



# FLORIDA FORESTRY WILDLIFE BEST MANAGEMENT PRACTICES FOR STATE IMPERILED SPECIES



**Florida Department of Agriculture and Consumer Services**  
**Adam H. Putnam, Commissioner**

## Acknowledgements

In the Spring of 2013, the forestry Technical Advisory Committee (TAC) began a process to develop Wildlife Best Management Practices (WBMP) using the existing Silviculture BMP Manual as a model document. This effort was initiated in accordance with Section 570.94, Florida Statutes, whereby the Florida Department of Agriculture and Consumer Services (FDACS) and the Florida Fish and Wildlife Conservation Commission recognize that silviculture provides a valuable benefit to the conservation and management of fish and wildlife in the state. In that regard, these agencies have entered into a memorandum of agreement to develop and adopt (by rule) voluntary best management practices for State Imperiled Species of wildlife. This Manual represents the TAC's collective best efforts to establish and maintain sound, responsible practices that foster silvicultural land use and promote natural resource conservation.

For their commitment and numerous contributions toward the development of this document, the following agencies, organizations and companies are most gratefully acknowledged:

FDACS, Florida Forest Service

Florida Forestry Association

University of Florida

Georgia-Pacific

Florida Department of Environmental  
Protection

Plum Creek Timber Company

Florida Regional Councils Association

Foley Timber and Land Company

Suwannee River Water Management District

Natural Resource Planning Services, Inc.

Florida Fish and Wildlife Conservation  
Commission

Neal Land and Timber Company, Inc.

1000 Friends of Florida

USDA Forest Service

Sierra Club

U.S. Fish and Wildlife Service

The Nature Conservancy

Rock-Tenn Company

Florida Audubon

Rayonier, Inc.

Florida Wildlife Federation

**Florida Wildlife Best Management Practices for Silviculture**

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## Foreword

Silviculture in Florida's forest lands provides a valuable benefit to the conservation of fish and wildlife, including many of the state's imperiled species that are integral to the overall ecosystem. This Wildlife Best Management Practices (WBMP) Manual has been developed to enhance silviculture's contribution to the conservation and management of freshwater aquatic life and wildlife in the state, and to provide guidance to landowners and others who choose to implement these important practices. As such, these WBMPs reflect a balance between natural resource conservation and forest resource utilization, and serve to benefit a multitude of species above and beyond the 16 species referenced in this document.

In addition, this manual addresses only State Imperiled Species in Florida and not those federally listed by the U.S. Fish and Wildlife Service. Fish and wildlife species currently on the state imperiled list were evaluated to determine the potential for incidental take (see Glossary) to occur during silviculture or agricultural activities. Based on current knowledge, 16 of the State Imperiled Species occur in areas where silviculture or other agricultural activities have the potential to influence habitat or directly impact individuals.

The practices in this manual were developed specifically for silviculture, but may have application for other agricultural land uses. However, they are not intended for use during tree removal or land clearing operations associated with development activities. The practices are to minimize the potential impacts to State Imperiled Species from silviculture activities - not as a means of species recovery, expansion or habitat restoration. As such, the practices represent a practical approach for avoiding and minimizing loss of State Imperiled Species.

Throughout this document, reference will be made to the Florida *Silviculture Best Management Practices Manual*, Florida Department of Agriculture and Consumer Services, Florida Forest Service, as incorporated in 5I-6.002, F.A.C. This reference is to acknowledge that many of the existing BMPs that were developed primarily for water quality provide significant wildlife conservation benefits. Where these existing Silviculture BMPs are suitable, a reference will be made in place of developing new practices for the Wildlife BMP Manual.

Finally, the Wildlife BMPs are voluntary practices applied at the discretion of the landowner or other person or entity responsible for conducting silviculture activities on the property. In addition, Applicants who enroll in the Wildlife BMP Notice of Intent (NOI) process and implement the practices are not required to obtain a permit authorizing the incidental take of State Imperiled Species associated with their operations (see Appendix 1). For NOI participants, monitoring may be conducted periodically to determine whether or not the WBMPs have been implemented. Such monitoring will be conducted jointly by personnel from both the Florida Fish and Wildlife Conservation Commission (FWC) and the Florida Forest Service (FFS), and will consist of site evaluations on properties that have been voluntarily enrolled in the Wildlife BMP NOI program. Where implementation is not physically observable in the field, personnel will inspect records documenting implementation and maintenance, which may include but are not limited to, documents such as: personal logs, digital photos, contracts, invoices, receipts, maps, or any other document kept or received in the normal course of business.

## Aquatic State Imperiled Species

A total of 10 State Imperiled Species are in the Aquatic Species category and are generally associated with flowing streams. Five of the 10 are fish, including the crystal darter, harlequin darter, bluenose shiner, blackmouth shiner, and the tessellated darter. The other five species are the Santa Fe cave crayfish, Black Creek crayfish, Barbour's map turtle, Florida bog frog and the Georgia blind salamander.

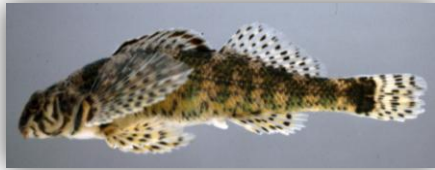
The species general habitat features are listed below (range maps are located in Appendix 2):

**Crystal Darter:** This species occupies medium to large rivers in the panhandle that have sand and fine gravel bottoms, specifically in the Escambia River and tributaries.



Crystal Darter Photograph courtesy of D.G. Bass

**Harlequin Darter:** This species occupies rivers and large creeks in the panhandle that have an abundance of snags and large woody debris, specifically the Escambia River and tributaries.



Harlequin Darter Photograph courtesy of FWC

**Bluenose Shiner:** This species occupies streams and rivers and spring runs that have backwater conditions, ranging from Escambia to Jackson Counties. This species is also found in the upper tributaries of the St. Johns River.



Bluenose Shiner Photograph courtesy of Todd D. Crail

**Blackmouth Shiner:** This species occupies backwaters of rivers and streams associated with steep, vegetated banks, specifically in the Blackwater River and Yellow River drainages.



Blackmouth Shiner Photograph courtesy of D.G. Bass

**Tessellated Darter:** This species occupies small to medium sized streams, specifically in the Oklawaha River drainage and tributaries.



Tessellated Darter Photograph courtesy of D.G. Bass

**Santa Fe Cave Crayfish:** This species occupies groundwater areas in caves and sinkholes in Suwannee and Columbia Counties.

*No Photo Available*

Santa Fe Cave Crayfish: Photograph is unavailable and not necessary since this crayfish resides in caves and is unlikely to be observed.

**Black Creek Crayfish:** This species occupies tannic-stained rivers and streams with sand bottoms, specifically in Clay, Duval, Putnam and St. Johns Counties.



Black Creek Crayfish Photograph courtesy of FWC, Eric Nelson and Daniel Gualtieri



**Barbour's Map Turtle:** This species occupies rivers, large streams and impoundments that include sand bars, berms and spoil mounds, specifically in the Apalachicola, Chipola, Choctawhatchee and Ochlocknee River systems.



Adult Female Barbour's Map Turtle  
Photograph courtesy of © Dale R. Jackson

Barbour's Map Turtle  
Photograph courtesy of U.S. Geological Survey

**Georgia Blind Salamander:** This species occupies caves associated with rivers and streams in Jackson County.



Juvenile Georgia Blind Salamander Photograph courtesy of Nathanael Herrera

**Florida Bog Frog:** This species occupies rivers and streams associated with acidic seeps, seepage streams and bogs proximate to sandy uplands, specifically in Walton, Santa Rosa and Okaloosa Counties.



Florida Bog Frog Photograph courtesy of FWC. Some rights reserved by MyFWCmedia

### **WBMPs for Aquatic State Imperiled Species**

The aquatic State Imperiled Species listed have important habitat needs within streams and stream corridors. These include temperature regulation (shade), large and small woody debris, substrate (sand, gravel vs. silt), channel stability and habitat connectivity. The Georgia blind

salamander, in particular, may be vulnerable to agricultural chemicals and petroleum products. The existing Silviculture BMPs for water quality are adequate for these species. All BMPs that prevent erosion, sedimentation, groundwater contamination and protect stream geomorphology are important. However, the most critical are those associated with the Special Management Zone (SMZ) and Stream Crossings – see *Silviculture Best Management Practices Manual*, Florida Department of Agriculture and Consumer Services, Florida Forest Service, as incorporated in Rule 5I-6.002, F.A.C.

The SMZ provides shade (an important factor in water temperature regulation), a natural vegetated “filter strip,” intact ground cover, large and small woody debris, leaf litter and a variety of tree species and age classes. In addition, the SMZ provides for stream channel and bank stability and maintains an active, stable floodplain. The Primary Zone of the SMZ ranges in width from 35 - 200 feet (each side) for perennial streams. The Secondary Zone of the SMZ ranges from 35 – 300 feet (each side), and can apply to both perennial and intermittent streams, depending on the slope and soil type (the Site Sensitivity Classification) in the area. Timber harvesting is limited in the Primary SMZ. Practices such as mechanical site preparation, main skid trails and aerial application of forest chemicals are prohibited here. *In addition, for purposes of implementation evaluations, records should be maintained for those activities that are not readily observable in the field, i.e., records of chemical site prep, fertilization, etc.*

Stream Crossing BMPs are designed to minimize the potential for impounding or impeding flow, generally providing for habitat connectivity, and to maintain normal streamflow rates and flow conditions. Key practices for stream crossings include proper sizing and placement of culverts, using the proper material, keeping a low profile on hard-surface crossings and periodic maintenance of all crossing types to ensure functionality.



## State Imperiled Species - Burrowing Animals

Two State Imperiled Species are in the Burrowing Animals species category and are generally associated with both forested and open area uplands. Specifically, they are the gopher tortoise and the burrowing owl. Generally, the burrows for these animals are visibly apparent and sites/habitat types are relatively easy to identify. For both species of burrowing animals, burrows are not required to be located prior to silviculture operations, nor does the property in question need to be surveyed for the presence of the animals or their burrows. The species' general habitat features are listed below (range maps are located in Appendix 2 except for the gopher tortoise, which occurs statewide):

**Gopher Tortoise:** This species occupies uplands with well-drained soils and significant depth. They may be found in forested or open areas throughout most of the state. The general habitat feature is an underground burrow with a large open area at the mouth known as the “apron.” The apron of the burrow is especially important because the females usually lay and bury their eggs in a shallow nest there, typically between mid-May and mid-June. Incubation lasts 80 to 100 days. Therefore, disturbance of the apron should be avoided from early May through September when eggs or hatchlings may be present.



Gopher Tortoise

Photograph courtesy of FWC



Gopher Tortoise Burrow with Apron

Photograph courtesy of Wikimedia Commons

<http://commons.wikimedia.org>

**Burrowing Owl:** This species occurs primarily in peninsular Florida, although isolated pairs and small colonies have been found as far west as Eglin Air Force Base. The owl is a small bird, averaging 9 inches in height, with long legs and bright yellow eyes, but lacking the ear tufts of more familiar woodland owls. The owls spend most of their time on the ground. During the day they are usually seen standing erect at the mouth of their underground burrow or on a nearby post. When disturbed, the owl bobs in agitation and utters a chattering or clucking call. In flight, burrowing owls typically undulate as if they are flying an invisible obstacle course. However, while hunting, the owls can hover in midair. The general habitat feature is an underground burrow, typically found in open habitats such as native dry prairies or modified landscapes such as pastures, agricultural fields, golf courses or other open grassy lands.



Burrowing Owl

Photograph courtesy of FWC.

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## WBMPs for State Imperiled Species - Burrowing Animals

- Maintain habitat features by carrying out activity on forest lands, such as harvesting (including thinning), site preparation, burning, etc.
- Locate concentrated heavy equipment operations (e.g. log decks, landings, main skid trails, ramps, etc.) away from known and visibly apparent active burrows, and especially known concentrations of active burrows. If concentrated heavy equipment operations must be located in such areas: a) identify and mark burrows, b) avoid damage to the burrow opening, and c) avoid damage to the gopher tortoise burrow apron during the nesting season (May through September).
- Advise heavy equipment operators to avoid direct contact year-round with all known and visibly apparent gopher tortoises and burrowing owls, as well as known and visibly apparent burrow aprons for tortoises during the period between May and September.
- When practical, minimize the use of heavy equipment during September and October when gopher tortoise hatchlings are more numerous and less visible due to their size during this time.

**For both species of burrowing animals, burrows are not required to be located prior to silviculture operations, nor does the property in question need to be surveyed for the presence of the animals or their burrows.**

**Note:** *Forest management practices that foster herbaceous ground cover on sites with well drained soils, and known and visibly apparent gopher tortoise occupation will enhance habitat for this species. The following options are provided as some examples of how to foster herbaceous ground cover in such areas. These practices, while encouraged, are not WBMPs:*

- *Thin pine stands as appropriate to meet silvicultural objectives, such as opening up the canopy and provide more sunlight to ground cover.*
- *Use prescribed fire in pine stands where it is appropriate economically feasible and compatible with overall forest management objectives, and safety/smoke management considerations.*
- *Where prescribed burning is problematic, use herbicides that target woody or shrub vegetation as an alternative as appropriate.*
- *When using herbicides to control herbaceous ground cover (herbaceous weed control) for newly established pines, a banded application is preferable over broadcast applications.*
- *Where appropriate and where stands are large enough, attempt to employ two or more stand ages within areas of known gopher tortoise occupation. This will lessen crown closure over the entire area at any one point in time.*
- *Leave herbaceous borders along forest roads, power lines and similar areas where practical and economically feasible.*
- *Sand pine is not a preferred species for gopher tortoise habitat due to canopy closure.*
- *Clear heavy debris off log decks after logging operations are completed.*
- *Maintain minimum tree densities to meet silvicultural goals.*

## State Imperiled Species - Nesting Birds

Four State Imperiled Species are in the Nesting Birds species category and are associated with both forested wetlands and uplands. Specifically they are the little blue heron, the tricolored heron, the Florida sandhill crane and the southeastern American kestrel. Most instances of incidental take are the result of disturbances to wading bird rookeries (breeding colonies) and southeastern American kestrel or Florida sandhill crane nests during certain periods of the year. Such disturbances include damaging or removing nest trees, excessive noise from machinery in close proximity and frequent human presence. Nests or rookeries do not have to be located prior to silviculture operations, nor does the property in question need to be surveyed for the presence of nests or rookeries or the animals themselves.

The species general habitat features are listed below (range maps are located in Appendix 2):

**Little Blue Heron and Tricolored Heron:** The general habitat feature for these species is the presence of rookeries (breeding colonies) in forested wetlands. The little blue heron and tricolored heron typically nest in rookeries of various sizes that may include other wading birds like the snowy egret, reddish egret and roseate spoonbill. Nests may occur in a variety of woody vegetation including cypress, willow, red maple, buttonwood and mangroves.



Little Blue Heron Photograph courtesy of FWC. Some rights reserved by MyFWCmedia



Tricolored Heron Photograph courtesy of FWC. Some rights reserved by MyFWCmedia

**Florida Sandhill Crane:** This species is a heavy-bodied bird with a long neck and legs. It is frequently found in open grass lands, pastures and marshes throughout most of the state. Sandhill cranes rely on shallow marshes for roosting and nesting and open upland habitats for foraging. The general habitat feature for nesting is herbaceous wetlands.



Florida Sandhill Crane

Photographs courtesy of Peter Canavan and FWC.  
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**Southeastern American Kestrel (aka Sparrow Hawks):** This species occupies open pines, woodland edges, prairies and pastures throughout most of Florida. The general habitat feature for nesting is standing snags. The majority of nest trees in north central Florida are located in pastures, cultivated farmland or longleaf pine-turkey oak woodlands.



Southeastern American Kestrel: Photograph courtesy of FWC. Some rights reserved by MyFWCmedia.

### WBMPs for State Imperiled Species - Nesting Birds

- Avoid heavy equipment operation (except for prescribed burning and related activities) within 330 feet of active, known and visibly apparent Little Blue and Tricolored Heron rookeries (two or more nests) from February through May.
- Avoid heavy equipment operation (except for prescribed burning and related activities) within 400 feet of active, known and visibly apparent Florida sandhill crane nests from February through May.

- For southeast American kestrels, leave standing snags where they do not pose a safety issue, as per the Silviculture BMP Manual as incorporated in Rule 5I-6.002 F.A.C., and avoid damaging or felling known nest trees.
- Avoid prolonged heavy equipment operation (generally in excess of one day), except for prescribed burning and related activities, within 490 feet of active, known and visibly apparent kestrel nests from March through June.

**Nests or rookeries do not have to be located prior to silviculture operations, nor does the property in question need to be surveyed for the presence of nests or rookeries or the animals themselves.**

**Note:** *If you have questions about WBMPs for these birds, consult with an FWC landowner assistance biologist prior to short duration disturbances such as mowing, chopping, tree planting and related activities within this buffer zone.*

**Exceptions:**

1. Documented cases where nesting birds have acclimated to disturbances and are obviously unaffected by them (these cases should be reported on the NOI).
2. Where consultation with an FWC Landowner Assistance biologist provides the landowner with a functional alternative to the WBMPs, e.g., hand planting, nest boxes, etc.

**Contact Information:**

Florida Forest Service  
Attn: Wildlife BMP Program  
3125 Conner Boulevard  
Tallahassee, FL 32399-1650

Or

Florida Fish and Wildlife Conservation Commission  
Attn: Wildlife BMP Program  
620 South Meridian Street  
Tallahassee, FL 32399-1600





ADAM H. PUTNAM  
COMMISSIONER

Florida Department of Agriculture and Consumer Services  
Florida Forest Service  
**NOTICE OF INTENT TO IMPLEMENT FLORIDA FORESTRY  
WILDLIFE BEST MANAGEMENT PRACTICES**

RULE 51-8.003 F.A.C.

Complete all sections below as well as the Implementation Checklist Florida Forestry Wildlife Best Management Practices for State Imperiled Species. List only those properties that are within the same county and are owned or leased by the same person or entity. Submit a copy of the Notice of Intent to Implement Florida Forestry Wildlife Best Management Practices to the addresses listed below, and it is recommended that you keep a copy for your records.

Applicant: \_\_\_\_\_

County: \_\_\_\_\_ Acres: \_\_\_\_\_

Parcel ID No.: \_\_\_\_\_

Check if  
parcel list  
is attached ☐

Property Owner:  
(if different from Applicant) \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Alt Phone: \_\_\_\_\_

Email: \_\_\_\_\_

In accordance with Sections 570.07 (23), 570.94, F.S. and Rule 68A-27.007 (2) (d), F.A.C., I hereby submit this Notice of Intent to Implement Florida Forestry Wildlife Best Management Practices and Implementation Checklist Florida Forestry Wildlife Best Management Practices for State Imperiled Species as verification of my intent to implement Florida Forestry Wildlife Best Management Practices in accordance with Rule 68A-27.007, F.A.C. and Chapter 51-8, F.A.C. Participation in this program and implementation of Florida Forestry WBMPs provides a presumption of compliance with regard to incidental take of State Imperiled Species. In addition, I agree to allow FDACS and FWCC personnel to periodically verify Florida Forestry WBMP implementation through records inspection and/or on-site evaluations of the property described above.

Check One:

☐ Property Owner/Lessee

Print Name: \_\_\_\_\_

☐ Authorized Agent

☐ Silvicultural Contractor

☐ Other

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Submit completed NOI and Florida Forestry WBMP Checklist to:

FDACS – Florida Forest Service  
Attn: Florida Forestry Wildlife BMP Program  
3125 Conner Boulevard  
Tallahassee, FL 32399-1650  
850-681-5943  
Fax: 850-681-5801  
Email: [FFSupport@freshfromflorida.com](mailto:FFSupport@freshfromflorida.com)

Florida Fish and Wildlife Conservation Commission  
and Attn: Wildlife BMP Program  
620 South Meridian Street  
Tallahassee, FL 32399-1600  
850-488-3831

FDACS-11319 08/14 Page 1 of 2



**IMPLEMENTATION CHECKLIST  
FLORIDA FORESTRY WILDLIFE BEST MANAGEMENT PRACTICES  
FOR STATE IMPERILED SPECIES**

Check All Applicable Boxes Below

<b>Aquatic State Imperiled Species</b>				
Species Name	<u>My property is located within the aquatic species' known range (see imperiled species range maps<sup>1</sup>).</u>	<u>I am currently implementing all applicable WBMPs (Special Management Zones &amp; Stream Crossings<sup>2</sup>).</u>	<u>Species is not applicable to the property.</u>	
Crystal Darter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Harlequin Darter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Bluenose Shiner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Blackmouth Shiner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tessellated Darter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Santa Fe Crayfish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Black Creek Crayfish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Barbour's Map Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Georgia Blind Salamander	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Florida Bog Frog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>State Imperiled Species - Burrowing Animals and Nesting Birds</b>				
Species Name	<u>Species is known to be present on the property.</u>	<u>I am currently implementing all applicable WBMPs for this species<sup>1</sup>.</u>	<u>I do not know if this species is currently present on my property but I would implement WBMPs if the species was located in the future.</u>	<u>Species is not applicable to the property</u>
Gopher Tortoise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Burrowing Owl	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Little Blue Heron	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tricolored Heron	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Florida Sandhill Crane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Southeastern American Kestrel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

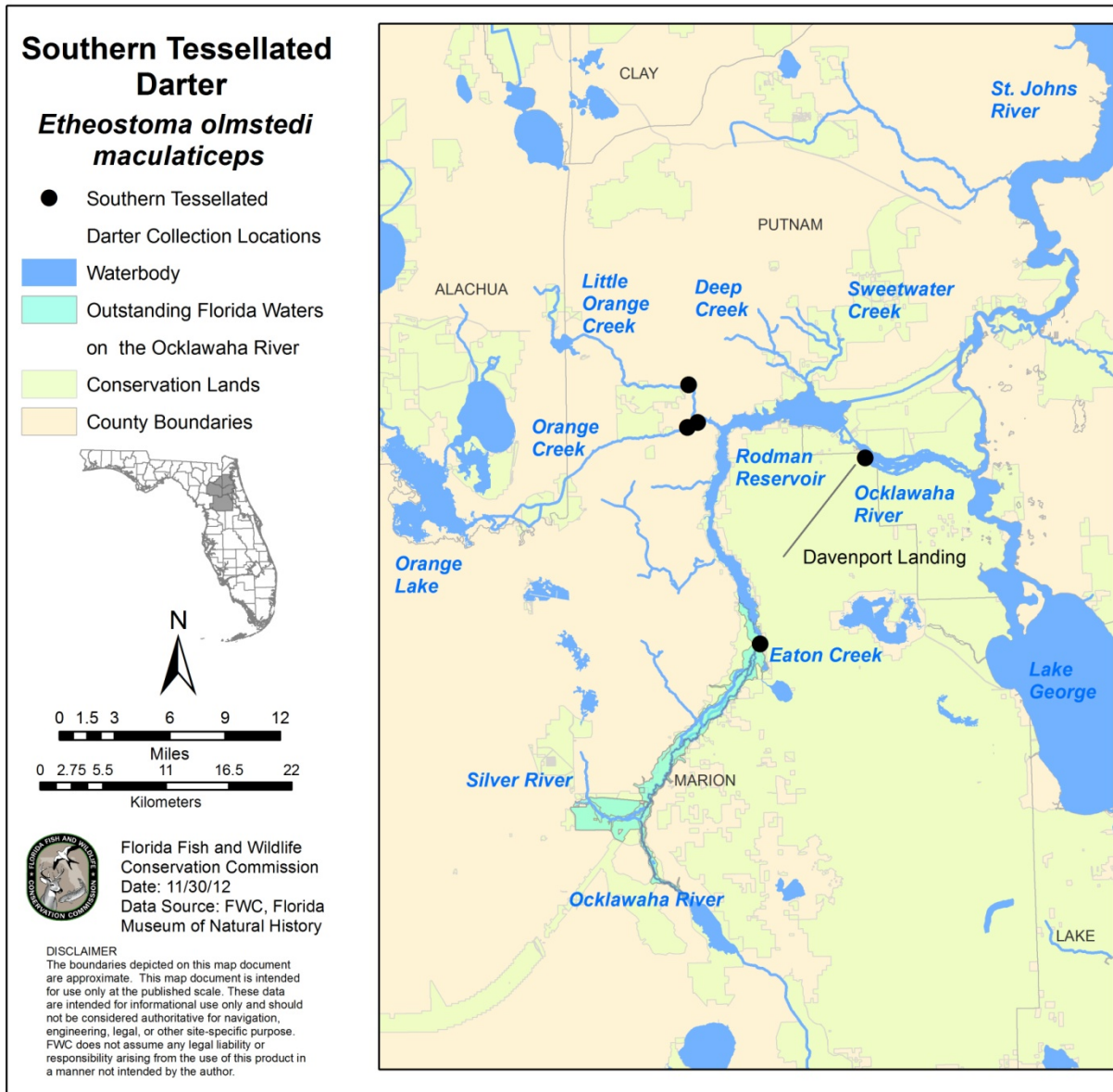
I am implementing the following Florida Forestry WBMP exception(s) for State Imperiled Species of Nesting Birds:

- ☐ Documented cases where birds have acclimated to disturbances.  
☐ Where consultation with a FWC biologist provided a functional alternative.

<sup>1</sup> Consult the Florida Forestry Wildlife Best Management Practices for State Imperiled Species, FDACS-01869, January 16, 2014, as incorporated by reference in Rule 5I-8.001, F.A.C., for descriptions, range maps, and WBMP practices applicable to the species listed above. Florida Forestry WBMPs pertain only to those ongoing forestry activities that are normal and customary for the area. Florida Forestry WBMPs do not apply to tree removal activities preceding a change in land use. For example, harvesting activities that would convert silviculture lands to mining or development would not be eligible for the program.

<sup>2</sup> Refer to the Florida Silviculture Best Management Practices Manual (Florida Department of Agriculture and Consumer Services, Florida Forest Service) which is incorporated in Rule 5I-6.002, F.A.C.

Appendix 2  
State Imperiled Species Range Maps  
(Location indicators represent broad general areas and are not necessarily specific observations)



## Harlequin Darter

*Etheostoma histrio*

- Harlequin Darter Collections Locations
- Harlequin Darter Distribution
- Rivers and Creeks
- Open Water



0 2 4 8 12 16

Miles

0 2.5 5 10 15 20

Kilometers



Florida Fish and Wildlife  
Conservation Commission  
Date: 1/9/13  
Data Source: FWC, University  
of Florida

### DISCLAIMER

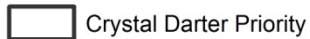
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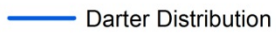
## Crystal Darter *Crystallaria asprella*

- Crystal Darter Collection

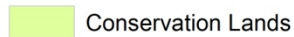
Locations



Crystal Darter Priority  
Sub-Watersheds



Darter Distribution



Rivers and Creeks



Conservation Lands



Open Water



0 1.5 3 6 9 12

Miles

0 2.5 5 10 15 20

Kilometers

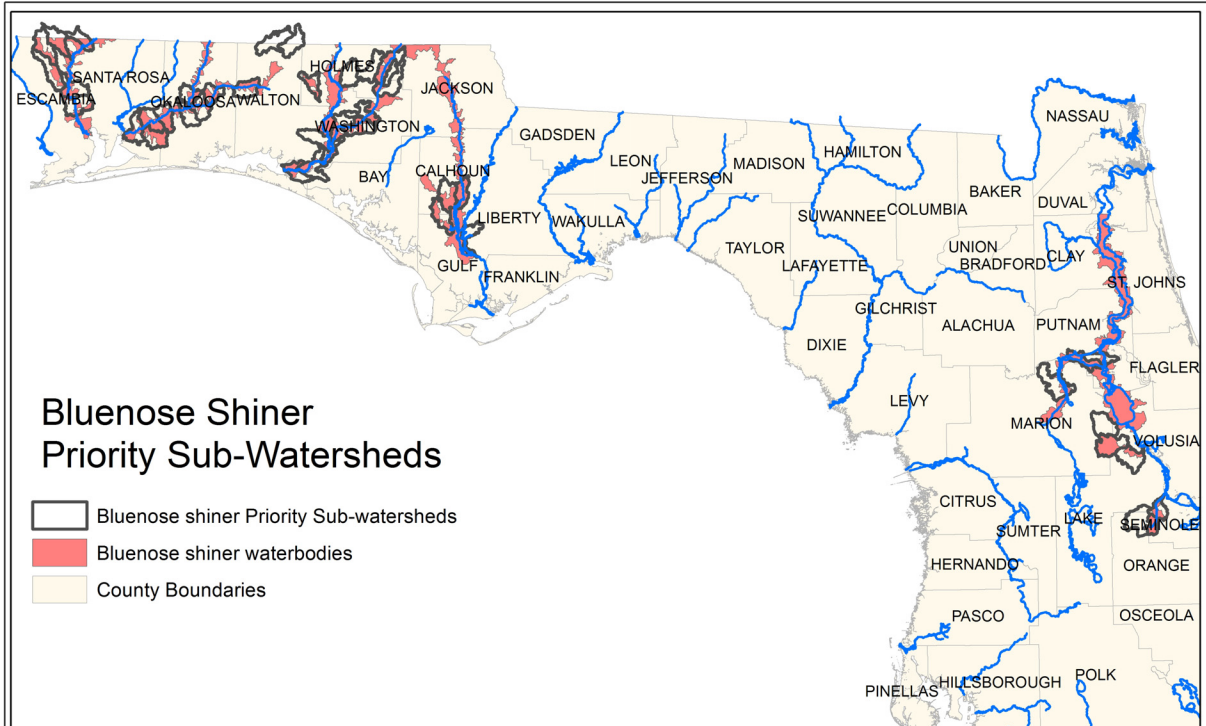


Florida Fish and Wildlife  
Conservation Commission  
Date: 11/4/13  
Data Source: FWC, University  
of Florida

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Florida Fish and Wildlife  
Conservation Commission  
Data Source: FWC  
Date: 01/08/2013

0 12.5 25 50 75 100 Miles



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# Blackmouth Shiner Priority Sub-Watersheds

- Blackmouth shiner post 2000
- Blackmouth shiner pre2000

Blackmouth Priority  
Sub-watersheds



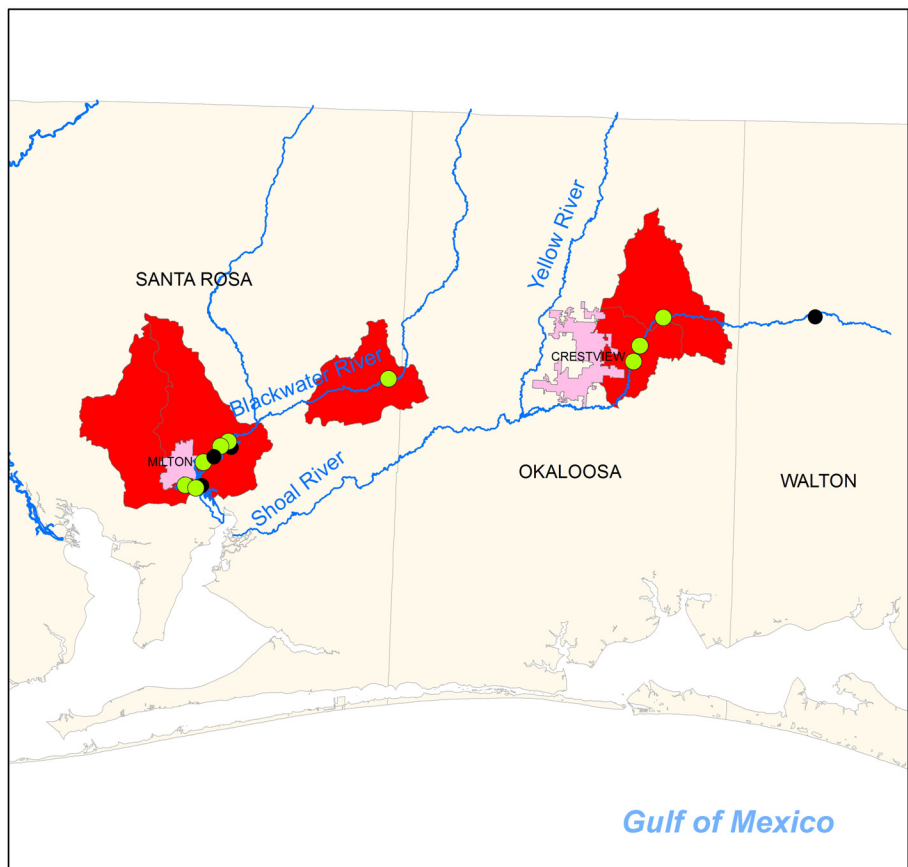
0 2 4 8 12 16 Miles



Florida Fish and Wildlife  
Conservation Commission  
Data Source: FWC  
Date: 01/16/2013

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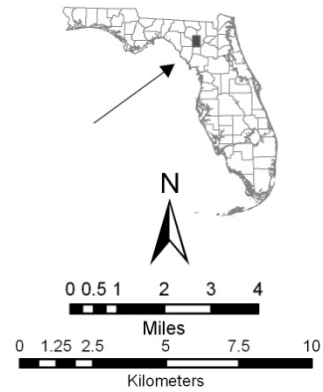




# Santa Fe Cave Crayfish

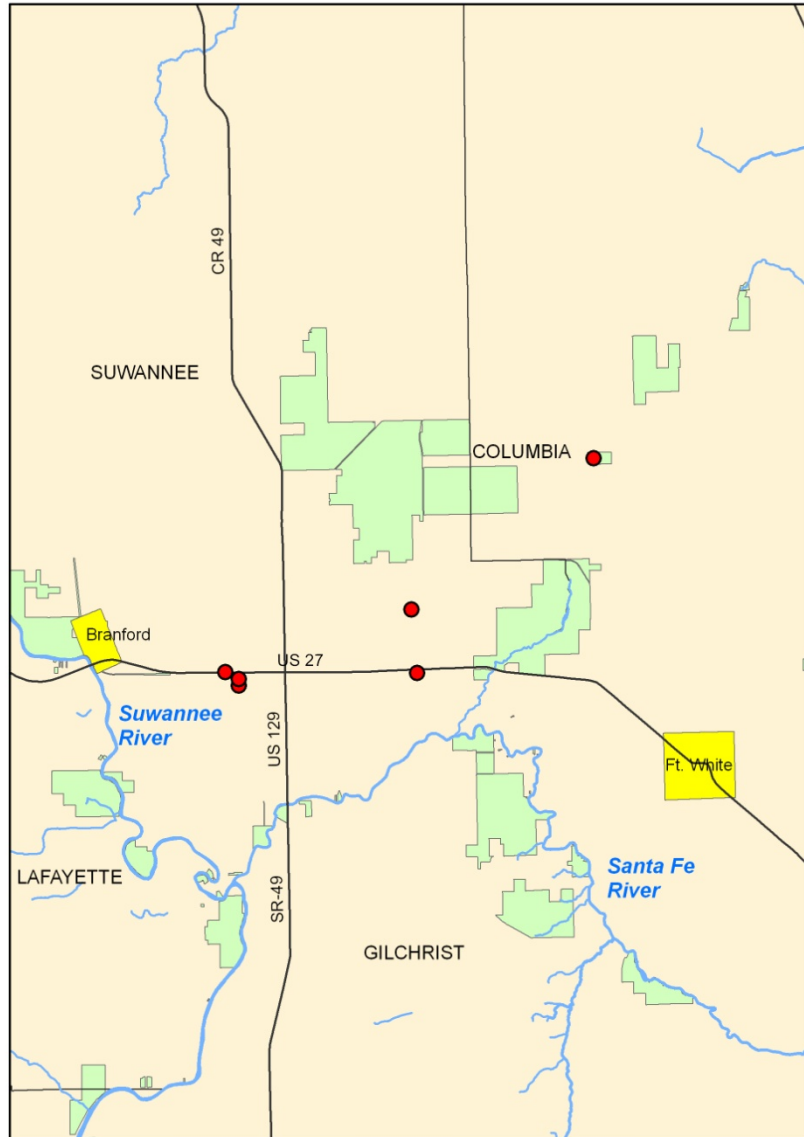
## *Procambarus erythrops*

- Documented Occurrence
- Major Roads
- Streams
- Waterbody
- Conservation Lands
- City Limits
- County Boundaries



Florida Fish and Wildlife  
Conservation Commission  
Date: 3/11/13  
Data Source: FWC

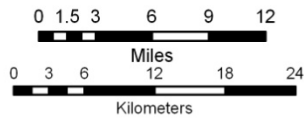
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# Black Creek Crayfish

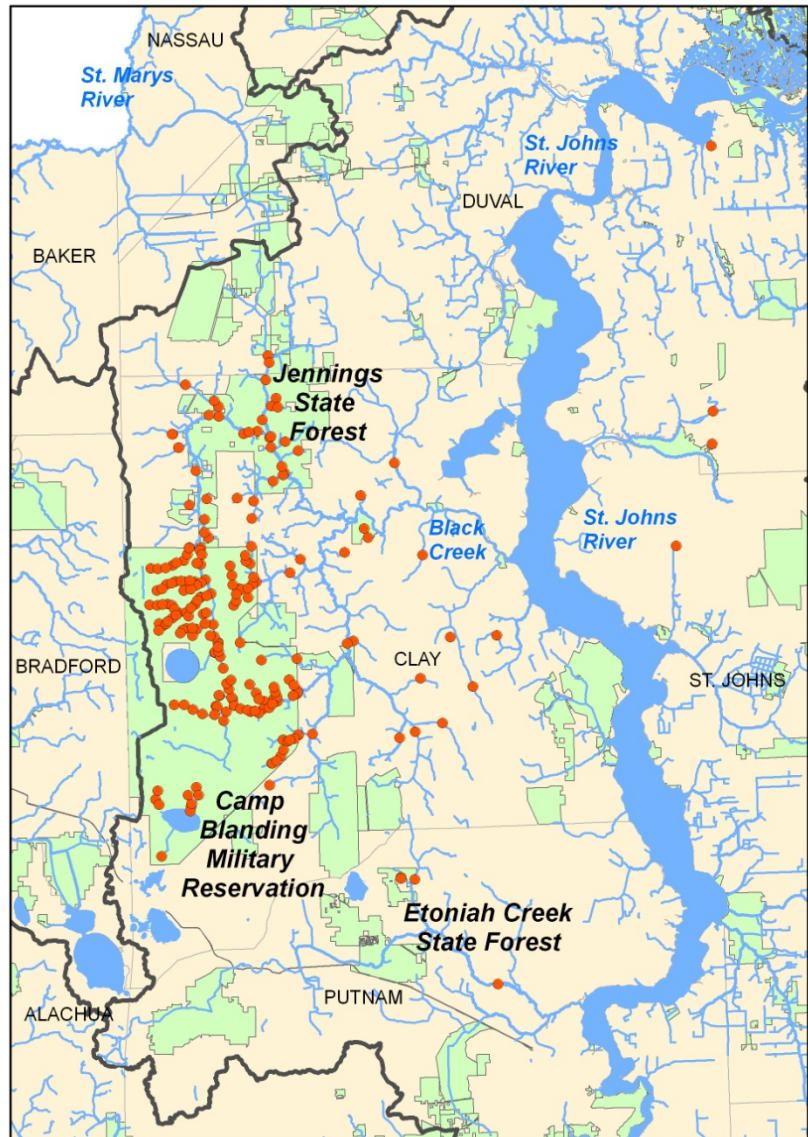
## *Procambarus pictus*

- Documented Occurrence
- Streams
- Watershed Basins
- Waterbody
- Conservation Lands
- County Boundaries



Florida Fish and Wildlife  
Conservation Commission  
Date: 2/18/13  
Data Source: FWC

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## Barbour's Map Turtle

### *Graptemys barbouri*

- Specific Records
- Inhabited Major Rivers
- Other Major Rivers
- County Boundaries
- Open Water



0 3 6 12 18 24  
Miles  
0 4.5 9 18 27 36  
Kilometers

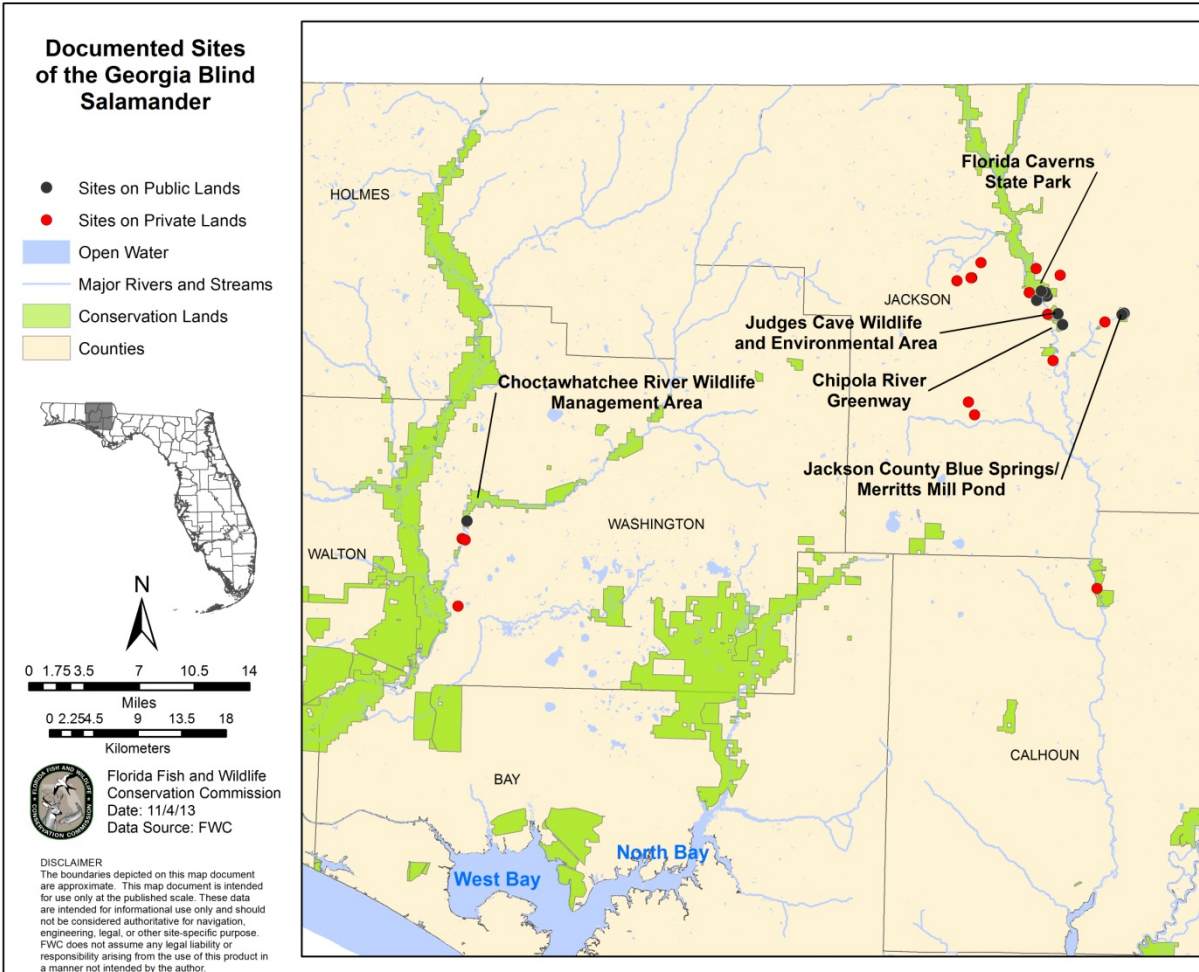


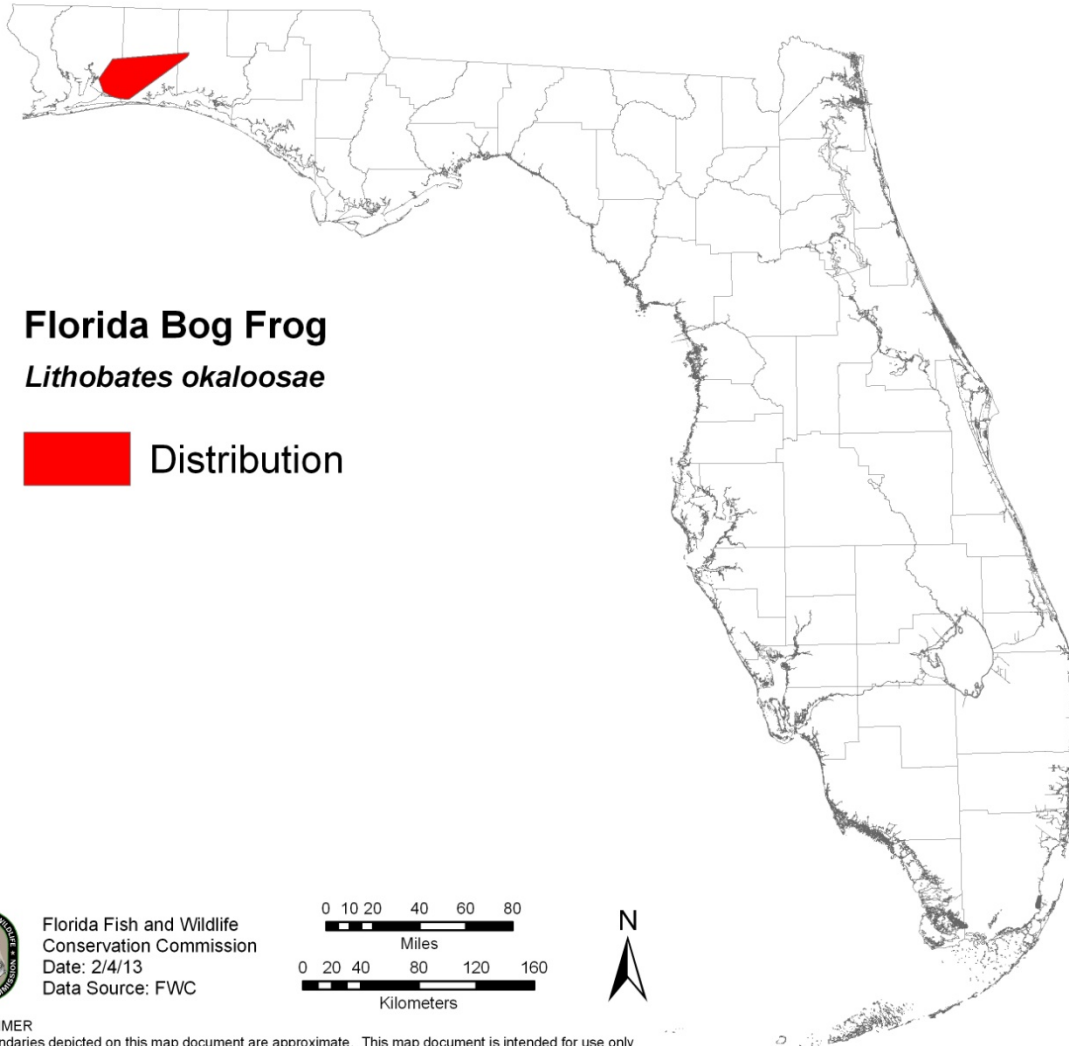
Florida Fish and Wildlife  
Conservation Commission  
Date: 3/18/13  
Data Sources: FWC, FNAI,  
FL Herp Atlas

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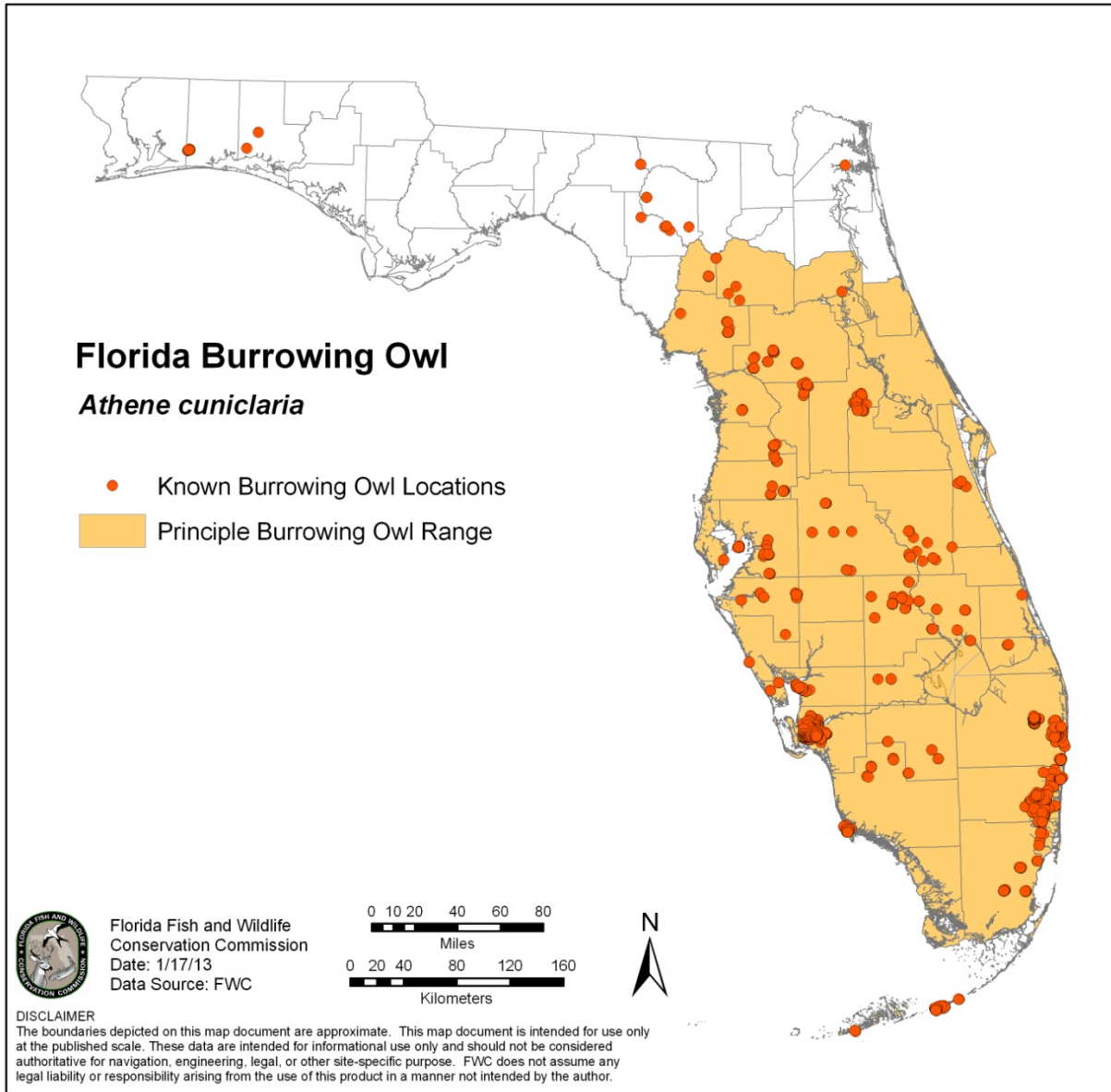






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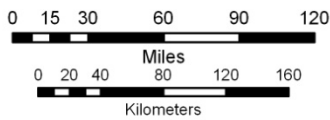




# Florida Sandhill Crane

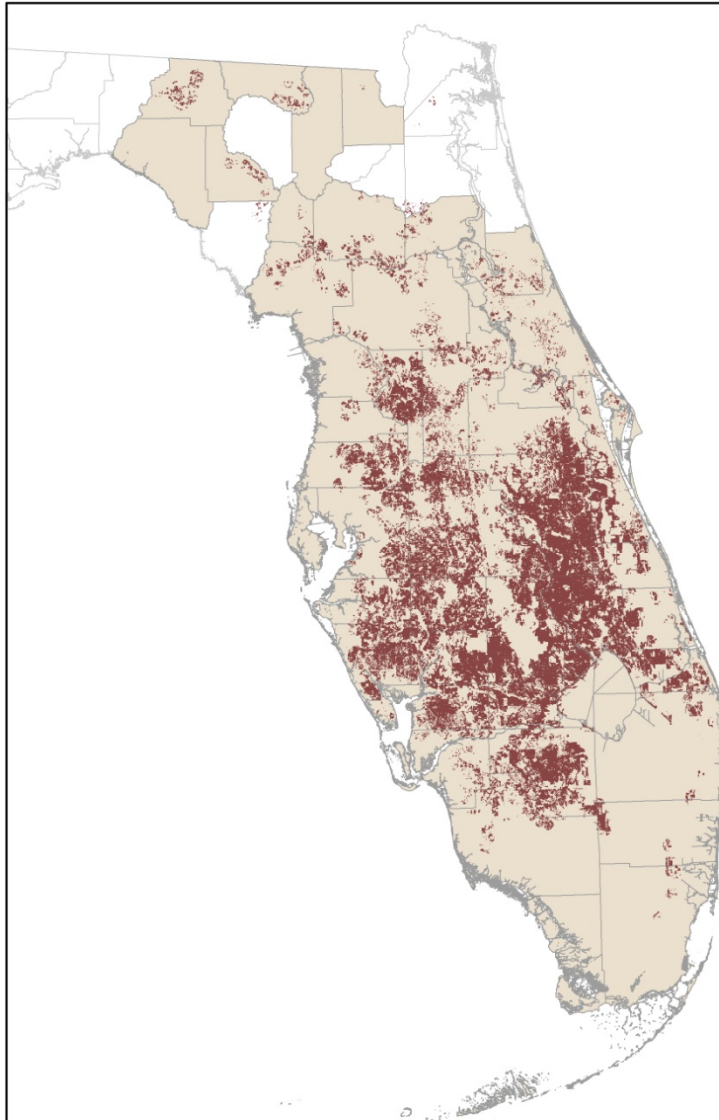
*Grus canadensis pratensis*

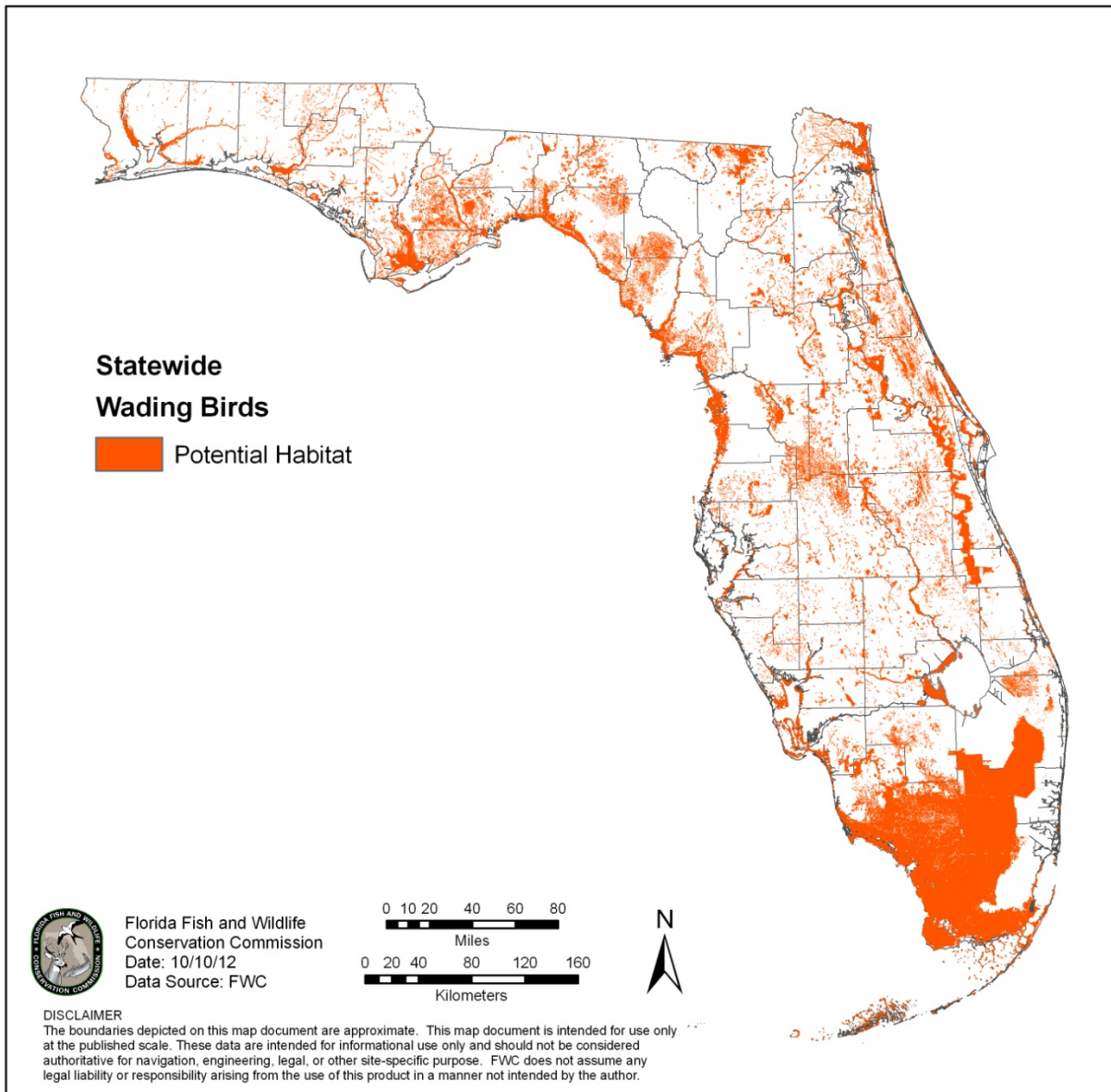
- Potential Suitable Habitat
- Breeding Bird Atlas Range
- County Boundaries

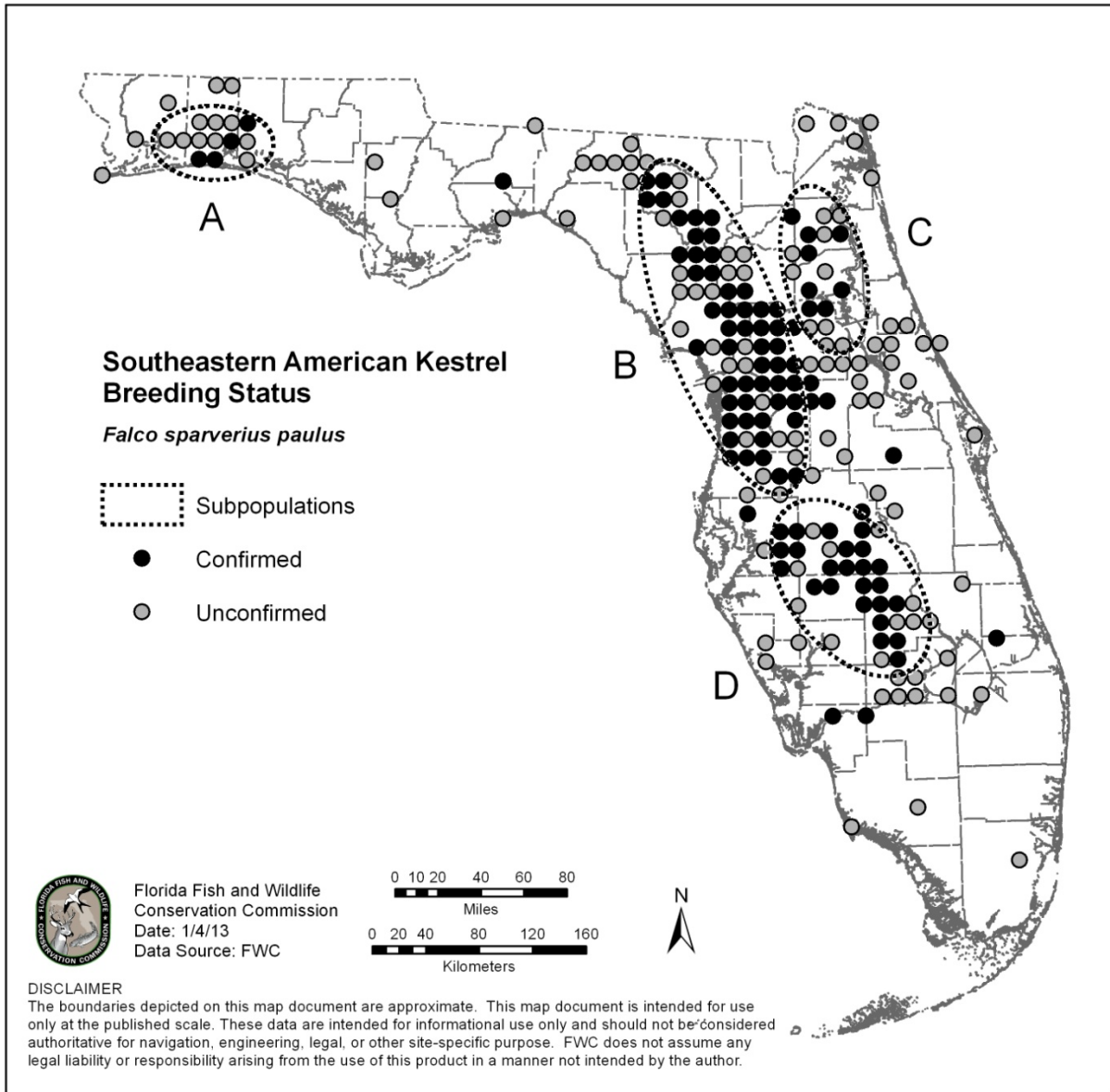


Florida Fish and Wildlife  
Conservation Commission  
Date: 12/10/12  
Data Source: FWC

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## Glossary of Terms

**Active burrow (burrowing owl)** – Active burrows are most easily identified by the presence of an owl standing erect at the entrance. An adult owl may be underground in the burrow even though the bird on the surface has flushed or is on a nearby post.

**Active burrow (gopher tortoise)** – Active burrows in good repair have the classic half-moon shaped entrance and appear to be in use by a tortoise. These burrows generally have tortoise tracks or scrapes from the tortoise shell clearly visible on the burrow floor or on the mound. The burrow floor often contains loose soil caused by tortoise activity. The burrow mound is usually clear of vegetation and may contain recently excavated soil. Inactive burrows are in good repair, but do not show recent tortoise use. In contrast, an abandoned burrow appears unused and dilapidated. The burrow is partially or completely filled with leaves or soil, the entrance is partially or completely collapsed and burrow collapse does not appear to be caused by recent rains or activity by livestock or humans. There are no trails into the burrow that might indicate that a tortoise recently passed through the leaf litter or that a small tortoise is using a dilapidated, adult burrow.

**Rookery (breeding colony)** – A colony of breeding birds. A breeding colony will be distinguished from roosting birds by the presence of nests or nesting activity (as shown below).



Photographs courtesy of Nicholas Vitale, University of Florida

**State Imperiled Species** – means the 16 species listed in and made part of this manual, which are: Crystal Darter, Harlequin Darter, Bluenose Shiner, Blackmouth Shiner, Tessellated Darter, Santa Fe Cave Crayfish, Black Creek Crayfish, Barbour's Map Turtle, Georgia Blind Salamander, Florida Bog Frog, Gopher Tortoise, Burrowing Owl, Little Blue Heron, Tricolored Heron, Florida Sandhill Crane, and Southeastern American Kestrel (aka Sparrow Hawk).

Additional information can be found at: <http://myfwc.com/wildlifehabitats/imperiled/profiles/>.

**Incidental Take** – Any taking otherwise prohibited, if such taking is incidental to, and not the purpose of the carrying out of an otherwise lawful activity.

**Take** – To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. The term "harm" in the definition of take means an act which actually kills or injures fish or wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. The term "harass" in the definition

of take means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering.