



# United States Department of the Interior



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

August 14, 2015

Dean Powell  
South Florida Water Management District  
Water Supply Bureau  
3301 Gun Club Road  
West Palm Beach, Florida 33406

Service CPA Code: 04EF2000-2014-CPA-0193  
Date Received: July 1, 2015  
Project: Central Florida Water  
Initiative  
Counties: Orange, Osceola, Seminole,  
Polk and southern Lake

Dear Mr. Powell:

The U.S. Fish and Wildlife Service (Service) has reviewed the Central Florida Water Initiative (CFWI) Regional Water Supply Plan (RWSP) by the South Florida Water Management District (District) dated May 2015 and received July 1, 2015. The Service appreciates the opportunity to comment on the CFWI RWSP and is submitting this letter to the District during the public comment period ending August 17, 2015.

## PROJECT DESCRIPTION

Through the CFWI, the St. Johns River, South Florida, and Southwest Florida Water Management Districts have worked to develop the area's first multi-district Regional Water Supply Plan to identify sustainable water source options and potential projects to meet projected demands while protecting, conserving and restoring water resources. The CFWI Planning Area is located in central Florida and consists of all of Orange, Osceola, Seminole, and Polk counties and southern Lake County, covering approximately 5,300 square miles. The CFWI Planning Area is currently home to approximately 2.7 million people and supports a large tourist industry, significant agricultural industry, and a growing industrial and commercial sector. The area's population is projected to reach approximately 4.1 million by 2035, which is a 49 percent increase from the 2010 estimate. The CFWI Planning Area also encompasses extensive natural systems such as Green Swamp, Reedy Creek Swamp, Boggy Creek Swamp, Shingle Creek Swamp, the Kissimmee Chain of Lakes (KCOL) (the headwaters to the Kissimmee River), 16 springs, and numerous wetland and surface water bodies. Based on modeling results and the assessment of groundwater availability, it was concluded that fresh groundwater resources alone cannot meet future water demands in the CFWI Planning Area without resulting in unacceptable impacts to water resources and related natural systems. This CFWI RWSP identified water

conservation efforts, groundwater withdrawal optimization, prevention and recovery strategies for targeted minimum flow level (MFL) water bodies, water supply development project options, water resource development project options, and water conservation by all water use categories as an important element in meeting future water needs.

### **THREATENED AND ENDANGERED SPECIES**

The Kissimmee Basin is home to many species of concern (see attached list) including Federal endangered and threatened species and State species of special concern and threatened species. Some of these species are also found throughout the CFWI Planning Area. The Service is concerned CFWI projects could further negatively impact these species located in the Upper Chain of Lakes and the Kissimmee River and floodplain. Any project which could negatively impact, or “take”, a federally listed species would require an incidental take permit from the Service. The Endangered Species Act (Act) defines “take” as “. . . to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” “Harm” includes significant habitat modification that actually kills or injures a listed species through impairing essential behavior such as breeding, feeding, or sheltering. The Service helps other Federal agencies and non-Federal entities or individuals determine whether specific proposed projects or actions are likely to result in “take.” The following comments highlight only two species, and do not address all potential impacts to these species or all potentially impacted species for which future consultation may be required.

#### **Manatee**

The CFWI Planning Area touches marginally on waterbodies of importance to manatees. These include the Peace River, the Alafia River, the Ocklawaha River, and the St. Johns River. Of these systems, the Ocklawaha River springs are likely the most significant if connectivity with the St Johns River is improved. Manatee sightings are known from Lithia Springs, Wekiva Springs, and the Ocklawaha River springs. Unfortunately, springs used by manatees within the CFWI region have been reduced, although the springs may have been significant in the past. Springs used by manatees must be accessible, have adequate depths and flows, and provide nearby sources of forage. Over time, spring runs have become inaccessible to manatees due to damming and to sediment build up. Thus, flows have diminished such that there is little remaining thermal benefit for manatees. CFWI activities that restore connectivity to springs, spring runs to usable depths, and flows that provide adequate warm water to manatees will provide a significant benefit to this endangered species. MFLs are relied on for springs and their spring runs to protect and enhance these sites for manatees. The Service supports adequate and meaningful MFLs to protect waterbodies, including springs, to support the manatee.

#### **Snail kite**

Snail kites forage, nest and roost in marsh and lakeshore habitats within the CFWI region. In recent years, the majority of snail kite nesting within this region has occurred in East Lake Tohopekaliga (Toho), Lake Toho, Lake Hatchineha, and Lake Kissimmee; however snail kites

have been observed nesting and foraging on numerous smaller water bodies throughout the region as well. The Kissimmee Basin represents an important portion of the kite's breeding range every year, and especially during times of drought or when habitat in South Florida becomes unsuitable or unavailable. For example, the relatively low reproductive output from Lake Okeechobee (1997-2010) and Water Conservation Area 3A (2001- 2012) left the snail kite population heavily concentrated in and dependent upon the Kissimmee Basin region, particularly Lake Toho, which accounted for 41 percent of all successful nests and 57 percent of all fledged young that were documented on a range-wide basis from 2005-2010 (Fletcher 2015). To support successful snail kite nesting and foraging, sufficient water levels are needed, including appropriate timing and rates of change (*e.g.*, transitions between high and low water levels). Apple snails, which are the kite's primary food, also require suitable water levels to survive and reproduce. Thus, any projects which could potentially lower water levels, increase recession or ascension rates, or alter the natural seasonality of water levels could potentially adversely impact snail kites, and may require consultation under the Act.

### **Everglades Headwaters National Wildlife Refuge (EHNWR)**

In addition to threatened and endangered species, the Kissimmee Basin also includes the Service's EHNWR. The EHNWR encompasses 150,000 acres and addresses landscape-scale land protection efforts north of Lake Okeechobee with conservation of land, water, and wildlife resources of the Kissimmee and Greater Everglades landscape. The Service recommends the District work closely with EHNWR on any potential withdrawals or surface water project to ensure resources within the EHNWR are not negatively impacted.

## **DETAILED COMMENTS TO THE RWSP DOCUMENT**

### **Water reservations and MFLs**

The Service supports the development of a water reservation for the Kissimmee basin for the protection of species, habitats, and ecosystems. As a part of the CFWI (page 33, paragraph 3), MFLs and water reservations are recommended for all water bodies of certain significance to the ecosystem. However, the planned Kissimmee water reservation thus far has neglected to provide reservations or protection for Boggy Creek (inflows for East Lake Toho), Shingle Creek (inflows for Lake Toho), Reedy Creek (inflows for Lake Cypress), Buck Lake, Fish Lake, Mill Slough, Lake Russell, Lake Marion, Lake Pierce, Lake Jackson, Lake Marian, Lake Rosalie, Lake Weoyakapka, and the No Name Slough. (The list of recommended protections is not limited to the above waterbodies or flow-ways but is an example of water bodies in need of protection).

### **Surface water projects**

The Service is concerned CFWI projects, including a proposed reservoir project in the Upper Kissimmee Basin, will erode the considerable federal and state investment in the Kissimmee River Restoration and further negatively affect the State and federally endangered and threatened species located in the Upper Chain of Lakes and the Kissimmee River and floodplain. Also of concern are potential negative impacts to downstream systems, such as Lake Okeechobee and the Everglades.

## **Monitoring**

The importance of monitoring is discussed on page B-114. The Service recommends a plan be devised and included in the RWSP. Details on variables to be monitored along with locations, costs, and timelines should be discussed with stakeholders and developed as a part of the CFWI.

## **Weather, climate, and climate change**

In the RWSP, climate and climate change are discussed and heavily used in planning and modeling. On page 33, in the first paragraph, it states the Florida legislature established a 1-in-10 year drought event level of certainty planning goal for CFWI. However, a couple of climatic variables were not discussed. The current warm phase of the Atlantic Multi-Decadal Oscillation (AMO) provides generally more rainfall to Florida due to warmer ocean waters and a more northern fluctuation of the Inter-Tropical Convergence Zone (ITCZ) from the equator. However, the warm phase is expected to transition to a cool phase likely within the next 10 to 15 years. During the transition, the ITCZ will move further south and the State will generally receive less rainfall. So near the 2025-2035 time frame, rainfall could lessen, leaving less surface water for water supply and the environment. Thus, a 1-in-10 year drought is not conservative enough for planning. The eventual transition into a drier weather regime should be considered in the RWSP.

Beyond 2035, according to the 2014 National Climate Assessment (NCA 2014), climate change is expected to decrease rainfall in Florida by 20-30%. The decrease is expected primarily during the spring and summer months. Thus, the Service recommends that the District utilize the climate change modeling scenarios (Vargas-Moreno 2010) developed by the Massachusetts Institute of Technology (MIT), the Service, and the United States Geological Survey (USGS). These scenarios incorporate expected changes in land use, the economy, and in climate variables for Florida, including the CFWI planning area.

## **Modeling**

Also of concern with climate, is that the East Central Florida Transient (ECFT) groundwater model that was developed and used to estimate changes of water levels as a result of changes in groundwater withdrawals and projected water demands with factors such as rainfall, runoff, and evapotranspiration used a modeling period of record (POR) of 1995 through 2006. This POR is only within the wetter warm phase of the AMO. Thus, modeling will indicate that more rain water will be available than will likely be. In the 12-year POR, 10 out of 12 years were average or above average with 5 of those years above average. There were only two droughts. One drought was in 2000 and the other was in 2006. The 2006 drought eventually led to a multiple 3-year drought, the majority of which was not included in the POR.

On page B-33 it states “Water-withdrawal conditions for 2005 have been designated as the Reference Condition (RC) for CFWI Planning Area analyses.” This study is already 10 years behind and will not reflect real-world withdrawals and ensuing complications and conditions. If it is necessary to use 2005 as a baseline, then the Service recommends that the District research and calculate a general percentage that water withdrawals have increased since 2005. This percentage should be added to the 2005 conditions to better reflect current day withdrawals.

The Service also recommends using conservative water withdrawal estimates due to the high level of errors in groundwater modeling. The District reports potential errors of 1-2 feet in modeling. These errors are rather large errors and could result in under-estimating large volumes of water either being withdrawn or not accounted for (missing) in the model.

On page B-55 it states "Based on the potential for withdrawals in the CFWI Planning Area to affect flows in the Peace River and possibly adversely affect recovery within the SWUCA, the effect of simulated withdrawal scenarios on the exchange of groundwater between the groundwater system and the upper Peace River was evaluated." Were these same evaluations performed on the KCOL, Kissimmee River and especially the effects on discharges to Lake Okeechobee?

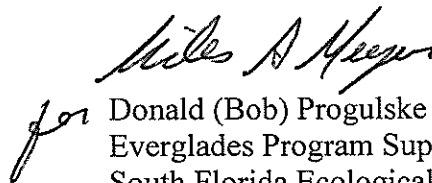
### **Water conservation, restrictions and other options**

The Upper Floridan Aquifer (UFA) is expected to drop up to 10 feet by 2035 according to Figure 8 on page 63. It is quite evident the aquifer is not a sustainable drinking water resource for the existing population much less for the expected population growth by 2035. This is supported on page B-80, where details are shown on the water availability decreases expected for lakes, wetlands, and springs. The report indicates the remaining UFA freeboard values for the lake and wetland MFL constraints ranged from 1.8 ft. to -7.8 ft. for the 2035 withdrawal scenario. Spring constraint freeboard values ranged from 0.2 to -5.4 cfs for the 2035 withdrawal scenario. Expressed as a percentage of remaining freeboard based on the adopted minimum flow regimes, the remaining freeboard for the spring constraints ranged from 5 percent to -43 percent.

The Service recommends the water management districts consider putting more emphasis on conservation, more proactive water restrictions, water farming, and dispersed water storage not only for the protection of drinking water but also for the species, habitats, and ecosystems that depend on the water budget. It is understood the District is involved in water farming and dispersed water storage. These projects will likely be a source of water and water storage in the future. However, they were not discussed in the RWSP. The Service recommends these projects be incorporated into water resource planning.

Thank you for the opportunity to review the Central Florida Water Initiative Regional Water Supply Plan and provide comments. If you have any questions regarding this letter, please contact Lori Miller at 772-469-4231, or Heather Tipton at 772-469-4296.

Sincerely yours,



for Donald (Bob) Progulske  
Everglades Program Supervisor  
South Florida Ecological Services Office

cc: electronic only  
District, West Palm Beach, Florida (Dean Powell)

### LITERATURE CITED

Fletcher, R., E. Robertson, B. Reichert, C. Cattau, R. Wilcox, C. Zweig, B. Jeffery, J. Olbert, K. Pias, and W. Kitchens. 2015. Snail kite demography 5-year report - Final report, 2014. Prepared for the U.S. Army Corps of Engineers, Environmental Branch, Jacksonville, Florida. U.S. Geological Survey, Florida Cooperative Fish and Wildlife Research Unit, Department of Wildlife Ecology and Conservation, University of Florida; Gainesville, Florida.

U.S. Global Change Research Program. (2014). *National Climate Assessment*. Washington D.C.:National Oceanic and Atmospheric Administration (NOAA).

Vargas-Moreno, J.C and M. Flaxman. 2010. Addressing the challenges of climate change in the Greater Everglades landscape. Project Sheet, November 2010. Massachusetts Institute of Technology, Department of Urban Studies and Planning; Cambridge, Massachusetts.

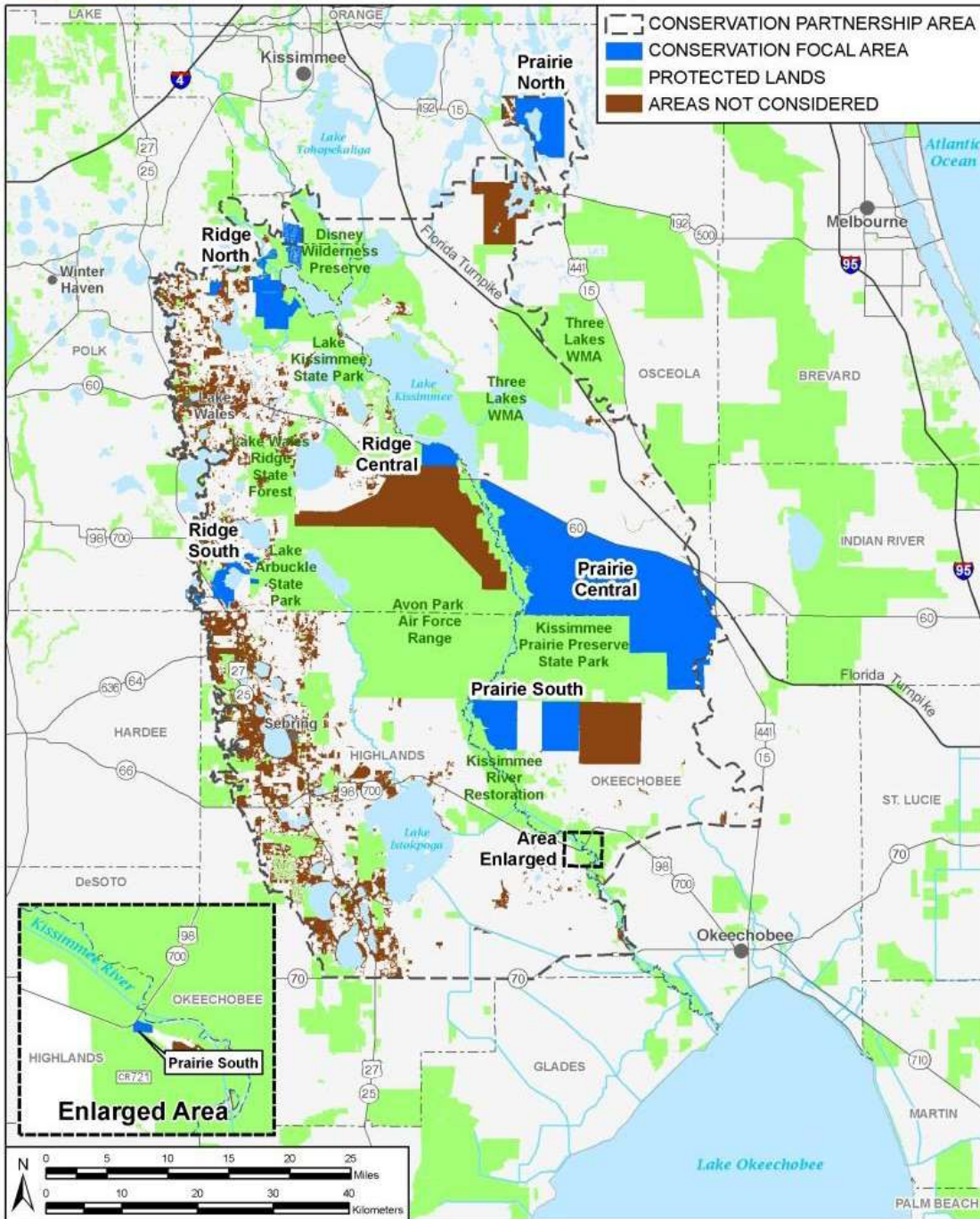




# Everglades Headwaters Conservation Partnership

## National Wildlife Refuge and Conservation Area Proposal

Alternative C - Parcels- Overview



## Species of Concern within the Kissimmee Basin

Common Name	Scientific Name	Status <sup>1</sup>	Agency
<b>Amphibians</b>			
Striped newt	<i>Notophthalmus perstriatus</i>	C	Federal
Gopher frog	<i>Lithobates capito</i>	SC	State
<b>Birds</b>			
Black skimmer	<i>Rynchops niger</i>	SC	State
Burrowing owl	<i>Athene cunicularia</i>	SC	State
Florida grasshopper sparrow	<i>Ammodramus savannarum floridanus</i>	E	Federal
Florida sandhill crane	<i>Grus canadensis pratensis</i>	ST	
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	T	Federal
Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	E	Federal
Audubon's crested caracara	<i>Polyborus plancus audubonii</i>	T	Federal
Limpkin	<i>Aramus guarauna</i>	SC	State
Little blue heron	<i>Egretta caerulea</i>	SC	State
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	Federal
Snowy egret	<i>Egretta thula</i>	SC	State
Southeastern American kestrel	<i>Falco sparverius paulus</i>	ST	State
Tricolored heron	<i>Egretta tricolor</i>	SC	State
White ibis	<i>Eudocimus albus</i>	SC	State
Whooping crane	<i>Grus americana</i>	Experimental Population non-essential	Federal, State
Wood stork	<i>Mycteria americana</i>	T	Federal
<b>Fish</b>			
Lake Eustis pupfish	<i>Cyprinodon hubbsi</i>	SC	State
<b>Insects</b>			
Highlands tiger beetle	<i>Cicindela highlandensis</i>	C	Federal
<b>Lichens</b>			
Florida perforate cladonia	<i>Cladonia perforata</i>	E	Federal
<b>Mammals</b>			
Florida panther	<i>Puma concolor coryi</i>	E	Federal
Florida manatee	<i>Trichechus manatus</i>	E	Federal
Puma	(=mountain lion) ( <i>Puma</i> (=Felis) concolor (all subsp. except coryi))	T (SA)	Federal
Florida bonneted bat	<i>Eumops floridanus</i>	E, ST	Federal, State
Florida mouse	<i>Podomys floridanus</i>	ST	State
Homosassa shrew	<i>Sorex longirostris eonis</i>	SC	State
Sherman's fox squirrel	<i>Sciurus niger shermani</i>	SC	State
<b>Reptiles</b>			
American alligator	<i>Alligator mississippiensis</i>	T (SA)	Federal
Bluetail mole skink	<i>Eumeces egregius lividus</i>	T	Federal
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T	Federal
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	SC	State



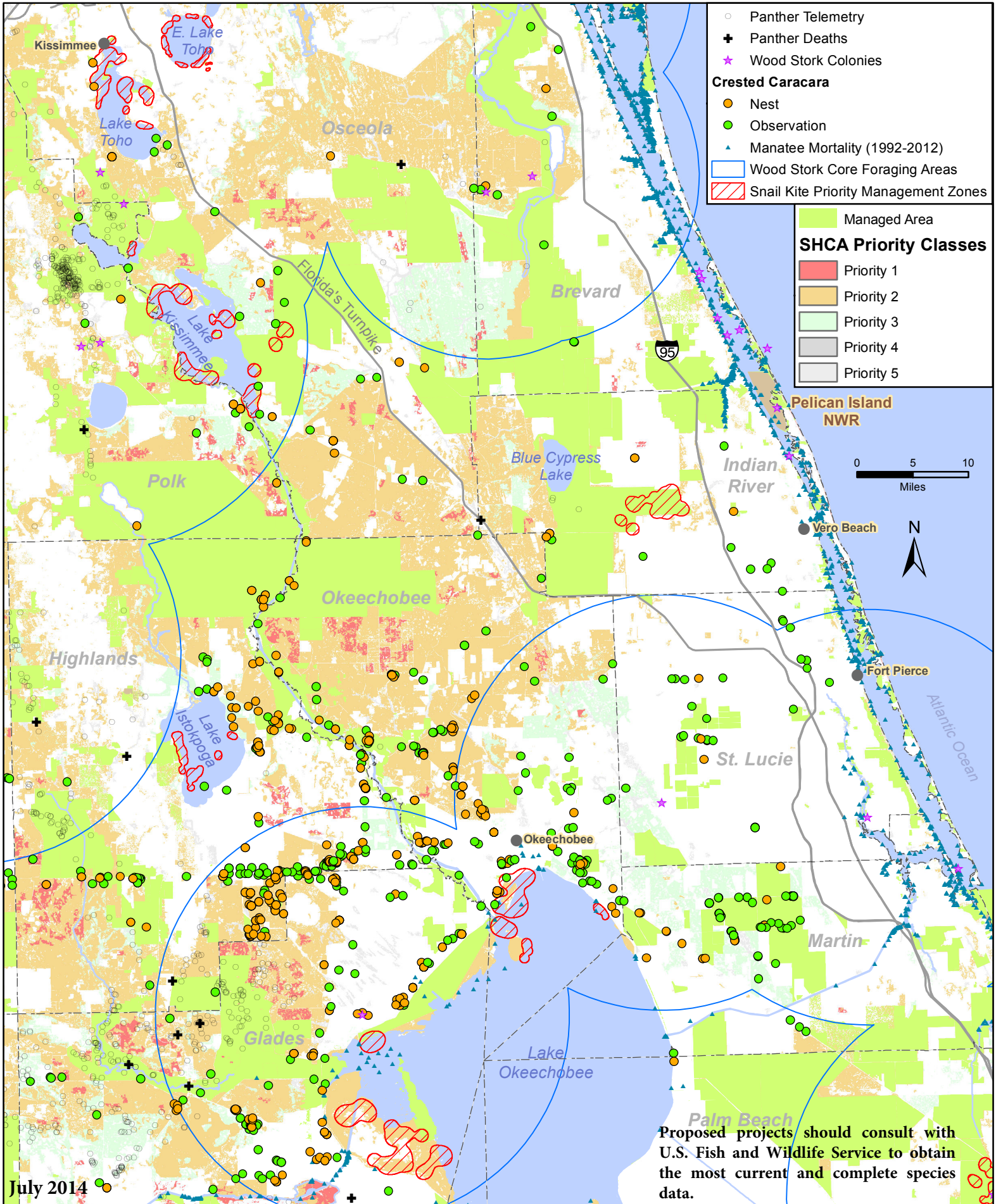
Gopher tortoise	<i>Gopherus polyphemus</i>	C, ST	Federal, State
Sand skink	<i>Neoseps reynoldsi</i>	T	Federal
Short-tailed snake	<i>Stilosoma extenuatum</i>	ST	State
<b>Plants</b>			
Short-leaved rosemary	<i>Conradina brevifolia</i>	E	Federal
Scrub mint	<i>Dicerandra frutescens</i>	E	Federal
Highlands scrub hypericum	<i>Hypericum cumulicola</i>	E	Federal
Scrub blazingstar	<i>Liatris ohlingerae</i>	E	
Papery whitlow-wort	<i>Paronychia chartacea</i>	T	Federal
Lewton's polygala	<i>Polygala lewtonii</i>	E	Federal
Wireweed	<i>Polygonella basiramia</i>	E	Federal
Sandlace	<i>Polygonella myriophylla</i>	E	Federal
Scrub plum	<i>Prunus geniculata</i>	E	Federal
Florida bonamia	<i>Bonamia grandiflora</i>	T	Federal
Pygmy fringe-tree	<i>Chionanthus pygmaeus</i>	E	Federal
Pigeon wings	<i>Clitoria fragrans</i>	T	Federal
Beautiful pawpaw	<i>Deeringothamnus pulchellus</i>	E	Federal
Scrub buckwheat	<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	T	Federal
Snakeroot	<i>Eryngium cuneifolium</i>	E	Federal
Britton's beargrass	<i>Nolina brittoniana</i>	E	Federal
Wide-leaf warea	<i>Warea amplexifolia</i>	E	Federal
Carter's mustard	<i>Warea carteri</i>	E	Federal
Scrub lupine	<i>Lupinus aridorum</i>	E	Federal
Garrett's mint	<i>Dicerandra christmanii</i>	E	Federal
Florida ziziphus	<i>Ziziphus celata</i>	E	Federal
Avon Park harebells	<i>Crotalaria avonensis</i>	E	Federal

<sup>1</sup> E – Endangered; T – Threatened; C – Candidate; SA – Similarity of Appearance; ST – State Threatened; SC – State Species of Special Concern



# U.S. Fish and Wildlife

## Kissimmee Chain of Lakes, Selected Threatened and Endangered Species

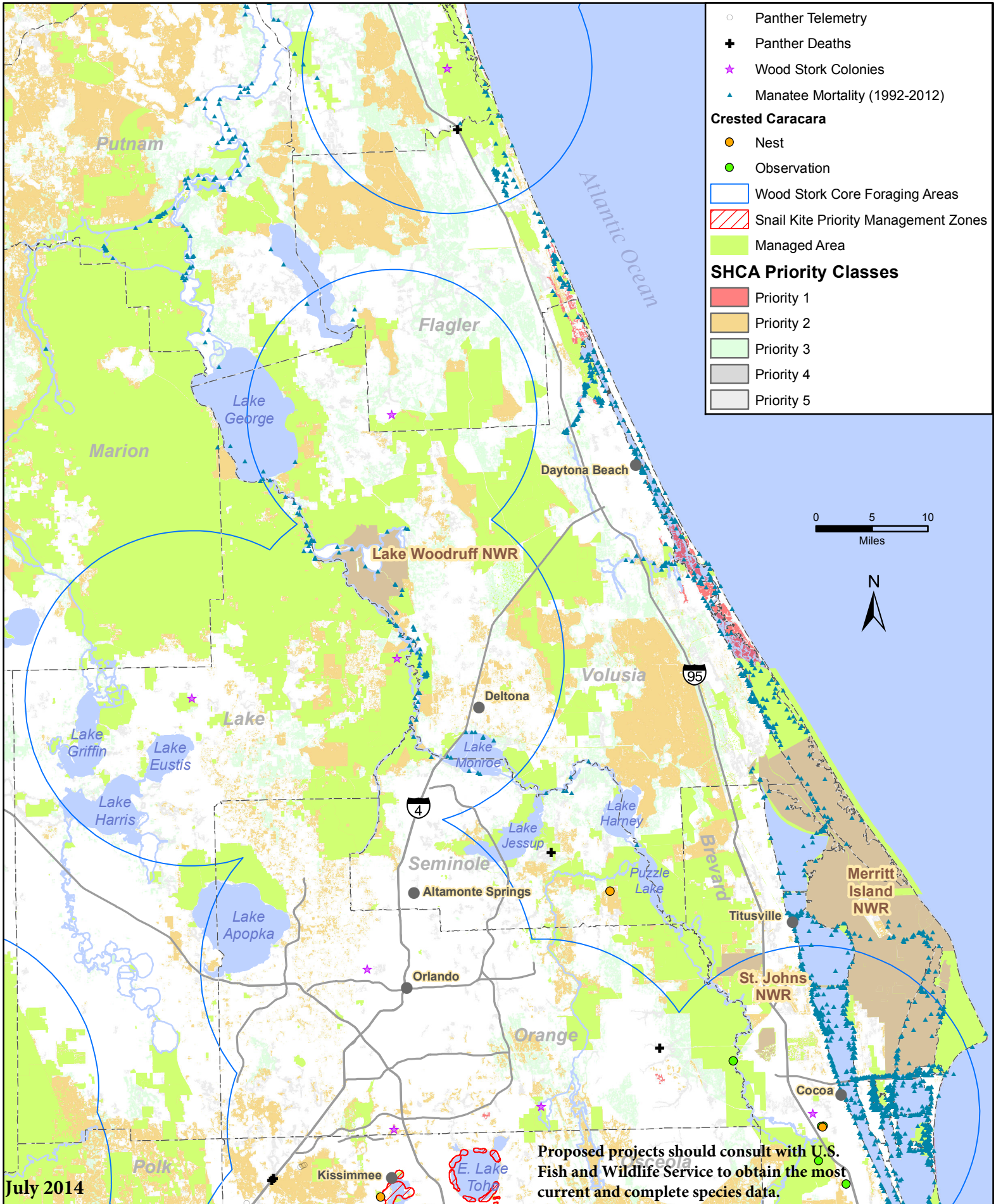






# U.S. Fish and Wildlife

## St. Johns River Basin, Selected Threatened and Endangered Species



- Panther Telemetry
- ✚ Panther Deaths
- ★ Wood Stork Colonies
- ▲ Manatee Mortality (1992-2012)

**Crested Caracara**

- Nest
- Observation

- Wood Stork Core Foraging Areas
- ▨ Snail Kite Priority Management Zones
- Managed Area

**SHCA Priority Classes**

- Priority 1
- Priority 2
- Priority 3
- Priority 4
- Priority 5

July 2014

Proposed projects should consult with U.S. Fish and Wildlife Service to obtain the most current and complete species data.