



NATURAL RESOURCES EVALUATION (NRE) REPORT
City of Sarasota

The Legacy Trail - Payne Park (Alderman MURT)
From School Avenue to Payne Parkway
PO-001626-1

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1.0 Executive Summary

Patel, Greene & Associates, LLC (PGA) has completed a Natural Resources Evaluation (NRE) Report for the City of Sarasota. The NRE was completed for the Legacy Trail-Payne Park (Alderman MURT) project in the City of Sarasota, in Sarasota County, Florida.

The evaluation results include the following:

It has been determined that the project “may affect, not likely to adversely affect” the eastern indigo snake, crested caracara, and wood stork. No adverse effect is anticipated for the Florida sandhill crane, gopher tortoise, pine snake, Florida burrowing owl, little blue heron, tricolored heron, or the roseate spoonbill. Furthermore, no effect is anticipated for the Florida bonneted bat, tri-colored bat, bald eagle, or listed plant species (Sanibel lovegrass and Tampa vervain).

There is no Critical Habitat included in the project study area.

One upland cut ditch was identified inside the project study area (OSW 1), which is approximately 0.01 acre in size. The project is anticipated to be exempt from permitting with the Southwest Florida Water Management District (SWFWMD). The project was issued a Project Evaluation-Project Exempt letter from the SWFWMD on January 25, 2022. No permit should be required from the Department of Environmental Protection (FDEP) State 404 program. It is anticipated that the project will require a National Pollutant Discharge Elimination System (NPDES) Permit from the Florida Department of Environmental Protection (FDEP). A copy of the SWFWMD Project Evaluation Letter is provided in **Appendix A**.

2.0 Project Overview

2.1 Project Description

The City of Sarasota has requested an NRE addressing the environmental elements associated with an extension of the Legacy Trail at Payne Park. The project study area is located within Section 29, Township 36S, Range 18E and Section 20 Township 36S, Range 18E in Sarasota County, Florida. A copy of the proposed site plan is provided in **Appendix B**. The project location is shown in **Figure 1: Project Location Map** and the total project study area is approximately 2.06 acres.

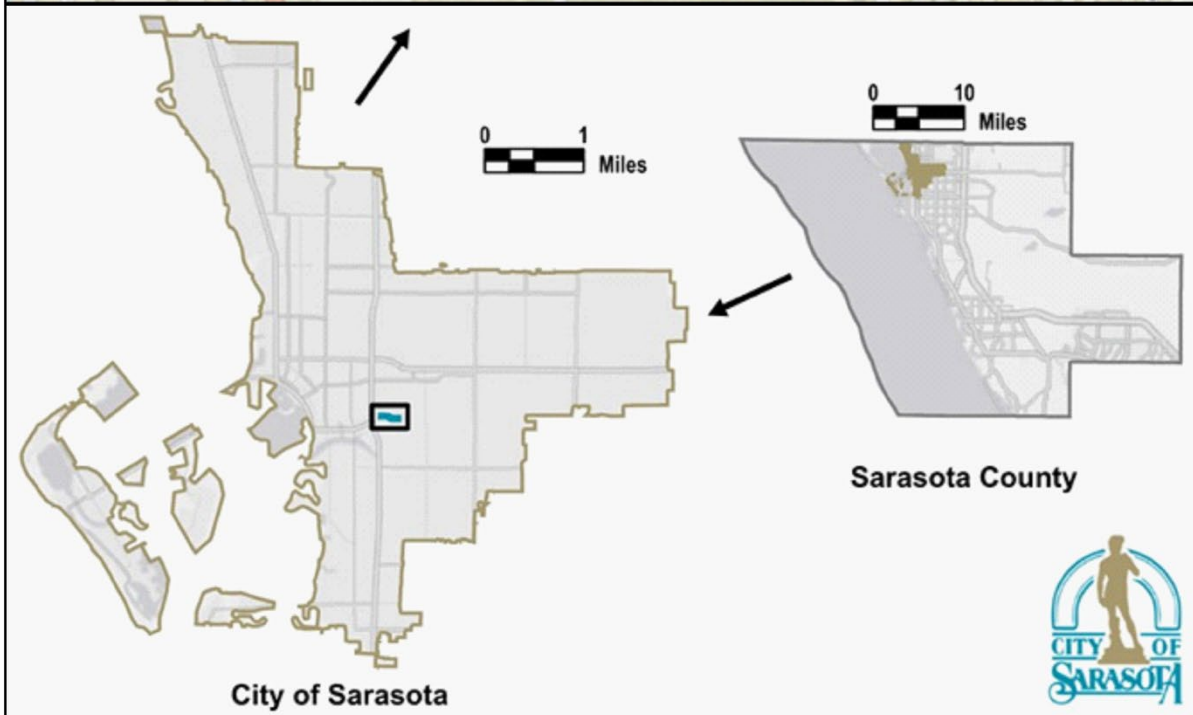
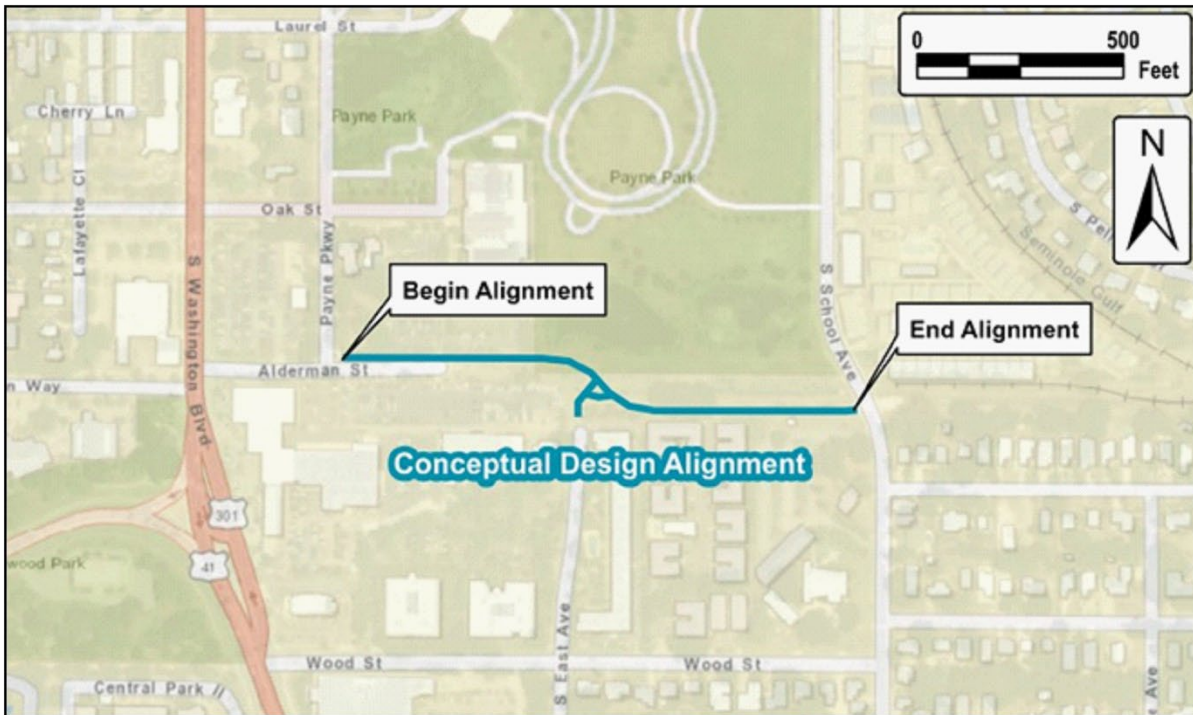


Figure 1: Project Location Map

The Legacy Trail - Payne Park
 (Alderman MURT)
 City of Sarasota

The proposed Multi-Use Recreational Trail (MURT) extends from School Avenue through the south edge of Payne Park, including a connection to S. East Avenue, and along the north side of Alderman Street extending for approximately 0.25 miles, terminating at Payne Parkway, as shown in **Figure 1**.

The proposed improvements include an at-grade paved trail, a shade shelter, trash receptacles, benches, tables, bike rack, drinking fountain, lighting, educational and informational signage, landscaping, and improvements to the stormwater management system.

This Natural Resources Evaluation (NRE) technical memorandum was prepared to document the natural resources and summarize the potential impacts to federal and state listed species, wetlands, surface waters, and other surface water habitats.

2.2 Existing Conditions

On the eastern side of the project study area, there is an open area lined with cabbage palm trees (*Sabal palmetto*) that runs parallel to an upland cut ditch north of the proposed trail location. The center of the project study area consists of live oak (*Quercus virginiana*) and laurel oak (*Quercus laurifolia*) trees. At the western end of the project study area, thirty small longleaf pine trees (*Pinus palustris*) are located in the path of the proposed trail. The far western end of the proposed trail location connects with Alderman Street that runs between Sarasota Ford to the south and First Presbyterian Church of Sarasota to the north.



Photo 1 – Proposed Trail Location, Facing West

3.0 Existing Natural Conditions

3.1 Introduction

This section presents a description of existing conditions within the project study area, including soils and land use/vegetative cover types within both upland and wetland communities.

3.2 Methodology

To determine the approximate locations and boundaries of existing upland and wetland communities within the project study area, available site-specific data was collected and reviewed. The information included:

- True color aerial imagery of the assessment area (1 inch = 200 feet) (2020);
- U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), Web Soil Survey. (<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>);
- U.S. Geological Survey (USGS) 7.5 Minute Topographic quadrangle map, Sarasota (2021);
- Florida Association of Environmental Soil Scientists, Hydric Soils of Florida Handbook, 4th Edition (2007);
- Florida Department of Transportation (FDOT), Florida Land Use, Cover and Forms Classification System Handbook, 3rd Edition (FDOT 1999);
- U.S. Fish and Wildlife Service (USFWS), Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, *et. al.* 2013); and
- USFWS, National Wetlands Inventory, Wetlands Online Mapper (January 2023).

Prior to field reviews, the approximate boundaries of upland and wetland communities within the project study area were mapped on true color aerial photographs. For the purposes of this report, the “project study area” includes the area located within the southern end of Payne Park.

Environmental scientists familiar with Florida’s natural communities conducted field reviews of the project study area on July 7, 2023 and August 4, 2023. The field reviews consisted of pedestrian transects throughout all habitat types found within the project study area. During the field investigation, each vegetative community type was traversed and visually inspected to verify approximate community boundaries. Attention was given to identifying dominant plant species composition for each community, exotic plant infestations, and other disturbances such as soil subsidence, clearing, canals, and power lines, etc. The field reviews were also completed to identify and document wildlife and signs of wildlife usage within the project study area.

3.3 Results

3.3.1 Soils

Based on the NRCS Web Soil Survey, the project study area is comprised of two (2) soil types: (53) Cassia fine sand-Urban land complex, 0 to 2 percent slopes and (55) EauGallie-Myakka fine sands-Urban land complex, 0 to 2 percent slopes. (53) Cassia fine sand-Urban land complex, 0 to 2 percent slopes does not have any hydric inclusions and comprises 0.75 acres of the project study area. (55) EauGallie-Myakka fine sands-Urban land complex, 0 to 2 percent slopes may have up to four percent hydric inclusions and comprises 1.31 acres of the project study area. Locations of each soil type within the project study area are shown in **Figure 2 of Appendix C**. The soil types mapped within the project study area, their corresponding map unit symbol, hydric soil classification, description and location, and average seasonal high-water depth are summarized in **Table 3-1**.

Table 3-1: Soils within the Project Study Area

| Soil ID and Name | Hydric (Y/N) | Description and Location | Average SHWT ² Depth (inches) | Acres within the PSA ³ |
|--|----------------|--|--|-----------------------------------|
| (53) Cassia fine sand-Urban land complex, 0 to 2 percent slopes | N | Somewhat poorly drained, located at the west end of the PSA ³ | 18-42 | 0.75 |
| (55) EauGallie-Myakka fine sands-Urban land complex, 0 to 2 percent slopes | N ¹ | Poorly drained, located at the east end of the PSA ³ | 6-18 | 1.31 |
| Total | | | | 2.06 |

1 - Contains hydric soil inclusions

2 - Seasonal High-Water Table

3 - Project Study Area

3.3.2 Land Uses/Vegetative Cover Types

All vegetative habitats and land use categories within the project study area were classified using the Florida Department of Transportation (FDOT) Florida Land Use, Cover, and Forms Classification System (FLUCFCS) (FDOT 1999). Wetland and surface water habitats were also classified using the U.S. Fish and Wildlife Service Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et. al., 1979).

Based on in-house and field reviews, the following land use/vegetative cover types have been identified within the project study area: (180) Recreational, (419) Other Pines, (427) Live Oak, (428) Cabbage Palm, (510) Streams and Waterways, and (814) Roads and Highways. The locations of each land use/vegetative cover type are shown in **Figure 3 of Appendix C** and **Table 3-2** summarizes the acreage of each land use/vegetative cover type within the project study area. Descriptions of land uses/vegetative cover types within the project study area are described in detail below.

Table 3-2: Land Use/Vegetative Cover Types within the Project Study Area

| Habitat Type | FLUCFCS Classification ¹ | USFWS Classification ² | Acres within the PSA ³ | Percent of PSA ³ |
|---|-------------------------------------|-----------------------------------|-----------------------------------|-----------------------------|
| Uplands | | | | |
| Recreational | 180 | N/A | 1.08 | 52.43% |
| Other Pines | 419 | N/A | 0.16 | 7.77% |
| Live Oak | 427 | N/A | 0.13 | 6.31% |
| Cabbage Palm | 428 | N/A | 0.06 | 2.91% |
| Streams and Waterways | 510 | PEM1Bx ⁴ | 0.01 | 0.48% |
| Roads and Highways | 814 | N/A | 0.62 | 30.10% |
| Total Uplands and Other Surface Waters | | | 2.06 | 100% |
| Total | | | 2.06 | 100% |

1 - Florida Department of Transportation (FDOT), *Florida Land Use, Cover and Forms Classification System Handbook* (FLUCFCS) (Third edition, 1999).

2 - U.S. Fish and Wildlife Service (FWS), *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et al., 1979).

3 - Project Study Area

4 - PEM1Bx: Palustrine, Emergent, Persistent, Seasonally Saturated, Excavated

Uplands

Recreational

FLUCFCS Classification Code: 180

Recreational land use areas are those whose physical structure indicates that active user-oriented recreation is or could be occurring within the given physical area. This land use type includes golf courses, parks, swimming beaches and shores, marinas, and fairgrounds. Within the project study area, this land use type describes Payne Park, located north of the project study area. Within the project study area, bahia grass (*Paspalum notatum*), frog fruit (*Phyla nodiflora*), large flower Mexican clover (*Richardia grandiflora*), cabbage palm, pink purslane (*Portulaca pilosa*), Chinese wedelia (*Sphagneticola calendulacea*), ponysfoot (*Dichondra carolinensis*), pennywort (*Centella asiatica*), girdlepod (*Mitracarpus hirtus*), Bermuda grass (*Cynodon dactylon*), St. Augustine grass (*Stenotaphrum secundatum*), longleaf pine trees, live oak, and laurel oak trees were observed. Recreational land use comprises 1.08 acres of the project study area.

Other Pines

FLUCFCS Classification Code: 419

Other Pines classification code refers to areas of pine that do not fit into the pine forest communities that are dominated with pine species. Within the project study area, an area of 30 small planted longleaf pine trees is located at the western end of the proposed trail location. Other Pines comprise 0.16 acre of the project study area.

Live Oak

FLUCFCS Classification Code: 427

Often referred to as an upland temperate hammock, this forest community is one in which live oak is either pure or dominant. Within the project study area, a group of mature live oak trees with laurel oak are located on the north side of the proposed trail location. Live oak comprises 0.13 acre of the project study area.

Cabbage Palm

FLUCFCS Classification Code: 428

Cabbage Palm vegetative cover includes areas where cabbage palms are predominant. Within the project study area, a group of mature cabbage palms are located at the eastern end of the proposed trail location. Cabbage Palms comprise 0.06 acre of the project study area.

Roads and Highways

FLUCFCS Classification Code: 814

Roads and Highways land use classification includes interchanges, limited access rights-of-way and service facilities. Within the project study area, the western end of the proposed trail connects to Alderman Street. Roads and Highways comprise 0.62 acre of the project study area.

Wetlands and Surface Waters

Streams and Waterways

FLUCFCS Classification Code: 510

USFWS Classification: PEM1Bx (Palustrine, Emergent, Persistent, Seasonally Saturated, Excavated)

Streams and Waterways include areas that include rivers, creeks, canals and other linear waterbodies, including ditch systems. Within the project study area, one upland cut ditch is located north of the proposed trail location. At the western end, the proposed trail path intersects the western portion of the ditch. In this area, the ditch can be classified as a wet swale. This area was dry at the time of the field reviews, but may fill with water during heavy rain events. Streams and Waterways comprise 0.01 acre of the project study area.

4.0 Protected Species and Habitat

4.1 Introduction

Listed species are afforded protective status by federal and state agencies. Federal protection is administered by the United States Department of the Interior, USFWS, and National Oceanic and Atmospheric Administration – National Marine Fisheries Service (NOAA-NMFS) pursuant to the Endangered Species Act of 1973 (as amended). The USFWS administers the federal list of animal species (50 Code of Federal Regulations [CFR] 17) and plant species (50 CFR 23). Federal protection of marine species is the responsibility of the NOAA-NMFS.

The Florida Fish and Wildlife Conservation Commission (FWC) affords protection to animal species designated as Endangered, Threatened or Species of Special Concern, pursuant to Chapter 68A-27, F.A.C. The State of Florida also protects and regulates plant species designated as endangered, threatened, or commercially exploited as identified on the Regulated Plant Index (5B-40.0055, F.A.C.), which is administered by the Florida Department of Agriculture and Consumer Services (FDACS), Division of Plant Industry, pursuant to Chapter 5B-40, F.A.C.

4.2 Methodology

In order to determine federal and state listed protected plant and animal species that have the potential to occur within the project study area, available site-specific data was collected and evaluated. In addition to the data reviewed as part of Section 3.2, literature and databases reviewed as part of this evaluation included:

- Audubon Center for Birds of Prey, Bald Eagle Nest Locator, last updated 2022; (<https://cbop.audubon.org/conservation/about-eaglewatch-program>);
- FDACS, Florida Statewide Endangered and Threatened Plant Conservation Program (July 2023);
- FWC, Florida's Endangered and Threatened Species, July 2023;
- FWC, Fish and Wildlife Research Institute. Wading Bird Colonies Florida database, (http://ocean.floridamarine.org/TRGIS/Description_Layers_Terrestrial.htm);
- FWC, Rare Snake Sightings Application (Rare Snake Sightings (myfwc.com));
- Florida Natural Areas Inventory (FNAI), Biodiversity Matrix Map Server (<http://www.fnai.org/biointro.cfm>);
- NOAA Fisheries, Essential Fish Habitat Mapper, Accessed July 2023. (EFH Mapper (noaa.gov));
- University of Florida (UF) Florida Geographic Data Library Map Viewer, UF Geoplan Center, Accessed July 2023; ([FGDL Map Viewer](#));
- USFWS, Critical Habitat Portal website (<http://criticalhabitat.fws.gov/crithab/>);
- USFWS, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12;
- USFWS, Wood Stork Nesting Colonies Maps, [Florida Wood Stork Foraging Areas \(state.fl.us\)](#) (April 2021);

- Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2021. Atlas of Florida Plants (<http://florida.plantatlas.usf.edu/>). [S. M. Landry and K. N. Campbell (application development), USF Water Institute.] Institute for Systematic Botany, University of South Florida, Tampa, Florida.

The FNAI Web Biodiversity Matrix was evaluated for documented occurrences of listed species within one mile of the project study area.

4.3 Results

Based upon information collected, as well as site specific field reviews, fourteen (14) federal or state protected species and one (1) other protected species were identified as having the potential to occur within the project study area. **Table 4-1** provides a complete tabular listing of these protected species, their federal or state protection status, preferred habitat, whether the habitat is present in the study area, and a ranking of probability of occurrence within the project study area.

The probability of occurrence for each species is designated as low, moderate, or high based on the habitat requirements for each species, the presence of the habitat within the project study area and documented occurrence of the species within one mile of the project study area. A low ranking indicates that preferred habitat for that species was found within the project study area, but the species has not been documented within one mile of the project study area. A moderate ranking indicates that suitable habitat exists, and the species has been documented within one mile of the project study area. A high ranking indicates that suitable habitat exists, and the species was observed during field reviews.

While the proposed project has taken all practical measures to avoid and minimize impacts to potentially occurring protected species and their habitats, unavoidable impacts may occur as a result of the proposed trail addition. A determination of the anticipated project “effect” on protected species was made based on their probability of occurrence within the project study area, proposed changes to habitat, and how each species is expected to respond to anticipated habitat changes.

Table 4-1: Federal and State-Protected Species Probability of Occurrence in the Project Study Area

| Species | Designated Status | | | Habitat Preferences | Habitat available in the PSA | Probability of Occurrence in the PSA |
|--|-------------------|-----|-----|---|------------------------------|--------------------------------------|
| | FWS | FWC | FDA | | | |
| Plants | | | | | | |
| Sanibel lovegrass (<i>Eragrotis pectipacea</i> var. <i>tracyi</i>) | NL | | E | Dry, compact soils of beach dunes, maritime hammocks, coastal strands, coastal grasslands, old fields, clearings, and disturbed sites | Yes | Low |

| | | | | | | |
|---|----|----|---|---|-----|-----|
| Tampa vervain (<i>Glandularia tampensis</i>) | NL | | E | Live oak-cabbage palm hammocks and pin-palmetto flatwoods; disturbed sandy areas | Yes | Low |
| Reptiles | | | | | | |
| Eastern indigo snake (<i>Drymarchon couperi</i>) | T | FT | | Scrub and sandhill, wet prairies, mangrove swamps. In northern part of range, often winters in gopher tortoise burrows in sandy uplands but forages in more hydric habitats | Yes | Low |
| Gopher tortoise (<i>Gopherus polyphemus</i>) | NL | ST | | Dry uplands habitats, including sandhills, scrub, xeric oak hammock, and dry pine flatwoods; pastures, old fields, and road shoulders | Yes | Low |
| Pine snake (<i>Pituophis melanoleucus</i>) | UR | ST | | Temperate broadleaf and mixed forest | Yes | Low |
| Birds | | | | | | |
| Florida sandhill crane (<i>Antigone canadensis pratensis</i>) | NL | ST | | Prairies, freshwater marshes, and pasture lands. Avoids forests and deep marshes but used transition zones and edges between these and prairies or pasture lands. Will frequent agricultural areas like feed lots and crop fields, golf courses, and open lawns | Yes | Low |
| Florida burrowing owl (<i>Athene cunicularia floridana</i>) | NL | ST | | High, sparsely vegetated, sandy ground; dry prairies and sandhill, ruderal areas such as pastures, airports, ball fields, parks, school grounds, university campuses, road right-of-ways, and vacant spaces in residential areas | Yes | Low |
| Crested caracara (<i>Caracara cheriway</i>) | T | FT | | Open country, pasture lands with cabbage palm and oak trees, shallow ponds and sloughs | Yes | Low |
| Little blue heron (<i>Egretta caerulea</i>) | NL | ST | | Feeds in shallow freshwater, brackish, and saltwater habitats. Largest nesting colonies occur in coastal areas, but prefers foraging in freshwater lakes, marshes, swamps, and streams | Yes | Low |
| Tricolored heron (<i>Egretta tricolor</i>) | NL | ST | | Mangrove islands and willow thickets in freshwater, feeds in ditches and the edges of ponds and lakes. | Yes | Low |

| | | | | | | |
|---|-------------------|-------------------|--|---|-----|-----|
| Bald eagle (<i>Haliaeetus leucocephalus</i>) | NL ⁽¹⁾ | NL ⁽²⁾ | | Coastal areas, bays, rivers, lakes, or other bodies of water that provide concentrations of food sources, including fish, waterfowl, and wading birds | Yes | Low |
| Wood stork (<i>Mycteria americana</i>) | T | FT | | Inundated forested wetlands, cypress strands and domes, mixed hardwood swamps, sloughs, and mangrove. Artificial habitats (e.g., impoundments and dredged areas with native or exotic vegetation) swamps, lagoons, ponds, tidal creeks, flooded pastures, and ditches | Yes | Low |
| Roseate spoonbill (<i>Platalea ajaja</i>) | NL | ST | | Nests in mixed-species colonies on coastal mangrove islands or in Brazilian pepper on man-made dredge spoil islands near suitable foraging habitat. Also nests in willow heads at freshwater sites. | Yes | Low |
| Mammals | | | | | | |
| Florida bonneted bat (<i>Eumops floridanus</i>) | E | FE | | Roosts in palms, hollow trees, and in buildings | Yes | Low |
| Tri-colored bat (<i>Perimyotis subflavus</i>) ³ | NL | NL | | Roosts in caves, mines, trees, under bridges and in culverts | Yes | Low |

* Species designated statuses are based on 2016-2026 FWC Imperiled Species Management Plan, effective January 2017.

** State listed plant species are regulated by the Florida Department of Agriculture and Consumer Services (FDACS)

PSA – Project Study Area

C – Candidate Species for listing under ESA, E – Endangered, T – Threatened, NL – Not Listed, UR- Under Review

(1) The bald eagle is no longer listed under ESA, but it is federally protected by the Bald and Golden Eagle Protection Act.

(2) While not listed under Chapter 68A-27, FAC, the Bald Eagle is protected under the FFWCC Bald Eagle Management Plan.

(3) FWS has proposed the listing of the Tri-Colored Bat

4.3.1 General Wildlife Observations

Mockingbirds (*Mimus polyglottos*), blue jays (*Cyanocitta cristata*), and the sound of woodpeckers (unknown species) were observed and/or heard inside the project study area during the field reviews.

4.3.2 Listed Wildlife

4.3.2.1 Federally Listed Species

Descriptions of the five (5) federally listed species with a probability of occurrence within the project study area and their effect determinations are provided in the following sections. All federally listed species are also considered listed by the state and are granted the same state status as the federal listing.

The **eastern indigo snake** (*Drymarchon couperi*) is a large, glossy black snake listed as threatened by the USFWS. The indigo snake can be found in a variety of habitats including mesic flatwoods, swamps, wet prairies, xeric pinelands, and scrub areas. It may also utilize gopher tortoise burrows for shelter to escape hot or cold ambient temperatures within its range. Suitable habitat is available for this species throughout the project study area. Based on a review of FNAI data and the FWC rare snake registry website, the eastern indigo snake has not been documented within one mile of the project study area and no eastern indigo snakes were observed during the field reviews. Based on the *Eastern Indigo Snake Programmatic Effect Determination Key-Revised July 2017-South Florida Ecological Office* (amended August 1, 2017), FDOT has determined that the project is “not likely to adversely affect” the eastern indigo snake. The path to the effect determination is A>B>C>D>NLAA. Because a “NLAA” effect determination was reached, no additional coordination with the FWS is required. To protect this species during construction, the Standard Protection Measures for the Eastern Indigo Snake will be implemented. A copy of the effect determination key and the standard protection measures are provided in **Appendix D**.

The **crested caracara** (*Caracara cheriway*) is listed as threatened by the FWS due primarily to habitat loss and modification due to urban development. This species prefers wet prairies with scattered cabbage palm trees and may also be found in wooded areas with saw palmetto, cypress, scrub oaks, and in pastures. The project study area is not located within the FWS consultation area for this species. Based on the FNAI Biodiversity Matrix, the crested caracara has not been historically documented within one mile of the project study area. While there are a few cabbage palm trees located in the project study area, no caracara or nests were observed during field reviews. In addition, no cabbage palms will be removed as part of the trail construction. Based on this information, the project will have “no effect” the crested caracara.

The **wood stork** (*Mycteria americana*) is a large, white wading bird listed as threatened by the USFWS. The wood stork is opportunistic and utilizes various habitat types, including forested wetlands, freshwater marshes, swamps, lagoons, ponds, tidal creeks, flooded pastures, and ditches. Water that is relatively calm, uncluttered by dense thickets of aquatic vegetation and contains a permanent or seasonal water depth less than 16 inches is considered suitable foraging habitat for this species. Suitable habitat exists within the project study area for this species and the project study area is located within the 18.6-mile core foraging area (CFA) of four active wood stork nesting colonies. The location of the core foraging areas in relation to the project study area is provided in **Figure 4 of Appendix C**. No individuals were observed during field reviews. Therefore, in accordance with the USFWS’ *South Florida Programmatic Concurrence for the Wood Stork* (May 18, 2010), it has been determined that the proposed project “is not likely to adversely affect” the wood stork. The path to the effect determination is A>B>NLAA. Because a “NLAA” effect determination was reached, no additional coordination with the FWS is required. A copy of the effect determination key is provided in **Appendix E**.

The **Florida bonneted bat** (*Eumops floridanus*) is federally-listed as endangered by the FWS. This species prefers areas of open water, freshwater wetlands and wetland and upland forests. This species often is found

in urban areas and will nest in buildings when natural roosting areas (i.e., native mature trees) are absent from the landscape. Habitat exists for this species in the oak and pine communities in the project study area and the project study area is within the FWS Consultation Area for this species. Using the 2019 Florida Bonneted Bat Key, the path to the determination is 1a>2a>3a>Conduct Limited Roost Surveys. The Key path is (1a)-the proposed project or land use change is partially or wholly within the Consultation Area, (2a)-Potential FBB roosting habitat exists within the project study area, (3a)-Project size/footprint <5 acres, Conduct Limited Roost Surveys. Although roosting habitat exists within the project study area, it is anticipated that no trees will be removed as part of the trail project. Therefore, the project would have “no effect” on the Florida bonneted bat. A copy of the Key is provided in **Appendix F**.

The **tri-colored bat** (*Perimyotis subflavis*) has been proposed for listing as endangered by the FWS. This species prefers to spend days in caves, mines, culverts and under bridges, then emerges at night to feed. It prefers to roost under bridges, treetops, or in moss. While this species has not been documented at the project site, the trees inside the project study area provide suitable roosting habitat. Because it is anticipated that no trees will be removed as part of the trail project, the project would have “no effect” on the tri-colored bat.

4.3.2.2 State Listed Species

Descriptions of the seven (7) state listed species with a probability of occurrence within the project study area and their effect determinations are provided in the following section.

The **Florida sandhill crane** (*Antigone canadensis pratensis*) is designated as threatened by the FWC. Prairies, freshwater marshes, and pasturelands are the preferred habitat for the Florida sandhill crane. Florida sandhill cranes also frequent agricultural areas such as feed lots and crop fields, golf courses, and open lawns. Suitable foraging habitat exists inside the project study area. According to FNAI, there have been no occurrences within a mile of the project study area and none were observed during the field reviews. Based on this information, the probability of occurrence is low, and it has been determined that the proposed project should have no adverse effect on the Florida sandhill crane.

The **gopher tortoise** (*Gopherus polyphemus*) is a medium-sized, land-based tortoise listed as threatened by the FWC. The gopher tortoise requires well-drained, loose sandy soils for burrowing, and low-growing herbs and grasses for food. These conditions can be found throughout the project study area. Gopher tortoise burrows may also harbor a number of commensal species. Gopher tortoise burrows were not observed within the project study area during the field reviews. As a result, the probability of occurrence of gopher tortoises within the project study area has been determined to be low. However, to avoid adverse impacts to the gopher tortoise, the City of Sarasota should resurvey the project study area for gopher tortoises prior to construction. If gopher tortoises are found within the project study area, the City should coordinate with the FWC to secure all permits needed to relocate the gopher tortoises prior to construction. Based on this information, it has been determined that no adverse effect is anticipated for the gopher tortoise.

The **pine snake** (*Pituophis melanoleucus*) is a large, tan or rusty-colored snake with blotched patterns that is listed by the FWC as threatened. This snake utilizes upland habitats with open canopies and dry sandy soils, including old fields and pastures. It often coexists with pocket gophers and gopher tortoises. Habitat for the pine snake is available in the sandy areas of the project study area. According to FNAI, the pine snake has not been documented within one mile of the project study area and it was not observed during field reviews. Based on this information, the probability of the pine snake occurring within the project study area is low and no adverse effect is anticipated for the pine snake.

The **Florida burrowing owl** (*Athene cunicularia floridana*) is listed as threatened by the FWC. This small bird prefers high, sparsely vegetated ground such as sandhills and ruderal areas such as pastures, road rights-of-way and vacant lots in residential areas. Marginal suitable habitat for this species is available in the project study area. According to FNAI, no burrowing owls have been documented within one mile of the project study area and no burrows or individuals were observed during the field reviews. The probability of the Florida burrowing owl occurring within the project study area is low. Based on this information, it has been determined that no adverse effect is anticipated for the Florida burrowing owl.

The **little blue heron** (*Egretta caerulea*), the **tricolored heron** (*Egretta tricolor*), and the **roseate spoonbill** (*Platalea ajaja*) are wading bird species listed as threatened by the FWC. While each species is distinct, wading birds are discussed collectively since they occupy similar habitats and have similar feeding patterns. These wading birds nest and forage among both fresh and saltwater habitats such as freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies, and bay swamps. The populations of these species have been primarily impacted by the destruction of wetlands for development and by the drainage of wetlands for flood control and agriculture. The primary concern for impacts to these wading birds is the loss of foraging habitat (i.e., wetlands). The upland cut ditch within the project study area provides suitable foraging habitat for these species. According to FNAI, no little blue herons, tricolored herons, or roseate spoonbills have been documented within one mile of the project study area and none were observed during field reviews. Based on this information, the probability of occurrence has been determined to be low for these wading birds. No adverse effect is anticipated for the little blue heron, tricolored heron, and the roseate spoonbill.

4.3.2.3 Other Protected Species

Although the **bald eagle** (*Haliaeetus leucocephalus*) has been removed from federal and state listings, it is still protected under the Bald and Golden Eagle Protection Act in accordance with 16 United States Code 668 and the Migratory Bird Treaty Act in accordance with 16 United States Codes § 703-712. The bald eagle tends to utilize riparian habitat associated with coastal areas, lake shorelines, and riverbanks. Nests are generally located near water bodies that provide a dependable food source. Nests within Florida are closely monitored and the Audubon Center for Birds for Prey manages the EagleWatch Program, a website of known bald eagle nest locations. According to the EagleWatch Program, there are no bald eagle nests within one

mile of the project study area, and none were observed during the field reviews. Based on this information, the probability of occurrence is low, and it has been determined that the proposed project will have no effect on the bald eagle.

4.3.3 *Listed Plants*

Based on a review of FNAI data, two state listed plant species are documented in Sarasota County that contain suitable habitat in the project study area.

Sanibel lovegrass (*Eragrostis pectinacea var. tracyi*) is listed as endangered by the FDA. This flowering plant prefers dry, compact soils of beach dunes, maritime hammocks, coastal strands, coastal grasslands, old fields, clearings, and disturbed sites. According to FNAI, no Sanibel lovegrass has been documented within one mile of the project study area and no lovegrass was observed during field reviews. In addition, the project study area is regularly mowed and maintained, so the probability of occurrence of Sanibel lovegrass is low. Based on this information, it has been determined that the project should have no effect on Sanibel lovegrass.

Tampa vervain (*Glandularia tampensis*) is listed as endangered by the FDA. This perennial herb prefers live oak-cabbage palm hammocks and pine-palmetto flatwoods or disturbed, sandy areas. According to FNAI, no Tampa vervain plants have been documented within one mile of the project study area and no vervain plants were observed during field reviews. In addition, the project study area is regularly mowed and maintained, so the probability of occurrence of Tampa vervain is low. Based on this information, it has been determined that the project should have no effect on Tampa vervain.

4.4 Critical Habitat

The project study area was evaluated for the occurrence of critical habitat as defined by the Endangered Species Act of 1973, as amended, and 50 CFR Part 424. The USFWS is the authority, as a federal agency, to protect from destruction or adverse modification the biological or physical constituent elements essential to the conservation of listed species. Critical Habitat is defined as the specific areas with the geographical area occupied by a species on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection. No critical habitat is present in the project study area.

5.0 **Wetlands, Surface Waters, and Other Surface Waters**

During field reviews of the project study area, environmental scientists delineated the boundaries of existing other surface water communities. The other surface water habitat within the project study area was classified using FLUCFCS (FDOT 1999) and the USFWS Classification of Wetlands and Deepwater Habitats of the

United States (Cowardin, et al. 2013). Wetland and surface water boundaries were identified in accordance with Chapter 62-340, Florida Administrative Code (F.A.C.).

One upland cut other surface water (OSW 1) was identified in the field during field reviews. This ditch is located north of the proposed trail location and the western portion of the trail will intersect this OSW. Within the project study area, the area was classified as a wet swale with St. Augustine and Bermuda grasses that are mowed and maintained frequently. This area may become inundated during periods of high rainfall. OSW 1 comprises 0.01 acre of the project study area. The location of the OSW in the project study area is provided as **Figure 5 in Appendix C**.

6.0 Permit Requirements

Because the project contains one upland cut other surface water (OSW), the project should not require a permit from the SWFWMD or the FDEP State 404 program. The project was issued a Project Evaluation-Project Exempt letter from the SWFWMD on January 25, 2022. A copy of the Project Evaluation letter is provided in **Appendix A**.

A National Pollutant Discharge Elimination System (NPDES) permit from FDEP is anticipated. This permit requires the implementation of a Stormwater Pollution Prevention Plan (SWPPP) during construction.

Based on field reviews, marginal suitable habitat exists within the project study area for the state-listed gopher tortoise. None were observed during field reviews; however, should observations of the gopher tortoise occur during the pre-construction surveys, a permit for gopher tortoise capture/relocation/release activities must be secured from the FWC before initiating any relocation work. A 10 or Fewer Burrows permit is available for development projects that contain 10 or fewer gopher tortoise burrows and a Conservation Permit is available for projects that require the relocation of more than 10 gopher tortoise burrows. Both permits allow for relocation either to an on-site or off-site FWC-approved Recipient Site.

Depending on the types of permits required from the regulatory agencies, the permitting process typically ranges from 90 days to 210 days.

7.0 Conclusions

It has been determined that the project “may affect, but is not likely to adversely affect” the eastern indigo snake, crested caracara, and wood stork. No adverse effect is anticipated for the Florida sandhill crane, gopher tortoise, pine snake, Florida burrowing owl, little blue heron, tricolored heron, or roseate spoonbill. Furthermore, no effect is anticipated for the Florida bonneted bat, tri-colored bat, bald eagle, or listed plant species (Sanibel lovegrass and Tampa vervain).

Approximately 0.01 acre of OSW (upland cut ditch) is located within the project study area and no impacts are anticipated. Based on the project description and potential wetland impacts, an exemption is anticipated from the Southwest Florida Water Management District and no permit is anticipated from the FDEP State 404 program. No mitigation is proposed for impacts to the OSW.

8.0 References

Audubon Center for Birds of Prey, Bald Eagle Nest Locator, last updated 2022;
(<https://cbop.audubon.org/conservation/about-eaglewatch-program>).

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Revised 2013. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services. Technical Publication FWS/OBS-79/31. 131 pp.

Florida Administrative Code, 1994. Chapter 62-340, F.A.C. Delineation of the Landward Extent of Wetlands and Surface Waters. Accessed January 2023.
<https://www.flrules.org/gateway/chapterhome.asp?chapter=62-340>.

Notes on Florida's Endangered and Threatened Plants. Botany Section Contribution No. 38, 5th edition. Florida Department of Agriculture and Consumer Services, Division of Plant Industry, 2010.

FDACS, Florida Statewide Endangered and Threatened Plant Conservation Program.

Hurt, Wade. 2007. Hydric Soils of Florida Handbook, Fourth Edition. Florida Association of Environmental Soil Scientists. Gainesville, Florida. 223 pp.

Florida Land Use, Cover and Forms Classification System. Third Edition. 91 pp. Florida Department of Transportation.

Florida Fish and Wildlife Conservation Commission pursuant to Rules 68A-27.003 through 68A-27.005, F.A.C. (<http://myfwc.com/wildlifehabitats/imperiled/>).

Florida's Endangered Species, Threatened Species 12 pp. Florida Fish and Wildlife Conservation Commission.

FWC, Fish and Wildlife Research Institute. Wading Bird Colonies Florida database, (http://ocean.floridamarine.org/TRGIS/Description_Layers_Terrestrial.htm).

FWC, Rare Snake Sightings Application (Rare Snake Sightings (myfwc.com)).

Element Occurrence Data Report. Florida Natural Areas Inventory. (<http://www.fnai.org/trackinglist.cfm>).

Imperiled Species Management Plan. 180 pp. Florida Fish and Wildlife Conservation Commission.

University of Florida (UF) Florida Geographic Data Library Map Viewer, UF Geoplan Center, (FGDL Map Viewer).

U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), Web Soil Survey. (<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>).

USFWS, Critical Habitat Portal website (<http://criticalhabitat.fws.gov/crithab/>).

USFWS, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12.

National Wetlands Inventory, Wetlands Online Mapper. (<https://www.fws.gov/wetlands/data/Mapper.html>).

USFWS, Wood Stork Nesting Colonies Maps, Florida Wood Stork Foraging Areas | Florida Wood Stork Foraging Areas | Florida Department of Environmental Protection Geospatial Open Data (state.fl.us) (April 2021)

U.S. Geological Survey (USGS) 7.5 Minute Topographic quadrangle maps -Sarasota (2021).

Wunderlin et al., 2016. Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2016. Atlas of Florida Plants (<http://florida.plantatlas.usf.edu/>). [S. M. Landry and K. N. Campbell (application development), USF Water Institute.] Institute for Systematic Botany, University of South Florida, Tampa, Florida.

Appendix A

The Legacy Trail – Payne Park (Alderman MURT)

Project Evaluation Letter



An Equal
Opportunity
Employer

Southwest Florida Water Management District

Bartow Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Office
78 Sarasota Center Boulevard
Sarasota, Florida 34240-9770
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Office
7601 U.S. 301 North (Fort King Highway)
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

2379 Broad Street, Brooksville, Florida 34604-6899

(352) 796-7211 or 1-800-423-1476 (FL only)

WaterMatters.org

January 25, 2022

City of Sarasota
Attn: Candie Pedersen
1761 12th Street
Sarasota, FL 34236

Subject: **Project Evaluation - Project Exempt**
Project Name: Legacy Trail - Payne Park
File Number: 834030
County: Sarasota
Sec/Twp/Rge: S20/T36S/R18E

Reference: Rule 62-330, Florida Administrative Code (F.A.C.)

Dear Ms. Pedersen:

The District has reviewed the information you submitted for the project referenced above and has determined that an Environmental Resource Permit (ERP) **will not be required** for the proposed construction of a 14-foot-wide multi-use recreational path in Payne Park, between Alderman Street and South School Avenue. [Rule 62-330.051(10), F.A.C.]

The information received by the District will be kept on file to support the District's determination regarding your application. This information is available for viewing or downloading through the District's Application and Permit Search Tools located at www.WaterMatters.org/permits.

The District's determination that your project does not require an ERP is only applicable pursuant to the statutes and rules in effect at the time the information was submitted and may not be valid in the event subsequent changes occur in the applicable rules and statutes. Additionally, this notification does not mean that the District has determined that your project is permanently exempt from permitting requirements. Any subsequent change you make in the project's operation may necessitate further evaluation or permitting by the District. Therefore, you are advised to contact the District before beginning the project and before beginning any activity which is not specifically described in your submittal. Your timely pursuit of this activity is encouraged to avoid any potential rule changes that could affect your request.

This letter constitutes notice of Intended Agency Action of the project referenced above. The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notice of agency action, as well as a noticing form that can be used is available from the District's website at www.WaterMatters.org/permits/noticing. If you publish notice of agency

action, a copy of the affidavit of publishing provided by the newspaper should be sent to the Regulation Division at the District Service Office that services this permit or other agency action, for retention in the File of Record for this agency action.

If you have questions regarding this matter, please contact Maia Kran in the Tampa Service Office, extension 2168. Please reference the Project Name and Inquiry/Permit Number in future communications concerning this project.

Sincerely,

David Kramer, P.E.
Bureau Chief
Environmental Resource Permit Bureau
Regulation Division

Enclosures: Notice of Rights
cc: Thomas Vill, P.E.
Devyn Howell P.E.

Notice of Rights

Administrative Hearing

1. You or any person whose substantial interests are or may be affected by the District's intended or proposed action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.
2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of intended or proposed agency action on a consolidated application for an environmental resource permit and use of sovereignty submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.
3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.
4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.
5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District intended or proposed action is not available prior to the filing of a petition for hearing.
6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28-106, F.A.C. A petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's intended action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C., can be viewed at www.flrules.org or at the District's website at www.WaterMatters.org/permits/rules.
7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 US Hwy 301, Tampa, FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 367-9776. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at www.WaterMatters.org/about.

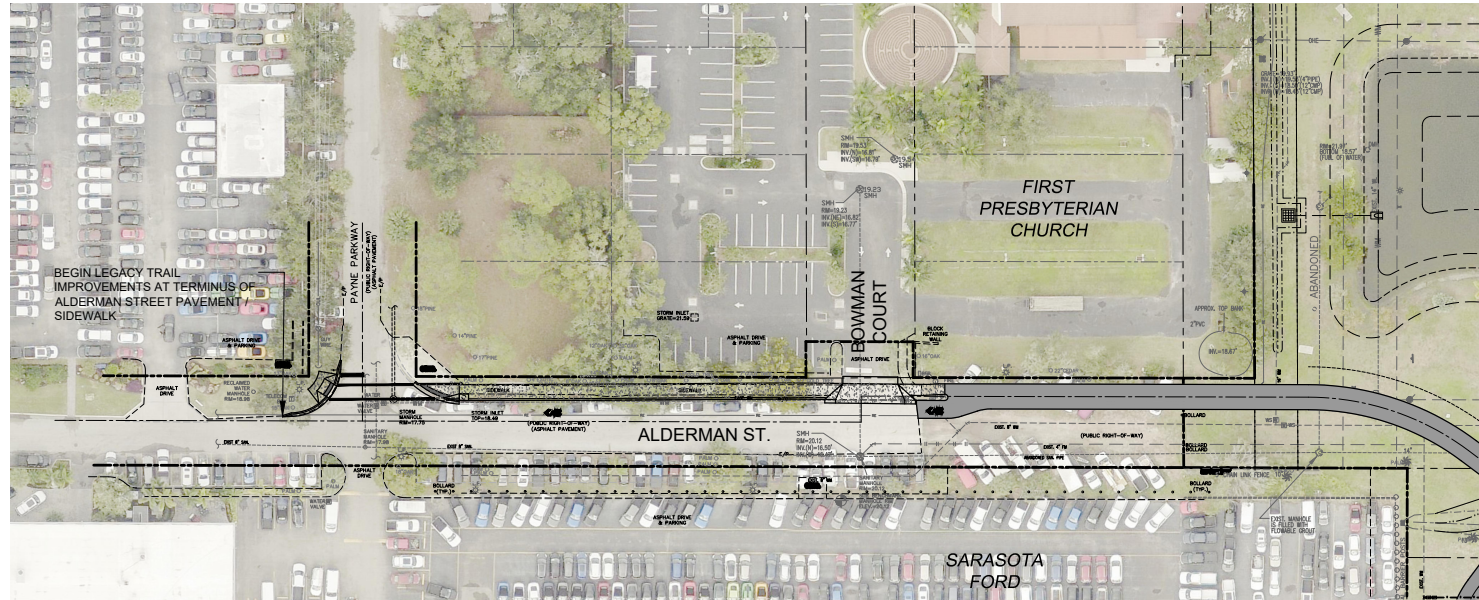
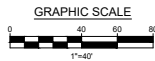
Judicial Review

1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by District action may seek judicial review of the District's action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.
2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency Clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.

Appendix B

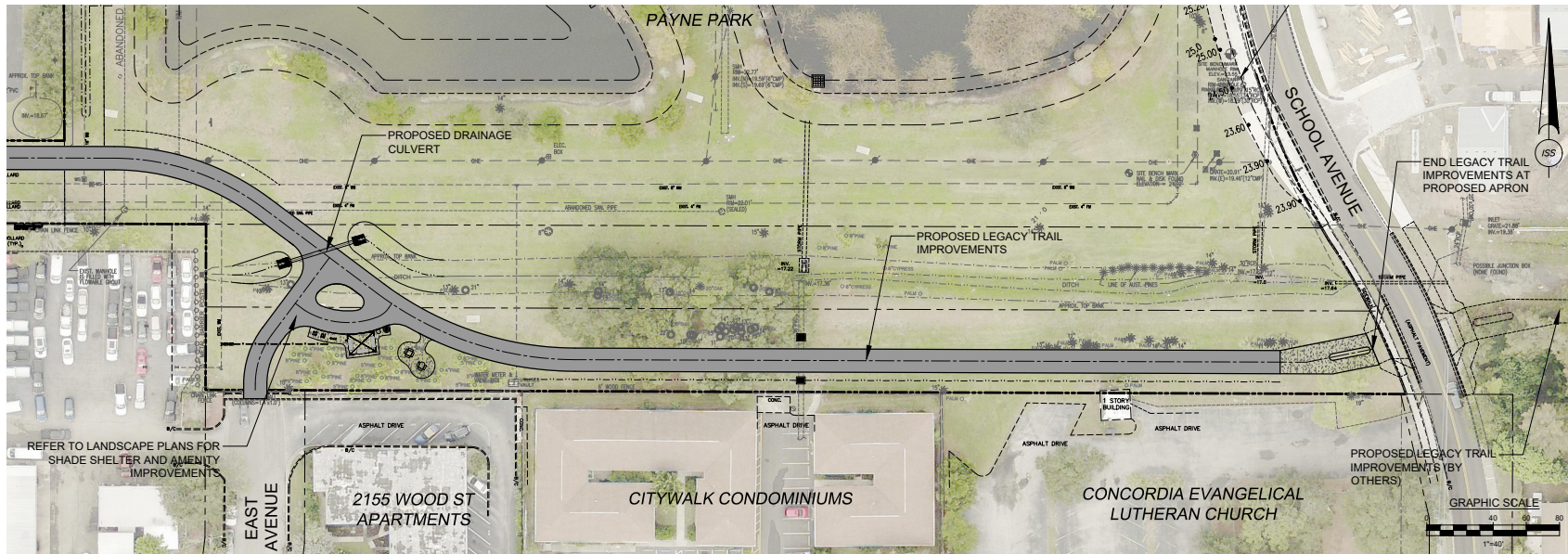
The Legacy Trail – Payne Park (Alderman MURT)

Proposed Site Plan



FOR CONTINUATION SEE BELOW

FOR CONTINUATION SEE ABOVE



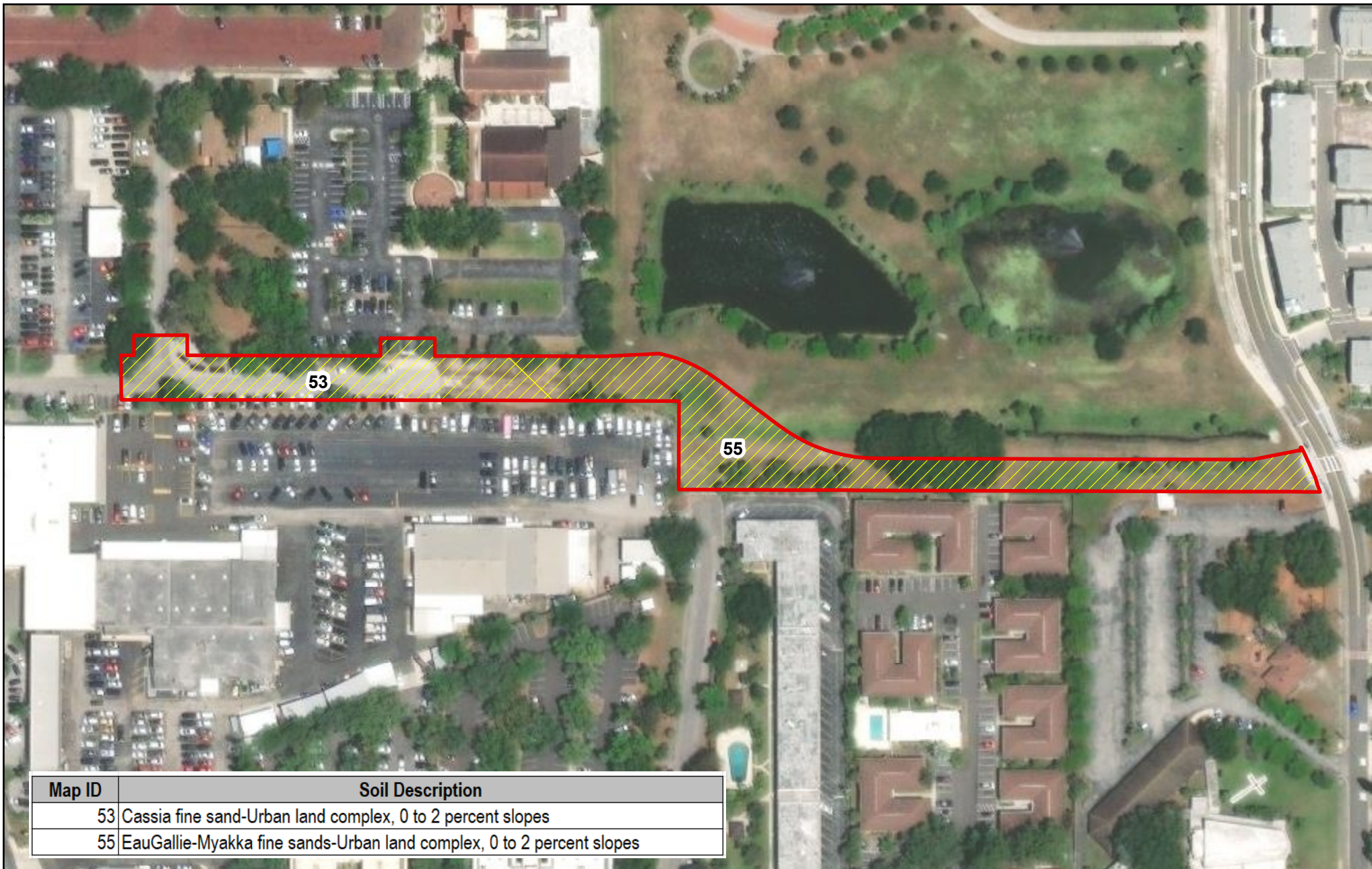
Proposed Site Plan

The Legacy Trail - Payne Park (Alderman MURT)
City of Sarasota

Appendix C



The Legacy Trail – Payne Park (Alderman MURT)

Figures



| Map ID | Soil Description |
|--------|---|
| 53 | Cassia fine sand-Urban land complex, 0 to 2 percent slopes |
| 55 | EauGallie-Myakka fine sands-Urban land complex, 0 to 2 percent slopes |

Legend

-  Project Area
-  Non-Hydric Soils



Source: USDA NRCS
 Scale: 1:1,750
 Date: 08/25/2023

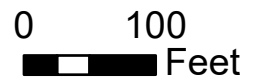


Figure 2: NRCS Soils Map

The Legacy Trail - Payne Park (Alderman MURT)
 City of Sarasota



Legend

- Project Area
- 180: Recreational
- 419: Other Pines
- 427: Live Oak
- 428: Cabbage Palm
- 510: Streams and Waterways
- 814: Roads and Highways



Source: FDEP
 Scale: 1:1,750
 Date: 08/25/2023

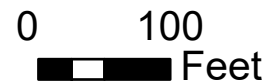
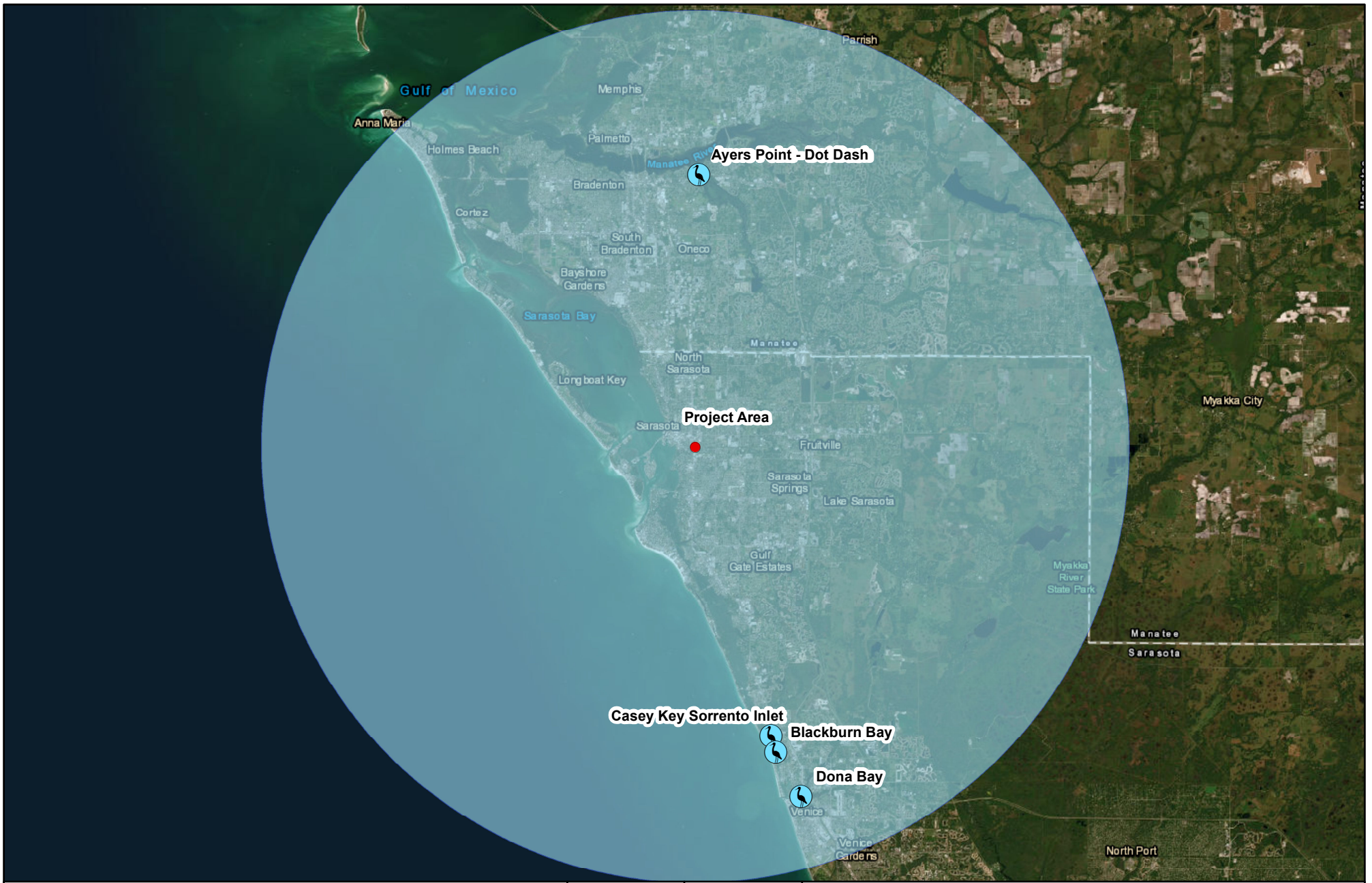


Figure 3: Land Use and Vegetative Cover Map

The Legacy Trail - Payne Park (Alderman MURT)
 City of Sarasota



Legend

- Project Area
- 18.6-mile South Florida Buffer
- 🐦 Wood Stork Nesting Colonies





| | |
|--|--|
|  | Source: FDEP Scale: 1:400,000 Date: 08/25/2023 |
|  | |

Figure 4: Wood Stork Colonies Map

The Legacy Trail - Payne Park (Alderman MURT)
 City of Sarasota




Legend

-  Project Area
-  Ditch (OSW 1) (0.01 acre)



Source: PGA Field Review
Scale: 1:1,750
Date: 08/25/2023

0 50 100
 Feet

**Figure 5: Wetlands and
Surface Waters Map**

The Legacy Trail - Payne Park (Alderman MURT)
City of Sarasota

Appendix D

The Legacy Trail – Payne Park (Alderman MURT)

*Eastern Indigo Snake Effect Determination Key/
Standard Protection Measures*



United States Department of the Interior



FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

August 1, 2017

Donnie Kinard
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Subject: Consultation Key for the Eastern Indigo Snake – Revised

Dear Mr. Kinard:

This letter revises and replaces the January 25, 2010, and August 13, 2013, letters to the U.S. Army Corps of Engineers (Corps) regarding the use of the eastern indigo snake programmatic effect determination key (Key) for projects occurring within the South Florida Ecological Service's Office (SFESO) jurisdiction. This revision supersedes all prior versions of the Key in the SFESO area. The purpose of this revision is to clarify portions of the previous keys based on questions we have been asked, specifically related to habitat and refugia used by eastern indigo snakes (*Drymarchon corais couperi*), in the southern portion of their range and within the jurisdiction of the SFESO. This Key is provided pursuant to the Service's authorities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*). This Key revision has been assigned Service Consultation Code: 41420-2009-I-0467-R001.

The purpose of this Key is to assist the Corps (or other Federal action agency) in making appropriate effects determinations for the eastern indigo snake under section 7 of the Act, and streamline informal consultation with the SFESO for the eastern indigo snake when the proposed action can be walked through the Key. The Key is a tool available to the Corps (or other Federal action agency) for the purposes of expediting section 7 consultations. 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 or instances where there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiates traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

This Key uses project size and home ranges of eastern indigo snakes as the basis for making determinations of "may affect, but is not likely to adversely affect" (NLAA) and "may affect, and is likely to adversely affect" (may affect). Suitable habitat for the eastern indigo snake consists of a mosaic of habitats types, most of which occur throughout South Florida. Information on home ranges for individuals is not available in specific habitats in South Florida. Therefore, the SFESO uses the information from a 26-year study conducted by Layne and Steiner (1996) at Archbold Biological Station, Lake Placid, Florida, as the best available

information. Layne and Steiner (1996) determined the average home range size for a female eastern indigo snake was 46 acres and 184 acres for a male.

Projects that would remove/destroy less than 25 acres of eastern indigo snake habitat are expected to result in the loss of a portion of an eastern indigo snakes home range that would not impair the ability of the individual to feed, breed, and shelter. Therefore, the Service finds that take would not be reasonably certain to occur due to habitat loss. However, these projects have the potential to injure or kill an eastern indigo snake if the individual is crushed by equipment during site preparation or other project aspects. The Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and the excavation of underground refugia (where a snake could be buried, trapped and/or injured), when implemented, are designed to avoid these forms of take. Consequently, projects less than 25 acres that include the Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and a commitment to excavate underground refugia as part of the proposed action would be expected to avoid take and thus, may affect, but are not likely to adversely affect the species.

If a proposed project would impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, the Key should not be used. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range.

Projects that would remove 25 acres or more of eastern indigo snake habitat could remove more than half of a female eastern indigo snakes home range. This loss of habitat within a home range would be expected to significantly impair the ability of that individual to feed, breed, and shelter. Therefore, the Service finds take through habitat loss would be reasonably certain to occur and formal consultation is appropriate. Furthermore, these projects have the potential to injure or kill an eastern indigo snake if the individual is crushed by equipment during site preparation or other project aspects. The Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and the excavation of underground refugia (where a snake could be buried, trapped and/or injured), when implemented, are designed to avoid these forms of take.

Eastern indigo snakes use a variety of habitat and are difficult to detect. Therefore, site specific information on the land use, observations of eastern indigo snakes within the vicinity, as well as other factors, as appropriate, will all be considered by the Service when making a final recommendation on the appropriate effects determination and whether it is appropriate to conclude consultation with the Corps (or other Federal action agency) formally or informally for projects that will impact 25 acres or more of habitat. Accordingly, when the use of the Key results in a determination of "may affect," the Corps (or other Federal action agency) is advised that consultation may be concluded informally or formally, depending on the project specific effects to eastern indigo snakes. Technical assistance from the Service can assist you in making a determination prior to submitting a request for consultation. In circumstances where the Corps (or other Federal action agency) desires to proceed with a consultation request prior to receiving

additional technical assistance from the Service, we recommend the agency documents the biological rationale for their determination and proceed with a request accordingly.

If the use of the Key results in a determination of “no effect,” no further consultation is necessary with the SFESO. If the use of the Key results in a determination of “NLAA,” the SFESO 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 eastern indigo snake. For “no effect” or “NLAA” determinations, the Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach your no effect or NLAA determination in the project record and proceed with other species analysis as warranted.

Eastern Indigo Snake Programmatic Effect Determination Key
Revised July 2017
South Florida Ecological Service Office

Scope of the Key

This Key should be used only in the review of permit applications for effects determinations for the eastern indigo snake (*Drymarchon corais couperi*) within the South Florida Ecological Service’s Office (SFESO) area (Broward, Charlotte, Collier, De Soto, Glades, Hardee, Hendry, Highlands, Lee, Indian River, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, **Sarasota**, and St. Lucie Counties). There is no designated critical habitat for the eastern indigo snake.

This Key is subject to revision as the Corps (or other Federal action agency) and Service deem necessary and in particular whenever there is new information on eastern indigo snake biology and effects of proposed projects.

The Key is a tool available to the Corps (or other Federal action agency) for the purposes of expediting section 7 consultations. 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 or instances where there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiates traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

Habitat

Habitat use varies seasonally between upland and wetland areas, especially in the more northern parts of the species' range. In southern parts of their range eastern indigo snakes are habitat generalists which use most available habitat types. Movements between habitat types in northern areas of their range may relate to the need for thermal refugia (protection from cold and/or heat).

In northern areas of their range eastern indigo snakes prefer an interspersed of tortoise-inhabited sandhills and wetlands (Landers and Speake 1980). In these northern regions eastern indigo

snakes most often use forested areas rich with gopher tortoise burrows, hollowed root channels, hollow logs, or the burrows of rodents, armadillos, or land crabs as thermal refugia during cooler seasons (Lawler 1977; Moler 1985a; Layne and Steiner 1996). The eastern indigo snake in the northern region is typically classified as a longleaf pine savanna specialist because here, in the northern four-fifths of its range, the eastern indigo snake is typically only found in vicinity of xeric longleaf pine–turkey oak sandhills inhabited by the gopher tortoise (Means 2006).

In the milder climates of central and southern Florida, comprising the remaining one fifth of its range, thermal refugia such as those provided by gopher tortoise burrows may not be as critical to survival of indigo snakes. Consequently, eastern indigo snakes in these regions use a more diverse assemblage of habitats such as pine flatwoods, scrubby flatwoods, floodplain edges, sand ridges, dry glades, tropical hammocks, edges of freshwater marshes, muckland fields, coastal dunes, and xeric sandhill communities; with highest population concentrations of eastern indigo snakes occurring in the sandhill and pineland regions of northern and central Florida (Service 1999). Eastern indigo snakes have also been found on agricultural lands with close proximity to wetlands (Zeigler 2006).

In south Florida, agricultural sites (*e.g.*, sugar cane fields and citrus groves) are occupied by eastern indigo snakes. The use of sugarcane fields by eastern indigo snakes was first documented by Layne and Steiner in 1996. In these areas there is typically an abundance of wetland and upland ecotones (due to the presence of many ditches and canals), which support a diverse prey base for foraging. In fact, some speculate agricultural areas may actually have a higher density of eastern indigo snakes than natural communities due to the increased availability of prey. Gopher tortoise burrows are absent at these locations but there is an abundance of both natural and artificial refugia. Enge and Endries (2009) reporting on the status of the eastern indigo snake included sugarcane fields and citrus groves in a Global Information Systems (GIS)-base map of potential eastern indigo snake habitat. Numerous sightings of eastern indigo snakes within sugarcane fields have been reported within south Florida (Florida Fish and Wildlife Conservation Commission Indigo Snake Database [Enge 2017]). A recent study associated with the Comprehensive Everglades Restoration Plan (CERP) (A-1 FEB Project formerly A-1 Reservoir; Service code: 41420-2006-F-0477) documented eastern indigo snakes within sugarcane fields. The snakes used artificial habitats such as piles of limerock, construction debris, and pump stations. Recent studies also associated with the CERP at the C-44 Project (Service code: 41420-2009-FA-0314), and C-43 Project (Service code: 41420-2007-F-0589) documented eastern indigo snakes within citrus groves. The snakes used artificial habitats such as boards, sheets of tin, construction debris, pipes, drain pipes in abandoned buildings and septic tanks.

In extreme south Florida (*i.e.*, the Everglades and Florida Keys), eastern indigo snakes also utilize tropical hardwood hammocks, pine rocklands, freshwater marshes, abandoned agricultural land, coastal prairie, mangrove swamps, and human-altered habitats. Though eastern indigo snakes have been found in all available habitats of south Florida it is thought they prefer hammocks and pine forests since most observations occur there and use of these areas is disproportionate compared to the relatively small total area of these habitats (Steiner *et al.* 1983).

Even though thermal stress may not be a limiting factor throughout the year in south Florida, eastern indigo snakes still seek and use underground refugia. On the sandy central ridge of central Florida, eastern indigo snakes use gopher tortoise burrows more (62 percent) than other underground refugia (Layne and Steiner 1996). Other underground refugia used include armadillo (*Dasyus novemcinctus*) burrows near citrus groves, cotton rat (*Sigmodon hispidus*) burrows, and land crab (*Cardisoma guanhumi*) burrows in coastal areas (Layne and Steiner 1996; Wilson and Porras 1983). Natural ground holes, hollows at the base of trees or shrubs, ground litter, trash piles, and crevices of rock-lined ditch walls are also used (Layne and Steiner 1996). These refugia are used most frequently where tortoise burrows are not available, principally in low-lying areas off the central and coastal ridges.

Minimization Measures

The Service developed protection measures for the eastern indigo snake “Standard Protection Measures for the Eastern Indigo Snake” (Service 2013) located at: https://www.fws.gov/verobeach/ReptilesPDFs/20130812_EIS%20Standard%20Protection%20Measures_final.pdf. These protection measures (or the most updated version) are considered a minimization measure for projects proposed within eastern indigo snake habitat.

Determinations

If the use of this Key results in a determination of “**no effect**,” no further consultation is necessary with the SFESO.

If the use of this Key results in a determination of “**NLAA**,” the SFESO concurs with this determination and no further consultation is necessary for the effects of the proposed action on the eastern indigo snake.

For no effect or NLAA determinations, the Corps (or other Federal action agency) should make a note in the project file indicating the pathway used to reach your no effect or NLAA determination.

If a proposed project would impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, the subsequent Key should not be used. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual’s home range.

If the use of this Key results in a determination of “**may affect**,” consultation may be concluded informally or formally depending on project effects to eastern indigo snakes. Technical assistance from the Service can assist you in making a determination prior to submitting a request for consultation. In circumstances where the Corps desires to proceed with a consultation request prior to receiving additional technical assistance from the Service, we recommend the Corps document the biological rationale for their determination and proceed with a request accordingly.

A. Project is not located in open water or salt marsh.....go to B

Project is located solely in open water or salt marsh.....no effect

B. Permit will be conditioned for use of the Service's most current guidance for Standard Protection Measures For The Eastern Indigo Snake (currently 2013) during site preparation and project construction.....go to C

Permit will not be conditioned as above for the eastern indigo snake, or it is not known whether an applicant intends to use these measures and consultation with the Service is requested.....may affect

C. The project will impact less than 25 acres of eastern indigo snake habitat (e.g., sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes).....go to D

The project will impact 25 acres or more of eastern indigo snake habitat (e.g., sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes).....may affect

D. The project has no known holes, cavities, active or inactive gopher tortoise burrows, or other underground refugia where a snake could be buried, trapped and/or injured during project activities.....NLAA

The project has known holes, cavities, active or inactive gopher tortoise burrows, or other underground refugia where a snake could be buried, trapped and /or injured.....go to E

E. Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be excavated prior to site manipulation in the vicinity of the burrow¹. If an eastern indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Any permit will also be conditioned such that holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an eastern indigo snake, no work will commence until the snake has vacated the vicinity of proposed work.....NLAA²

Permit will not be conditioned as outlined above.....may affect

End Key

¹ If excavating potentially occupied burrows, active or inactive, individuals must first obtain state authorization via a Florida Fish and Wildlife Conservation Commission Authorized Gopher Tortoise Agent permit. The excavation method selected should also minimize the potential for injury of an indigo snake. Applicants should follow the excavation guidance provided within the most current Gopher Tortoise Permitting Guidelines found at <http://myfwc.com/gophertortoise>.

² Please note, if the proposed project will impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site. NLAA is not the appropriate conclusion. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range

Working with the Fish and Wildlife Foundation of Florida, the Service has established a fund to support conservation and recovery for the eastern indigo snake. Any project that has the potential to affect the eastern indigo snake 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 eastern indigo snake recovery please contact Ashleigh Blackford, Connie Cassler, or José Rivera at 772-562-3559.

This revised Key is effective immediately upon receipt by the Corps. Should circumstances change or new information become available regarding the eastern indigo snake and/or implementation of the Key, the determinations herein may be reconsidered and this Key further revised or amended.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. If you have any questions or comments regarding this Key, please contact the SFESO at 772-562-3909.

Sincerely,



Roxanna Hinzman
Field Supervisor
South Florida Ecological Services

Cc:

Corps, Jacksonville, Florida (Dale Beter, Muriel Blaisdell, Ingrid Gilbert, Angela Ryan,
Irene Sadowski, Victoria White, Alisa Zarbo)
Service, Athens, Georgia (Michelle Elmore)
Service, Jacksonville, Florida (Annie Dziergowski)
Service, Panama City, Florida (Sean Blomquist)

LITERATURE CITED

- Enge K. M. 2017. Personal communication. Email from Kevin Enge, Florida Fish and Wildlife Conservation Commission, Gainesville, Florida to Steve Mortellaro, U.S. Fish and Wildlife Service, Vero Beach, Florida, July 5, 2017. Locations of Eastern Indigo Snake (*Drymarchon couperi*).
- Enge K. M. and M. J. Endries. 2009. Status of the Eastern Indigo Snake (*Drymarchon couperi*) in Florida. Southeast Partners in Amphibian and Reptile Conservation Meeting.
- Landers, J. L. and D.W. Speake. 1980. Management Needs of Sandhill Reptiles in Southern Georgia. Proceedings Annual Conference of Southeastern Association of Fish and Wildlife Agencies. 34: 515-529.
- Layne, J.N., and T.M. Steiner. 1996. Eastern indigo snake (*Drymarchon corais couperi*): summary of research conducted on Archbold Biological Station. Report prepared under Order 43910-6-0134 to the U.S. Fish and Wildlife Service; Jackson, Mississippi.
- Lawler, H.E. 1977. The status of *Drymarchon corais couperi* (Holbrook), the eastern indigo snake, in the southeastern U.S.A. *Herpetological Review* 8(3):76-79.
- Means, D. B. 2006. Vertebrate faunal diversity of longleaf pine ecosystems. In *The Longleaf Pine Ecosystem* pp. 157-213. Springer New York.
- Molar, P.E. 1985a. Distribution of the eastern indigo snake, *Drymarchon corais couperi*, in Florida. *Herpetological Review* 16(2):37-38.
- Moler, P.E. 1985b. Home range and seasonal activity of the eastern indigo snake, *Drymarchon corais couperi*, in northern Florida. Final performance report, Study E-1-06, III-A-5. Florida Game and Fresh Water Fish Commission; Tallahassee, Florida.
- Steiner, T.M., O.L. Bass, Jr., and J.A. Kushlan. 1983. Status of the eastern indigo snake in Southern Florida National Parks and vicinity. South Florida Research Center Report SFRC-83-01, Everglades National Park; Homestead, Florida.
- U.S. Fish and Wildlife Service (Service). 1999. South Florida multi-species recovery plan. 23 pp.
- U.S. Fish and Wildlife Service (Service). 2013. Standard Protection Measures for the Eastern Indigo Snake. August 12, 2013. U.S. Fish and Wildlife Service, South Florida Ecological Services Office; Vero Beach, Florida.
- Wilson, L.D. and L. Porras. 1983. The ecological impact of man on the south Florida herpetofauna. *University of Kansas Museum of Natural History Special Publication* 9:1-89.
- Zeigler, M. 2006. Personal communication. Citrus grove operations manager. Meeting with the U.S. Fish and Wildlife Service on August 1, 2006. Agricultural Resource Management; Vero Beach, Florida.

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE
U.S. Fish and Wildlife Service
August 12, 2013

The eastern indigo snake protection/education plan (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida for use by applicants and their construction personnel. At least **30 days prior** to any clearing/land alteration activities, the applicant shall notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented as described below (North Florida Field Office: jaxregs@fws.gov; South Florida Field Office: verobeach@fws.gov; Panama City Field Office: panamacity@fws.gov). As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the attached poster and brochure), no further written confirmation or “approval” from the USFWS is needed and the applicant may move forward with the project.

If the applicant decides to use an eastern indigo snake protection/education plan other than the approved Plan below, written confirmation or “approval” from the USFWS that the plan is adequate must be obtained. At least 30 days prior to any clearing/land alteration activities, the applicant shall submit their unique plan for review and approval. The USFWS will respond via e-mail, typically within 30 days of receiving the plan, either concurring that the plan is adequate or requesting additional information. A concurrence e-mail from the appropriate USFWS Field Office will fulfill approval requirements.

The Plan materials should consist of: 1) a combination of posters and pamphlets (see **Poster Information** section below); and 2) verbal educational instructions to construction personnel by supervisory or management personnel before any clearing/land alteration activities are initiated (see **Pre-Construction Activities** and **During Construction Activities** sections below).

POSTER INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (a final poster for Plan compliance, to be printed on 11” x 17” or larger paper and laminated, is attached):

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands

and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION UNDER FEDERAL AND STATE LAW: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. “Taking” of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. “Take” is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of \$25,000 for civil violations and up to \$50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

IF YOU SEE A LIVE EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the live eastern indigo snake sufficient time to move away from the site without interference;
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant’s designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A DEAD EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and immediately notify supervisor or the applicant’s designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

Telephone numbers of USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336
Panama City Field Office – (850) 769-0552
South Florida Field Office – (772) 562-3909

PRE-CONSTRUCTION ACTIVITIES

1. The applicant or designated agent will post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff. A sample poster is attached.
2. Prior to the onset of construction activities, the applicant/designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office (a final brochure for Plan compliance, to be printed double-sided on 8.5" x 11" paper and then properly folded, is attached). Photos of eastern indigo snakes may be accessed on USFWS and/or FWC websites.
3. Construction staff will be informed that in the event that an eastern indigo snake (live or dead) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

DURING CONSTRUCTION ACTIVITIES

1. During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).
2. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e. burrow excavation), the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.
3. Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials, and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.

POST CONSTRUCTION ACTIVITIES

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion. The report can be sent electronically to the appropriate USFWS e-mail address listed on page one of this Plan.



ATTENTION:

THREATENED EASTERN INDIGO SNAKES MAY BE PRESENT ON THIS SITE!!!

IF YOU SEE A LIVE EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the eastern indigo snake sufficient time to move away from the site without interference.
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate U.S. Fish and Wildlife Service (USFWS) office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A DEAD EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336

Panama City Field Office – (850) 769-0552

South Florida Field Office – (772) 562-3909

Killing, harming, or harassing indigo snakes is strictly prohibited and punishable under State and Federal Law.

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. "Taking" of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. "Take" is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of \$25,000 for civil violations and up to \$50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

**IF YOU SEE A LIVE EASTERN
INDIGO SNAKE ON THE SITE:**

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- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate U.S. Fish and Wildlife Service (USFWS) office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

**IF YOU SEE A DEAD EASTERN
INDIGO SNAKE ON THE SITE:**

- Cease clearing activities and immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

**USFWS Florida Field Offices to be
contacted if a live or dead eastern indigo
snake is encountered:**

North Florida ES Office – (904) 731-3336
Panama City ES Office – (850) 769-0552
South Florida ES Office – (772) 562-3909

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

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Killing, harming, or harassing indigo snakes is strictly prohibited and punishable under State and Federal Law.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

LEGAL STATUS: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. “Taking” of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. “Take” is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of \$25,000 for civil violations and up to \$50,000 and/or imprisonment for criminal offenses, if convicted.



August 12, 2013

ATTENTION:
THREATENED EASTERN INDIGO
SNAKES MAY BE PRESENT ON
THIS SITE!!!



Please read the following information provided by the U.S. Fish and Wildlife Service to become familiar with standard protection measures for the eastern indigo snake.

Appendix E

The Legacy Trail – Payne Park (Alderman MURT)

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 affect"⁴
- 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 affect⁴”

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"

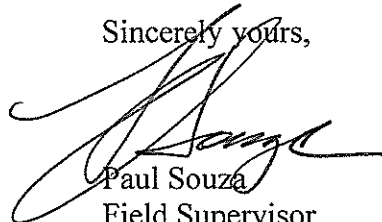
This Key does not apply to Comprehensive Everglades Restoration Plan projects, as they will require project-specific consultations with the Service.

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)

LITERATURE CITED

- Ceilley, D.W. and S.A. Bortone. 2000. A survey of freshwater fishes in the hydric flatwoods of flint pen strand, Lee County, Florida. Proceedings of the 27th Annual Conference on Ecosystems Restoration and Creation, 70-91. Hillsborough Community College; Hillsborough County, Florida.
- Flemming, D.M., W.F. Wolff, and D.L. DeAngelis. 1994. Importance of landscape heterogeneity to wood storks. Florida Everglades Management 18: 743-757.
- Kahl, M.P., Jr. 1964. Food ecology of the wood stork (*Mycteria americana*) in Florida. Ecological Monographs 34:97-117.
- Ogden, J.C. 1991. Nesting by wood storks in natural, altered, and artificial wetlands in central and northern Florida. Colonial Waterbirds 14:39-45.
- Ogden, J.C., J.A. Kushlan, and J.T. Tilmant. 1976. Prey selectivity by the wood stork. Condor 78(3):324-330.
- Ogden, J.C. 1996. Wood Stork in J.A. Rodgers, H. Kale II, and H.T. Smith, eds. Rare and endangered biota of Florida. University Press of Florida; Gainesville, Florida.
- Rodgers, J.A. Jr., A.S. Wenner, and S.T. Schwikert. 1987. Population dynamics of wood storks in northern and central Florida, USA. Colonial Waterbirds 10:151-156.
- Rodgers, J.A., Jr., S.T. Schwikert, and A. Shapiro-Wenner. 1996. Nesting habitat of wood storks in north and central Florida, USA. Colonial Waterbirds 19:1-21.
- U.S. Fish and Wildlife Service. 1990. Habitat management guidelines for the wood stork in the southeast region. Prepared by John C. Ogden for the Southeast Region U.S. Fish and Wildlife Service; Atlanta, Georgia.
- U.S. Fish and Wildlife Service. 1999. South Florida multi-species recovery plan. Fish and Wildlife Service; Atlanta, Georgia. Available from: <http://verobeach.fws.gov/Programs/Recovery/vbms5.html>.

Appendix F

The Legacy Trail – Payne Park (Alderman MURT)

Florida Bonneted Bat 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
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. Survey 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)

LITERATURE CITED

- Ober, H. 2015. Annual report to USFWS for calendar year 2015. Permit number TE23583B-1. University of Florida, Department of Wildlife Ecology and Conservation, North Florida Research and Education Center. Quincy, Florida.
- Ober, H. 2016. Annual report to USFWS for calendar year 2016. Permit number TE23583B-1. University of Florida, Department of Wildlife Ecology and Conservation, North Florida Research and Education Center. Quincy, Florida.
- Webb, E.N. 2018a. Email to Paula Halupa *et al.* University of Florida, Department of Wildlife Ecology and Conservation. Gainesville, Florida. April 1, 2018.
- Webb, E.N. 2018b. Presentation given at Florida bonneted bat working group meeting at The Conservancy of Southwest Florida. University of Florida, Department of Wildlife Ecology and Conservation. Gainesville, Florida. May 24, 2016.

**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.

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|---|
| Terms in bold are further defined in the Glossary. |
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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.

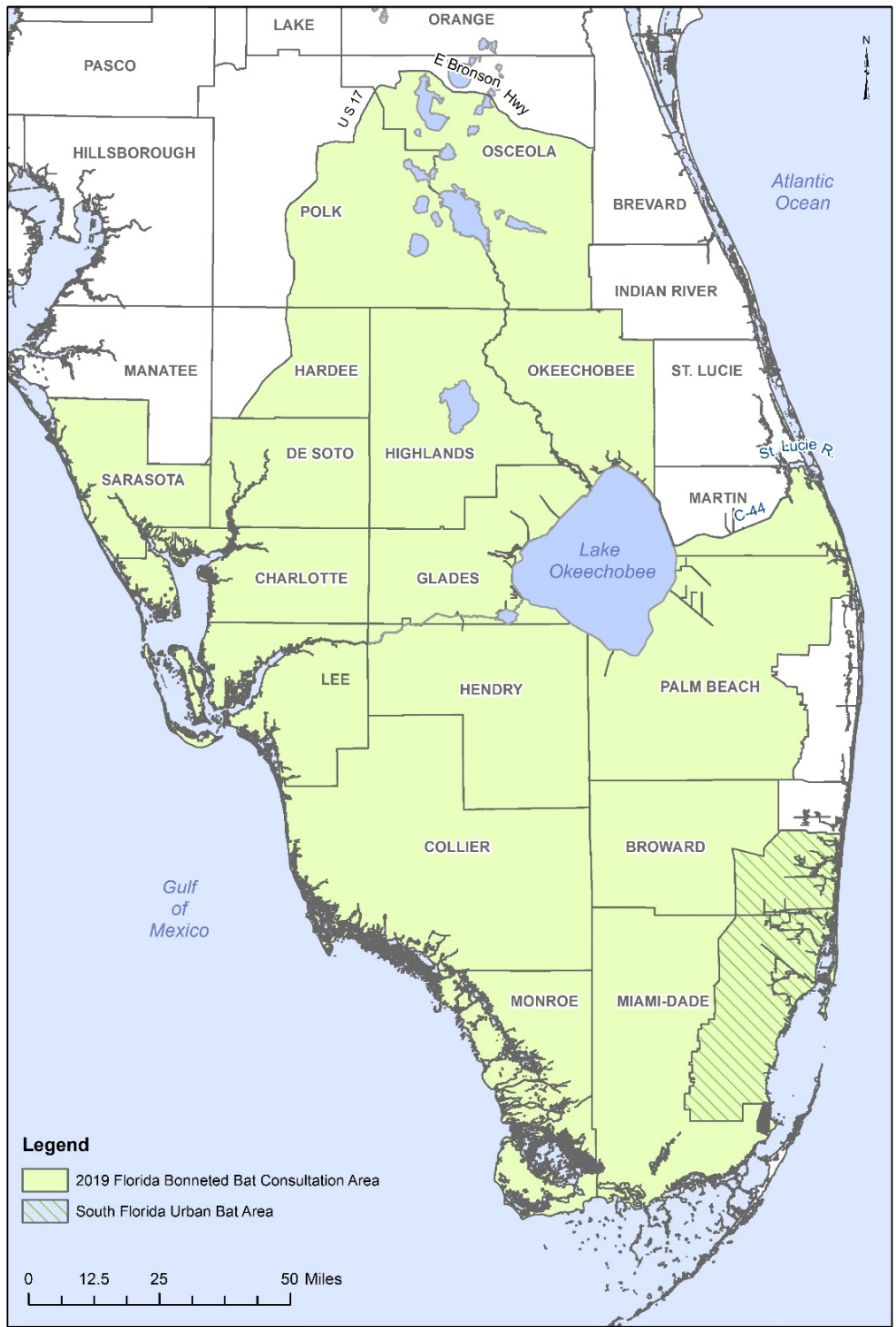


Figure 1. Florida Bonneted Bat Consultation Area. Hatched area (Figure 2) identifies the urban development boundary in Miami-Dade and Broward County. Applicants with projects in this area should contact the Service for specific guidance addressing this area and individual consultation. The Consultation Key should not be used for projects in this area.

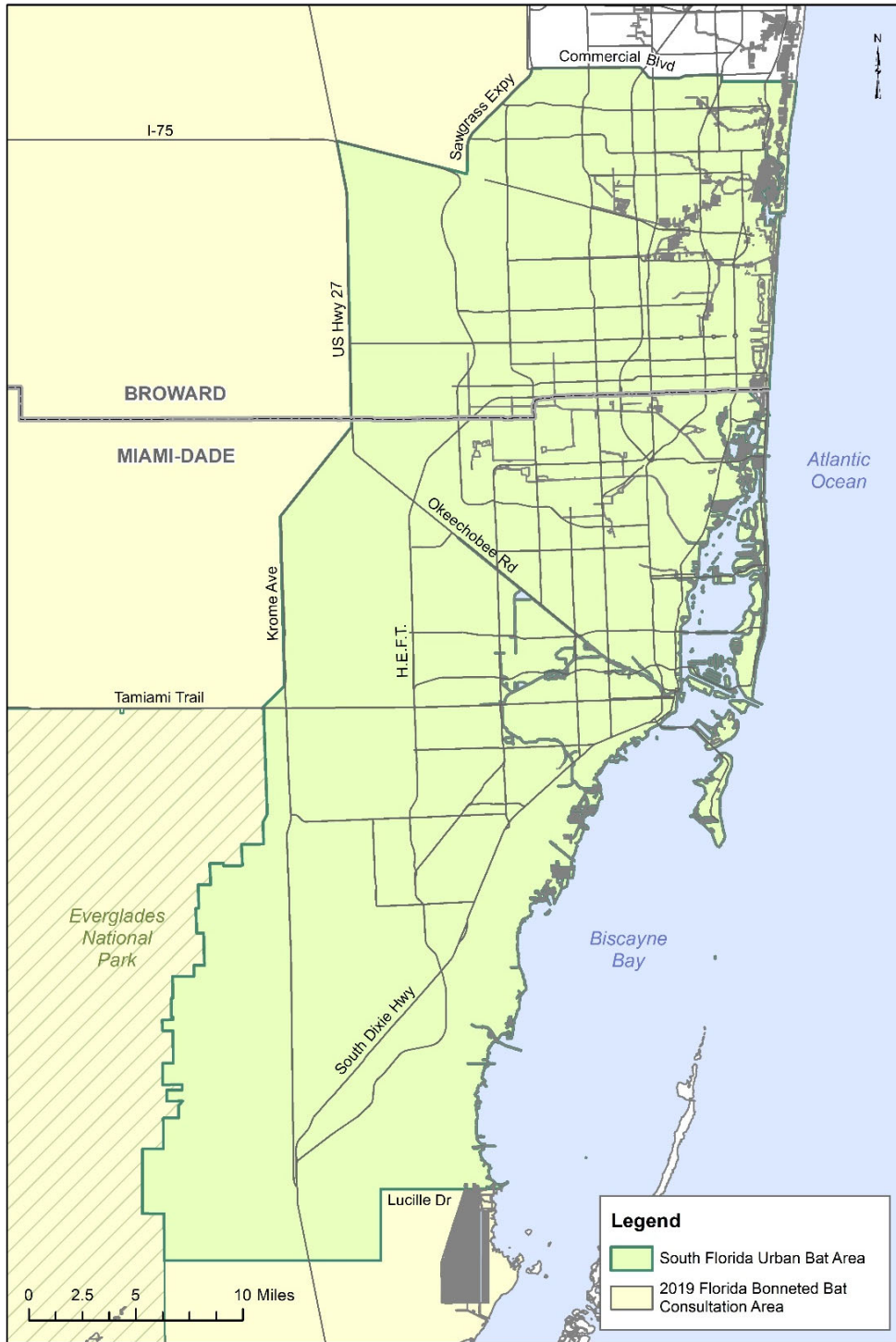


Figure 2. Urban development boundary in Miami-Dade and Broward County. The Consultation Key should not be used for projects in this area. Applicants with projects in this South Florida Urban Bat Area should contact the Service for specific guidance addressing this area and individual consultation.

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.

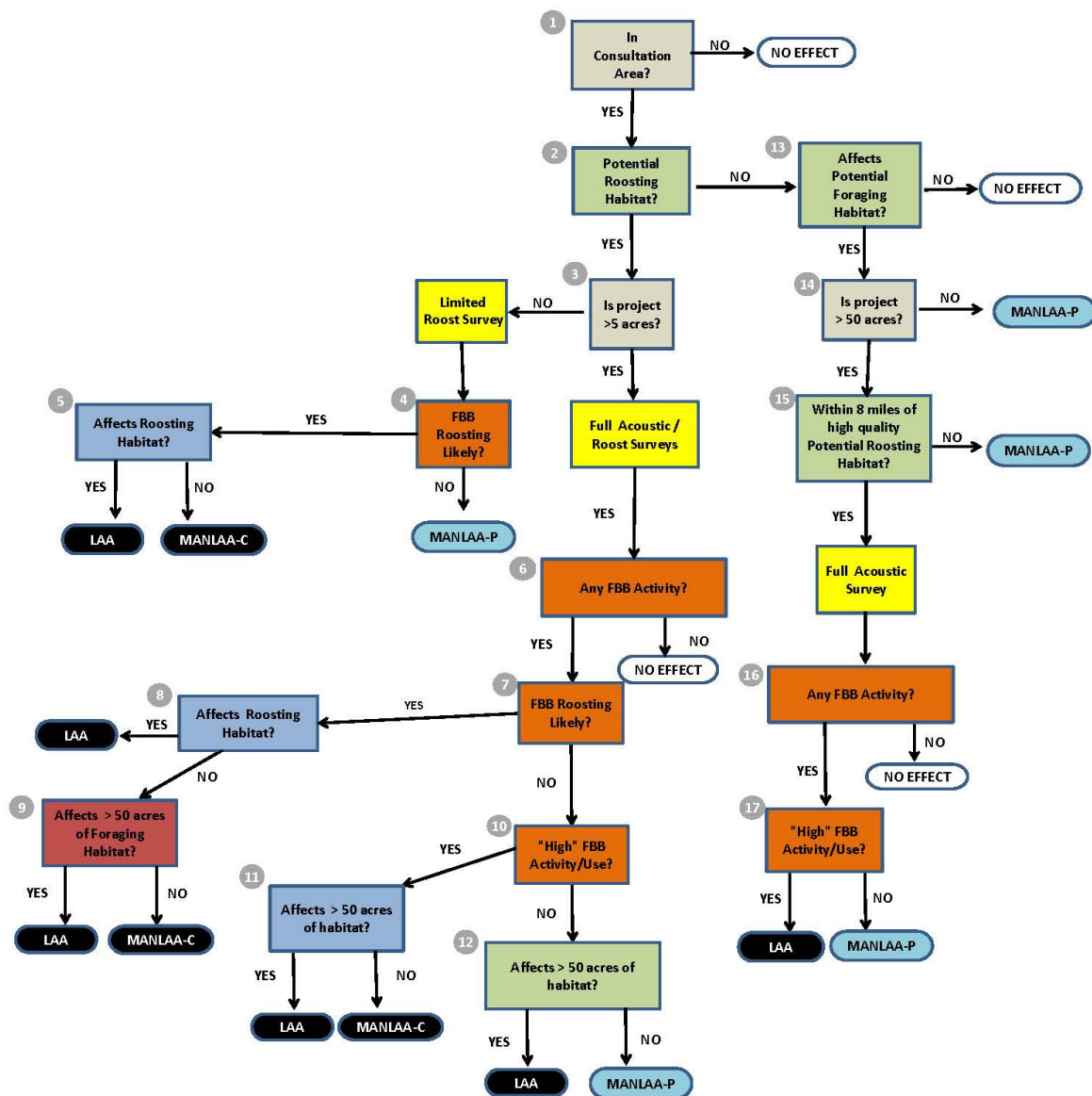


Figure 3. Florida bonneted bat Consultation Flowchart. “No effect” determinations do not need Service concurrence. “May affect, but not likely to adversely affect”, **MANLAA-P**, in blue have programmatic concurrence through the transmittal letter of these Guidelines, and therefore no further consultation with the Service is necessary unless assistance is needed in interpreting survey results. **MANLAA-C** determinations in black require further consultation with the Service. Applicants are expected to incorporate the appropriate **BMPs** to reach a **MANLAA** determination. “May affect, and is likely to adversely affect”, **LAA**, (also in black) determinations require consultation with the Service. Further consultation with the Service may identify project modifications that could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA** determinations. The Service requests Florida bonneted bat survey reports for all determinations.

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].

Literature Cited

- 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. 2019. Email from biologist E. Braun de Torrez, Florida Fish and Wildlife Conservation Commission to biologist, S. Sneckenberger, U.S. Fish and Wildlife Service. July 24, 2019. Gainesville, Florida.
- Keeley, B.W., and M.D. Tuttle. 1999. Bats in American bridges. Bat Conservation International, Inc. Austin, Texas.
- Ober, H.K., E.C. Braun de Torrez, J.A. Gore, A.M. Bailey, J.K. Myers, K.N. Smith, and R.A. McCleery. 2016. Social organization of an endangered subtropical species, *Eumops floridanus*, the Florida bonneted bat. *Mammalia* 2016:1-9.
- U.S. Fish and Wildlife Service. 2013. Endangered and threatened wildlife and plants; endangered species status for the Florida bonneted bat. *Federal Register* 78:61004-61043.

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.

Literature Cited -Appendix A

- 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.
- Belwood, J.J. 1992. Florida mastiff bat *Eumops glaucinus floridanus*. Pages 216-223 in S.R. Humphrey (ed.), *Rare and Endangered Biota of Florida*. Vol. I. Mammals. University Press of Florida. Gainesville, Florida.
- Best, T.L., Kiser, W.M., and P.W. Freeman. 1996. *Eumops perotis*. *Mammalogy Papers: University of Nebraska State Museum*. Lincoln.
- Braun de Torrez, E.C. 2018c. Presentation given at Florida bonneted bat working group meeting at The Conservancy of Southwest Florida. Florida Fish and Wildlife Research Institute, Florida Fish and Wildlife Conservation Commission. Gainesville, Florida. May 23, 2016.
- Findley, J.S., E.H. Studier, and D.E. Wilson. 1972. Morphologic properties of bat wings. *Journal of Mammalogy* 53(3): 429-444.
- Norberg, U.M. and J.M.V. Rayner. 1987. Ecological morphology and flight in bats (Mammalia; Chiroptera): wing adaptations, flight performance, foraging strategy and echolocation. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences* 316(1179):335-427.
- Ober, H. 2016. Annual report to USFWS for calendar year 2016. Permit number TE23583B-1. University of Florida, Department of Wildlife Ecology and Conservation, North Florida Research and Education Center. Quincy, Florida.
- Ober, H.K., R.A. McCleery, and E.C. Braun de Torrez. 2018. Managing with fire to promote the recently listed Florida bonneted bat, *Eumops floridanus*. Final report. JFSP Project ID: 14-1-05-7. University of Florida, Department of Wildlife Ecology and Conservation. Gainesville, Florida.
- Rainho, A., and J.M. Palmeirim. 2011. The importance of distance to resources in the spatial modelling of bat foraging habitat. *PLoS ONE* 6(4): e19227.
- Siders, M. 2005. *Eumops perotis*, Western mastiff bat. Western Bat Working Group. Species Accounts. Updated at the 2005 Portland Biennial Meeting. http://www.wbwg.org/species_accounts
- Siders, M. S., Rabe, M. J., Snow, T. K., and K. Yasuda. 1999. Long foraging distances in two uncommon bat species (*Euderma maculatum* and *Eumops perotis*) in northern Arizona. In *Proceedings of the Fourth Biennial Conference of Research on the Colorado Plateau*. US Geological Survey, Flagstaff, AZ, Vol. 4.
- Tibbitts, T., A. Pate, Y. Petryszyn, and B. Barns. 2002. Determining foraging and roosting areas

for Underwood's mastiff bat (*Eumops underwoodi*) using radiotelemetry, at Organ Pipe Cactus National Monument, Arizona. Final summary report, year two – December 2002. Organ Pipe Cactus National Monument. Ajo, Arizona.

Webb, E.N. 2018a. Email to Paula Halupa *et al.* University of Florida, Department of Wildlife Ecology and Conservation. Gainesville, Florida. April 1, 2018.

Webb, E.N. 2018b. Presentation given at Florida bonneted bat working group meeting at The Conservancy of Southwest Florida. University of Florida, Department of Wildlife Ecology and Conservation. Gainesville, Florida. May 24, 2016.

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.
- Ober, H.K., E.C. Braun de Torrez, J.A. Gore, A.M. Bailey, J.K. Myers, K.N. Smith, and R.A. McCleery. 2016. Social organization of an endangered subtropical species, *Eumops floridanus*, the Florida bonneted bat. *Mammalia* 2016:1-9.
- 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.
- 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.
- Ober, H.K., E.C. Braun de Torrez, J.A. Gore, A.M. Bailey, J.K. Myers, K.N. Smith, and R.A. McCleery. 2016. Social organization of an endangered subtropical species, *Eumops floridanus*, the Florida bonneted bat. *Mammalia* 2016:1-9.
- 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.

