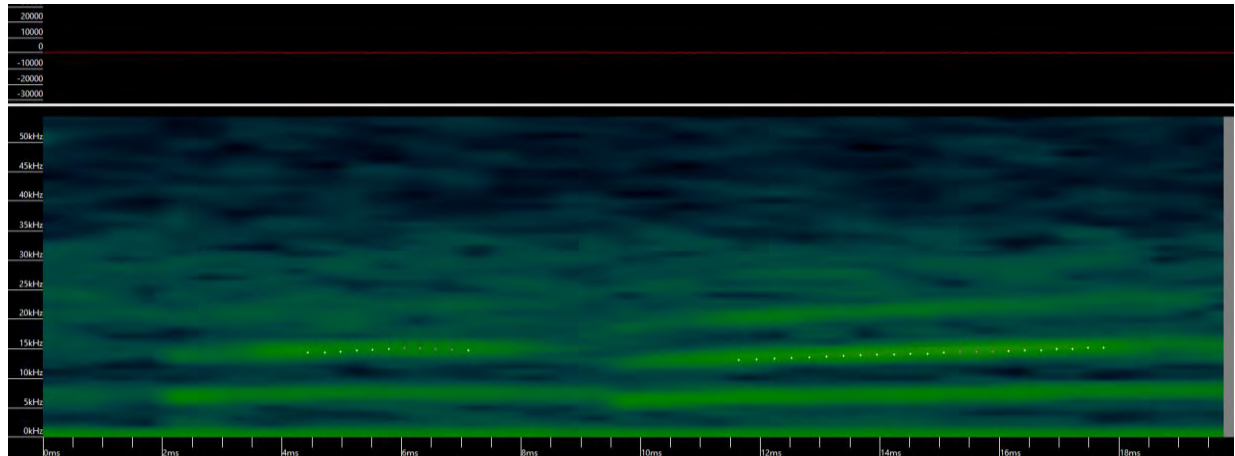
Appendix E

FLORIDA BONNETED BAT RESULTS AND MISCLASSIFIED FLORIDA BONNETED BAT CALLS

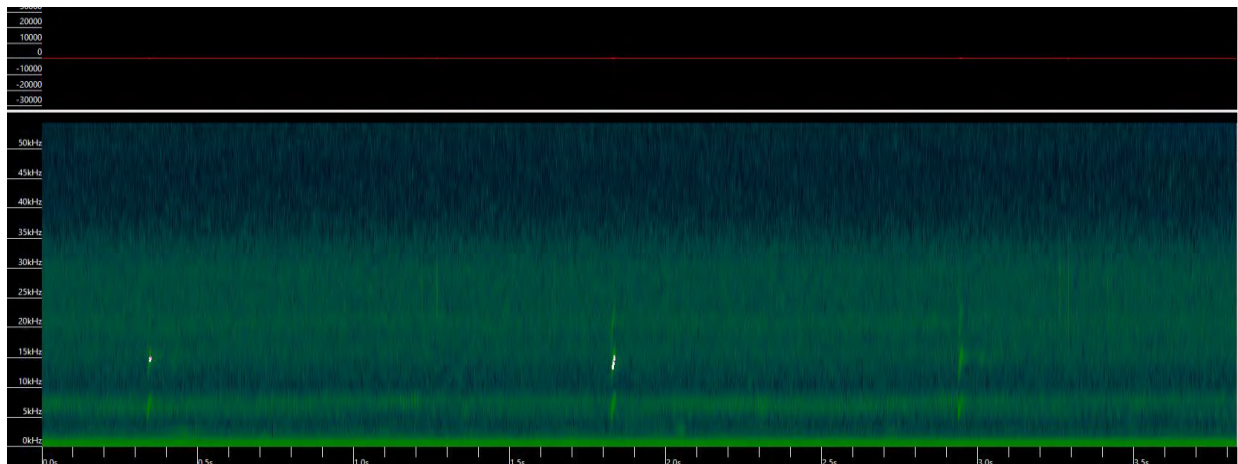
Appendix E - Florida Bonneted Bat Results and Misclassified Florida Bonneted Bat Calls

Detector	AutoID	Manual ID	Recording Date	Recording Time	Sunrise	Sunset
1	EUMFLO	Not EUMFLO - Noise	5/9/2024	5:42:35	6:40:00	20:03:00
1	EUMFLO	Not EUMFLO - Bird	5/10/2024	6:34:44	6:39:00	20:04:00
2	EUMFLO	Not EUMFLO - Noise	5/3/2024	2:27:41	6:45:00	20:01:00
2	EUMFLO	Not EUMFLO - Noise	5/3/2024	2:27:34	6:45:00	20:01:00
2	EUMFLO	Not EUMFLO - Noise	5/4/2024	2:36:55	6:44:00	20:01:00
2	EUMFLO	Not EUMFLO - Noise	5/7/2024	23:47:42	6:41:00	20:02:00
2	EUMFLO	Not EUMFLO - Noise	5/10/2024	2:20:16	6:39:00	20:04:00
3	EUMFLO	Not EUMFLO - Noise	5/15/2024	3:39:43	6:36:00	20:06:00
3	EUMFLO	Not EUMFLO - Noise	5/14/2024	3:18:20	6:37:00	20:06:00
5	EUMFLO	Not EUMFLO - TADBRA	5/9/2024	1:49:55	6:40:00	20:03:00
5	EUMFLO	Not EUMFLO - TADBRA	5/6/2024	0:26:57	6:42:00	20:01:00
6	EUMFLO	Not EUMFLO - Traffic Noise	5/2/2024	22:07:59	6:45:00	20:01:00
8	EUMFLO	Not EUMFLO - Bird	5/8/2024	6:22:07	6:40:00	20:03:00
9	EUMFLO	Not EUMFLO - Noise	5/8/2024	4:06:58	6:40:00	20:03:00
9	EUMFLO	Not EUMFLO - Noise	5/9/2024	5:38:52	6:40:00	20:03:00
9	EUMFLO	Not EUMFLO - Insect	5/10/2024	5:53:38	6:39:00	20:04:00
10	EUMFLO	Not EUMFLO - Insect	5/6/2024	1:44:31	6:42:00	20:01:00
10	EUMFLO	Not EUMFLO - Noise	5/6/2024	3:26:08	6:42:00	20:01:00
10	EUMFLO	Not EUMFLO - Insect	5/6/2024	1:44:44	6:42:00	20:01:00
10	EUMFLO	Not EUMFLO - Insect	5/7/2024	3:24:25	6:41:00	20:02:00
10	EUMFLO	Not EUMFLO - Noise	5/8/2024	20:58:15	6:40:00	20:03:00
11	EUMFLO	Not EUMFLO - Noise	5/6/2024	7:04:01	6:42:00	20:01:00
12	EUMFLO	Not EUMFLO - Bird	5/24/2024	6:59:17	6:32:00	20:12:00
12	EUMFLO	Not EUMFLO - Other	5/28/2024	22:04:03	6:31:00	20:14:00
13	EUMFLO	Not EUMFLO - Bird	5/19/2024	6:58:15	6:34:00	20:09:00
13	EUMFLO	Not EUMFLO - Bird	5/19/2024	6:58:25	6:34:00	20:09:00

AutolD FBB Call. Detector 1 File ID: SR70-ST1_20240510_063444.wav
05-10-2024 06:34:44 (EDT)
Example of Bird from Detector 1

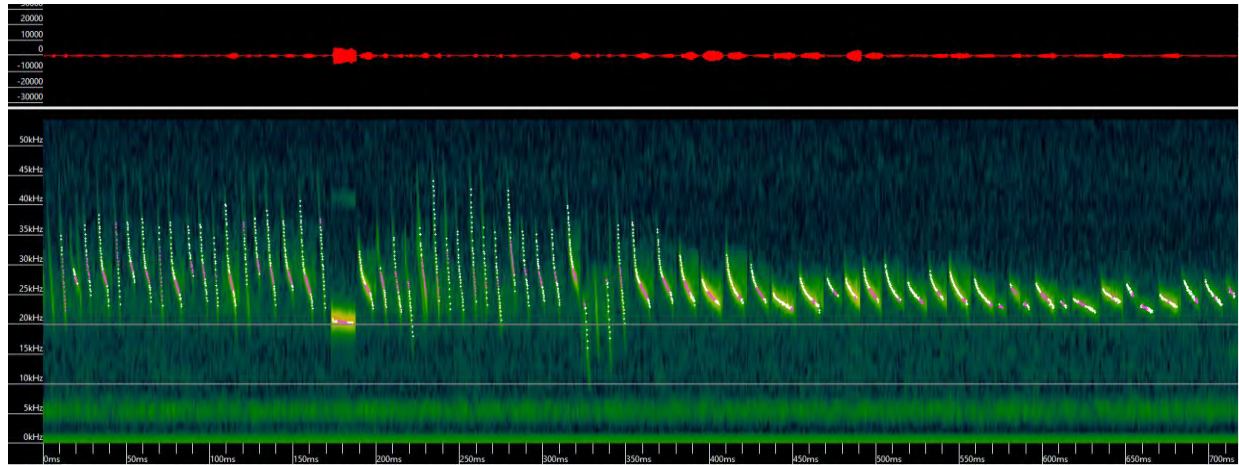


Compressed view

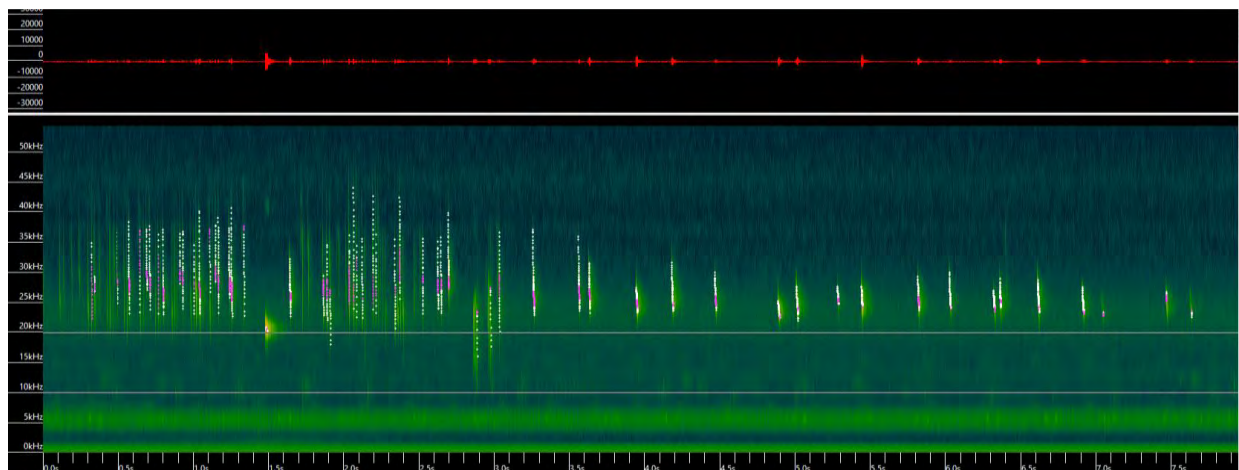


Normal time view

AutolD FBB Call. Detector 2 File ID: SR70-ST2_20240505_012119.wav
05-05-2024 01:21:19 (EDT)
Example of Low Frequency from Other Species from Detector 2

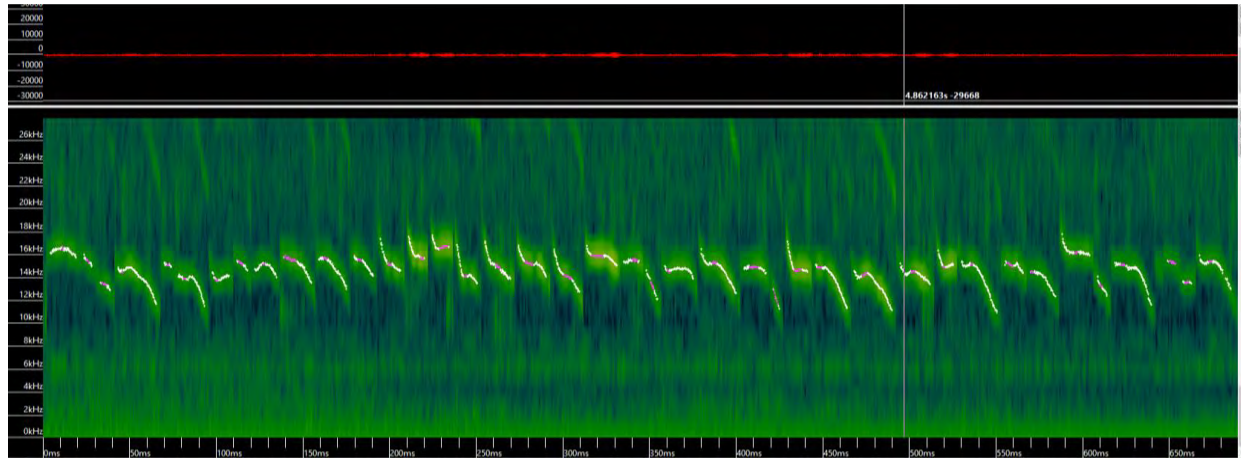


Compressed view

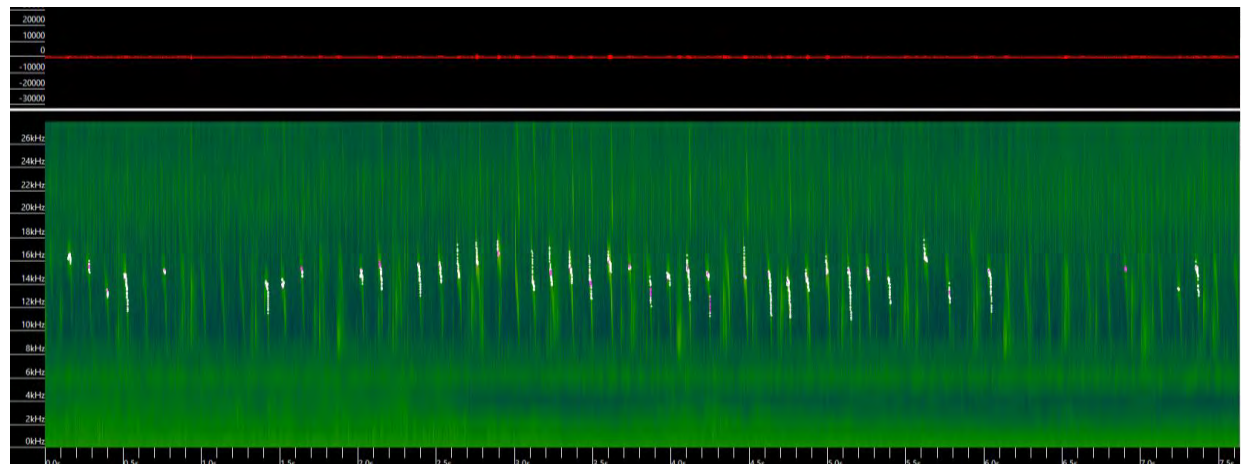


Normal time view

AutolD FBB Call. Detector 3 File ID: SR70-ST3_20240515_033943.wav
05-15-2024 03:39:43 (EDT)
Example of Insects from Detector 3

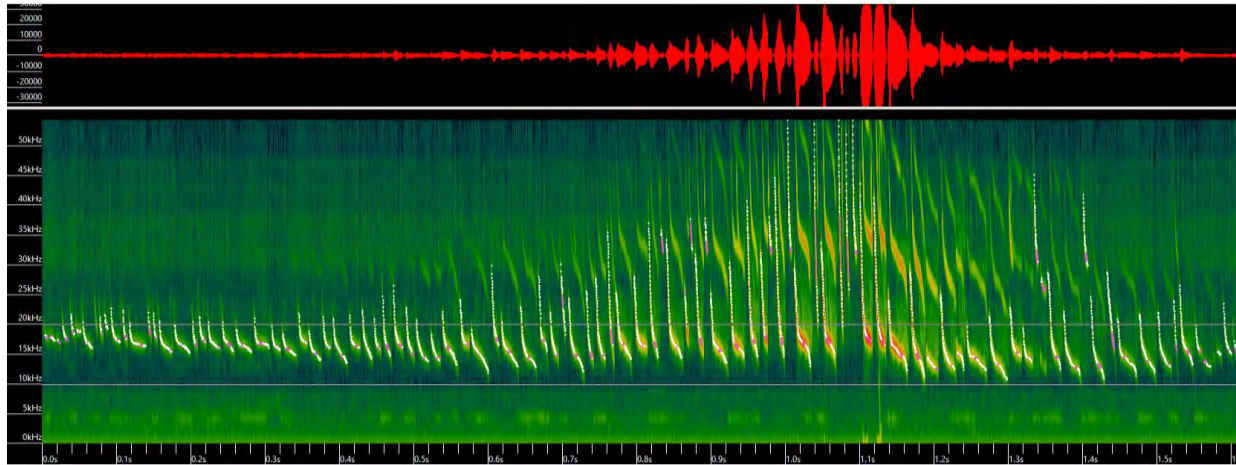


Compressed view

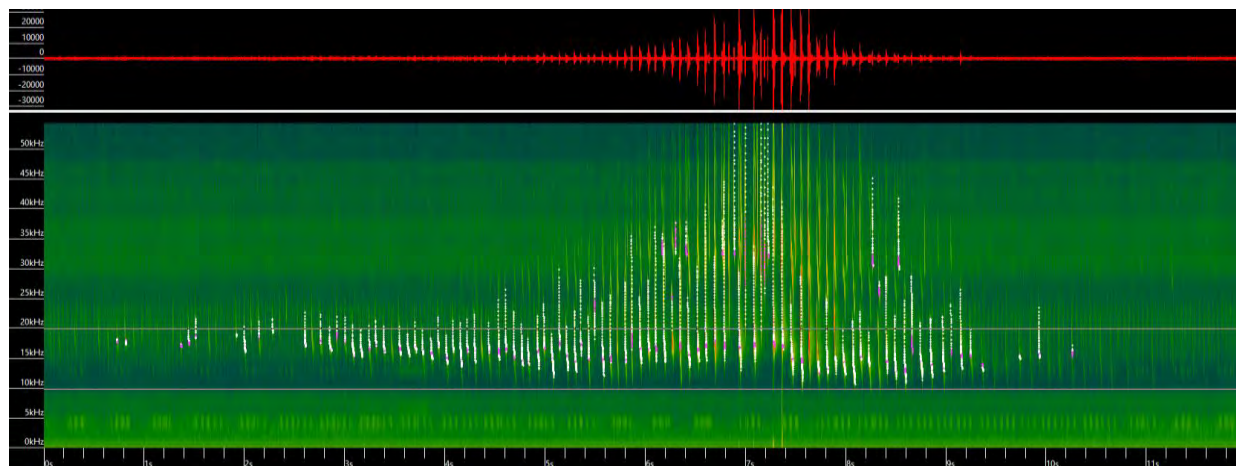


Normal time view

AutolD FBB Call. Detector 5 File ID: SR70-ST5_20240509_014955.wav
05-05-2024 01:49:55 (EDT)
Example of Bird from Detector 5

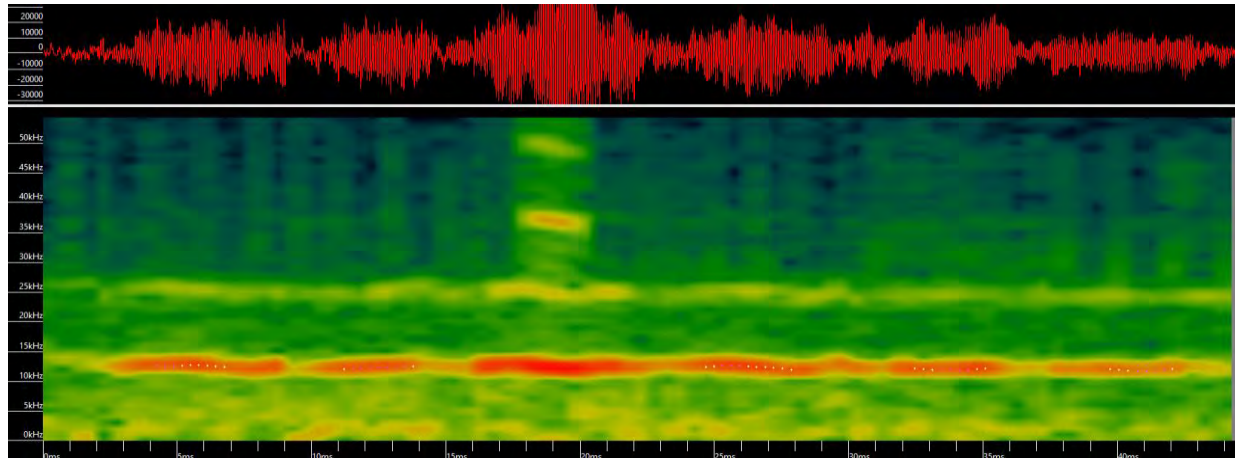


Compressed view

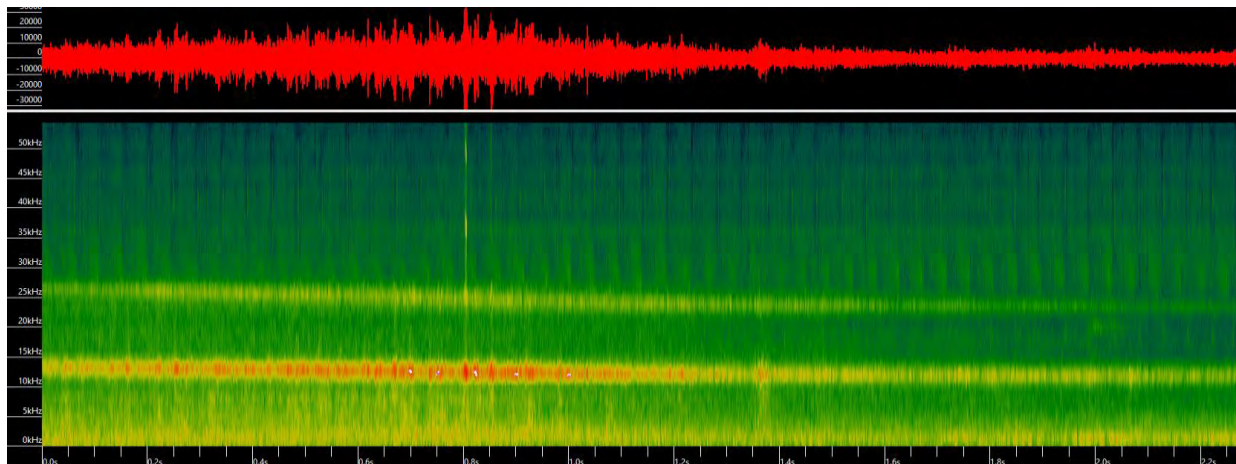


Normal time view

AutolD FBB Call. Detector 6 File ID: SR70-ST6_20240502_220759.wav
05-02-2024 22:07:59 (EDT)
Example of Noise from Detector 6

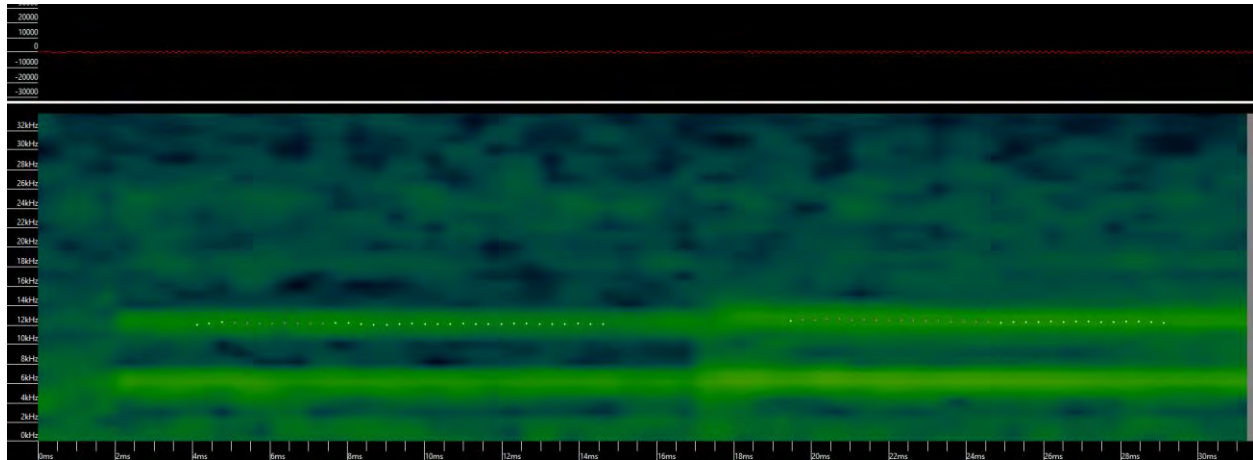


Compressed view

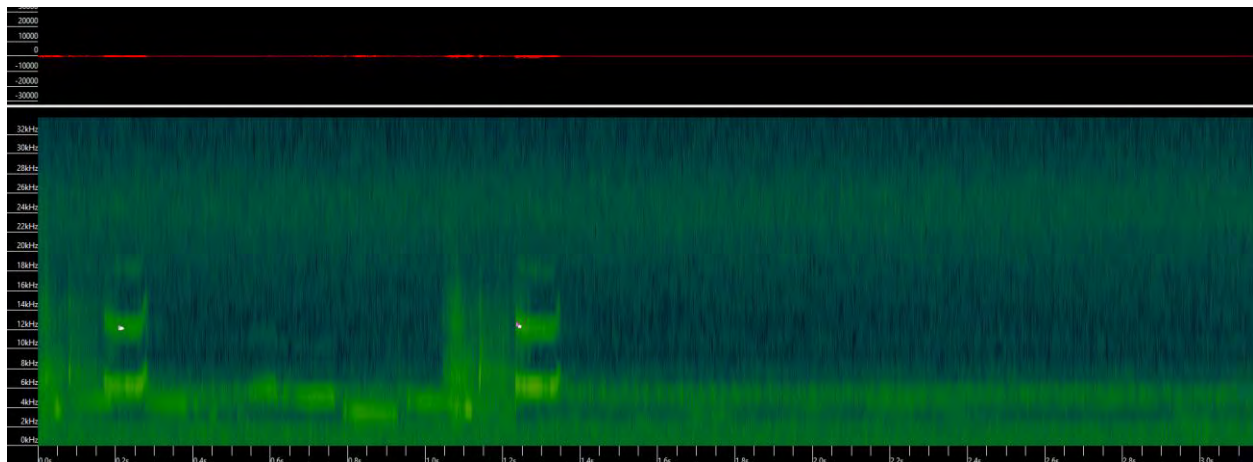


Normal time view

AutolD FBB Call. Detector 8 File ID: SR70-ST8_20240508_062207.wav
05-08-2024 06:22:07 (EDT)
Example of Bird from Detector 8

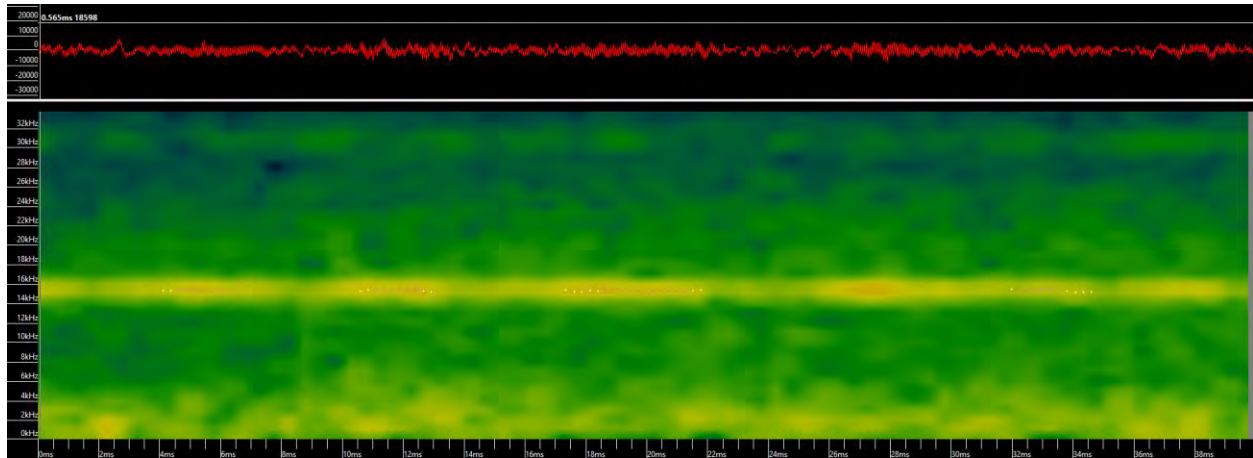


Compressed view

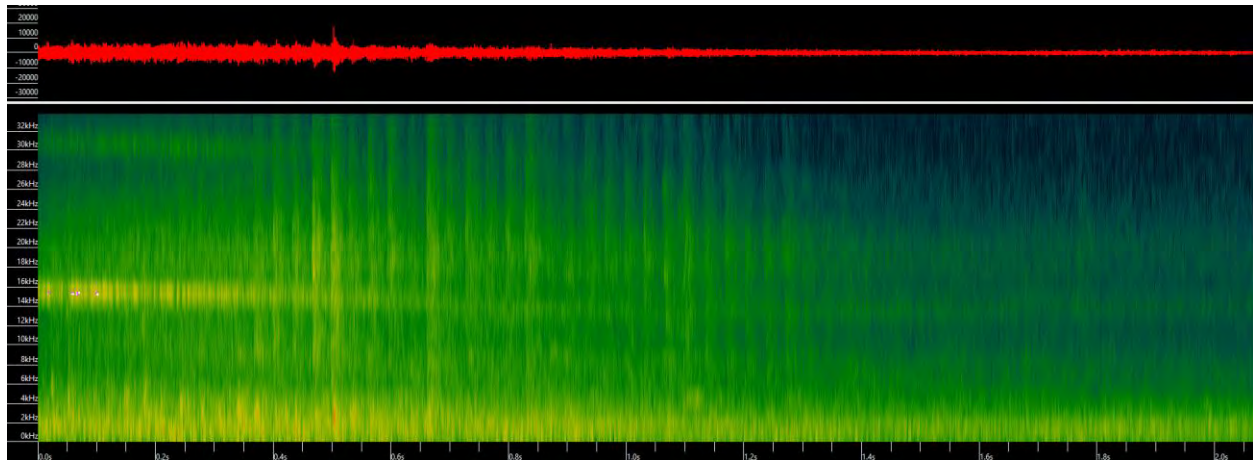


Normal time view

AutolD FBB Call. Detector 9 File ID: SR70-ST9_20240509_053852.wav
05-09-2024 05:38:52 (EDT)
Example of Noise from Detector 9

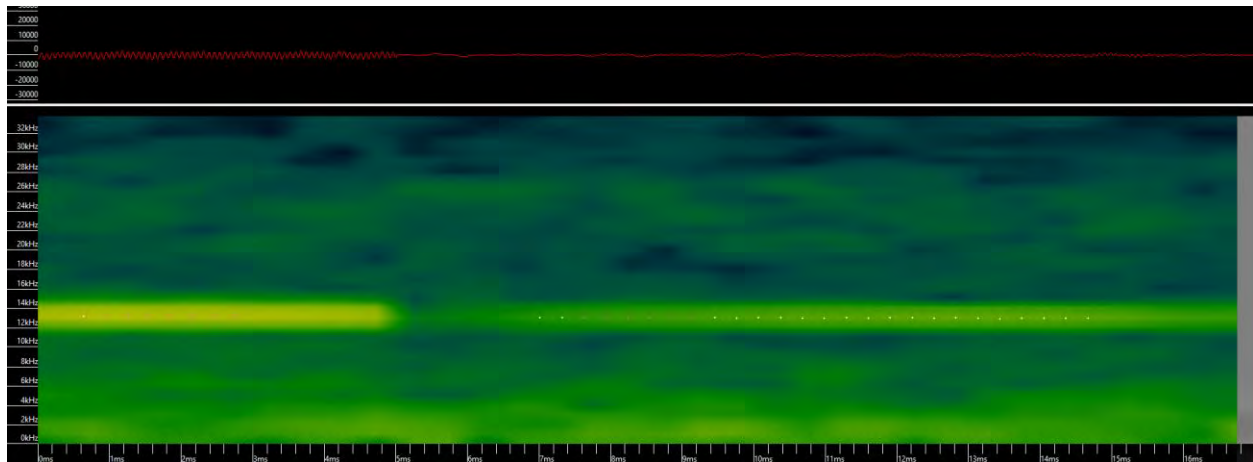


Compressed view

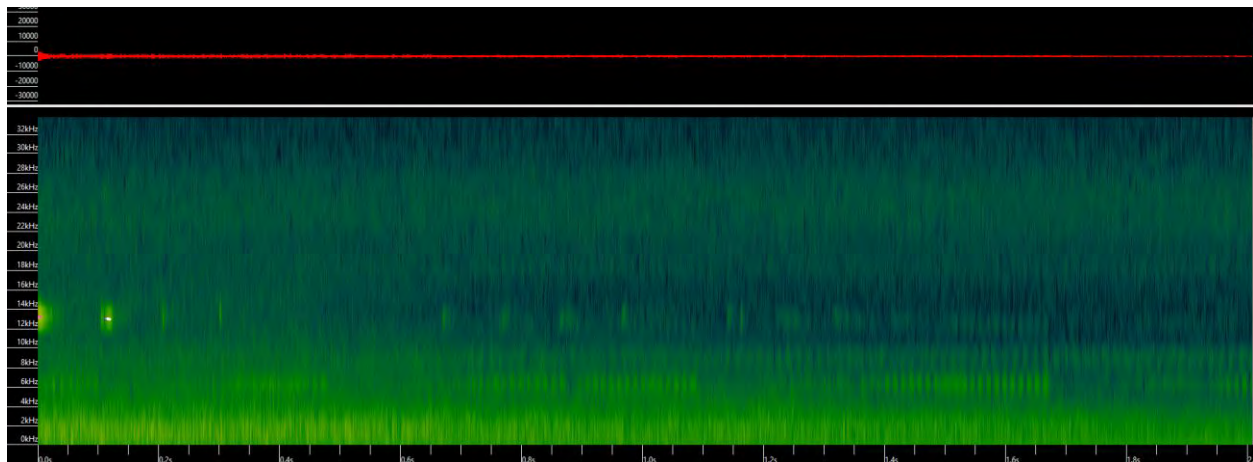


Normal time view

AutolD FBB Call. Detector 10 File ID: SR70-ST10_20240508_205815.wav
05-08-2024 20:58:15 (EDT)
Example of Noise from Detector 10

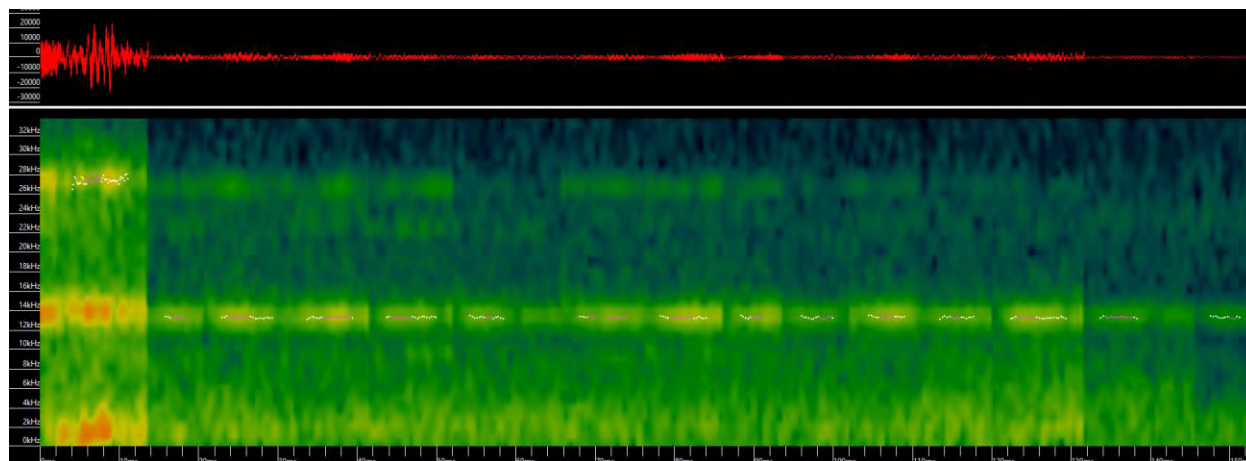


Compressed view

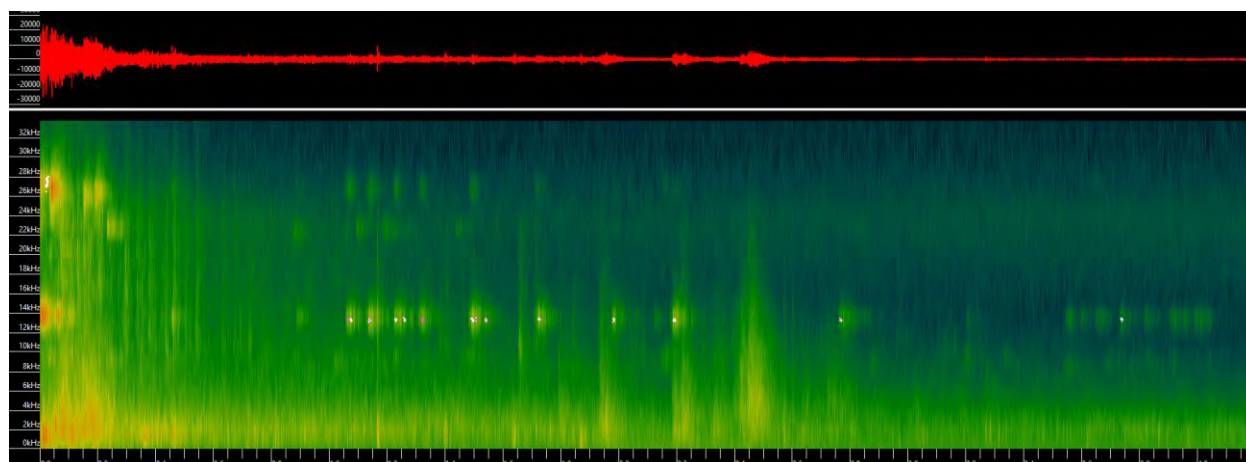


Normal time view

AutolD FBB Call. Detector 11 File ID: SR70-ST11_20240506_070401.wav
05-06-2024 07:04:01 (EDT)
Example of Noise from Detector 11

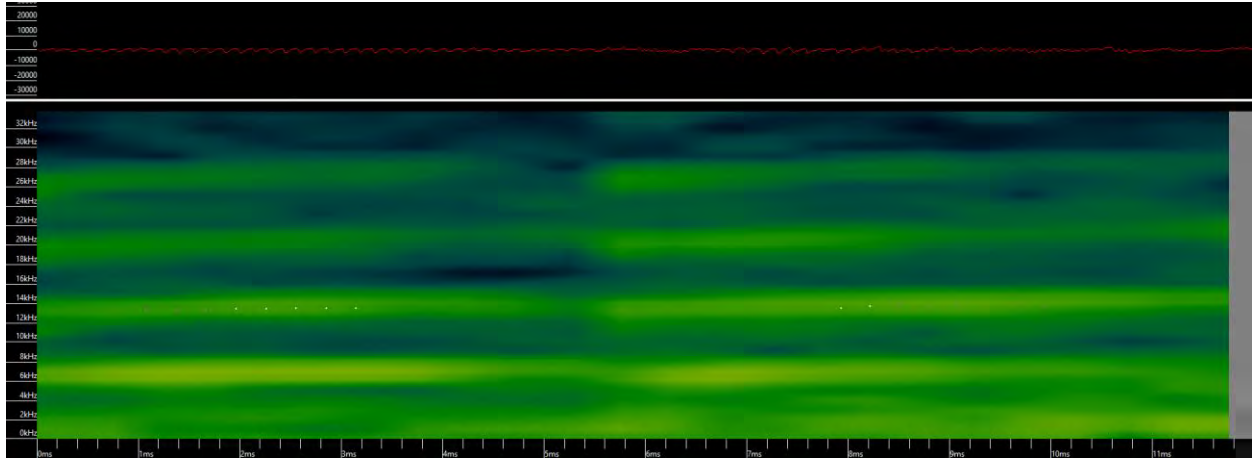


Compressed view

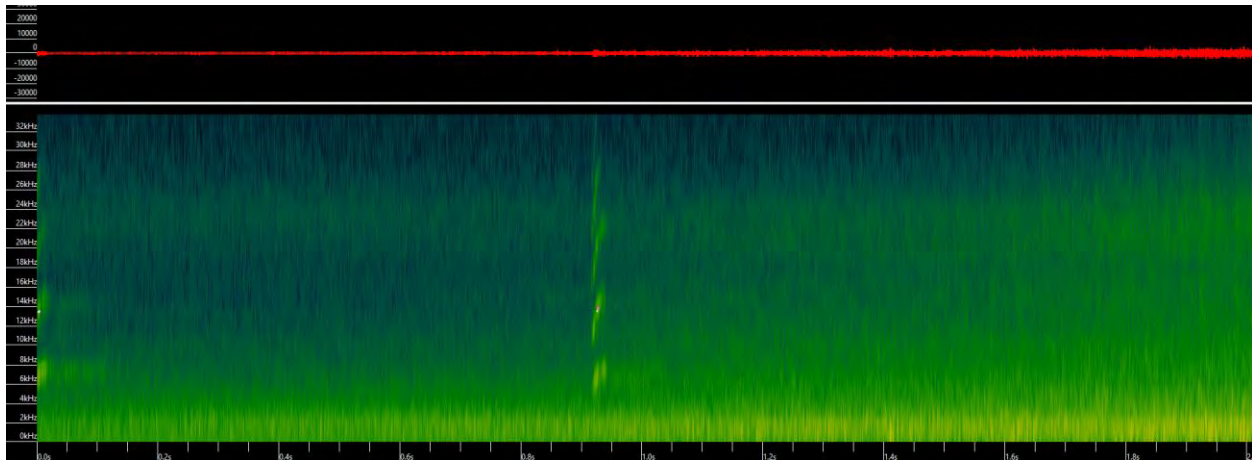


Normal time view

AutoID FBB Call. Detector 12 File ID: ST-12-SR-70_20240524_065917.wav
05-24-2024 06:59:17 (EDT)
Example of Not EUMFLO from Detector 12

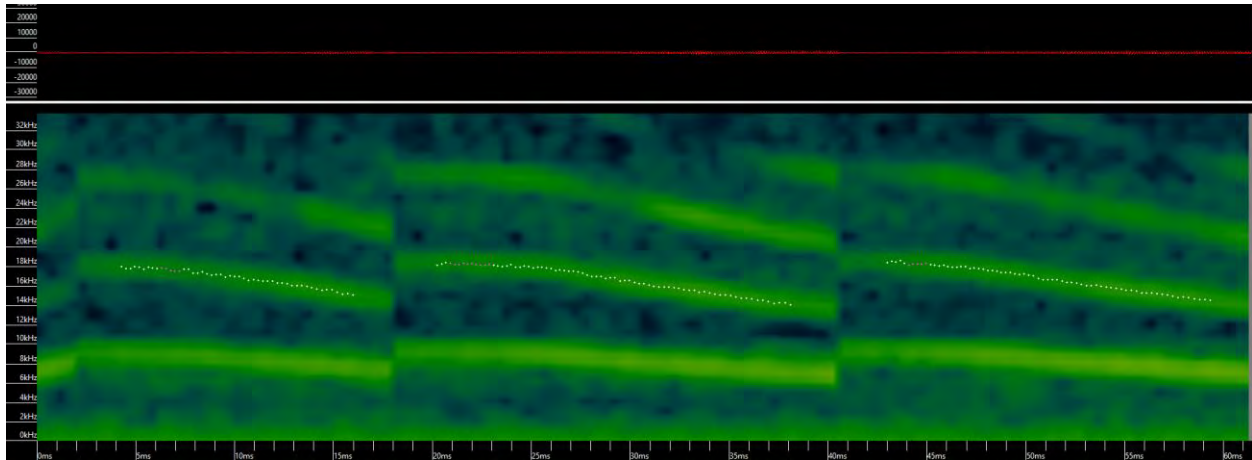


Compressed view

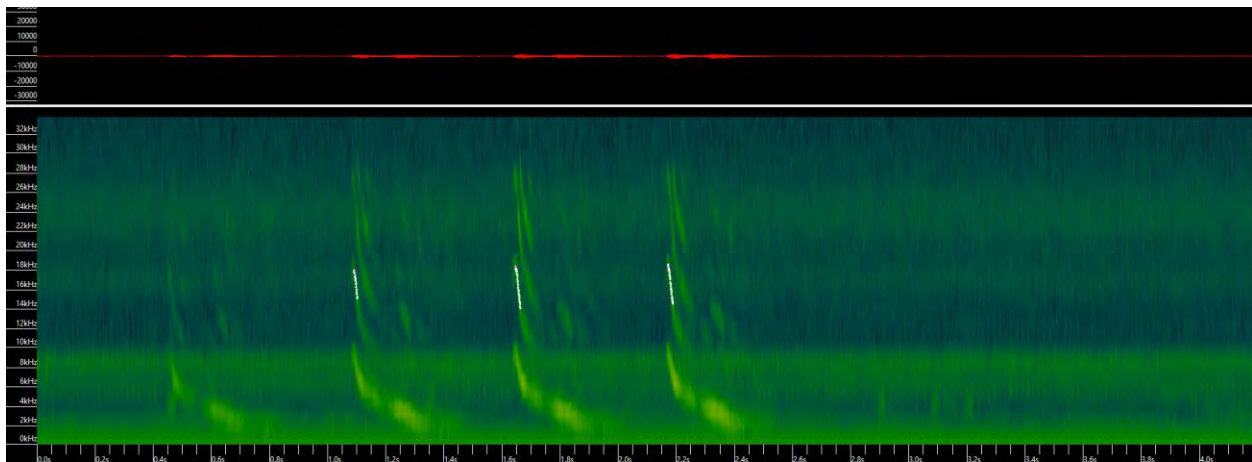


Normal time view

AutoID FBB Call. Detector 13 File ID: ST-13-SR-70_20240519_065815.wav
05-19-2024 06:58:15 (EDT)
Example of Bird from Detector 13



Compressed view



Normal time view

Appendix P: Standard Manatee Conditions for In-Water Work

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

- a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
- b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
- c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
- d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
- e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or in Vero Beach (1-772-562-3909) for south Florida, and emailed to FWC at ImperiledSpecies@myFWC.com.
- f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at http://www.myfwc.com/WILDLIFEHABITATS/manatee_sign_vendors.htm. Questions concerning these signs can be forwarded to the email address listed above.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:



Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

Appendix Q: West Indian Manatee Effect Determination Key



United States Department of the Interior

FISH AND WILDLIFE SERVICE

1339 20th Street
Vero Beach, Florida 32960



May 13, 2019

Andrew D. Kelly, Jr., Colonel
District Commander
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Colonel Kelly:

The U.S. Fish and Wildlife Service (Service) and the U.S. Army Corps of Engineers (Corps) currently use a dichotomous key (Key) to assist in making effect determinations pursuant to the Endangered Species Act for in-water activities that may affect manatees. Recently, Corps and Service staff identified the need to make several revisions to the 2013 Key to address new issues and changed circumstances. Although a more complete revision is needed in the future, three issues need to be addressed as soon as possible: 1) requirements associated with clamshell dredge head operation; 2) locations and conditions related to impact hammer driven metal piles and/or sheet piles; and 3) incorporation of the current list of counties that have approved Manatee Protection Plans (MPPs).

For the purpose of continuing to use the Key on projects that involve clamshell dredging or impact driving of metal piles or sheet piles, the Service is issuing this letter as an addendum to the Key. The Service finds work that keys out as “not likely to adversely affect” the manatee or its critical habitat using the 2013 Key is still the appropriate determination provided there is adherence to the following additional conditions:

- 1) During clamshell dredging operations, the dredge operator shall gravity-release the clamshell bucket only at the water’s surface, and only after confirmation that there are no manatees within the safety distance identified in the standard construction conditions (or a 75-foot buffer if dredging is authorized at night);
- 2) Installation of metal pilings or metal sheet piles by impact hammer – if not within Important Manatee Areas, Warm Water Aggregation Areas, or Federal manatee sanctuaries or state-designated No Entry Areas - may occur under the following conditions: a) Use of at least one dedicated manatee observer, with all work being stopped if a manatee is observed within 1000 feet; b) no work shall occur outside of daylight hours (defined as one-half hour after sunrise to one-half hour before sunset); and, c) no more than 5 piles/day may be installed. If within any of the above-described areas, an informal or formal project-specific consultation with the Service is required.

In addition, the following change will allow projects in Charlotte County and Flagler County to be properly handled using the Key:

- 3) Charlotte County and Flagler County shall be added to the list of counties that have an approved Manatee Protection Plan (couplet J of the 2013 Key) and removed from the list of counties included in couplet L and the second category of couplet P of the 2013 Key.

With the above-described changes, the Service affirms that such work would not likely adversely affect the West Indian manatee and no further consultation is required provided all other conditions of the 2013 Key are met. The above changes, and possibly others, will ultimately be reflected in an updated version of the Key. We hope this letter provides the Corps with the ability to continue to work with the 2013 Key and in-water construction conditions until a revised and updated Key is approved.

Thank you for your continued support to facilitate recovery of the West Indian manatee and other species protected under the Endangered Species Act. If you have any questions, please contact Mr. Scott Calleson by e-mail at charles_calleson@fws.gov or by phone at (904) 731-3326.

Sincerely,



Larry Williams
State Supervisor

cc:

Service, Jacksonville, Florida (Jay Herrington)

Service, Vero Beach, Florida (Bob Progulske, Roxanna Hinzman)

THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, AND THE STATE OF FLORIDA EFFECT DETERMINATION KEY FOR THE MANATEE IN FLORIDA

April 2013

Purpose and background of the key

The purpose of this document is to provide guidance to improve the review of permit applications by U.S. Army Corps of Engineers' (Corps) Project Managers in the Regulatory Division regarding the potential effects of proposed projects on the endangered West Indian manatee (*Trichechus manatus*) in Florida, and by the Florida Department of Environmental Protection or its authorized designee or Water Management District, for evaluating projects under the State Programmatic General Permit (SPGP) or any other Programmatic General Permits that the Corps may issue for administration by the above agencies. Such guidance is contained in the following dichotomous key. The key applies to permit applications for in-water activities such as, but not limited to: (1) dredging [new or maintenance dredging of not more than 50,000 cubic yards], placement of fill material for shoreline stabilization, and construction/placement of other in-water structures as well as (2) construction of docks, marinas, boat ramps and associated trailer parking spaces, boat slips, dry storage or any other watercraft access structures or facilities.

At a certain step in the key, the user is referred to graphics depicting important manatee areas or areas with inadequate protection. The maps can be downloaded from the Corps' web page at <http://www.saj.usace.army.mil/Missions/Regulatory/SourceBook.aspx>. We intend to utilize the most recent depiction of these areas, so should these areas be modified by statute, rule, ordinance and/or other legal mandate or authorization, we will modify the graphical depictions accordingly. These areas may be shaded or otherwise differentiated for identification on the maps.

Explanatory footnotes are provided in the key and must be closely followed whenever encountered.

Scope of the key

This key should only be used in the review of permit applications for effect determinations on manatees and should not be used for other listed species or for other aquatic resources such as Essential Fish Habitat (EFH). Corps Project Managers should ensure that consideration of the project's effects on any other listed species and/or on EFH is performed independently. This key may be used to evaluate applications for all types of State of Florida (State Programmatic General Permits, noticed general permits, standard general permits, submerged lands leases, conceptual and individual permits) and Department of the Army (standard permits, letters of permission, nationwide permits, and regional general permits) permits and authorizations. The final effect determination will be based on the project location and description; the potential effects to manatees, manatee habitat, and/or manatee critical habitat; and any measures (such as project components, standard construction precautions, or special conditions included in the authorization) to avoid or minimize effects to manatees or manatee critical habitat. Projects that key to a "may affect" determination equate to "likely to adversely affect" situations, and those projects should not be processed under the SPGP or any other programmatic general permit. For

all “may affect” determinations, Corps Project Managers shall refer to the Manatee Programmatic Biological Opinion, dated March 21, 2011, for guidance on eliminating or minimizing potential adverse effects resulting from the proposed project. If unable to resolve the adverse effects, the Corps may refer the applicant to the U.S. Fish and Wildlife Service (Service) for further assistance in attempting to revise the proposed project to a “may affect, not likely to adversely affect” level. The Service will coordinate with the Florida Fish and Wildlife Conservation Commission (FWC) and the counties, as appropriate. Projects that provide new access for watercraft and key to “may affect, not likely to adversely affect” may or may not need to be reviewed individually by the Service.

MANATEE KEY
Florida¹
April 2013

The key is not designed to be used by the Corps' Regulatory Division for making their effect determinations for dredging projects greater than 50,000 cubic yards, the Corps' Planning Division in making their effect determinations for civil works projects or by the Corps' Regulatory Division for making their effect determinations for projects of the same relative scope as civil works projects. These types of activities must be evaluated by the Corps independently of the key.

- A. Project is not located in waters accessible to manatees and does not directly or indirectly affect manatees (see Glossary).....*No effect*

Project is located in waters accessible to manatees **or** directly or indirectly affects manatees **B**

- B. Project consists of one or more of the following activities, all of which are *May affect*:

1. blasting or other detonation activity for channel deepening and/or widening, geotechnical surveys or exploration, bridge removal, movies, military shows, special events, etc.;
2. installation of structures which could restrict or act as a barrier to manatees;
3. new or changes to existing warm or fresh water discharges from industrial sites, power plants, or natural springs or artesian wells (but only if the new or proposed change in discharge requires a Corps permit to accomplish the work);
4. installation of new culverts and/or maintenance or modification of existing culverts (where the culverts are 8 inches to 8 feet in diameter, ungrated and in waters accessible, or potentially accessible, to manatees)²;
5. mechanical dredging from a floating platform, barge or structure³ that restricts manatee access to less than half the width of the waterway;
6. creation of new slips or change in use of existing slips, even those located in a county with a State-approved Manatee Protection Plan (MPP) in place and the number of slips is less than the MPP threshold, to accommodate docking for repeat use vessels, (*e.g.*, water taxis, tour boats, gambling boats, etc; or slips or structures that are not civil works projects, but are frequently used to moor large vessels (>100') for shipping and/or freight purposes; does not include slips used for docking at boat sales or repair facilities or loading/unloading at dry stack storage facilities and boat ramps);
[Note: For projects within Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Craig Key), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County, the reviewer should proceed to Couplet C.]
7. any type of in-water activity in a Warm Water Aggregation Area (WWAA) or No Entry Area (see Glossary and accompanying Maps⁴); [Note: For residential docking facilities in a Warm Water Aggregation Area that is not a Federal manatee sanctuary or No Entry Area, the reviewer should proceed to couplet C.]
8. creation or expansion of canals, basins or other artificial shoreline and/or the connection of such features to navigable waters of the U.S.; [Note: For projects proposing a single residential dock, the reviewer should proceed to couplet C; otherwise, project is a *May Affect*.]

9. installation of temporary structures (docks, buoys, etc.) utilized for special events such as boat races, boat shows, military shows, etc., but only when consultation with the U.S. Coast Guard and FWS has not occurred; [Note: See programmatic consultation with the U.S. Coast Guard on manatees dated May 10, 2010.].
- Project is other than the activities listed above..... C
- C. Project is located in an Important Manatee Area (IMA) (see Glossary and accompanying Maps⁴) D
- Project is not located in an Important Manatee Area (IMA) (see Glossary and accompanying Maps⁴) G
- D. Project includes dredging of less than 50,000 cubic yards E
- Project does not include dredging G
- E. Project is for dredging a residential dock facility or is a land-based dredging operation N
- Project not as above..... F
- F. Project proponent **does not elect** to follow all dredging protocols described on the maps for the respective IMA in which the project is proposed *May affect*
- Project proponent **elects** to follow all dredging protocols described on the maps for the respective IMA in which the project is proposed G
- G. Project provides new⁵ access for watercraft, *e.g.*, docks or piers, marinas, boat ramps and associated trailer parking spaces, new dredging, boat lifts, pilings, floats, floating docks, floating vessel platforms, boat slips, dry storage, mooring buoys, or other watercraft access (residential boat lifts, pilings, floating docks, and floating vessel platforms installed in existing slips are not considered new access) or improvements allowing increased watercraft usage H
- Project does not provide new⁵ access for watercraft, *e.g.*, bulkheads, seawalls, riprap, maintenance dredging, boardwalks and/or the maintenance (repair or rehabilitation) of currently serviceable watercraft access structures provided all of the following are met: (1) the number of slips is not increased; (2) the number of existing slips is not in question; and (3) the improvements do not allow increased watercraft usage N
- H. Project is located in the Braden River Area of Inadequate Protection (Manatee County) (see Glossary and accompanying AIP Map⁴) *May affect*
- Project is not located in the Braden River Area of Inadequate Protection (Manatee County) (see Glossary and accompanying AIP Map⁴) I
- I. Project is for a multi-slip facility (see Glossary) J
- Project is for a residential dock facility or is for dredging (see Glossary) N
- J. Project is located in a county that currently has a State-approved MPP in place (BREVARD, BROWARD, CITRUS, CLAY, COLLIER, DUVAL, INDIAN RIVER, LEE, MARTIN, MIAMI-DADE, PALM BEACH, ST. LUCIE, SARASOTA, VOLUSIA) or shares contiguous waters with a county having a State-approved MPP in place (LAKE, MARION, SEMINOLE)⁶ K
- Project is located in a county not required to have a State-approved MPP L

- K. Project has been developed or modified to be consistent with the county's State-approved MPP **and** has been verified by a FWC review (or FWS review if project is exempt from State permitting) **or** the number of slips is below the MPP threshold N
- Project has not been reviewed by the FWC or FWS **or** has been reviewed by the FWC or FWS **and** determined that the project is not consistent with the county's State-approved MPP *May affect*
- L. Project is located in one of the following counties: CHARLOTTE, DESOTO⁷, FLAGLER, GLADES, HENDRY, HILLSBOROUGH, LEVY, MANATEE, MONROE⁷, PASCO⁷, PINELLAS M
- Project is located in one of the following counties: BAY, DIXIE, ESCAMBIA, FRANKLIN, GILCHRIST, GULF, HERNANDO, JEFFERSON, LAFAYETTE, MONROE (south of Craig Key), NASSAU, OKALOOSA, OKEECHOBEE, PUTNAM, SANTA ROSA, ST. JOHNS, SUWANNEE, TAYLOR, WAKULLA, WALTON N
- M. The number of slips does not exceed the residential dock density threshold (see Glossary) N
- The number of slips exceeds the residential dock density threshold (see Glossary) *May affect*
- N. Project impacts to submerged aquatic vegetation⁸, emergent vegetation or mangrove will have beneficial, insignificant, discountable⁹ or no effects on the manatee¹⁰ O
- Project impacts to submerged aquatic vegetation⁸, emergent vegetation or mangrove may adversely affect the manatee¹⁰ *May affect*
- O. Project proponent **elects** to follow standard manatee conditions for in-water work¹¹ and requirements, as appropriate for the proposed activity, prescribed on the maps⁴ P
- Project proponent **does not elect** to follow standard manatee conditions for in-water work¹¹ and appropriate requirements prescribed on the maps⁴ *May affect*
- P. If project is for a new or expanding⁵ multi-slip facility and is located in a county with a State-approved MPP in place **or** in Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Craig Key), Nassau, Okaloosa, Okeechobee, Putnam, St. Johns, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County, the determination of "*May affect, not likely to adversely affect*" is appropriate¹² and no further consultation with the Service is necessary.
- If project is for a new or expanding⁵ multi-slip facility and is located in Charlotte, Desoto, Flagler, Glades, Hendry, Hillsborough, Levy, Manatee, Monroe (north of Craig Key), Pasco, or Pinellas County, further consultation with the Service is necessary for "*May affect, not likely to adversely affect*" determinations.
- If project is for repair or rehabilitation of a multi-slip facility and is located in an Important Manatee Area, further consultation with the Service is necessary for "*May affect, not likely to adversely affect*" determinations. If project is for repair or rehabilitation of a multi-slip facility and: (1) is **not** located in an Important Manatee Area; (2) the number of slips is not increased; (3) the number of existing slips is not in question; and (4) the improvements to the existing watercraft access structures do not allow increased watercraft usage, the determination of "*May affect, not likely to adversely affect*" is appropriate¹² and no further consultation with the Service is necessary.
- If project is a residential dock facility, shoreline stabilization, or dredging, the determination of "*May affect, not likely to adversely affect*" is appropriate¹² and no further consultation with the Service is necessary. **Note:** For residential dock facilities located in a Warm Water Aggregation Area or in a No Entry area, seasonal restrictions may apply. See footnote 4 below for maps showing restrictions.
- If project is other than repair or rehabilitation of a multi-slip facility, a new⁵ multi-slip facility, residential dock facility, shoreline stabilization, or dredging, and does not provide new⁵ access for watercraft or

improve an existing access to allow increased watercraft usage, the determination of “*May affect, not likely to adversely affect*” is appropriate¹² and no further consultation with the Service is necessary.

¹ On the St. Mary’s River, this key is only applicable to those areas that are within the geographical limits of the State of Florida.

² All culverts 8 inches to 8 feet in diameter must be grated to prevent manatee entrapment. To effectively prevent manatee access, grates must be permanently fixed, spaced a maximum of 8 inches apart (may be less for culverts smaller than 16 inches in diameter) and may be installed diagonally, horizontally or vertically. For new culverts, grates must be attached prior to installation of the culverts. Culverts less than 8 inches or greater than 8 feet in diameter are exempt from this requirement. If new culverts and/or the maintenance or modification of existing culverts are grated as described above, the determination of “*May affect, not likely to adversely affect*” is appropriate¹¹ and no further consultation with the Service is necessary.

³ If the project proponent agrees to follow the standard manatee conditions for in-water work as well as any special conditions appropriate for the proposed activity, further consultation with the Service is necessary for “*May affect, not likely to adversely affect*” determinations. These special conditions may include, but are not limited to, the use of dedicated observers (see Glossary for definition of dedicated observers), dredging during specific months (warm weather months vs cold weather months), dredging during daylight hours only, adjusting the number of dredging days, does not preclude or discourage manatee egress/ingress with turbidity curtains or other barriers that span the width of the waterway, etc.

⁴ Areas of Inadequate Protection (AIPs), Important Manatee Areas (IMAs), Warm Water Aggregation Areas (WWAAs) and No Entry Areas are identified on these maps and defined in the Glossary for the purposes of this key. These maps can be viewed on the [Corps’ web page](#). If projects are located in a No Entry Area, special permits may be required from FWC in order to access these areas (please refer to Chapter 68C-22 F.A.C. for boundaries; maps are also available at [FWC’s web page](#)).

⁵ New access for watercraft is the addition or improvement of structures such as, but not limited to, docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, pilings, floats, floating docks, floating vessel platforms, (maintenance dredging, residential boat lifts, pilings, floating docks, and floating vessel platforms installed in existing slips are not considered new access), boat slips, dry storage, mooring buoys, new dredging, etc., that facilitates the addition of watercraft to, and/or increases watercraft usage in, waters accessible to manatees. The repair or rehabilitation of any type of currently serviceable watercraft access structure is not considered new access provided all of the following are met: (1) the number of slips is not increased; (2) the number of existing slips is not in question; and (3) the improvements to the existing watercraft access structures do not result in increased watercraft usage.

⁶ Projects proposed within the St. Johns River portion of Lake, Marion, and Seminole counties and contiguous with Volusia County shall be evaluated using the Volusia County MPP.

⁷ For projects proposed within the following areas: the Peace River in DeSoto County; all areas north of Craig Key in Monroe County, and the Anclote and Pithlachascotee Rivers in Pasco County, proceed to Couplet M. For all other locations in DeSoto, Monroe (south of Craig Key) and Pasco Counties, proceed to couplet N.

⁸ Where the presence of the referenced vegetation is confirmed within the area affected by docks and other piling-supported minor structures and the reviewer has concluded that the impacts to SAV, marsh or mangroves would not adversely affect the manatee or its critical habitat, proceed to couplet O.

Where the presence of the referenced vegetation is confirmed within the area affected by docks and other piling-supported minor structures and the reviewer has concluded that the impacts to SAV, marsh or mangroves would adversely affect the manatee or its critical habitat, the applicant can elect to avoid/minimize impacts to that vegetation. In that instance, where impacts are unavoidable and the applicant elects to abide by or employ construction techniques that exceed the criteria in the following documents, the reviewer should conclude that the impacts to SAV, marsh or mangroves would not adversely affect the manatee or its critical habitat and proceed to couplet O.

- “Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat,” prepared jointly by the U.S. Army Corps of Engineers and the National Marine Fisheries Service (August 2001) [refer to the [Corps’ web page](#)], and
- “Key for Construction Conditions for Docks or Other Minor Structures Constructed in or over Johnson’s seagrass (*Halophila johnsonii*),” prepared jointly by the National Marine Fisheries Service and U.S. Army Corps of Engineers (October 2002), for those projects within the known range of Johnson’s seagrass occurrence (Sebastian Inlet to central Biscayne Bay in the lagoon systems on the east coast of Florida) [refer to the [Corps’ web page](#)],

Where the presence of the referenced vegetation is confirmed within the area affected by docks and other piling-supported minor structures and the reviewer has concluded that the impacts to SAV, marsh or mangroves would adversely affect the manatee or its critical habitat, and the applicant does not elect to follow the above Guidelines, the Corps will need to request formal consultation on the manatee with the Service as *May affect*.

For activities other than docks and other piling-supported minor structures proposed in SAV, marsh, or mangroves (*e.g.*, new dredging, placement of riprap, bulkheads, etc.), if the reviewer determines the impacts to the SAV, marsh or mangroves will not adversely affect the manatee or its critical habitat, proceed to couplet O, otherwise the Corps will need to request formal consultation on the manatee with the Service as *May affect*.

⁹ See Glossary, under “is not likely to adversely affect.”

¹⁰ Federal reviewers, when making your effects determination, consider effects to manatee designated critical habitat pursuant to section 7(a)(2) of the Endangered Species Act. State reviewers, when making your effects determination, consider effects to manatee habitat within the entire State of Florida, pursuant to Chapter 370.12(2)(b) Florida Statutes.

¹¹ See the [Corps' web page](#) for manatee construction conditions. At this time, manatee construction precautions c and f are not required in the following Florida counties: Bay, Escambia, Franklin, Gilchrist, Gulf, Jefferson, Lafayette, Okaloosa, Santa Rosa, Suwannee, and Walton.

¹² By letter dated April 25, 2013, the Corps received the Service's concurrence with “*May affect, not likely to adversely affect*” determinations made pursuant to this key for the following activities: (1) selected non-watercraft access projects; (2) watercraft-access projects that are residential dock facilities, excluding those located in the Braden River AIP; (3) launching facilities solely for kayaks and canoes, and (4) new or expanding multi-slip facilities located in Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Craig Key), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County.

Additionally, in the same letter dated April 25, 2013, the Corps received the Service's concurrence for “*May affect, not likely to adversely affect*” determinations specifically made pursuant to Couplet G of the key for the repair or rehabilitation of currently serviceable multi-slip watercraft access structures provided all of the following are met: (1) the project is not located in an IMA, (2) the number of slips is not increased; (3) the number of existing slips is not in question; and (4) the improvements to the existing watercraft access structures do not allow increased watercraft usage. Upon receipt of such a programmatic concurrence, no further consultation with the Service for these projects is required.

GLOSSARY

Areas of inadequate protection (AIP) – Areas within counties as shown on the maps where the Service has determined that measures intended to protect manatees from the reasonable certainty of watercraft-related take are inadequate. Inadequate protection may be the result of the absence of manatee or other watercraft speed zones, insufficiency of existing speed zones, deficient speed zone signage, or the absence or insufficiency of speed zone enforcement.

Boat slip – A space on land or in or over the water, other than on residential land, that is intended and/or actively used to hold a stationary watercraft or its trailer, and for which intention and/or use is confirmed by legal authorization or other documentary evidence. Examples of boat slips include, but are not limited to, docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, floats, floating docks, pilings, boat davits, dry storage, etc.

Critical habitat – For listed species, this consists of: (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act (ESA), on which are found those physical or biological features (constituent elements) (a) essential to the conservation of the species and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species. Designated critical habitats are described in 50 CFR 17 and 50 CFR 226.

Currently serviceable – Currently, serviceable means usable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects – The direct or immediate effects of the project on the species or its habitat.

Dredging – For the purposes of this key, the term dredging refers to all in-water work associated with dredging operations, including mobilization and demobilization activities that occur in water or require vessels.

Emergent vegetation – Rooted emergent vascular macrophytes such as, but not limited to, cordgrass (*Spartina alterniflora* and *S. patens*), needle rush (*Juncus roemerianus*), swamp sawgrass (*Cladium mariscoides*), saltwort (*Batis maritima*), saltgrass (*Distichlis spicata*), and glasswort (*Salicornia virginica*) found in coastal salt marsh-related habitats (tidal marsh, salt marsh, brackish marsh, coastal marsh, coastal wetlands, tidal wetlands).

Formal consultation – A process between the Services and a Federal agency or applicant that: (1) determines whether a proposed Federal action is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat; (2) begins with a Federal agency's written request and submittal of a complete initiation package; and (3) concludes with the issuance of a biological opinion and incidental take statement by either of the Services. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed

action “is not likely to adversely affect” listed species or designated critical habitat). [50 CFR 402.02, 50 CFR 402.14]

Important manatee areas (IMA) – Areas within certain counties where increased densities of manatees occur due to the proximity of warm water discharges, freshwater discharges, natural springs and other habitat features that are attractive to manatees. These areas are heavily utilized for feeding, transiting, mating, calving, nursing or resting as indicated by aerial survey data, mortality data and telemetry data. Some of these areas may be federally-designated sanctuaries or state-designated “seasonal no entry” zones. Maps depicting important manatee areas and any accompanying text may contain a reference to these areas and their special requirements. Projects proposed within these areas must address their special requirements.

Indirect effects – Those effects that are caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur. Examples of indirect effects include, but are not limited to, changes in water flow, water temperature, water quality (*e.g.*, salinity, pH, turbidity, nutrients, chemistry), prop dredging of seagrasses, and manatee watercraft injury and mortality. Indirect effects also include watercraft access developments in waters not currently accessible to manatees, but watercraft access can, is, or may be planned to waters accessible to manatees by the addition of a boat lift or the removal of a dike or plug.

Informal consultation – A process that includes all discussions and correspondence between the Services and a Federal agency or designated non-Federal representative, prior to formal consultation, to determine whether a proposed Federal action may affect listed species or critical habitat. This process allows the Federal agency to utilize the Services’ expertise to evaluate the agency’s assessment of potential effects or to suggest possible modifications to the proposed action which could avoid potentially adverse effects. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed action “is not likely to adversely affect” listed species or designated critical habitat). [50 CFR 402.02, 50 CFR 402.13]

In-water activity – Any type of activity used to construct/repair/replace any type of in-water structure or fill; the act of dredging.

In-water structures – watercraft access structures – Docks or piers, marinas, boat ramps, boat slips, boat lifts, floats, floating docks, pilings (depending on use), boat davits, etc.

In-water structures – other than watercraft access structures – Bulkheads, seawalls, riprap, groins, boardwalks, pilings (depending on use), etc.

Is likely to adversely affect – The appropriate finding in a biological assessment (or conclusion during informal consultation) if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions and the effect is not: discountable, insignificant, or beneficial (see definition of “is not likely to adversely affect”). An “is likely to adversely affect” determination requires the initiation of formal consultation under section 7 of the ESA.

Is not likely to adversely affect – The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. **Discountable effects** are those extremely unlikely to occur. **Insignificant effects** relate to the size of the impact and should never reach the scale where take occurs. **Beneficial effects** are contemporaneous positive effects without any adverse effects to the species. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects or (2) expect discountable effects to occur.

Manatee Protection Plan (MPP) – A manatee protection plan (MPP) is a comprehensive planning document that addresses the long-term protection of the Florida manatee through law enforcement, education, boat facility siting, and habitat protection initiatives. Although MPPs are primarily developed by the counties, the plans are the product of extensive coordination and cooperation between the local governments, the FWC, the Service, and other interested parties.

Manatee Protection Plan thresholds – The smallest size of a multi-slip facility addressed under the purview of a Manatee Protection Plan (MPP). For most MPPs, this threshold is five slips or more. For Brevard, Clay, Citrus, and Volusia County MPPs, this threshold is three slips or more.

Mangroves – Rooted emergent trees along a shoreline that, for the purposes of this key, include red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*) and white mangrove (*Laguncularia racemosa*).

May affect – The appropriate conclusion when a proposed action may pose any effects on listed species or designated critical habitat. When the Federal agency proposing the action determines that a “may affect” situation exists, then they must either request the Services to initiate formal consultation or seek written concurrence from the Services that the action “is not likely to adversely affect” listed species. For the purpose of this key, all “may affect” determinations equate to “likely to adversely affect” and Corps Project Managers should request the Service to initiate formal consultation on the manatee or designated critical habitat. **No effect** – the appropriate conclusion when the action agency determines its proposed action will not affect a listed species or designated critical habitat.

Multi-slip facility – Multi-slip facilities include commercial marinas, private multi-family docks, boat ramps and associated trailer parking spaces, dry storage facilities and any other similar structures or activities that provide access to the water for multiple (five slips or more, except in Brevard, Clay, Citrus, and Volusia counties where it is three slips or more) watercraft. In some instances, the Corps and the Service may elect to review multiple residential dock facilities as a multi-slip facility.

New access for watercraft – New dredging and the addition, expansion or improvement of structures such as, but not limited to, docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, pilings, floats, floating docks, floating vessel platforms, (residential boat lifts, pilings, floats, and floating vessel platforms installed in existing slips are not considered new access), boat slips, dry storage, mooring buoys, etc., that facilitates the addition of watercraft to, and/or increases watercraft usage in, waters accessible to manatees.

Observers – During dredging and other in-water operations within manatee accessible waters, the standard manatee construction conditions require all on-site project personnel to watch for manatees to ensure that those standard manatee construction conditions are met. Within important manatee areas (IMA) and under special circumstances, heightened observation is needed. **Dedicated Observers** are those having some prior experience in manatee observation, are dedicated only for this task, and must be someone other than the dredge and equipment operators/mechanics. **Approved Observers** are dedicated observers who also must be approved by the Service (if Federal permits are involved) and the FWC (if state permits are involved), prior to work commencement. Approved observers typically have significant and often project-specific observational experience. Documentation on prior experience must be submitted to these agencies for approval and must be submitted a minimum of 30 days prior to work commencement. When dedicated or approved observers are required, observers must be on site during all in-water activities, and be equipped with polarized sunglasses to aid in manatee observation. For prolonged in-water operations, multiple observers may be needed to perform observation in shifts to reduce fatigue (recommended shift length is no longer than six hours). Additional information concerning observer approval can be found at [FWC's web page](#).

Residential boat lift – A boat lift installed on a residential dock facility.

Residential dock density ratio threshold – The residential dock density ratio threshold is used in the evaluation of multi-slip projects in some counties without a State-approved Manatee Protection Plan and is consistent with 1 boat slip per 100 linear feet of shoreline (1:100) owned by the applicant.

Residential dock facility – A residential dock facility means a private residential dock which is used for private, recreational or leisure purposes for single-family or multi-family residences designed to moor no more than four vessels (except in Brevard, Clay, Citrus, and Volusia counties which allow only two vessels). This also includes normal appurtenances such as residential boat lifts, boat shelters with open sides, stairways, walkways, mooring pilings, dolphins, etc. In some instances, the Corps and the Service may elect to review multiple residential dock facilities as a multi-slip facility.

Submerged aquatic vegetation (SAV) – Rooted, submerged, aquatic plants such as, but not limited to, shoal grass (*Halodule wrightii*), paddle grass (*Halophila decipiens*), star grass (*Halophila engelmanni*), Johnson's seagrass (*Halophila johnsonii*), sago pondweed (*Potamogeton pectinatus*), clasping-leaved pondweed (*Potamogeton perfoliatus*), widgeon grass (*Ruppia maritima*), manatee grass (*Syringodium filiforme*), turtle grass (*Thalassia testudinum*), tapegrass (*Vallisneria americana*), and horned pondweed (*Zannichellia palustris*).

Warm Water Aggregation Areas (WWAAs) and No Entry Areas – Areas within certain counties where increased densities of manatees occur due to the proximity of artificial or natural warm water discharges or springs and are considered necessary for survival. Some of these areas may be federally-designated manatee sanctuaries or state-designated seasonal “no entry” manatee protection zones. Projects proposed within these areas may require consultation in order to offset expected adverse impacts. In addition, special permits may be required from the FWC in order to access these areas.

Watercraft access structures – Docks or piers, marinas, boat ramps and associated trailer parking spaces, boat slips, boat lifts, floats, floating docks, pilings, boat davits, dry storage, etc.

Waters accessible to manatees – Although most waters of the State of Florida are accessible to the manatee, there are some areas such as landlocked lakes that are not. There are also some weirs, salinity control structures and locks that may preclude manatees from accessing water bodies. If there is any question about accessibility, contact the Service or the FWC.

**Appendix R: FDOT Conservation Plan for the Florida Panther
Project-Level Section 7 Form and PHU Calculations**

The **Authorized Projects/Activity Types/** Descriptions section describes many of the project types FDOT undertakes to maintain and improve the SHS and these are described broadly to provide an indication of the activities associated with each. And as noted previously, many of the projects FDOT constructs could involve more than one of these projects or activity types under one contract. While it is difficult to make effect determinations for individual transportation projects without knowing the specific design details, this section will describe the generally anticipated effect determinations based on the project location and typically expected actions associated with the project type. Final effect determinations will be made through the Section 7(a)(2) consultation process either through the Minor Transportation Activities PA, or through the Section 7(a)(2) Consultation Form included in **Appendix B**. The Section 7(a)(2) Consultation Form will also be used by FDOT for technical assistance and those results would be provided to the permitting agencies to rely on during their reviews. Other than those projects covered by the PA, the effect determinations outlined herein are preliminary only and should not be construed by FDOT or the USFWS as final effect determinations until the project specific details have been considered by both entities. Projects are grouped into the following categories:

GROUP 1

Projects that qualify for the Minor Transportation Activities PA (Categories A, B, C)

Category A: Activities with No Ground Disturbance

Category B: Activities with Minimal Ground Disturbance

Category C: Activities with Moderate Ground Disturbance or In-Water Work

There are 26 activities covered by the PA (see Section III. Covered Activities and Table 1 of the PA) that result in either “no effect” or “may affect, not likely to adversely affect” (MANLAA) determinations. For those projects that result in a MANLAA determination, FDOT follows the conservation measures in the PA as applicable. For projects where the PA can be applied and applicable conservation measures can be followed, no further consultation for these activities is required. FDOT will document and report the use of this PA as required in sections **Conservation Measures** and **Partnerships/Use of Conservation Plan by Others** of the PA.

GROUP 2

Projects with activities in Category A or B of the PA but require minor amounts of right of way and for which the PA conservation measures are still appropriate

Many times, the types of actions described in the PA will require minor amounts of right of way either in fee, or for temporary access to accomplish the construction. These project types can include safety, RRR, bridge rehabilitation, in-kind bridge replacement, shared use paths landscaping, ITS, and maintenance. Some of these situations include:

- Corner clips (e.g., at intersections where a new mast arm signal foundation requires additional area)
- Small right of way strip (e.g., a few feet of additional area is needed to add or extend a turn lane for an intersection improvement)
- Temporary construction easement (TCE) (e.g., the contractor will need additional space during construction to build the facility, but that will not become part of the final transportation facility and is typically returned to the original or better condition).
- Right of entry (e.g., similar to TCE)
- License agreement – revokable permission to access adjacent property to improve harmonization for the benefit of the adjacent property owner.

If the land cover type for these minor right of way needs is either Urban or Water as defined in the USFWS Panther Habitat Assessment Methodology (September 2012), which are assigned a value of 0, then these projects can apply the appropriate effect determination in the PA as long as the applicable conservation measures are followed.

GROUP 3

Projects with activities in Category A or B of the PA that do not fit in Group 2, and Projects with activities in Category C of the PA that require right of way or reach a MA determination when using the PA

These project types would be the same as those in Group 1 or 2 but require more right of way. However, this group is still generally not expected to have significant impacts and are considered activities to maintain (repair, replacement, or preventative actions to maintain or restore existing infrastructure in order to retain existing conditions and functionality of the transportation system) or modernize (enhance the existing transportation system, primarily to correct for substandard conditions for the safety of its users) the transportation system.

- 1) For these projects, FDOT will first apply the USACE Florida Panther Effect Determination Key (February 19, 2007).
 - a. For projects that reach a “no effect” determination through the key, no further consultation will be required.
 - b. For projects that reach a “may affect” determination FDOT will evaluate habitat impacts and documented panther occurrences as follows:
 - i. FDOT will purchase the appropriate PHUs based on the USFWS Panther Habitat Assessment Methodology (September 2012), except for retrofit projects in which case FDOT may use the methodology in **Appendix G** address any PHUs that may be required.
 - ii. Where there is a documented panther occurrence within a two-mile radius of the project limits within the last two years FDOT will evaluate implementing the following conservation measures as applicable and appropriate for the project conditions.
 1. ROW fencing (to reduce potential for WVCs).
 2. Riprap Modifications under bridges to support incorporation of wildlife shelves.
 3. Culvert upgrades or new culverts intended to reduce WVCs.
 4. Application of other conservation measures outlined in this Plan.
 - iii. The final effect determination will be based on the use of the Section 7(a)(2) Consultation Form (**Appendix B**) and the conservation measures that can be provided by the project.

GROUP 4

Projects not covered by the PA outside the Panther focal area

This group includes projects such as Add Lanes and Reconstruct, New Construction, Bridge Widening, Rest Areas/Welcome Centers/Service Plazas/Weigh Stations, and retro fit Wildlife Crossings. When these project types are outside of the panther focus area, no habitat impact offsets through purchase of PHUs is anticipated, but there may be an opportunity for FDOT to provide conservation measures that reduce WVCs (current or future anticipated) or that support range expansion. FDOT will take into account documented panther vehicle hot spots (e.g., most

recent version of the Southwest Florida Roads Hot Spots GIS data layer) within the project limits and will evaluate implementing conservation measures outlined in this Plan as applicable and appropriate for the project conditions.

- 1) For projects with documented panther occurrences related to vehicle mortality, it is anticipated that these projects would generally result in a “may affect, likely to adversely affect” determination and conservation measures would be documented in the Section 7(a)(2) Consultation Form.
- 2) For projects with documented panther occurrences, but none related to vehicle mortality it is anticipated these projects would generally result in a “may affect, not likely to adversely affect” and conservation measures (if any) would be documented in the Section 7(a)(2) Consultation Form.
- 3) For projects with no documented panther occurrences, it is anticipated these projects would result either in a “no effect” or in a “may affect, not likely to adversely affect” when there are beneficial effects from implementing proactive conservation measures. Either scenario would be documented in the Section 7(a)(2) Consultation Form.

GROUP 5

Projects not covered by the PA inside the panther focal area

This group includes the same project types as those in Group 4 but occur in the panther focus area. Both habitat and the potential for direct impacts to panthers will be addressed through conservation measures for these projects using conservation measures outlined in this Plan as appropriate and applicable to the project conditions.

- 1) For projects in the focus area that do not fragment existing habitat and that do not have documented vehicle mortality, FDOT will offset habitat impacts with the purchase of appropriate PHUs based on the USFWS Panther Habitat Assessment Methodology (September 2012), except for retrofit projects in which case FDOT may use the methodology in **Appendix G** to address any PHUs that may be required. FDOT will evaluate implementing conservation measures that could reduce the potential for future WVCs outlined in this Plan as applicable and appropriate for the project conditions. It is anticipated that these projects would generally result in “may affect, not likely to adversely affect” determinations. Results will be documented in the Section 7(a)(2) Consultation Form.
- 2) For projects in the focus area that do not fragment existing habitat but that do have documented vehicle mortality, FDOT will offset habitat impacts with the purchase of appropriate PHUs based on the USFWS Panther Habitat Assessment Methodology (September 2012). FDOT will evaluate implementing conservation measures that would reduce the WVCs outlined in this Plan as applicable and appropriate for the project conditions. It is anticipated that these projects would generally result in “may affect, likely to adversely affect” determinations. Results will be documented in the Section 7(a)(2) Consultation Form.
- 3) For projects in the focus area that do fragment existing habitat, regardless of documented vehicle mortality, FDOT will offset habitat impacts with the purchase of appropriate PHUs based on the USFWS Panther Habitat Assessment Methodology (September 2012). FDOT will evaluate implementing conservation measures that would reduce the WVCs (current or future anticipated) outlined in this Plan as applicable and appropriate for the project conditions. It is anticipated that these projects would generally result in “may affect, likely to adversely affect” determinations. Results will be documented in the Section 7(a)(2) Consultation Form.



APPENDIX B

Section 7(a)(2) Process

Note that the Section 7(a)(2) form may be modified as mutually agreed by FDOT and USFWS for improving clarity and utility.

**FLORIDA DEPARTMENT OF TRANSPORTATION
CONSERVATION PLAN FOR THE FLORIDA PANTHER
PROJECT-LEVEL SECTION 7 FORM**

Purpose: The purpose of this form is to ensure that the Florida Department of Transportation (FDOT) complies with Section 7(a)(2) and 9 of the Endangered Species Act (ESA) and the procedures for informal and formal consultation described in Code of Federal Regulations 402.13 and 402.14 for the action(s) associated with the FDOT Conservation Plan for the Florida Panther (Plan) described below in Section B. Specifically, this project-level section 7(a)(2) form is only for the endangered Florida panther which is covered by the Plan described in the Action section. And this form documents, quantifies, exempts, and tracks take of Florida Panther that is reasonably certain to occur. A separate consultation is required for any other listed species and/or critical habitats in the action area.

Action: Implementation of FDOT activities or projects in accordance with the Plan, developed under Section 7(a)(1) of the Endangered Species Act (ESA) of 1973. Activities and projects are defined in the section **Authorized Projects/Activity Types/Descriptions** of the Plan and may occur either within the Florida panther focus area or outside the focus area with potential for effects (either beneficial or adverse).

Projects that qualify for ESA consultation under the FDOT Programmatic Approach for Minor Transportation Activities (PA) (refer to Section V, Group 1) will be documented through use of the Statewide Environmental Project Tracker (SWEPT) PA tool and not on this form.

Date: Click to enter a date.

FDOT Project Title:

FDOT Financial Project ID:

FDOT District:

County:

Service Consultation Code:

Date Received:

Consultation Initiation Date:

INSTRUCTIONS

1. Sections A through D are to be drafted by FDOT and submitted to FWS for review and consideration in finalizing the form.
2. Select Type of Project
3. Describe the FDOT project or activity.
4. Provide Effects Analysis and select the appropriate Determination of Effects.
5. Attach Project Level Section 7 Form to Natural Resources Evaluation (which acts as a Biological Assessment per FDOT Project Development and Environmental Manual, Part 2, Chapter 16) when consultation is also required for other listed species or critical habitat.
6. FWS to complete Sections E through G
7. Complete Effects of the Action and **Incidental Take** sections when appropriate.
8. Obtain
9. **Approval** and signature(s) as appropriate.
10. ES office should enter the project into the appropriate FWS database (e.g., ECOSphere) as a project under the Plan. One "master" ECOSphere project for the Panther plan with subsequent projects linked to that record.
11. Attach the Project Level Section 7 Form to the Biological Opinion when consultation is also required for other listed species or critical habitat.
12. Ensure the official file or administrative record contains all necessary information.

A. Type of Project (Refer to Section III of the Plan) – choose all that apply:

- ☒ Safety Improvements
- ☐ Resurfacing, Restoration, Rehabilitation (RRR)
- ☒ Add Lanes and Reconstruction
- ☐ New Construction
- ☒ Bridge Rehabilitation, Replacement, or Widening
- ☐ Toll Facilities
- ☒ Shared Use Path
- ☐ Rest Areas, Welcome Centers, Services Plazas, Weigh Stations
- ☐ Landscaping
- ☐ Intelligent Transportation Systems (ITS)
- ☒ Wildlife Crossings (wildlife shelf)
- ☐ Maintenance
- ☐ Emergency Repairs

B. Project Description

Describe the project including, limits, scope, anticipated letting date, etc. Attach any graphics or plan sheets that may support this discussion.

C. Effects Analysis (Refer to Effects Analysis of the FDOT Transportation Program of the Plan)– choose appropriate project Group and provide required details in that section to support the effect determination. Group 1 projects (qualifying for the minor transportation activities PA) are completed in SWEPT tool.

- ☐ **Group 2** - Projects with activities in Category A or B of the PA that require minor amounts of right of way and which the PA conservation measure (noted below) is still appropriate.

If land cover types for minor right of way needs are either Urban or Water, provide a brief description of the additional right of way locations (or provide a figure). If the right of way to be acquired for the project includes additional land cover types, go to Group 3.

Does the project include new right of way fencing? If yes, fence ends should be positioned so that animals are not funneled onto the roadway. Ideally, fence ends should occur at bridges or culverts to encourage safe passage beneath the roadway. Discuss applicability of this conservation measure to the project.

The resulting effect determination from the PA is (select one: NE/MANLAA) and is still appropriate given the information above.

- ☐ **Group 3** - Projects with activities in Category A or B of the PA that do not fit in Group 2, and Projects with activities in Category C of the PA that require right of way or reach a MA determination when using the PA.
- 1) For these projects, FDOT will first apply the USACE Florida Panther Effect Determination Key (February 19, 2007).
 - a) For projects that reach a “no effect” determination through the key, no further consultation will be required.
 - b) For projects that reach a “may affect” determination FDOT will consider habitat impacts and documented panther occurrences as follows:
 - i. FDOT will purchase the appropriate PHUs based on the USFWS Panther Habitat Assessment Methodology (September 2012), except for retrofit projects in which case FDOT may use the PHU credit for Wildlife Crossings methodology in **Appendix G** to address any PHUs that may be required.
 - ii. Where there is a documented panther occurrence within a two-mile radius of the project limits within the last two years FDOT will consider implementing the following conservation measures as applicable and appropriate for the project conditions.
 - (1) ROW fencing (to reduce potential for WVCs)
 - (2) Riprap Modifications under bridges to support incorporation of wildlife shelves.
 - (3) Culvert upgrades or new culverts intended to reduce WVCs.
 - (4) Application of other conservation measures outlined in the Plan.

Discuss the application of the USACE Florida Panther Effect Determination Key (February 19, 2007), and for projects that do not reach a “no effect” determination, discuss proposed conservation measures and provide the effect determination (either “may affect, not likely to adversely affect” or “likely to adversely affect” as appropriate).

- ☒ Group 4 - Projects not covered by the PA outside the Panther focus area. No habitat impact offsets through purchase of PHUs is required, but there may be an opportunity for FDOT to provide conservation measures that reduce WVCs (current or future anticipated) or that support range expansion. FDOT will consider documented panther vehicle hot spots (e.g., most recent version of the Southwest Florida Roads Hot Spots GIS data layer) within the project limits and will consider implementing conservation measures outlined in the Plan as applicable and appropriate for the project conditions.

Describe documented panther occurrences. Discuss whether there are any documented WVCs. Describe any efforts to offset documented WVC, potential future WVCs, panther range expansion opportunities, or other beneficial effects from implementation of the project. Discuss proposed conservation measures and provide the effect determination.

Please refer to Section 3.2.1.3 Florida Panther of the NRE

- ☐ Group 5 - Projects not covered by the PA inside the panther focus area. Both habitat and the potential for direct impacts to panthers will be addressed through conservation measures for these projects using conservation measures outlined in the Plan as appropriate and applicable to the project conditions.

Habitat

Describe the potential for the project to fragment existing panther habitat. Describe the habitat impact avoidance and minimization measures (road widening vs new alignment). Avoidance of higher quality panther habitat with pond sites, etc. Describe the amount/quality of impacted panther habitat within the project footprint using USFWS Panther Habitat Assessment Methodology (September 2012). Provide table. Discuss where PHUs will be purchased from or that will be offset through application of the methodology in **Appendix G**.

Direct Impacts

Describe in detail the amount of existing Panther Vehicle Collisions (PVCs) within the project limits or road segment including identified panther hotspots using most recent version of the Southwest Florida Roads Hot Spots GIS data layer. Specifically identify any hotspots with greater than 2 PVCs within the project footprint. Include relevant PVC information including dates of collisions (within last 5-10 years or older), clusters, age, sex, time of day/year.

Describe the presence/absence of existing conservation lands adjacent to the project footprint.

Describe the existing land use/habitat adjacent to the project footprint as it relates to panther and panther prey usage (hunting, breeding, denning). Include any future land use changes/planned conservation easements/acquisitions (Florida Forever, etc.).

Describe any past actions or future planned actions in the vicinity of the project footprint which may reduce or limit panther vehicle collisions, provide range expansion opportunities, or other beneficial effects from implementation of the project. Discuss proposed conservation measures and provide the effect determination.

D. Determination of Effects

Choose one of the following:

- ☒ Project results in a No Effect or May Affect, Not Likely to Adversely Affect determination with appropriate conservation measures.
Please refer to Section 3.3 Wildlife Feature of the NRE for conservation measures.
- ☐ Project results in a May Affect, requiring further consultation, or a May Affect, Likely to Adversely Affect determination.

TO BE FILLED OUT BY USFWS

E. Describe the Effects of the Action

Describe the Effects of the Action on the panther.

Effects Summary

- ☐ The effects of the project **are not** reasonably certain to result in any adverse effects to the Florida Panther. Therefore, this project is not likely to jeopardize the Florida Panther *[Proceed to section I of this form.]*
- ☐ The effects of the project **are** reasonably certain to result in adverse effects to the Florida Panther that may (or may not) rise to the level of incidental take. However, the project's activities and effects fall within those considered by the Plan, (see Plan for detailed explanation). *[If incidental take is reasonably certain, proceed to section F of this form. If not, proceed to section I of this form.]*

F. Incidental Take

For projects with a May Affect determination and which injury or death to panther is reasonably certain to occur as a result of the action or associated habitat loss, estimate the extent or amount of anticipated take in the table below: *[Then proceed to section I of this form.]*

Estimate the extent or amount of anticipated take.

Anticipated Take	ITS Amount or Extent
<i>Panther Habitat</i>	<i># PHUs</i>
<i>Vehicle Collision Range</i>	<i>Between X and Y</i>

G. Incidental Take Monitoring and Reporting

Incidental take should be monitored and reported using the same units of measure (e.g., impacted PHUs). During and post project construction, FDOT will report if the amount of impacted panther habitat exceeded the amount permitted. Additionally, FDOT annually produces the panther hotspot data which tracks panther vehicle collisions. FDOT will monitor the rate of PVCs on state roadways to identify any post project hotspots. If any new hotspots are identified, FDOT will coordinate with the Service to determine if any additional protective or conservations measures are reasonable and prudent.

H. Approval

Based on the information provided in this form, it has been determined that [*choose one*]:

- ☐ 1. The Project meets the coverage criteria described in the Plan therefore is not likely to jeopardize the continued existence of a species. Any incidental take that is reasonably certain to occur is exempted from section 9 prohibitions provided the project complies with the associated consultation.
- ☐ 2. The Project does not meet the coverage criteria described in the Plan or the Project Leader defers the project for review by the Regional Office for the following reason(s):

Reviewing ES Biologist

Name/Title

Signature

Date

Supervisor (for projects with no take), Division of Environmental Review Approval

Name/Title

Signature

Date

Manager (for projects where take is reasonably certain to occur), Division of Environmental Review Approval

Name/Title

Signature

Date

PHU ANALYSIS FOR A PANTHER ENHANCEMENT AREA FROM A NEW WILDLIFE CROSSING WITH NO WILDLIFE FENCING

Habitat Type	FLUCFCS Codes	Land Value	Acre (ac)	Primary Equivalent Habitat Units	0.10 PHU Multiplier
Hardwood swamp	6170	9.2	63.59	195	19.5
Dry prairie	3100, 3200	6.3	4.35	9	0.9
Unimproved pasture	2120	5.7	24.51	47	4.7
Shrub swamp/brush	6310	5.5	0.20	0.4	0.04
Improved pasture	2110	5.2	32.88	57	5.7
Marsh/ wet prairie	6410, 6430	4.7	55.64	87	8.7
Exotic/Nuisance plants	4220, 6190	3	20.33	20	2.0
Barren/Disturbed lands	7400	3	50.43	50	5.0
Water	5100, 5120	0	45.77	0	0.0
Urban	1110, 8140	0	2.51	0	0.0
TOTAL			300.21	466.00	46.60