Conservation Planning Services and Project Reviews

February & March 2020

Jason Hight, Land Use Planning Program

Office of Conservation Planning Services

Conservation Planning Services

Land Use Planning: 18 staff

•All land/water-use changes in state that have the potential to affect resources (property, activities, species)

•Public and private sources

•Avoidance and Minimization

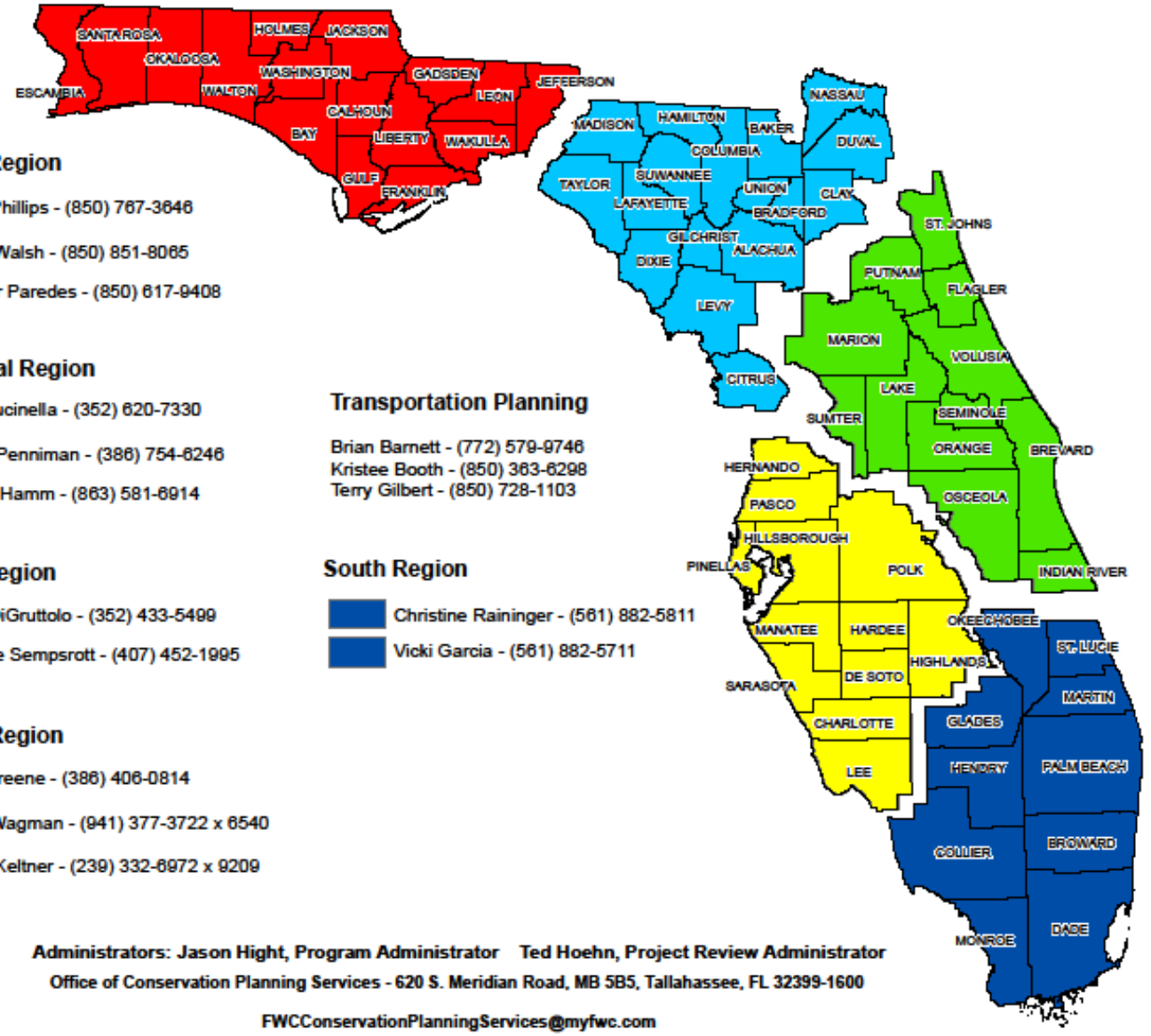
Landowner Assistance: 18 staff

- Private landowner technical assistance
- Habitat management
- Financial assistance

Conservation Planning Services

- Florida: the FWC is a state review agency and referenced in 38 different rules/statutes
- Federal: USACE, USFWS, DOI, Armed Forces, CZMA/FCMP
- Review projects with or without a federal nexus
- Proactive technical assistance
- Provide permitting guidance

Office of Conservation Planning Services - Land Use Planning - Staff Contacts



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Administrators: Jason Hight, Program Administrator Ted Hoehn, Project Review Administrator

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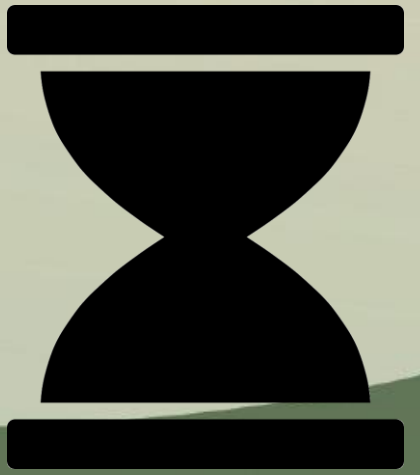
FWCConservationPlanningServices@myfwc.com

Conservation Planning Services

- OCPS facilitates this agency function for the FWC
- OCPS also manages the FWC Log that supports this process
- Division/Office lead reviewers
- Land Use Planning is lead on the majority of the reviews
- OCPS Leadership Team

FWC's Project Review Process

- All coordinated through the Conservation Planning Services Leadership Team
- Projects are received through a "general correspondence" inbox
- Projects are screened for appropriateness and logged into the database
- GIS analysis run for each project logged
- Lead reviewer assigned for each project



FWC's Project Review Process

- Technical assistance
  - External - Publicly available information and technical resources, other state and federal agencies
  - Internal – species data, SME collaboration, ISMP
- Identify potential for listed species habitat onsite
- Work on survey guidance and site/project plans WITH applicant – avoidance, minimization, and mitigation
- Requires *constant* internal collaboration to provide an agency opinion

Federal Partners

Federal Agencies - Fish and Wildlife Coordination Act

State Clearinghouse - Coastal Zone Management Act/Florida Coastal Management Program

US Army Corps of Engineers

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

FERC Federal Energy Regulatory Commission

NRCS

State Partners

- Other State regulatory or review agencies requesting or requiring FWC's review
- Relationships range from a need to know basis to long-standing partnerships

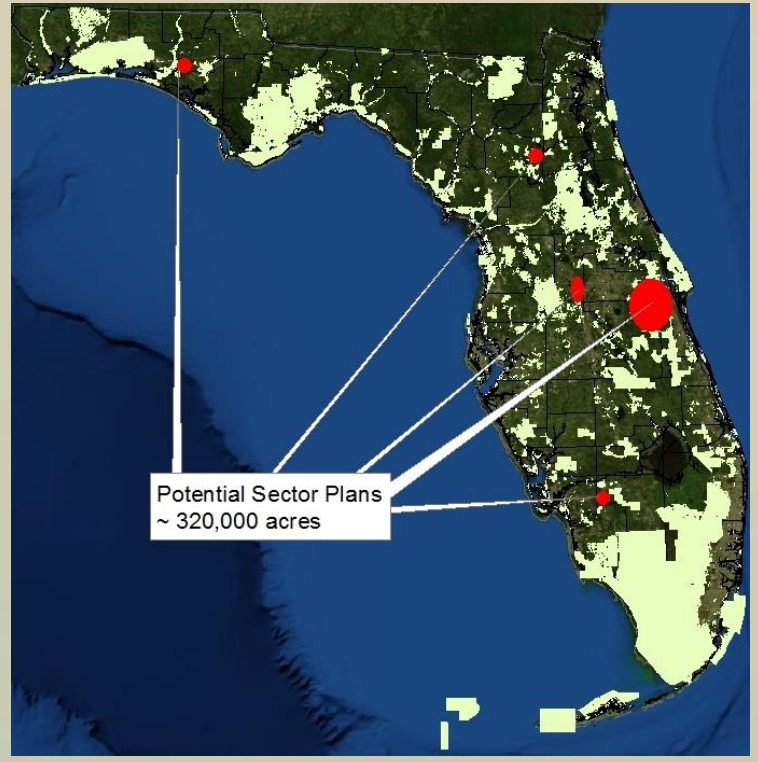

Conservation Planning Services

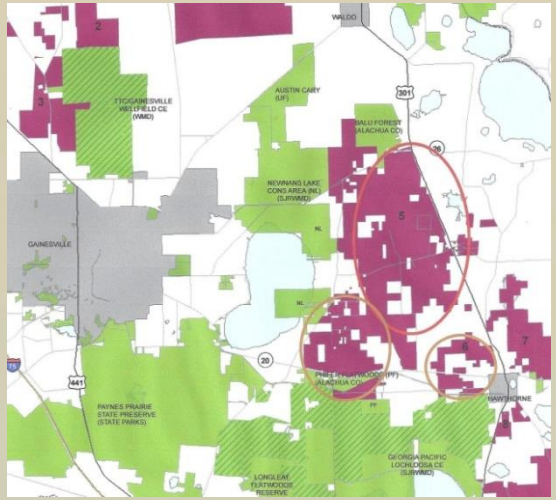
Growth Management

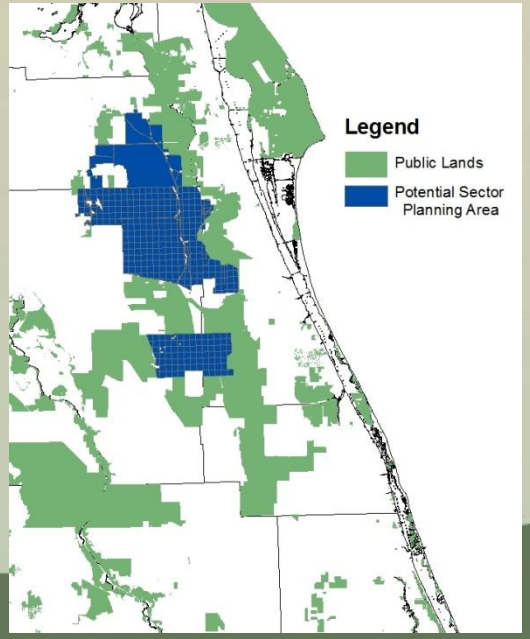
- LUP coordinates with landowners on ~750,000 acres per year

- Working closely with landowners and local governments on fish and wildlife issues

- Working to keep connections between public conservation lands







Conservation Planning Services

- Local or regional land use changes: Sector Plans
- Commercial/residential/industrial development
- Oil/Gas Exploration: terrestrial and marine geoseismic
- Roadway projects: FDOT and local
- Energy: Sites and corridors
- Mining and reclamation

Stakeholder Engagement

Private Citizens and General Public

- Do we know about it?
- What do we want to do?

Non-governmental or Non-profits

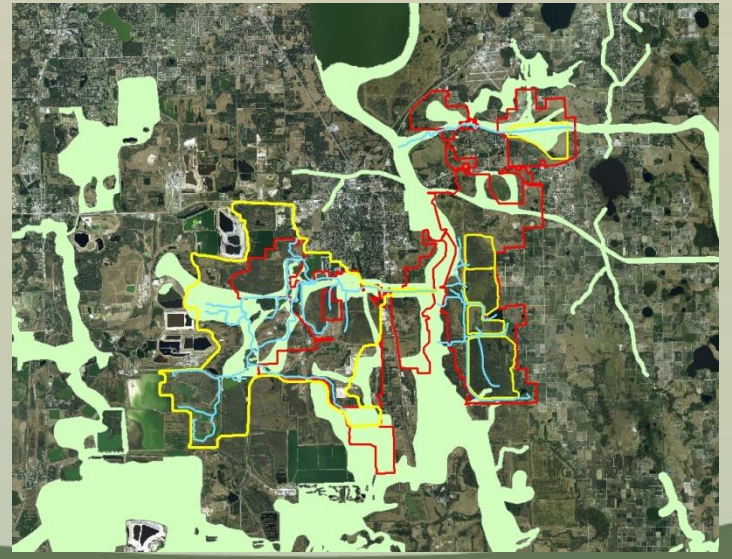
- Formal correspondence
- Discussions in public forums
- Discussions in interagency meetings

Reclamation and Restoration

- Work with large corporate landowners to minimize impacts of their operations
- Recommendations and incentives for reclaiming or restoring the native plant communities
- Mining, power, military, agriculture







FWC Roles

- The FWC is not the agency issuing the permits 95% of the time
- With 34 different rules or statutes mentioning the FWC in state processes - we can always provide information on fish and wildlife resources (almost!)
- We mostly *influence* permitting conditions and recommendations, including mitigation.
- Federal regulations like 33 CFR 332.8(b) REQUIRE the FWC to be involved in interagency review teams.
- Review teams are general practice for many other types of state and local project reviews.

- Jason Hight, Program Administrator
  Land Use Planning Program
  850.413.6966

Questions?

Process for FWC Review of FDOT Projects

The FWC is an active participant in several routine transportation project review processes.

- Efficient Transportation Decision Making (ETDM)
- Alternative Corridor Evaluation (ACE)
- Project Development & Environment Study (PD&E)
- Public Conservation Lands Involvement
- Permits

FWC is one of more than 30 members of FDOT's Environmental Technical Advisory Team (ETAT) which includes:

- Federal Agencies
- State Agencies
- Local Governments
- Native American Tribal Governments

Efficient Transportation Decision Making

As part of the Environmental Technical Advisory Team, FWC provides comments on each project run through the ETDM process

How do we review a project, and what elements are most important?

- Most important: the GIS data layers in the Environmental Screening Tool
- Specifically, the data layers in the “Natural “ layer category, which includes the sub-topics:
  - Coastal and Marine
  - Floodplains
  - Geology
  - Land Cover
  - Soils
  - Water Quality and Quantity
  - Wetlands and Surface Waters
  - Wildlife and Habitat

Other routine elements of FWC ETDM reviews

- Aerial and ground-level photography – Google Earth, Street View
- Consult with other FWC staff who are Subject Matter Experts in
    - Fish and wildlife species
    - FWC Management Areas
    - Specific geographic areas (river basins, the Everglades, estuaries, counties, etc.)
    - Agency proprietary interests via fee title ownership or conservation easement
    - Protected species Incidental Take Permits
- Consult with other review agencies, such as the U.S. Fish and Wildlife Service
- Field surveys of selected projects

Draft Memo

Sent to Subject Matter Experts for Review

Final Memo

Sent to FWC official ETAT members

Comments are entered in the ETDM EST

Primary FWC ETDM Project Concerns

- Fish and wildlife habitats that will be impacted, both directly and indirectly
- Fish and wildlife resources, especially listed species, that could be impacted
- Potential for increased habitat fragmentation
- Impacts on wildlife corridors
- Potential for wildlife roadkill

Primary FWC ETDM Project Concerns (cont.)

- Need and appropriate location of wildlife crossings to maintain habitat connectivity and reduce roadkill
- Impacts on public conservation lands, either directly (taken for right-of-way) or indirectly (reduced ability for controlled burning, etc.), with special attention given to impacts on FWC management areas and conservation easements
- Impacts on proposed conservation lands such as Florida Forever or CERP projects
- New public conservation lands that could be acquired as mitigation

Alternative Corridor Evaluation (ACE)

- FDOT identifies multiple feasible corridors for a road project
- An ACE report is prepared and circulated to the ETAT members for review
- Goal is to narrow the list of alternatives for further examination in the PD&E Study
- FWC reviews and compares the alternative corridors using the same criteria as the ETDM process

Project Development & Environment Study

- FDOT's procedure for complying with the National Environmental Policy Act (NEPA) of 1969
- FWC reviews the Natural Resources Evaluation, a part of the PD&E Study that includes a detailed analysis of potential impacts to threatened and endangered species
- For state-funded projects where significant environmental impacts would be expected, a State Environmental Impact Report (SEIR) is prepared, and also reviewed by FWC

Primary FWC NRE Concerns

- Completeness and accuracy of the list of potentially occurring protected species
- Project commitments regarding protected species and their habitats, including pre-construction surveys, further coordination with FWC and USFWS, mitigation for wetlands and species impacts, adherence to species conservation protocols, etc.

Public Conservation Lands Involvement

- If public conservation lands are directly impacted, they must be appropriately replaced
- For state lands, they must be replaced at least at a 1.5 to 1 ratio, with approval of the Governor and Cabinet acting as the Land and Water Adjudicatory Commission FWC is usually involved in the selection process for such mitigation lands
- If the impact is to FWC management areas or conservation easements, we are directly involved in the legal process for mitigation

Permits

FWC Issued Permits

- Most major road projects require FWC gopher tortoise incidental take permits
- For new highways going through lands occupied by several listed species, sometimes a multi-species incidental take permit is required, involving significant acquisition of new conservation lands

Wetland Permits

- All road projects must comply with U.S. Army Corps of Engineers (USACE) permit and state Environmental Resource Permit (ERP) requirements for wetlands and surface water impacts
- USACE permits can involve Section 7 Endangered Species Act Consultation with the U.S. Fish and Wildlife Service for federal listed species, frequently resulting in significant mitigation requirements
- FWC participation in wetlands permit review typically results in FDOT commitments to perform pre-construction surveys for a variety of state-listed species, with requirements for impact avoidance, minimization, and mitigation

Questions?

Florida's Imperiled Species Management Plan
&
Incidental Take Permitting

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ISMP:

comprehensive management plan for state-listed species

- 59 species included
  - 38 state Threatened
  - 21 removed from the List
- Tied to state listing process
- Multiple components
  - Species Action Plans
  - Guidelines
- Rules and Policies
- 10-year plan
- 6 objectives

State-Threatened Species

68A-27.003, F.A.C.

- No person shall *take*, possess, or sell any threatened species, nests, eggs or any part thereof
- Unless authorized by rule, permit, or in a FWC approved management plan or species guideline

State-Threatened Species

American Oystercatcher

Short-tailed Snake

Crystal Darter

Photos: FWC

Species Action Plan Summaries

Florida Burrowing Owl

Athene cunicularia floridana

Photograph by FWC.

The Florida burrowing owl is geographically distinct from burrowing owls occurring in the western U.S. Burrowing owls require well-drained upland habitats, and are typically found at treeless sites with sparse or low-growing vegetation. Because of this, they may be found at airports, golf courses, in some neighborhoods, and at sites cleared for development.

Status

Listed as state Threatened on Florida's Endangered and Threatened Species List.

Conservation Goal

Conservation status of the Florida burrowing owl is improved to a point that the species can be removed from Florida's Endangered and Threatened Species list and will not again need to be listed.

Identified Threats

- Loss of native habitat and the resulting dependence on altered habitat.
- Lack of protected habitat, even for rural burrowing owls.
- Lure of potentially hazardous habitat, such as predevelopment activities (vegetation clearing) resulting in sites that mimic native habitat of the burrowing owl.
- Urban area threats, including vehicle collision, predation or injury by domestic animals, and burrow destruction by mowers or other equipment.

Conservation Approach

- Protect and manage habitat to support current population and to accommodate population growth.
- Minimize impacts of development and land-use conversion through Species Conservation Measures and Permitting Guidelines, outreach, and technical assistance.
- Ensure adequate protection of burrows through education, enforcement, and management.
- Determine if one or more populations exist, and monitor population(s) to assess size and trend.

Current Protections

- No person shall take (including harm or harass), possess, or sell any Threatened species or parts of their nests or eggs, as outlined in Chapter 68A-27, F.A.C., Rules Relating to Endangered or Threatened Species.
- Under the federal Migratory Bird Treaty Act, it is unlawful to pursue, hunt, take, capture, kill, or sell migratory birds, including their feathers, eggs, and nests.

Resources

- Species Action Plan
- Biological Status Review Report

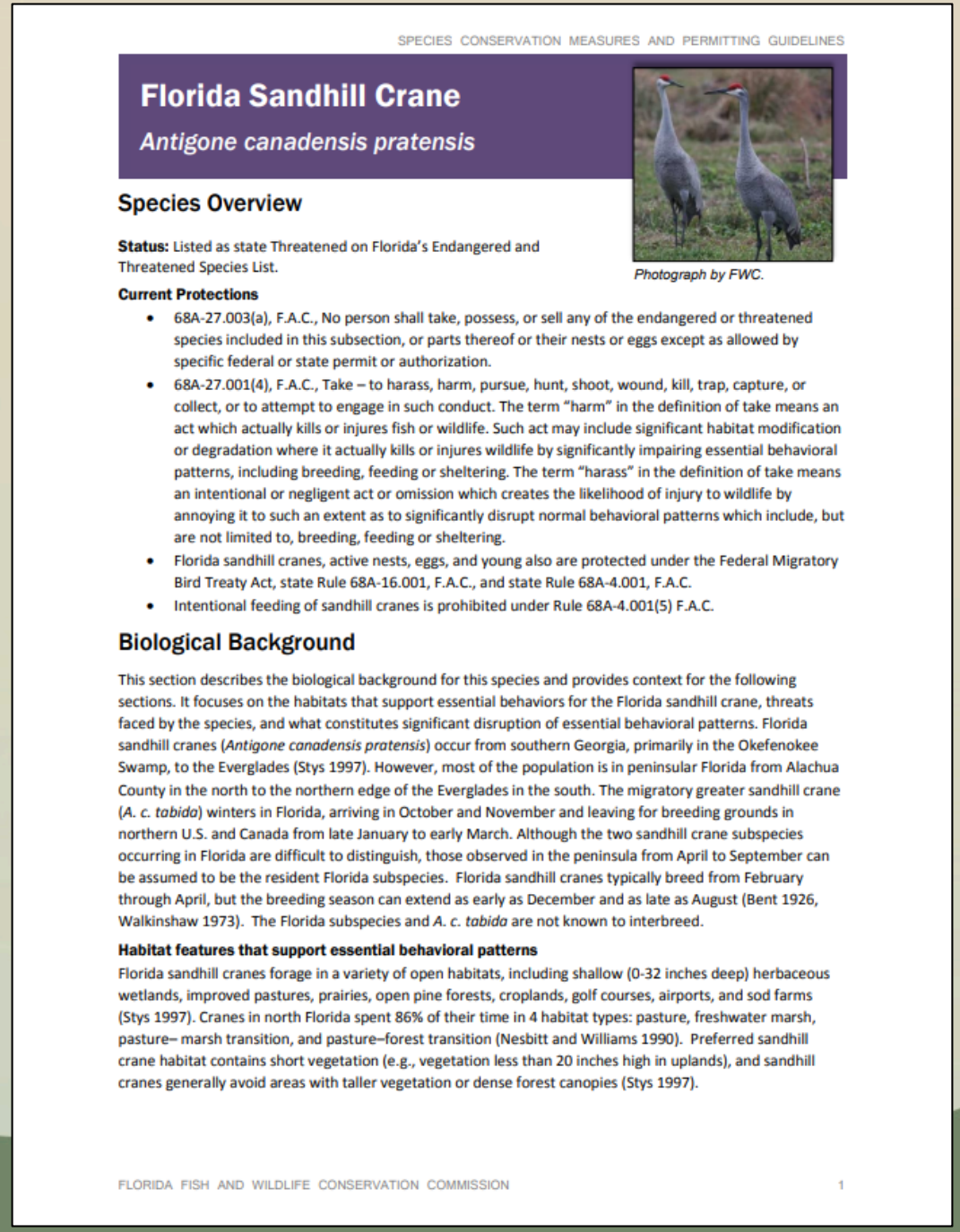
ISMP Policies

- Nest Removal for Inactive Single-Use Nests of State-Threatened Bird Species
- Cryptic Species
- Listed Species and Man-Made structures
- Aversive Conditioning of State-Listed Species

Photo: FWC

Species Conservation Measures and Permitting Guidelines

- Provides information and tools for interpreting existing protections
- Can authorize exempt activities
- Address mitigation options and establishes scientific benefit for state-Threatened species
  - Avoidance
  - Minimization
  - Mitigation



Florida Sandhill Crane

Antigone canadensis pratensis

Photograph by FWC.

Species Overview

Status: Listed as state Threatened on Florida's Endangered and Threatened Species List.

Current Protections

- 68A-27.003(a), F.A.C., No person shall take, possess, or sell any of the endangered or threatened species included in this subsection, or parts thereof or their nests or eggs except as allowed by specific federal or state permit or authorization.
- 68A-27.001(4), F.A.C., 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.
- Florida sandhill cranes, active nests, eggs, and young also are protected under the Federal Migratory Bird Treaty Act, state Rule 68A-16.001, F.A.C., and state Rule 68A-4.001, F.A.C.
- Intentional feeding of sandhill cranes is prohibited under Rule 68A-4.001(5) F.A.C.

Biological Background

This section describes the biological background for this species and provides context for the following sections. It focuses on the habitats that support essential behaviors for the Florida sandhill crane, threats faced by the species, and what constitutes significant disruption of essential behavioral patterns. Florida sandhill cranes (*Antigone canadensis pratensis*) occur from southern Georgia, primarily in the Okefenokee Swamp, to the Everglades (Stys 1997). However, most of the population is in peninsular Florida from Alachua County in the north to the northern edge of the Everglades in the south. The migratory greater sandhill crane (*A. c. tabida*) winters in Florida, arriving in October and November and leaving for breeding grounds in northern U.S. and Canada from late January to early March. Although the two sandhill crane subspecies occurring in Florida are difficult to distinguish, those observed in the peninsula from April to September can be assumed to be the resident Florida subspecies. Florida sandhill cranes typically breed from February through April, but the breeding season can extend as early as December and as late as August (Bent 1926, Walkinshaw 1973). The Florida subspecies and *A. c. tabida* are not known to interbreed.

Habitat features that support essential behavioral patterns

Florida sandhill cranes forage in a variety of open habitats, including shallow (0-32 inches deep) herbaceous wetlands, improved pastures, prairies, open pine forests, croplands, golf courses, airports, and sod farms (Stys 1997). Cranes in north Florida spent 86% of their time in 4 habitat types: pasture, freshwater marsh, pasture– marsh transition, and pasture–forest transition (Nesbitt and Williams 1990). Preferred sandhill crane habitat contains short vegetation (e.g., vegetation less than 20 inches high in uplands), and sandhill cranes generally avoid areas with taller vegetation or dense forest canopies (Stys 1997).

Species Conservation Measures and Permitting Guidelines

- Provides information and tools for interpreting existing protections
- Can authorize exempt activities
- Address mitigation options and establishes scientific benefit for state-Threatened species
  - Avoidance
  - Minimization
  - Mitigation

Osprey

Pandion haliaetus

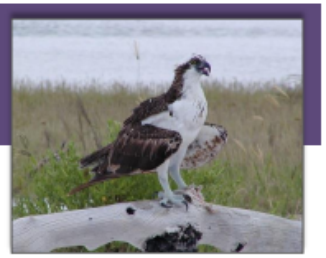


Photo by Ricardo Zambrano, FWC.

Species Overview

Status: Removed from Florida's Endangered and Threatened Species list in 2018.

Current Protections

- 68A-4.001, F.A.C., General Prohibitions — No wildlife or freshwater fish or their nests, eggs, young, homes or dens shall be taken, transported, stored, served, bought, sold, or possessed in any manner or quantity at any time except as specifically permitted by these rules nor shall anyone take, poison, store, buy, sell, possess or wantonly or willfully waste the same except as specifically permitted by these rules.
- 68A-1.004, F.A.C., Take—The term shall include taking, attempting to take, pursuing, hunting, molesting, capturing, or killing any wildlife or freshwater fish, or their nests or eggs by any means whether or not such actions result in obtaining possession of such wildlife or freshwater fish or their nests or eggs.
- Osprey, active nests, eggs, and young are also protected under the Federal Migratory Bird Treaty Act and state Rule 68A-16.001, F.A.C.

Biological Background

This section describes the biological background for this species and provides context for the following sections. It focuses on the habitats that support osprey, and the threats faced by the species.

Ospreys occurring in Monroe County are not genetically distinct from ospreys elsewhere in Florida, and this information led to the removal of the osprey of Monroe County from Florida's Endangered and Threatened Species list in 2018. *Pandion haliaetus* species was not previously listed.

Figure 1: Osprey nest on channel marker in Florida Bay. Photograph by Heather Henkel, USGS.

The osprey is found in temperate and subtropical areas that contain permanent fresh, brackish, or salt water for foraging (Henny 1988). Ospreys typically utilize canals, ponds, lakes, bays and man-made impoundments. Ospreys prefer areas with clear, shallow waters (0.5 to 2 m [1.6 to 6.6 ft] deep) for hunting that is within 10 to 20 km (6.2 to 12.4 mi) of nest sites. The osprey diet is made up almost entirely of live fish. Bierregaard et al. (2016) report that live fish make up 99% of prey items reported in all publications addressing osprey's diet; ospreys rarely take small birds, mammals, and reptiles.

Ospreys prefer to nest near shallow water but will fly long distances if a breeding site is desirable (Bierregaard et al. 2016). Nests (Figure 1, Figure 2) are large and primarily made up of sticks, historically in trees, but commonly found on artificial structures such as channel markers, utility poles, cell phone

Stakeholder Involvement & ISMP Resources

- Commenting on draft permitting guidelines
- Feedback on existing Guidelines, policies, etc.
  - Imperiled@myfwc.com or Kelly.Oconnor@myfwc.com
- Additional resources (including Guidelines, Species Action Plans, full text of the ISMP) at https://myfwc.com/wildlifehabitats/wildlife/

Photos: FWC

Incidental Take Permitting

Angela T. Williams
Protected Species Permit Coordinator
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(850) 921-5990

How does one “take” a Threatened Species?

- 68A-27.001, F. A. C. - defines **take** of state threatened species as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect wildlife
  - **Harm** –activity which directly kills or injures wildlife or indirectly kills or injures wildlife by impairing essential behaviors such as breeding, feeding or sheltering.
  - **Harass** - intentional or negligent act or omission likely to cause injury to wildlife by disrupting normal behaviors such as breeding, feeding or sheltering.

What is Incidental Take?

- 68A-27.001, F.A.C. defines incidental take as - any taking otherwise prohibited, if such taking is incidental to, and not the purpose of the carrying out of an otherwise lawful activity.

Permitting Incidental Take

- 68A-27.007, F.A.C.- FWC may issue permits authorizing incidental take of Threatened species if:
  - Species specific standards in Rule 68A-27.003 are met or
  - Clearly enhances the survival potential of the species or
  - Scientific or conservation benefit provided and will not negatively impact survival potential of the species

Permitting Incidental Take (continued)

Considerations for issuing a permit:

1. Objectives of FWC management plan
2. Long range impact
3. Impacts to other fish and wildlife species
4. Extent of injury, harm or loss of the species;
5. Applicant ability to avoid, minimize or mitigate incidental take of the species
6. Human safety and
7. Other conservation and management factors

When is a permit recommended?

Activities will cause take (direct or indirect)

- Avoidance is not feasible (cannot maintain buffer, working during the nesting season)
- Applicants typically meet criteria via combination of
  - Avoidance measures
  - Minimization measures
  - Mitigation measures

Example: Burrowing Owls

- State listed as Threatened
- Prefer grassy habitats with few trees
  - Often occupy residential areas, airports, and sports fields
  - Some dense local populations, such as Marco Island and Cape Coral
- Rely on burrows year round for breeding and sheltering
- Burrows average 5-10 feet long

Photo: Ron Bielefeld, Whistling Wings Photography

Example: Burrowing Owls

- Collapsing or blocking a burrow results in take
  - — Potential to harm eggs, young, adults
  - — Harassment of adults

Example: Beach-nesting birds

- State Threatened
- Nest in “scrape” in sand
- Nests, eggs, chicks camouflaged
- Nest Located: beaches, islands

Example: Beach-nesting Birds

- Person walks through colony, crushes eggs
- Dog runs through colony, birds flush off nest, leaving young and eggs exposed to elements and predators

Photo: CWF

Example of Take Via Significant Habitat Modification

- Least tern habitat at Summerhaven

When is no permit needed?

- When take of species can be completely avoided
- ISMP addresses 3 types of avoidance
  - Activities not expected to cause take
    - Species specific in guidelines
  - Avoidance measures undertaken to remove need for ITP
    - Buffers, work during nonbreeding season, JCP
  - Exemptions
    - Land management consistent with management plans
    - Agricultural best management practices
    - Airport Safety Rule – 68A-9.012 F.A.C.

When is no permit needed? (continued)

- When the following ISMP policies are followed:
  - Nest removal for inactive single-use nests of state-Threatened birds applies to birds that do not re-use the same nests.
  - Aversive conditioning of state-listed species applies to species with Guidelines that describe non-lethal actions to reduce or eliminate nuisance behavior
  - State-listed species and man-made structures policy applies to species that are using structures such as buildings, bridges, utility poles, signs and pipes for essential behavior, such as breeding.

Additional Resources

- Protected Wildlife Permits webpage
- Species Conservation Measures and Permitting Guidelines webpage
- Florida's Endangered and Threatened Species List

How to Contact the Permitting Office

(850) 921-5990

or

Wildlifepermits@myfwc.com

or

myfwc.com/license/wildlife/protected-wildlife-permits/

Questions?

Florida Black Bears and Roadways

Bear Management and Research Programs

Florida Fish and Wildlife

Conservation Commission

Carlton Ward, 2017

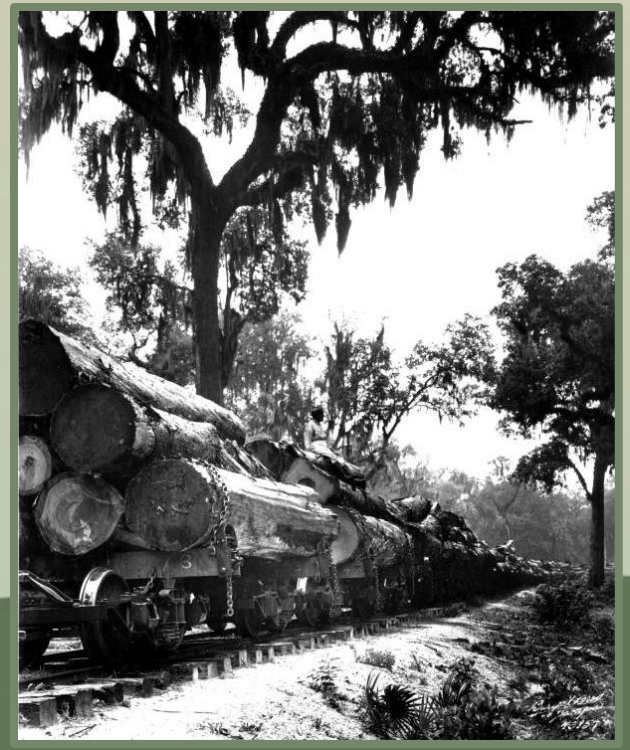
Background

Gene Smith

Abundant

Little or no management

Over-exploited



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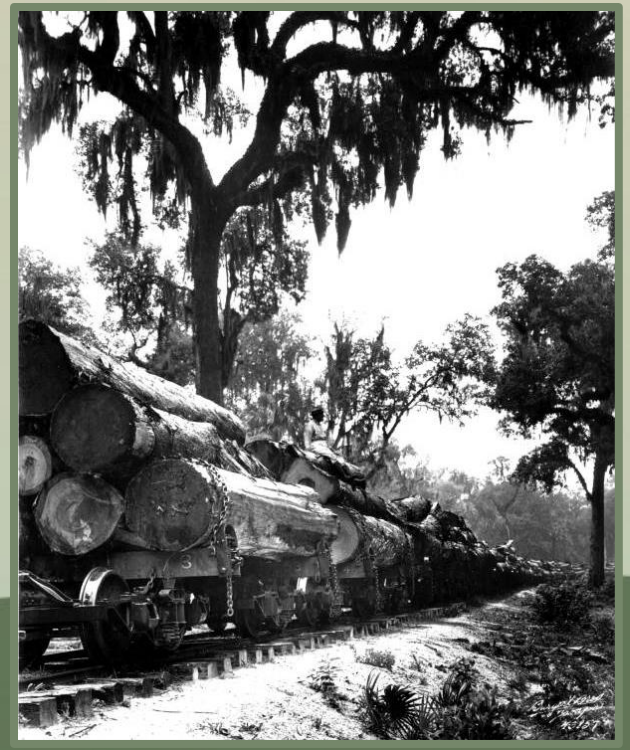
Background

Gene Smith

Over-exploited



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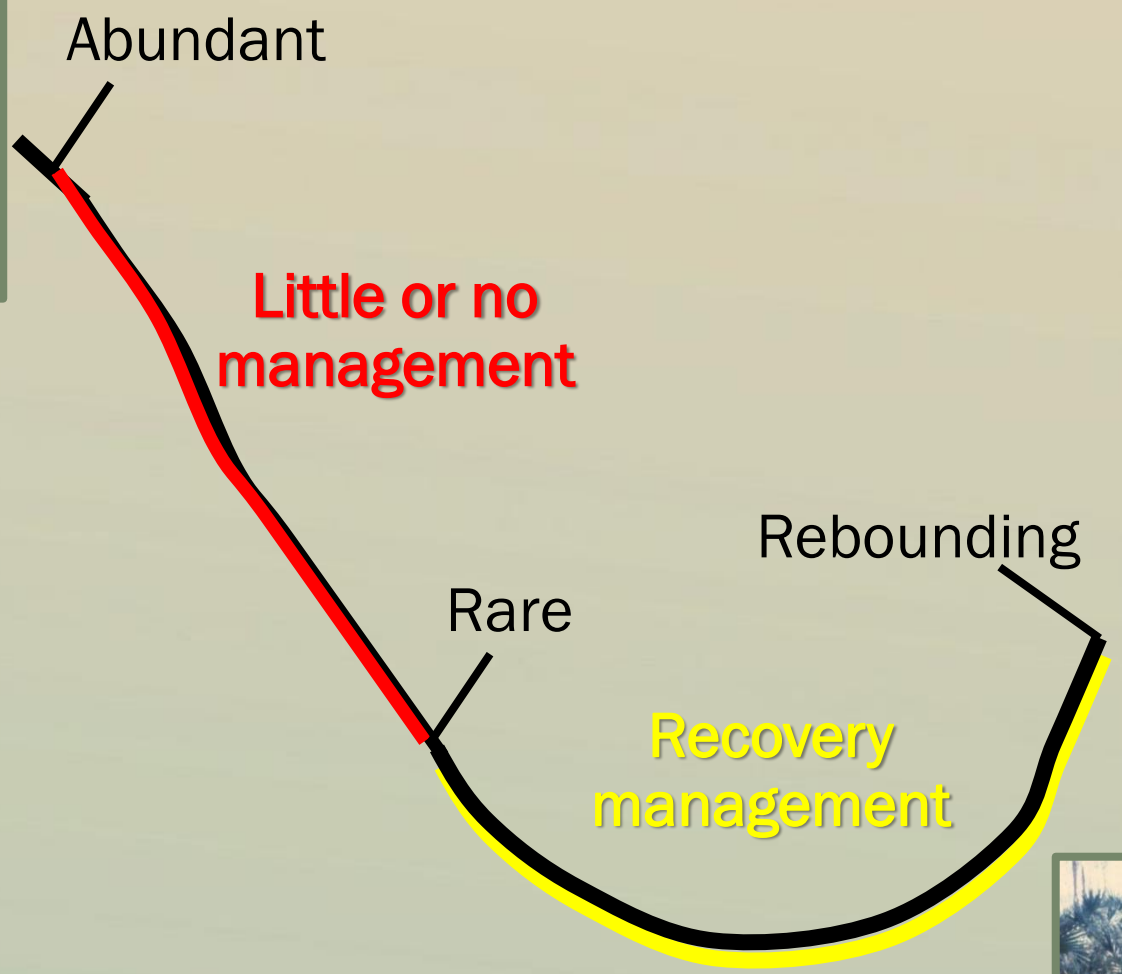

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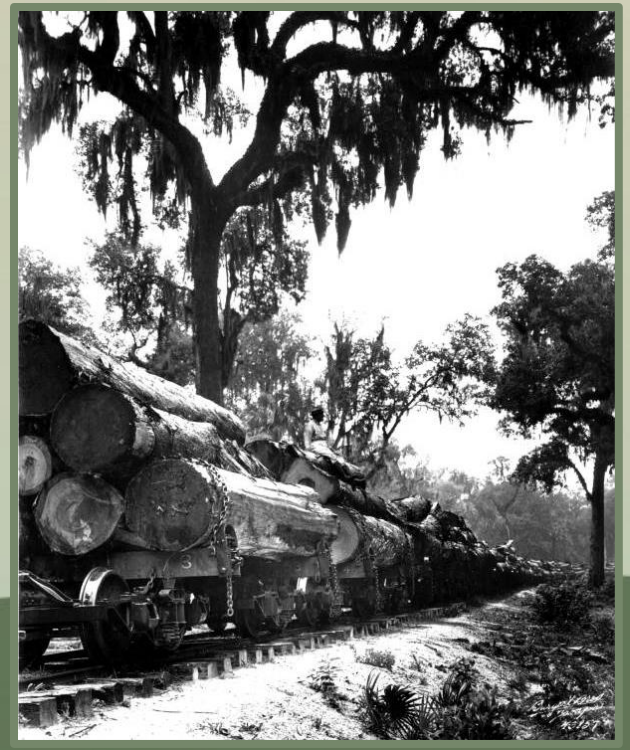

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Abundant

Little or no management

Rare

Recovery management

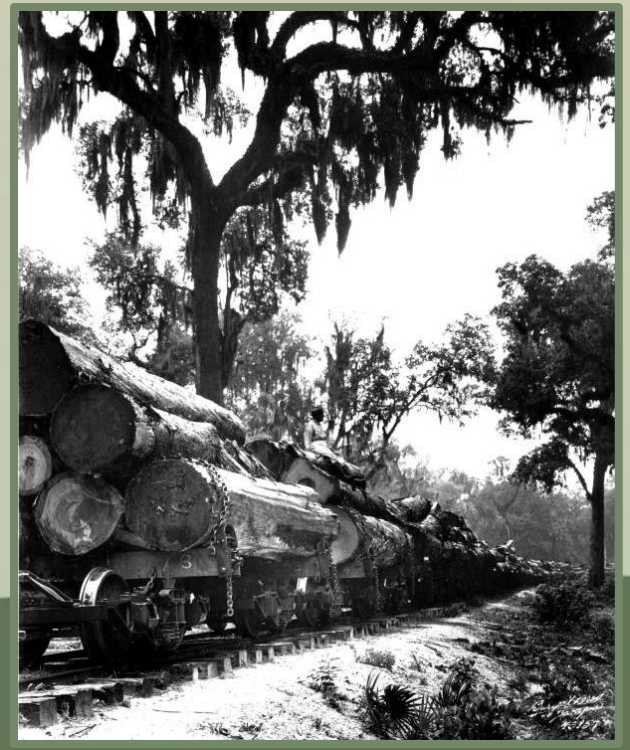
Rebounding

Conflict management

Background

Gene Smith

Over-exploited



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Abundant

Little or no management

Rare

Recovery management

Rebounding

Conflict management

Stable

Sustainable Co-Existence

ORLANDOSENTINEL

Abundance Estimates

- 2002 Estimate

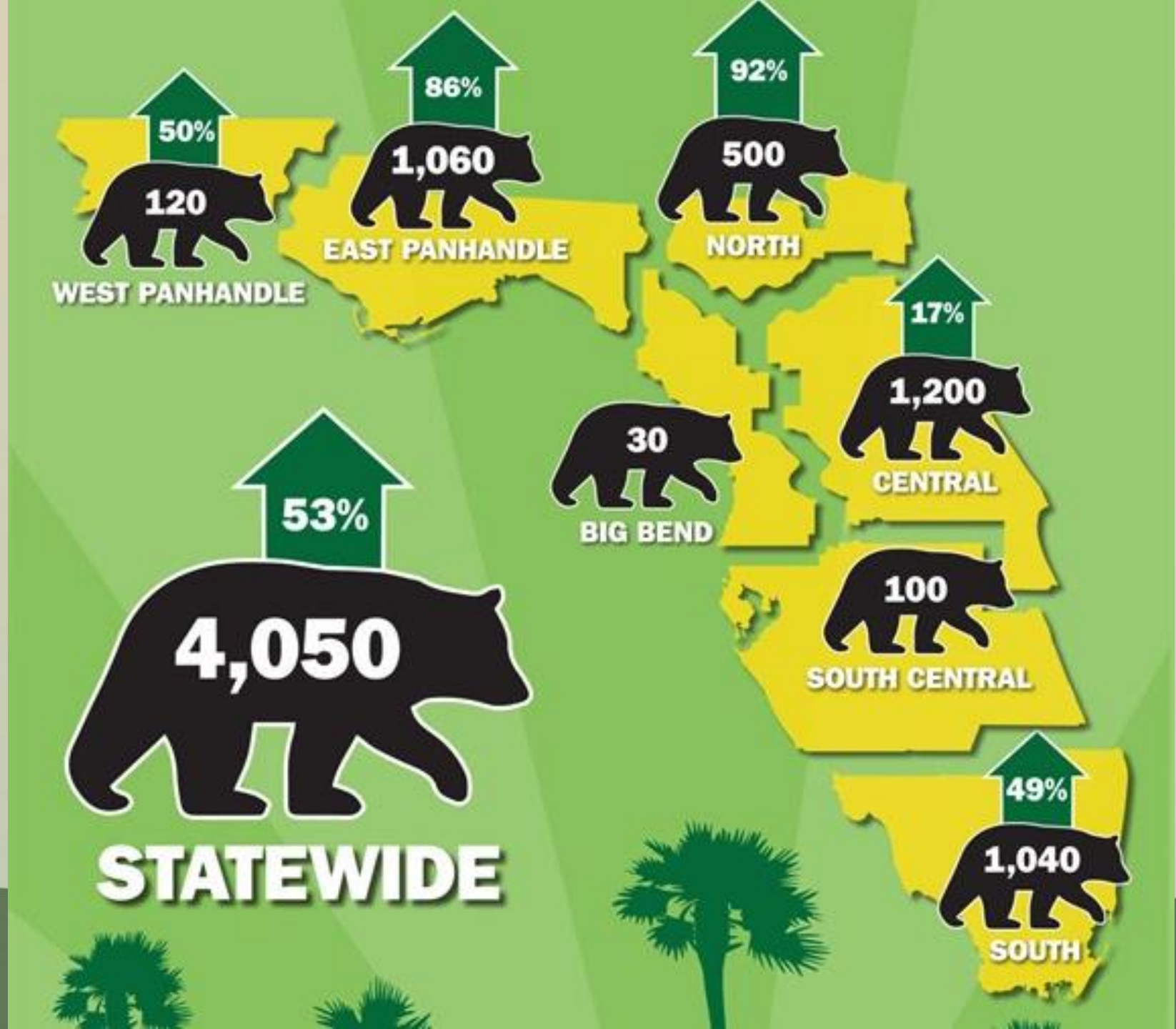
  = 2,600 bears

(Funded by FDOT)

- 2016 Estimate

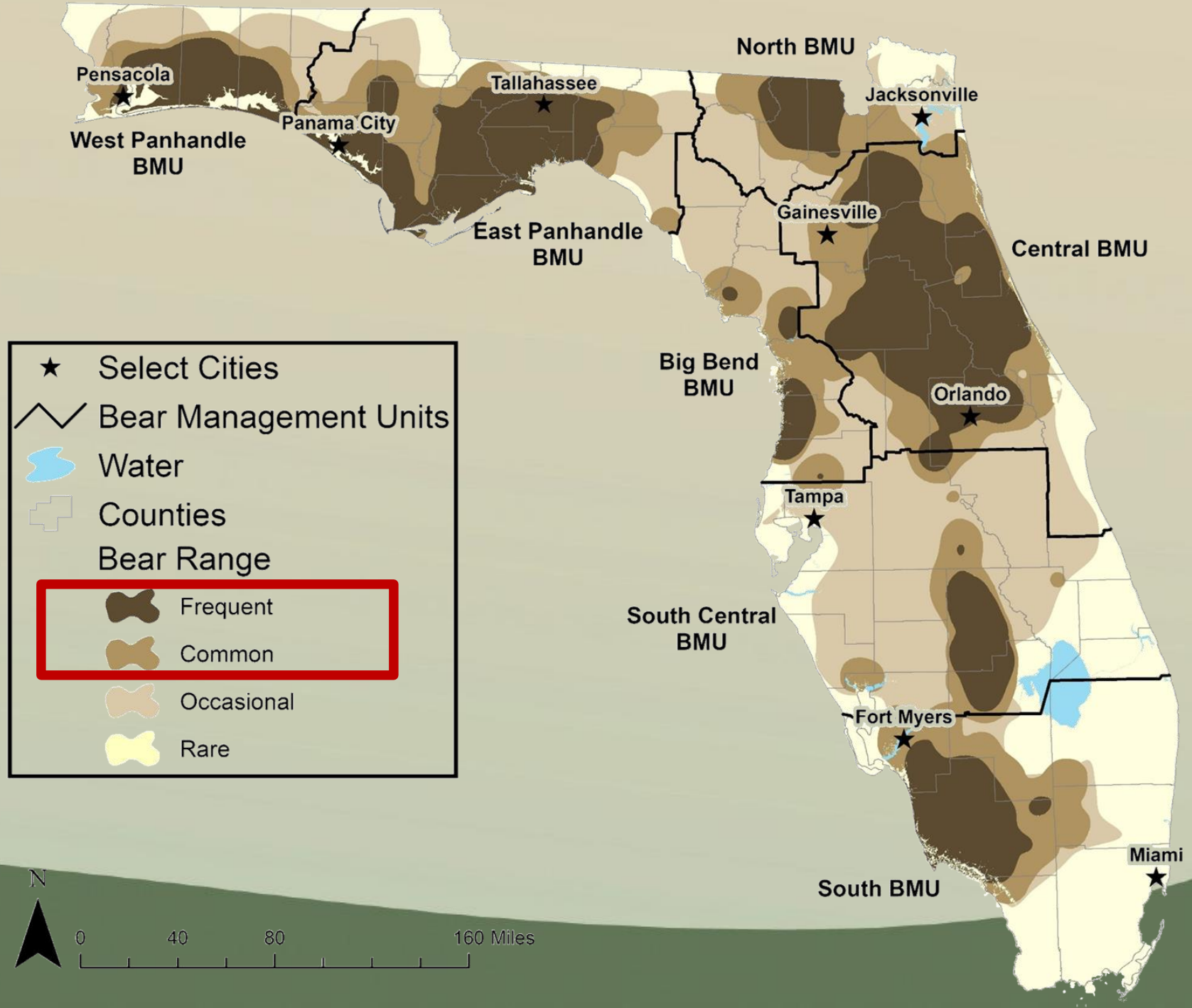
  = 4,050 bears

(> 50% increase)



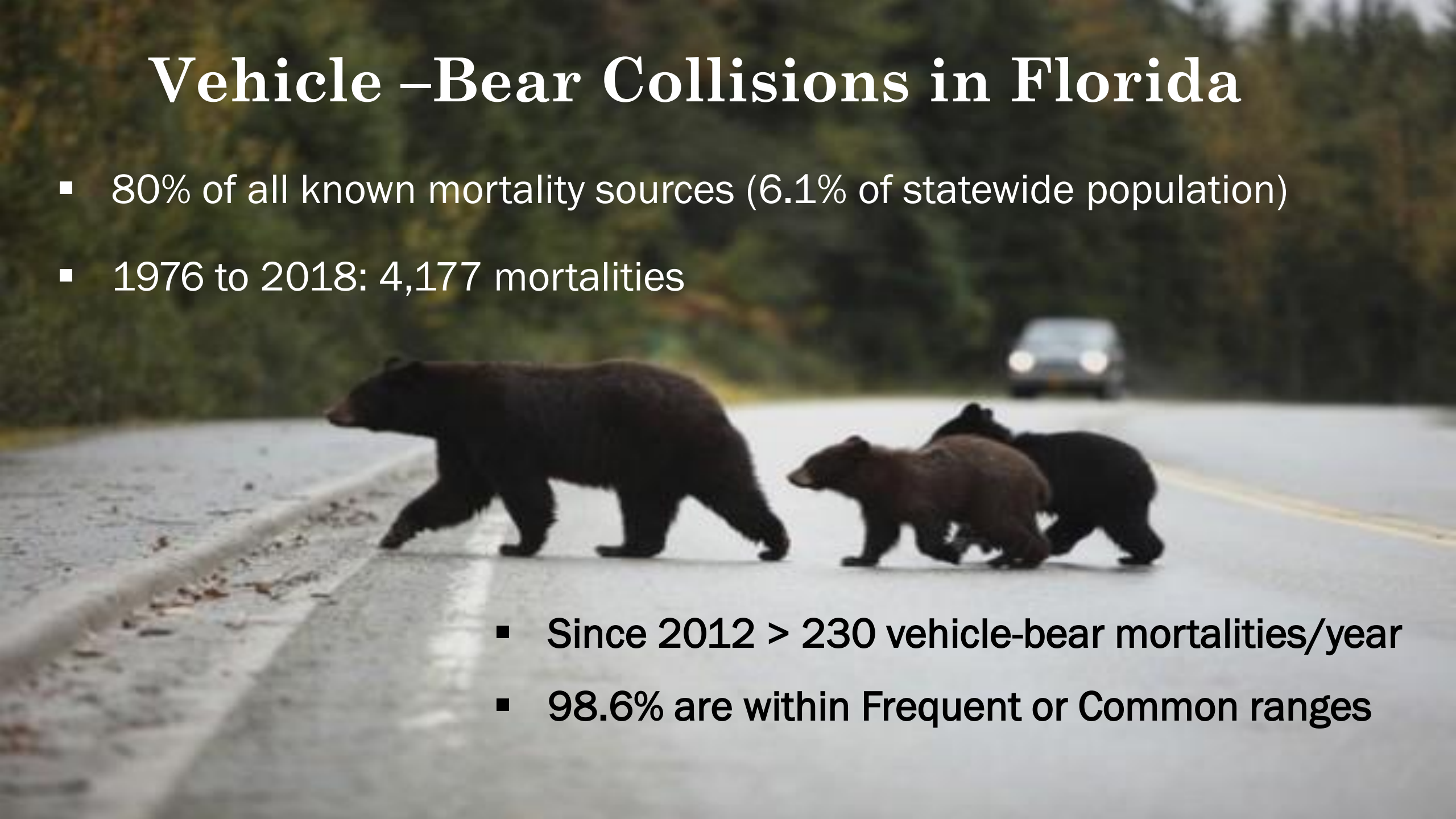
Bear Range

- Occupied Range
- 49% of historic
- Up from 17% (1993)



Vehicle –Bear Collisions in Florida

- 80% of all known mortality sources (6.1% of statewide population)
- 1976 to 2018: 4,177 mortalities



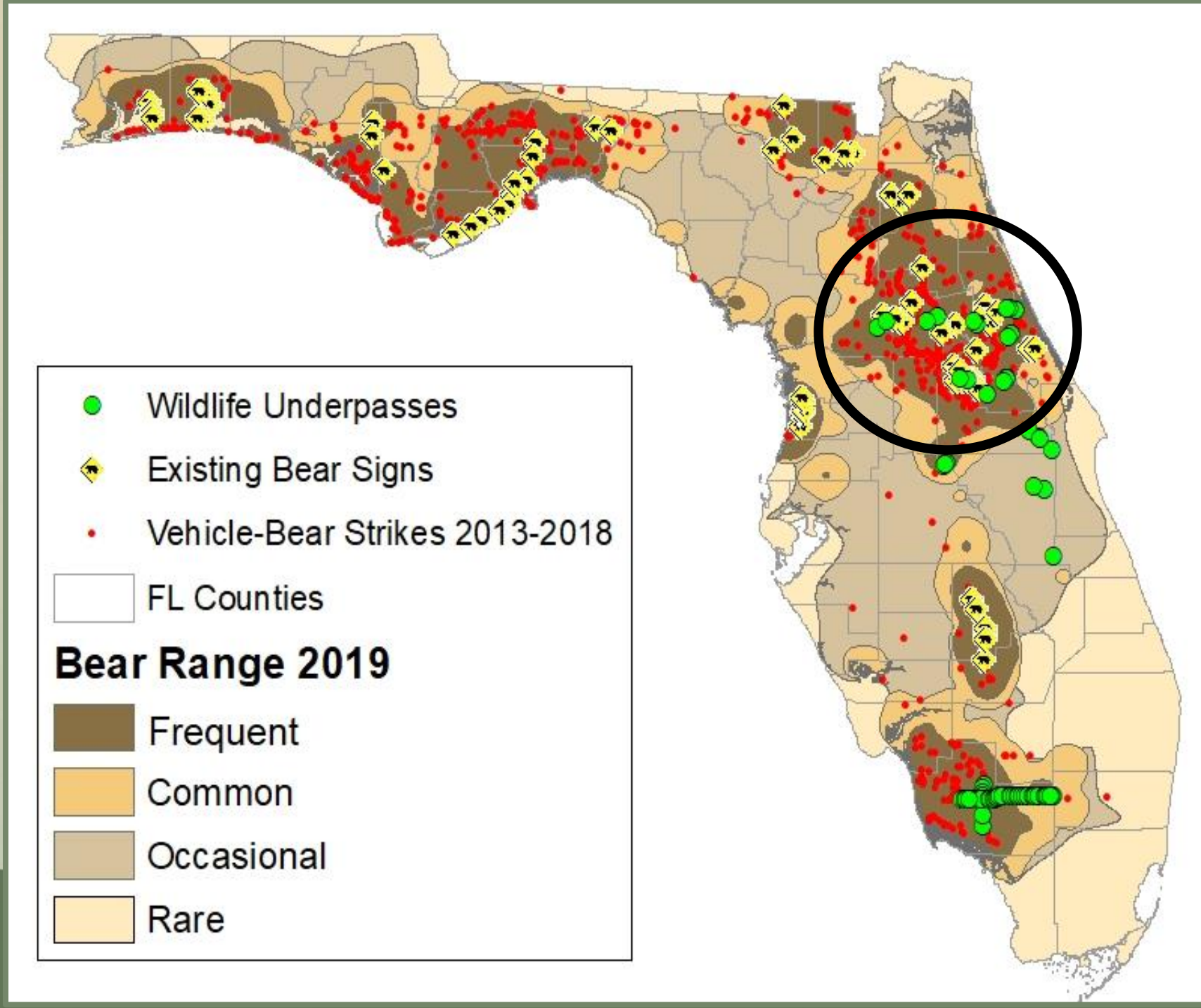
- Since 2012 > 230 vehicle-bear mortalities/year
- 98.6% are within Frequent or Common ranges

FWC and FDOT Working Together

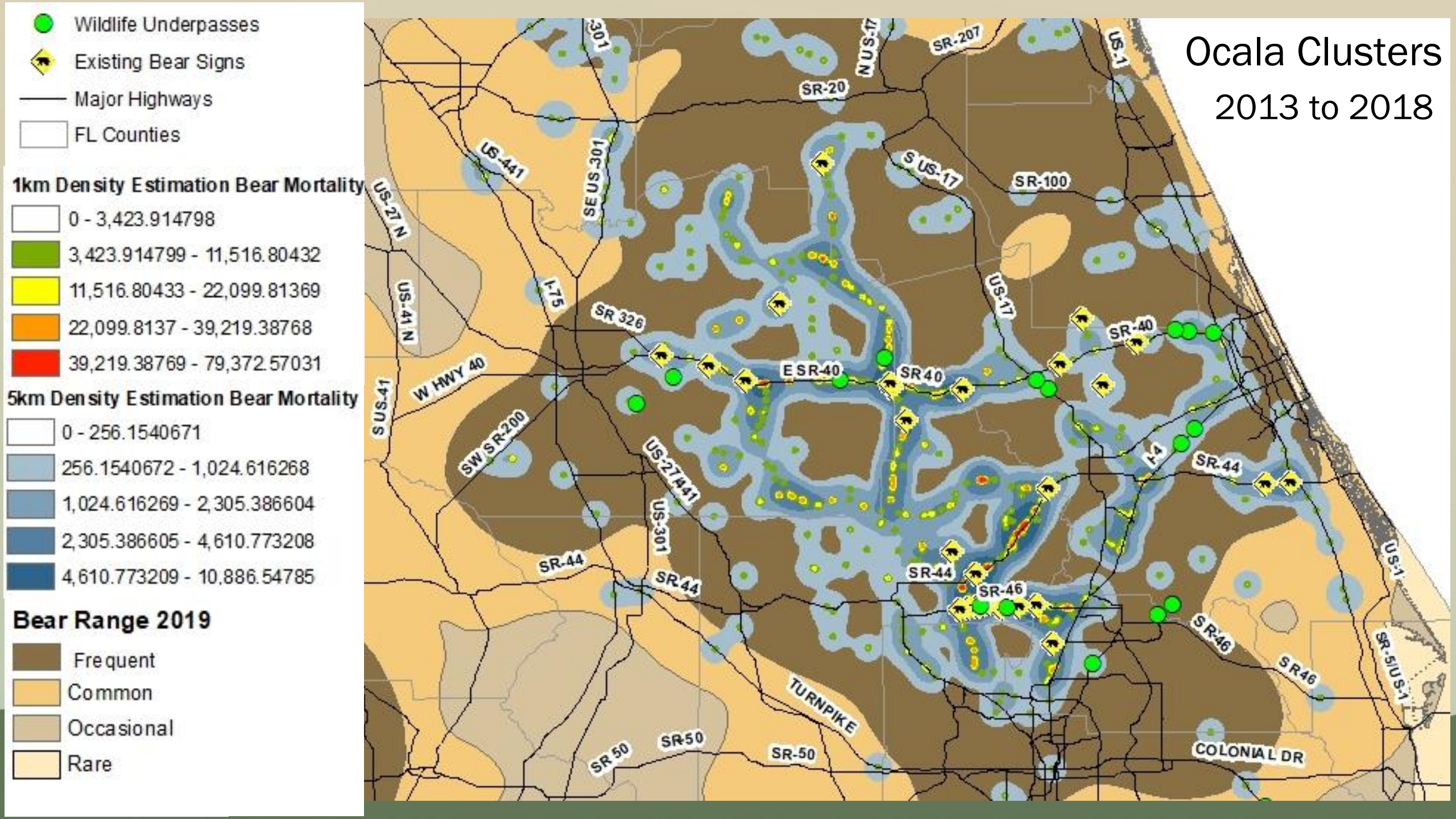
- Commenting on road development and improvement projects
- Technical assistance and stakeholder groups
- Outreach on driving in bear country
- Periodic assessments of vehicle-bear mortality hotspots
  - Bear Crossing Signs
  - Underpasses
  - Modify Existing Bridges

Vehicle-Bear Mortality Cluster Analysis

- Density Map
- 1km & 5km
  - 2003 to 2007
  - 2008 to 2012
  - 2013 to 2018

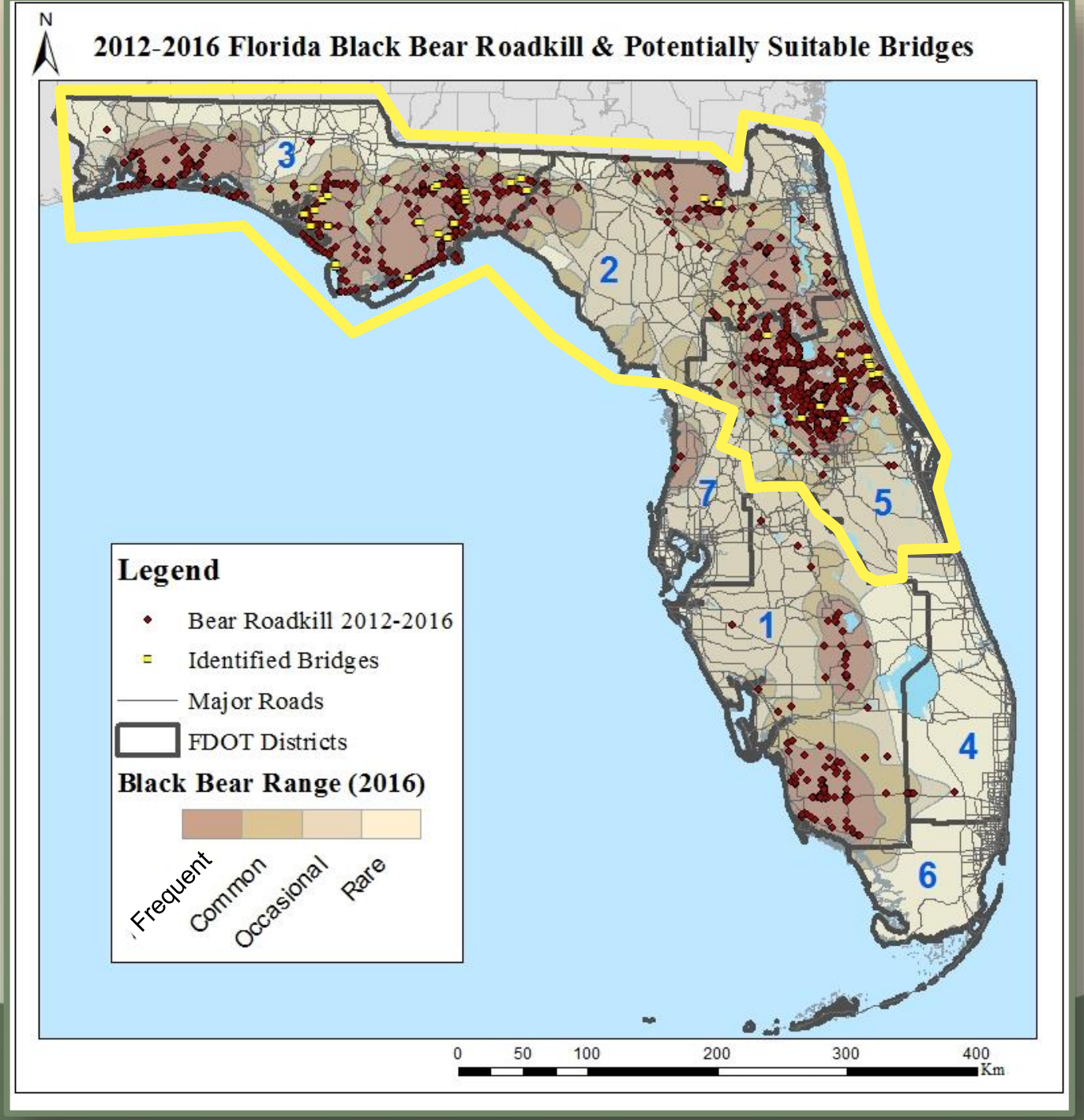


Ocala Clusters
2013 to 2018

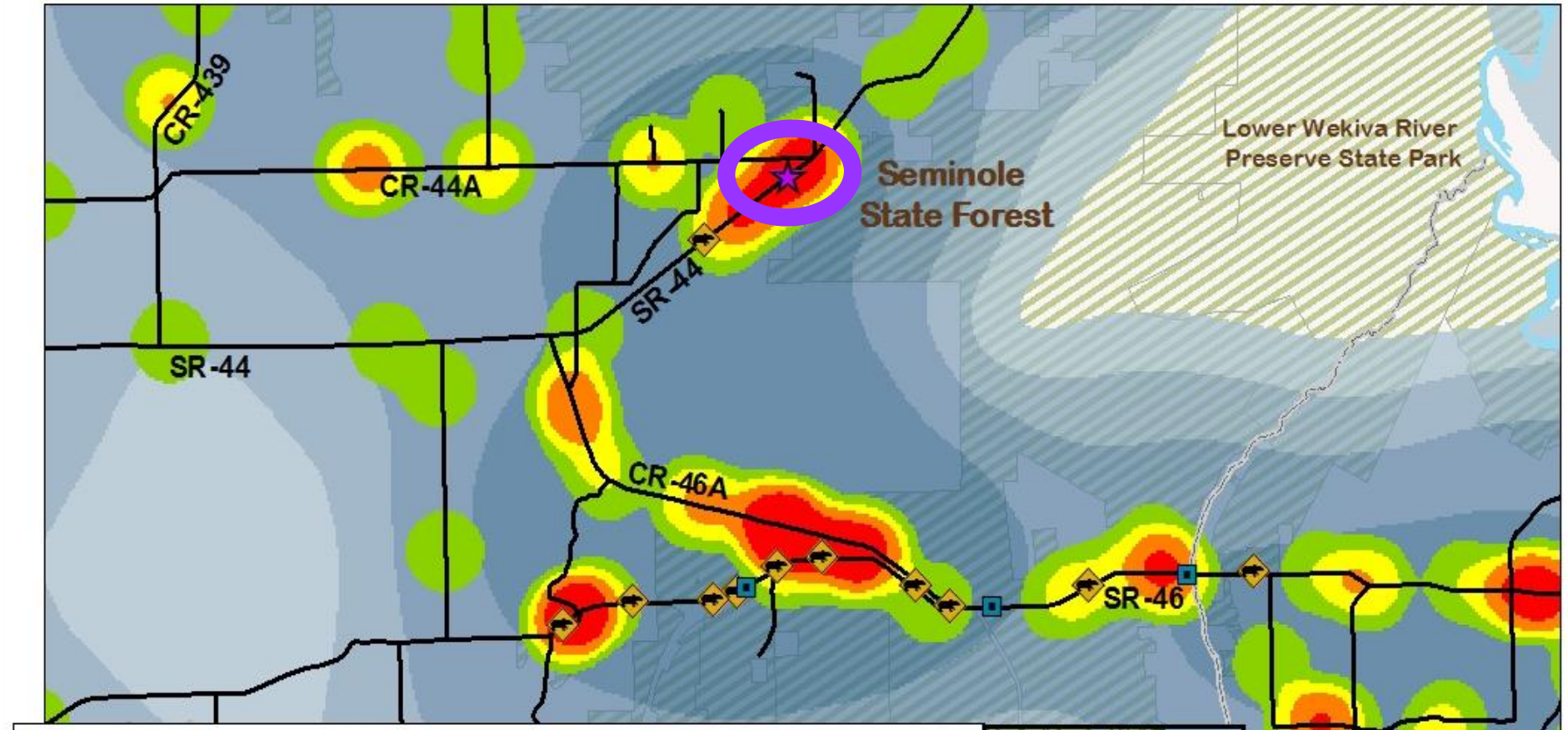


Fencing Bridges

- FDOT Districts 2,3, and 5
- 2012 to 2016 = 1,238 bears
- 34 bridges identified
  - Proximity to hotspot
  - Ownership on both sides
  - Length and height of bridge



District 5 (Lake Co.) Hotspots and Bridges



Legend

- Bear Crossing Sign
- Major Roads
- County Boundaries
- Conservation Areas

Bridges
Priority Level
- High
- Moderate
- Low

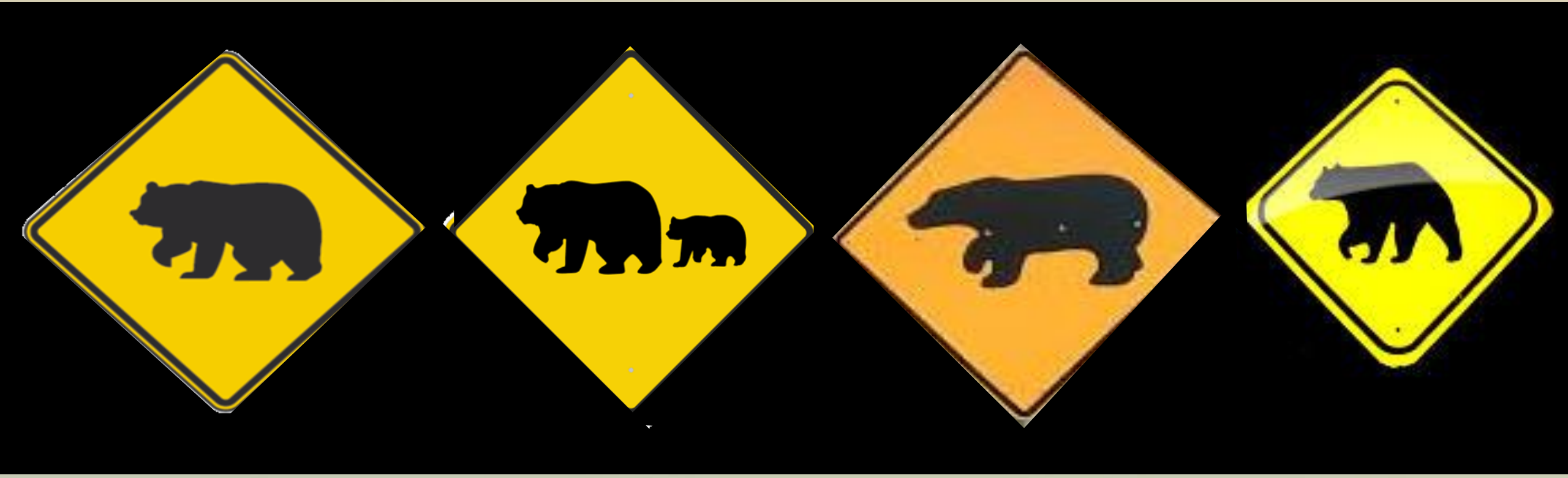
1 km Buffer Density per Sq.km	5 km Buffer Density per Sq.km
0 - 0.29	0 - 0.02
0.3 - 0.96	0.03 - 0.08
0.97 - 1.84	0.09 - 0.19
1.85 - 3.21	0.2 - 0.36
3.22 - 7.44	0.37 - 0.83

Wildlife Underpass
- EXISTING
- PLANNED

0 1.5 3 6 9 12 Km

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

Bear Crossing Signs

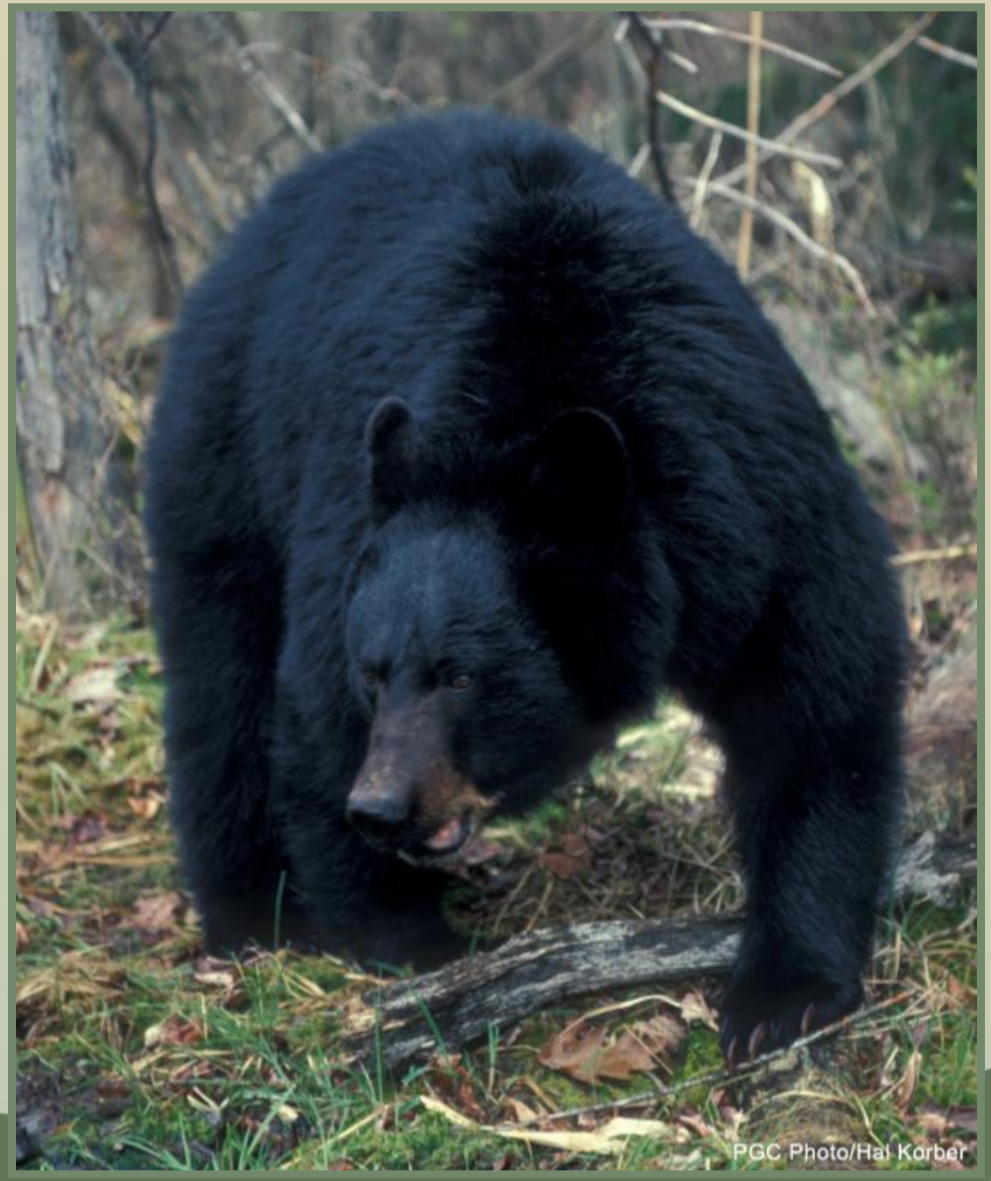


What if I see a Bear?

- 90% of time bears run/climb
- DO NOT run or play dead
- Raise arms, yell, honk horn
- Bear spray

Defensive/Warning Behavior

- Like a rattlesnake
- Personal space
- Stay still, then back away
- If makes contact, fight back

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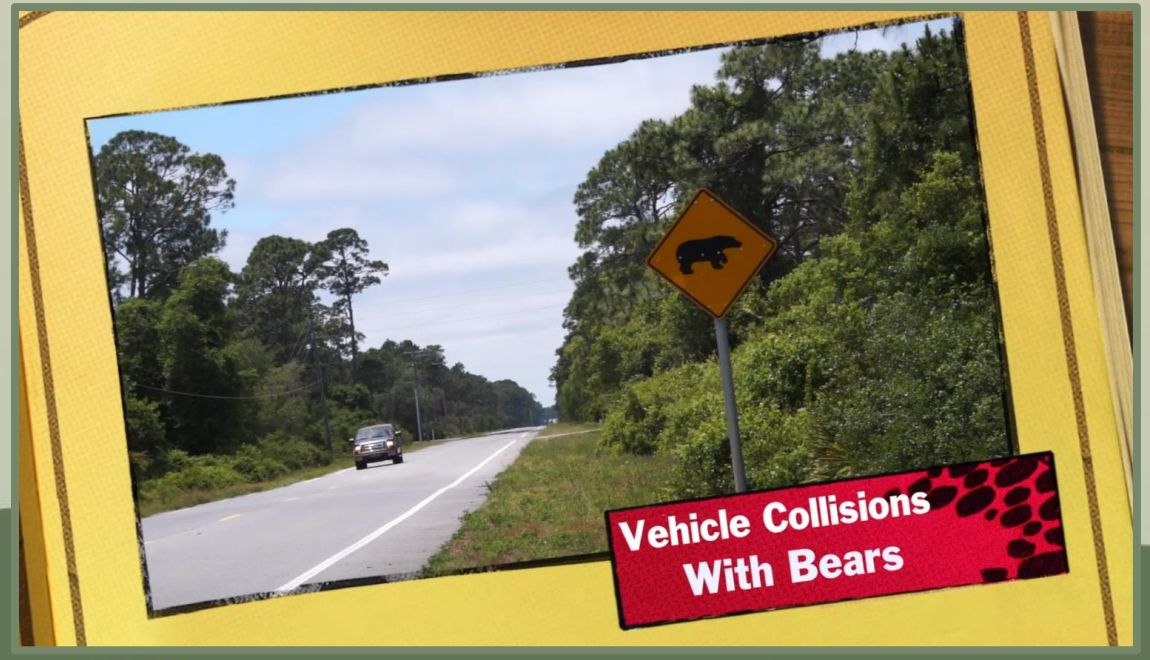

Vehicle Collisions
With Bears

Bat Conservation Challenges When Working Around Bridges and Other Transportation Structures

Bats in Florida

- Twenty species of bats are found in Florida.
- Thirteen are resident.
  - 7 are considered accidental
- The Florida bonneted bat is found only in Florida.

Florida bonneted bat

- Two Resident bat species are listed as Endangered by USFWS:
  - Florida bonneted bat
  - Gray myotis bat

Bridges, Culverts, and Other Structures Provide Important Roost Sites for Several Bat Species in Florida

5 species are known to roost in Florida bridges.

- There are concerns the Florida bonneted bat may roost in bridges

Florida bonneted bat

- Free-tailed bat — *Tadarida brasiliensis*
- Evening bat — *Nycticeius humeralis*
- Big brown bat — *Eptesicus fuscus*
- Southeastern myotis — *Myotis austroriparius*
- Big-eared bat — *Corynorhinus rafinesquii*

?? Bonneted bat — *Eumops floridanus*

Tri-colored Bat

- Sandy brown to orange fur with hairs dark at base and tip.
- Usually found roosting alone and never in large colonies.
- Pink forearms.
- May be covered with dew drops.
- Candidate for Federal listing under the Endangered Species Act.

Florida Bonneted Bat

- One of the rarest bats in North America – found only in Florida - federally listed as Endangered.
- We have limited information about this species.
- Known to roost in buildings.
- Adapts well to manmade structures – Potential to roost in transportation structures.
- That may place it at risk for take.
- Lack of awareness can cause disturbance to or mortality in colonies.

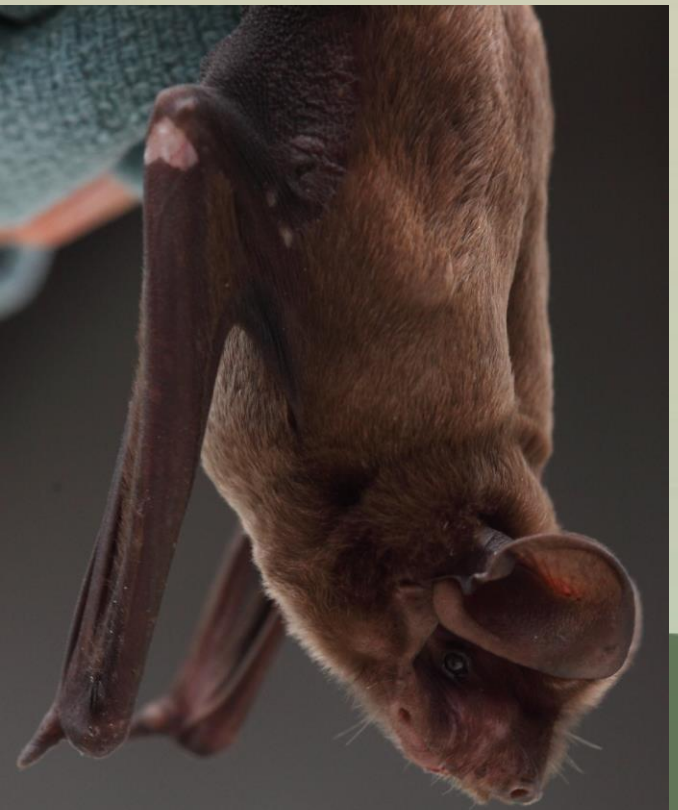
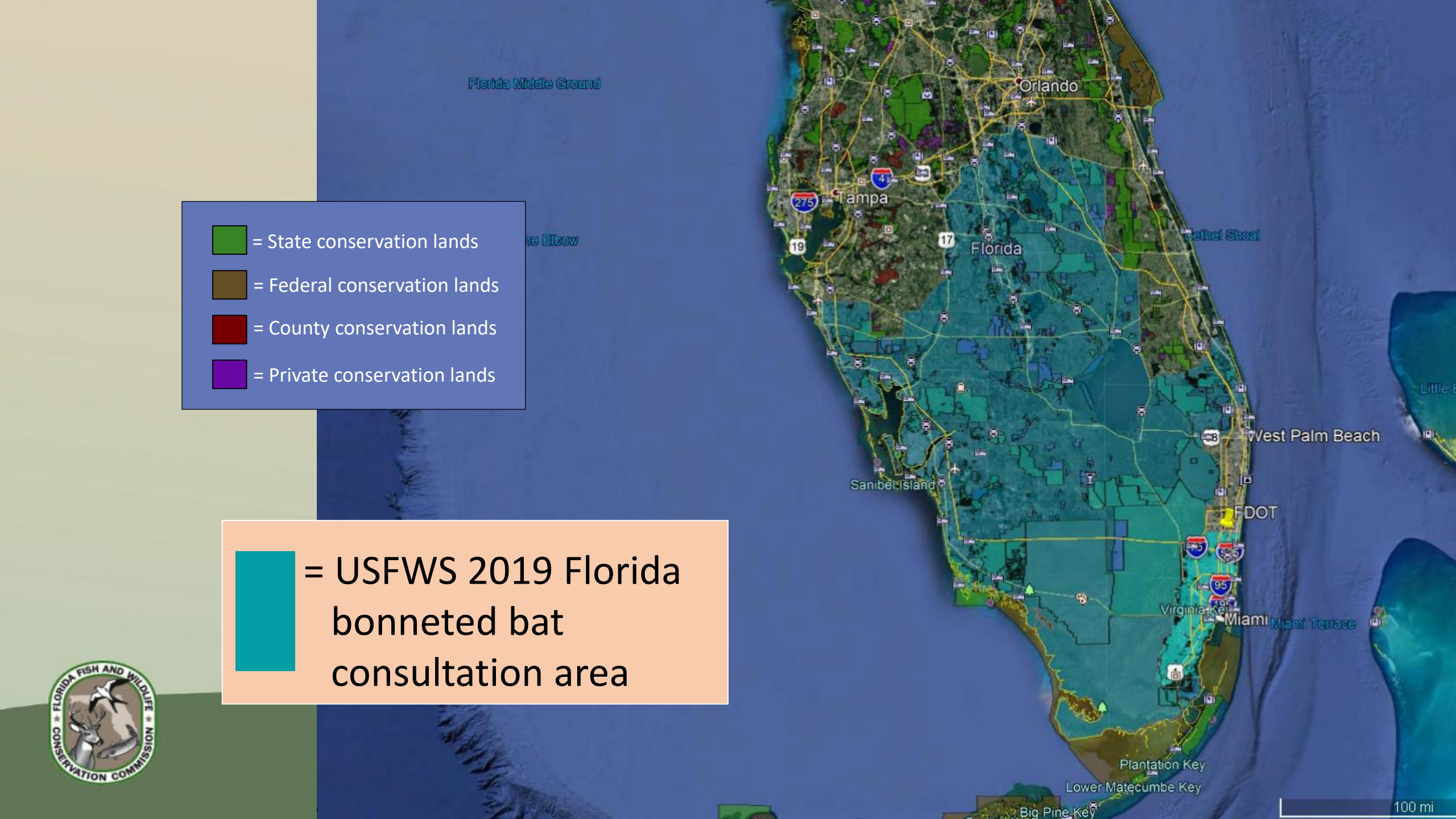


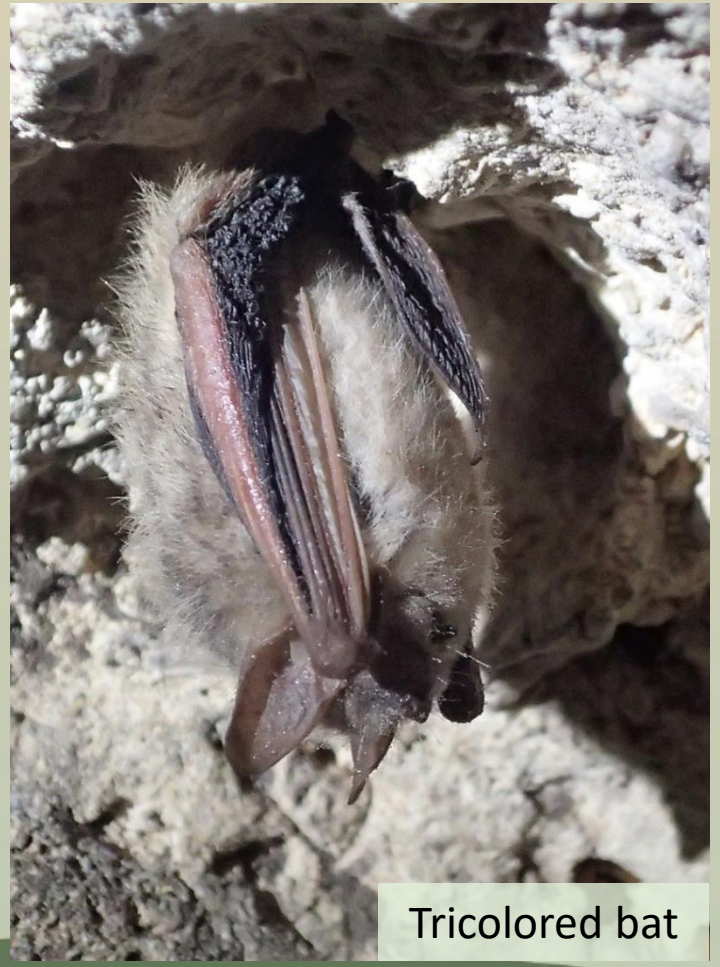
Photo by Dustin Smith, Zoo Miami

Potential Issues Associated with the Federally Listed Florida Bonneted Bat

- Within the USFWS consultation area the USFWS typically will ask FDOT to conduct surveys to locate roosts if suitable habitat (including bridges and similar structures) occurs within a project site.
  - Initial inspection mainly is expected to be visual.
  - Where identification of bat presence or bat species ID cannot be made visually, USFWS is likely to ask for acoustic surveys.
- For the construction of new bridges or transportation-infrastructure projects, the USFWS general consultation guidelines would apply.
- The USFWS has draft protocols for conducting roost surveys and acoustic surveys.


= State conservation lands
= Federal conservation lands
= County conservation lands
= Private conservation lands
= USFWS 2019 Florida bonneted bat consultation area
Florida Middle Ground
Orlando
Tampa
Florida
West Palm Beach
Sanibel Island
FDOT
Miami
Miami Terrace
Virginia Key
Plantation Key
Lower Matecumbe Key
Big Pine Key
100 mi
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

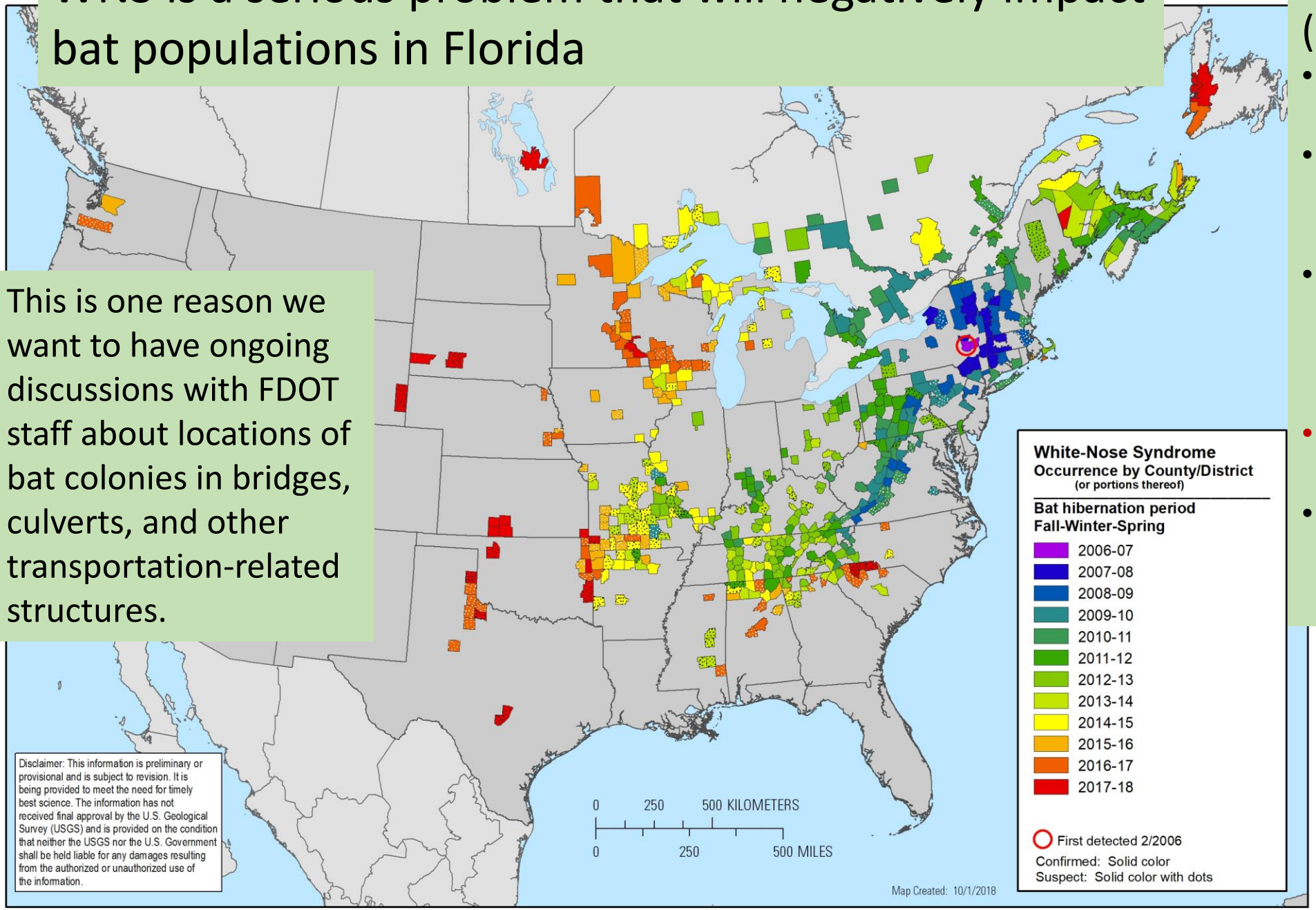
Bat Biology



Tricolored bat

- Most bats do not have rabies.
- Bats can see very well in low light.
- Bats do not try to attack people.
- Many bats hibernate in the winter.
- In Florida, bats may hibernate just on cold nights/days.
  - Bats use culverts as hibernation sites.
  - About 50% of the culverts surveyed in winter had bats present.

WNS is a serious problem that will negatively impact bat populations in Florida



Citation: White-nose syndrome occurrence map - by year (2018). Data Last Updated: 10/1/2018. Available at: https://www.whitenosesyndrome.org/resources/map.

This is one reason we want to have ongoing discussions with FDOT staff about locations of bat colonies in bridges, culverts, and other transportation-related structures.

White-nose syndrome (WNS)

- A disease that causes the death of hibernating bats.
- Named for the white fungus that infects the bats and appears on their muzzles.
- WNS has caused extensive mortality in cave-roosting bat species across eastern North America.
- WNS has killed more than 6,000,000 bats.
- In many caves, 90 to 100 percent of the bats have died.

WHITE-NOSE SYNDROME
RESPONSE TEAM

Legal Status of Bats in Florida

- Bats are protected from take!
  - 68A-4.001 F.A.C.
  - 68A-29.002 F.A.C.

A young Brazilian free tailed bat pup – still dependent on its mother.

- Additional protections during maternity season
  - Populations are vulnerable because of loss of young and adults
  - Protects property owners from dead baby bats in structures
- 2 Federally listed species in Fla.
  - Gray myotis – caves only; panhandle
  - Bonneted bat – south Florida species; occurs in buildings

Nuisance Wildlife Rule: 68A-9.010

- Protects bats during the maternity season.
- States how and when bats can be removed from structures.
- Exclusions are the ONLY legal removal method.
  1) Requires a physical barrier that allows bats to exit and not re-enter
  2) Only allowed from August 15th through April 15th
     - Outside the maternity season
  3) At least 4 consecutive nights when the projected temperature is above 50 degrees F.

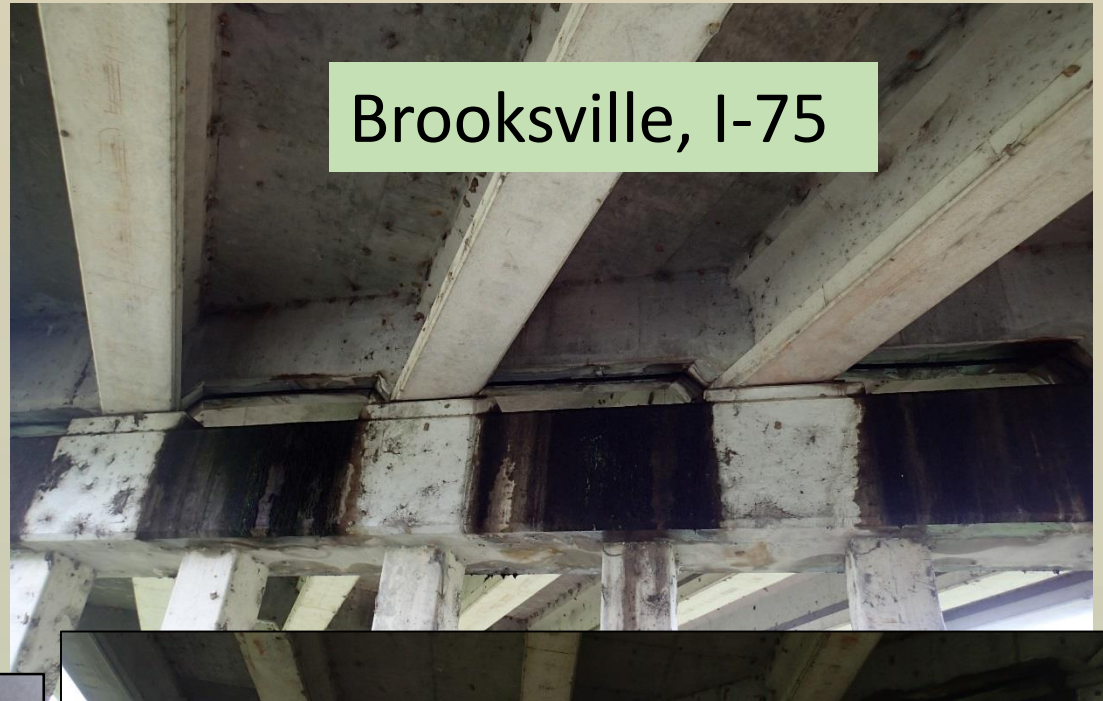
ALL 3 conditions must be met for an exclusion to be legal.

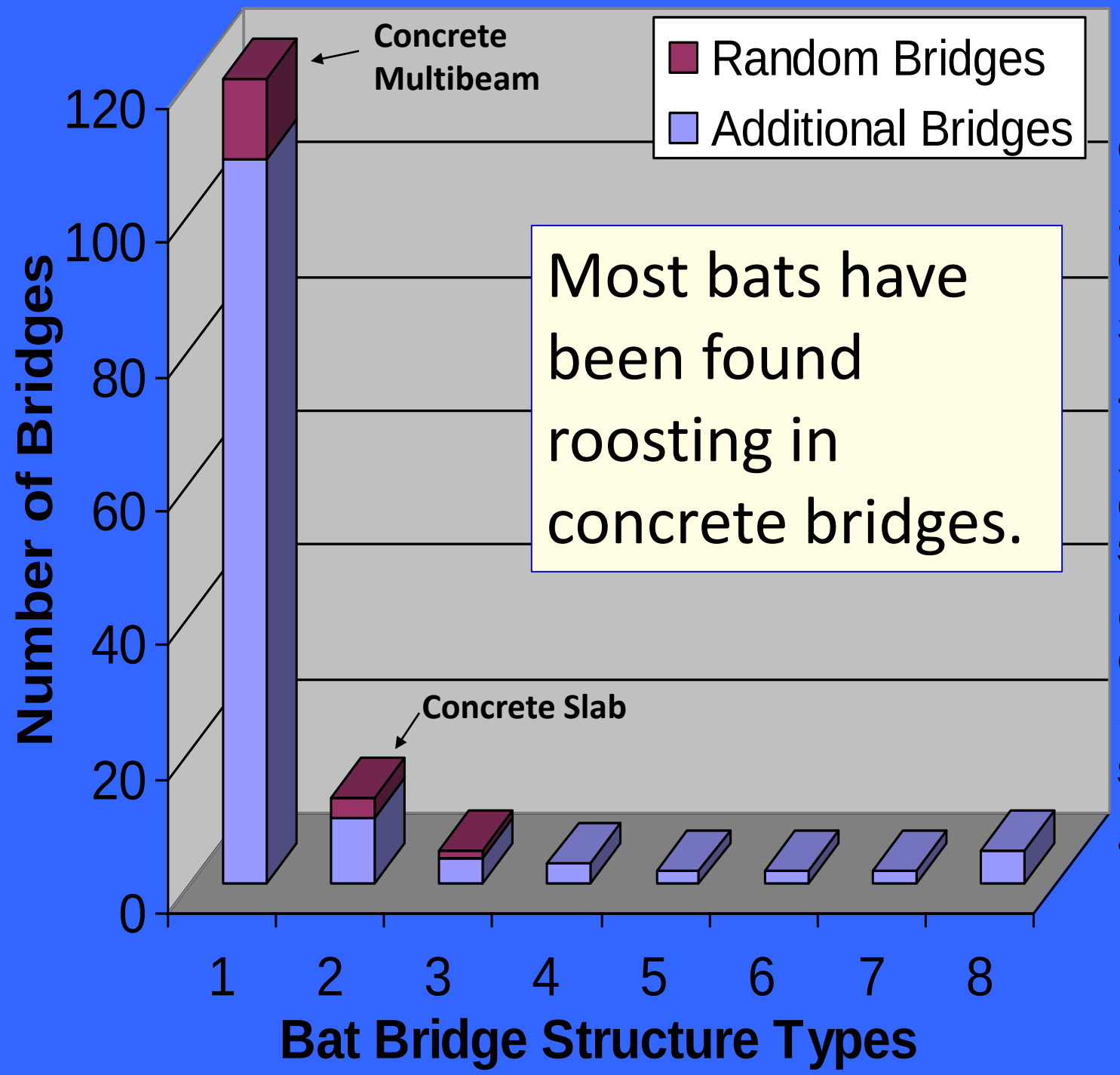
Netting attached as an exclusion device over an expansion joint between 2 sections of a bridge

- Bats usually prefer small or narrow spaces in concrete bridges and culverts as roosting sites
- Some bats can enter spaces as small as ½ inch wide.

Staining and Guano are signs that bats have been, or are, present

Lots of Signs = Lots of Bats





Bridge Structure Types:

1 = Prestressed Concrete Multibeam

2 = Prestressed Concrete Slab

3 = Steel Stringer

4 = Concrete T-beam

5 = Prestressed Concrete Continuous Stringer

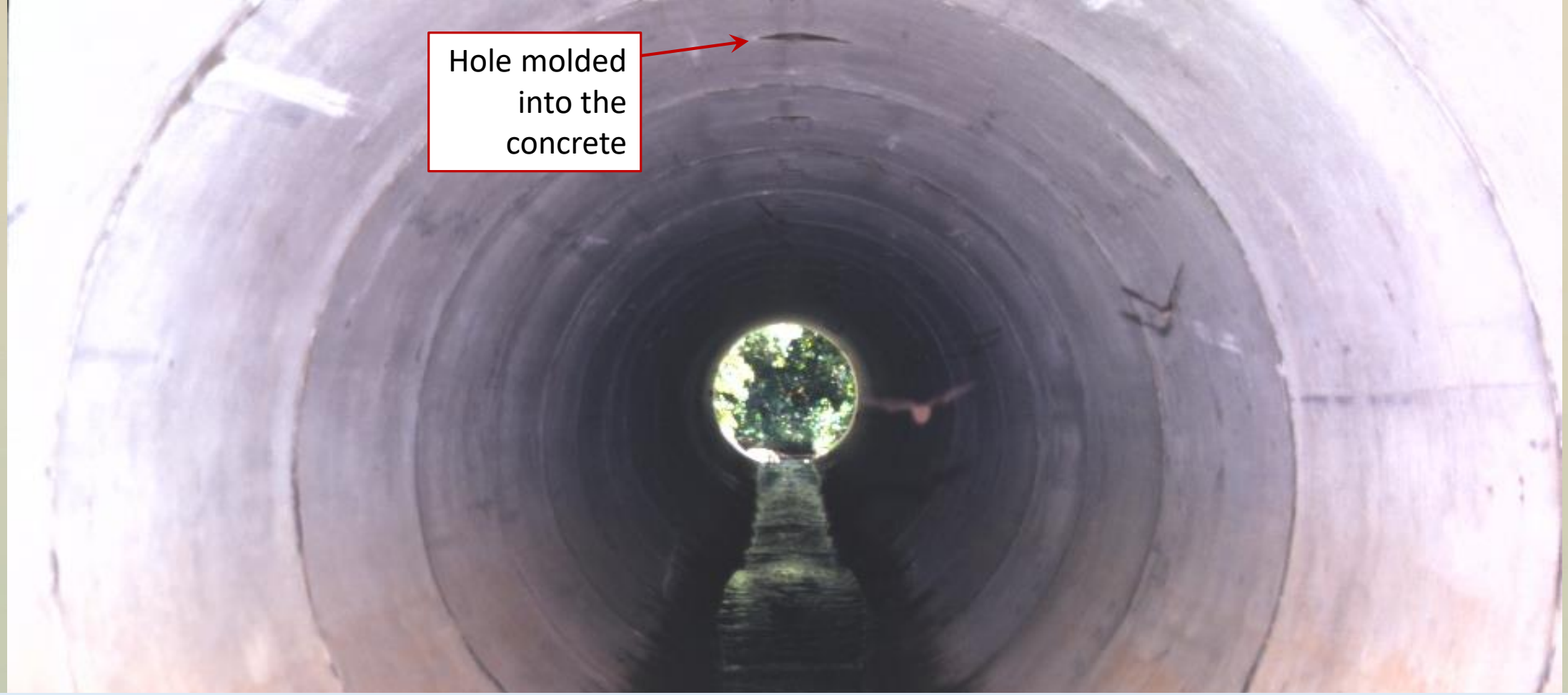
6 = Steel Continuous Girder

7 = Steel Continuous Stringer

8 = Other Types

Bats in Culverts

- Culverts can provide important habitat for bats
  - Winter roosts
  - Maternity colonies
  - Bachelor roosts
- Four species of bats are known to roost in culverts in Florida
  - Southeastern myotis
  - Tri-colored bats
  - Big brown bats
  - Rafinesque's big-eared bats



Culverts are also provide important roost sites for bats

- About 50% of the culverts we have surveyed have had bats roosting there
  - From a few bats to hundreds.
- Bats typically roost in holes molded into the concrete and in gaps at joints between culvert sections.

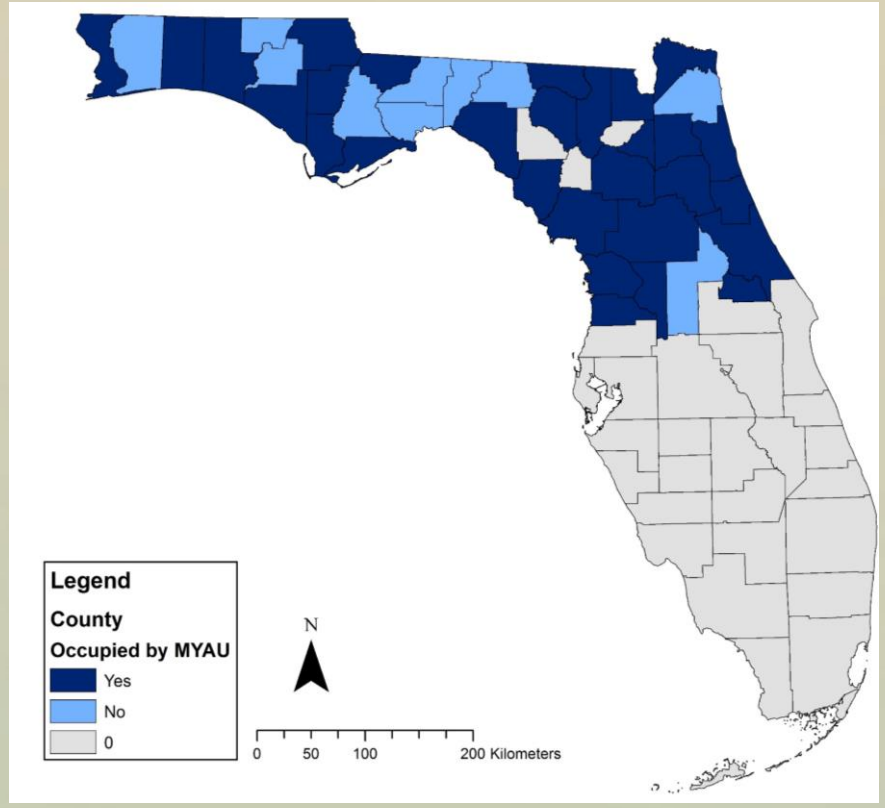
A cluster of bats in a pipe hole.

A cluster of bats at edge of a hole in a culvert.

Bats will use many different types of holes or crevices for shelter.

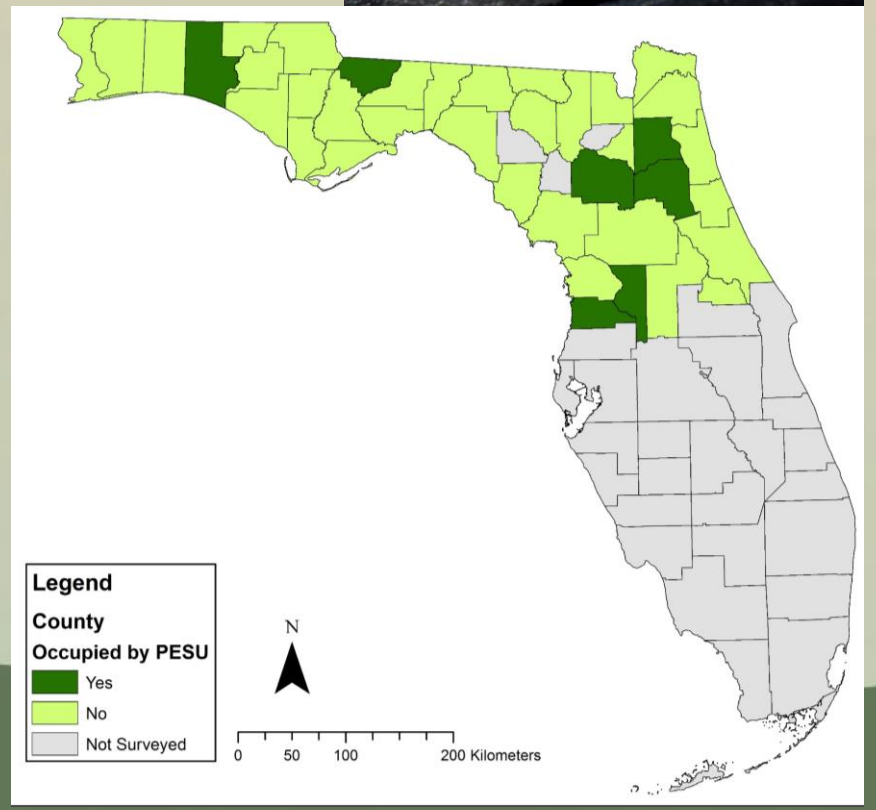
Southeastern Myotis in Culverts

- 29 counties in north Florida with winter records of southeastern myotis in culverts.
- ~2,500 southeastern myotis were documented in 50% of culverts in 2018.
- Colony size is variable from a single individual to thousands.



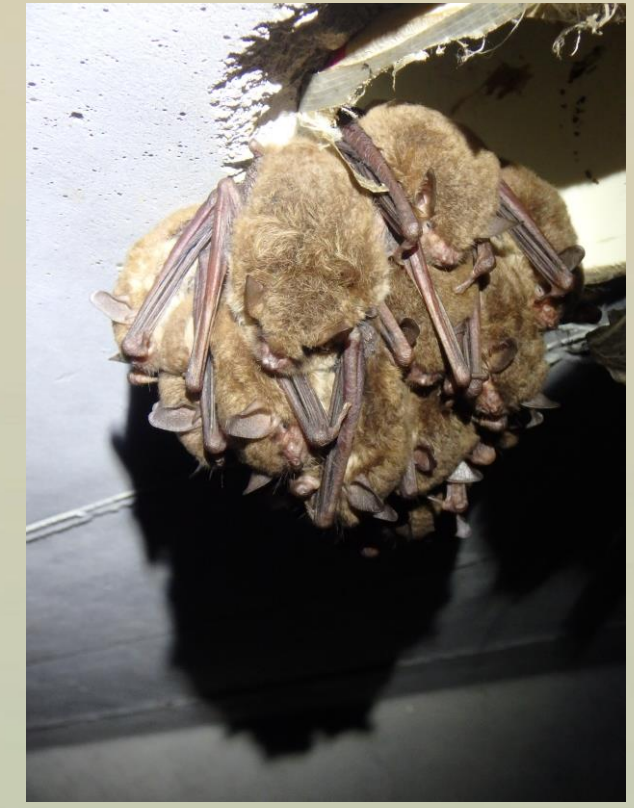
Tri-colored bats in Culverts

- 7 counties in north Florida with winter records of tri-colored bats in culverts.
- 46 tri-colored bats were detected in 16% of culverts surveyed in 2018.
- Numbers highly variable between years.



Seasonal Use of Culverts

- Southeastern myotis are more common in culverts in winter but maternity colonies may occur during summer months
  - Maternity colonies are especially common in culverts with manhole covers
- Tri-colored bats are usually only present in winter.



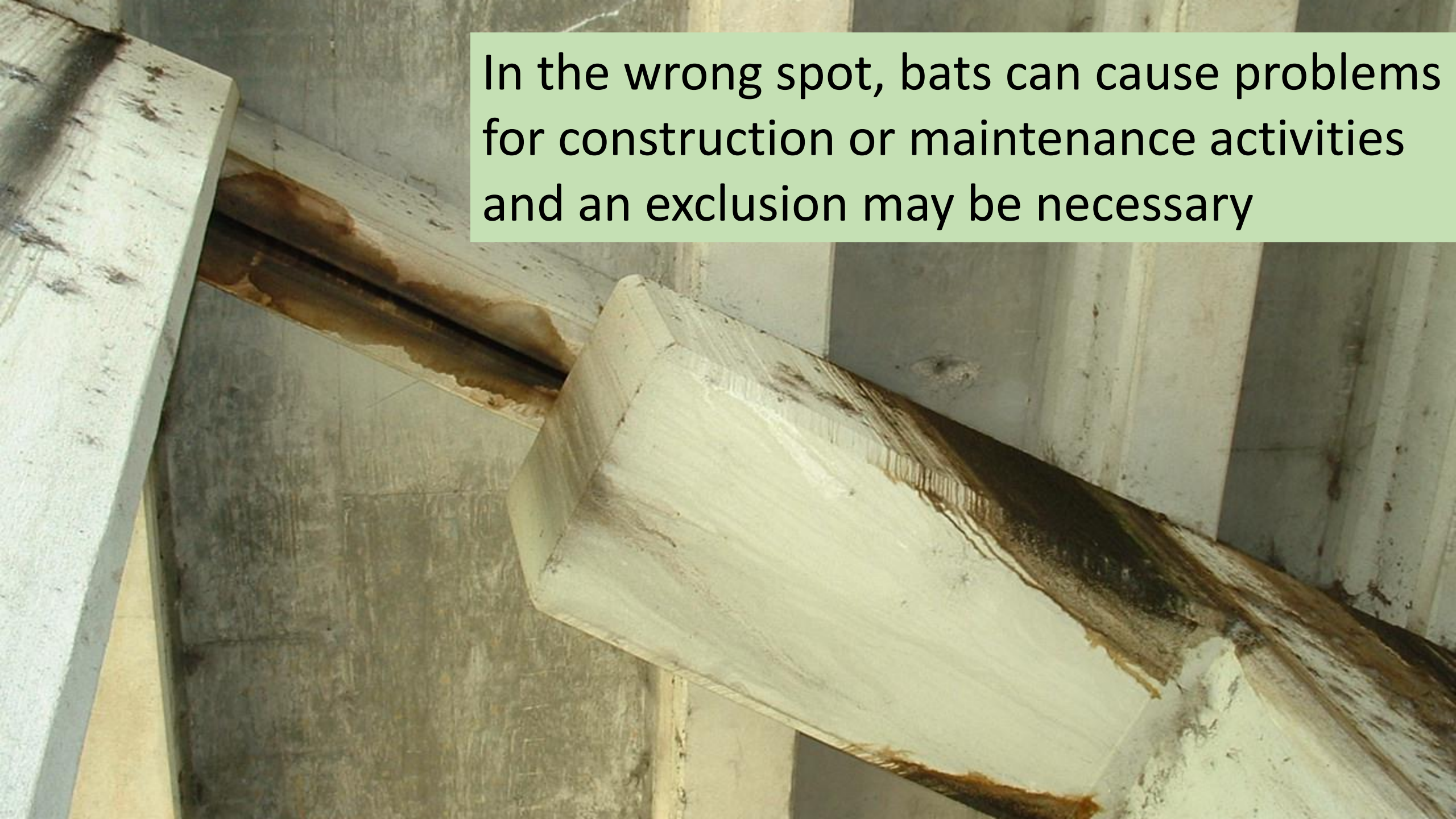
	Winter 2018 (n = 102)		Summer 2018 (n = 98)		Winter 2019 (n = 88)	
	No. bats	No. culverts	No. bats	No. culverts	No. bats	No. culverts
Southeastern Myotis	2499	51 (50.0%)	1813	29 (29.6%)	1186	54 (61.4%)
Tri-colored Bat	46	16 (15.7%)	2	1 (1.0%)	22	10 (11.4%)
Big Brown Bat	0	0 (0.0%)	2	2 (2.0%)	0	0 (0.0%)

Bat Mortality

- Found in 3 culverts
- All in joints of box culverts
- Bats continue to use culvert

Locating a Roost in a Culvert

- Joints
- Weep holes
- Cracked concrete
- Manholes
- Roughed concrete
- Wood splinters



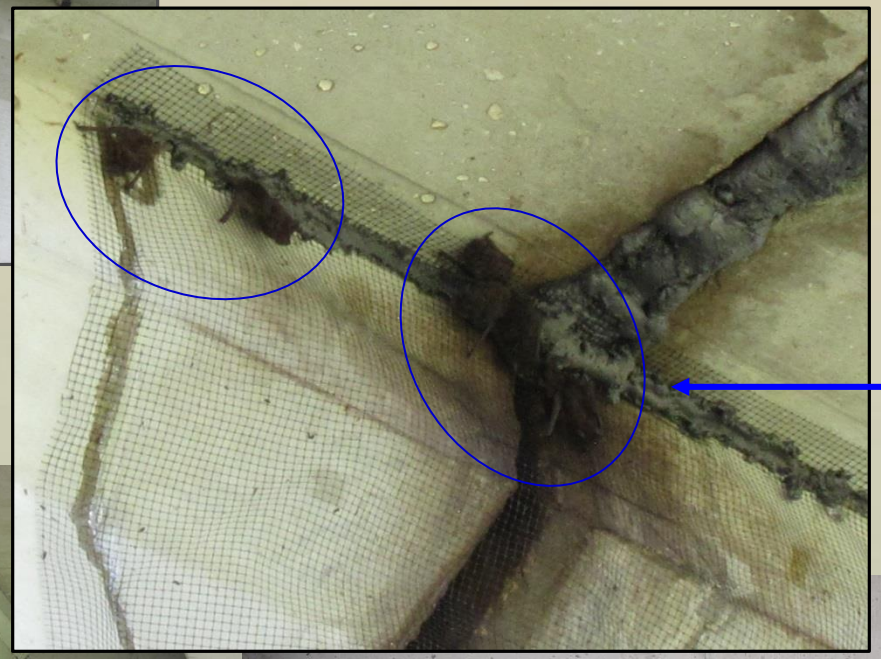
In the wrong spot, bats can cause problems for construction or maintenance activities and an exclusion may be necessary

Problems can occur when bats are roosting in a work area and are not excluded

Bats that were killed when some type of material trapped them in a culvert

Exclusions

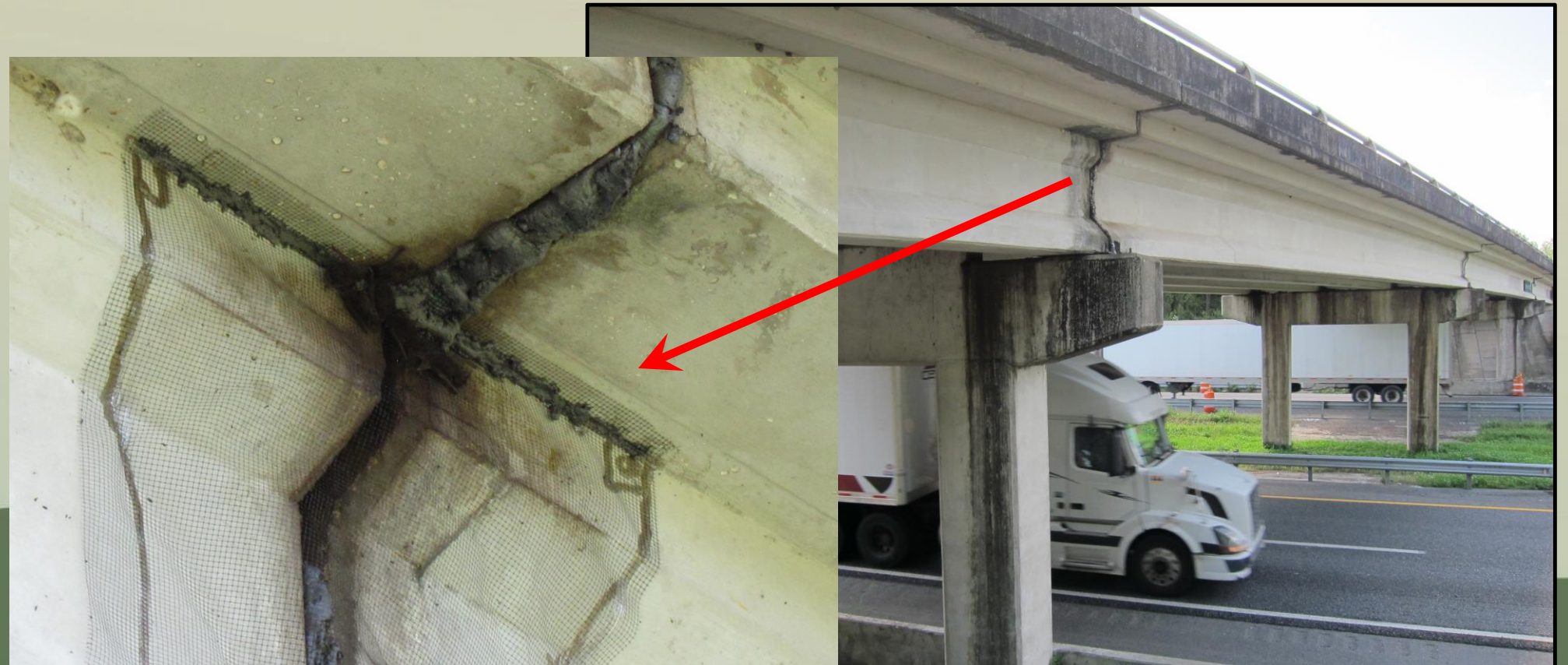
When exclusions have to be done, it is important to have them done well



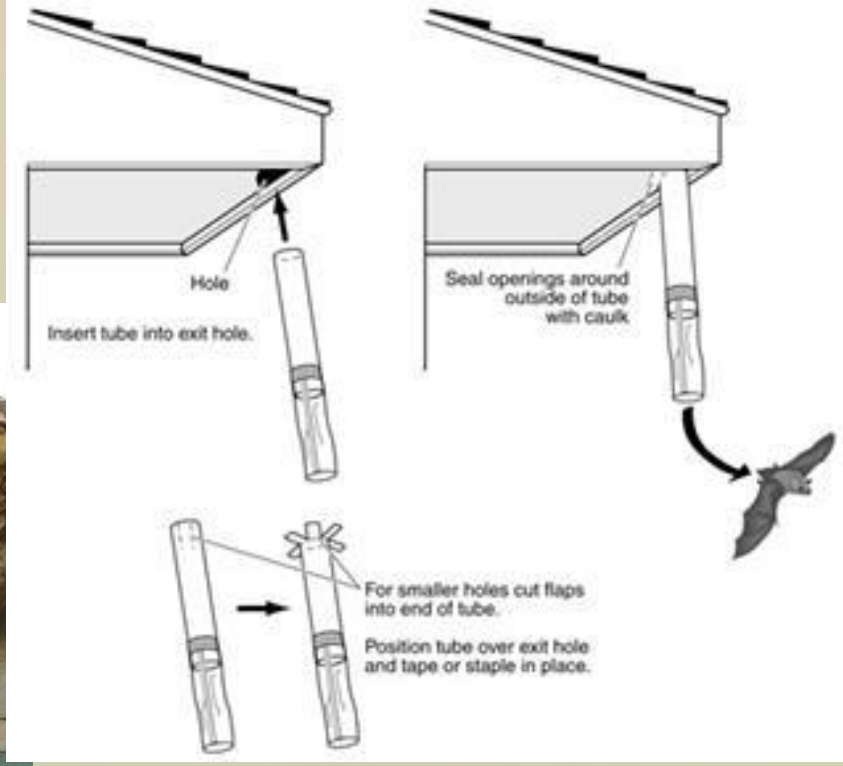
Note bats that are unable to re-enter the roost site

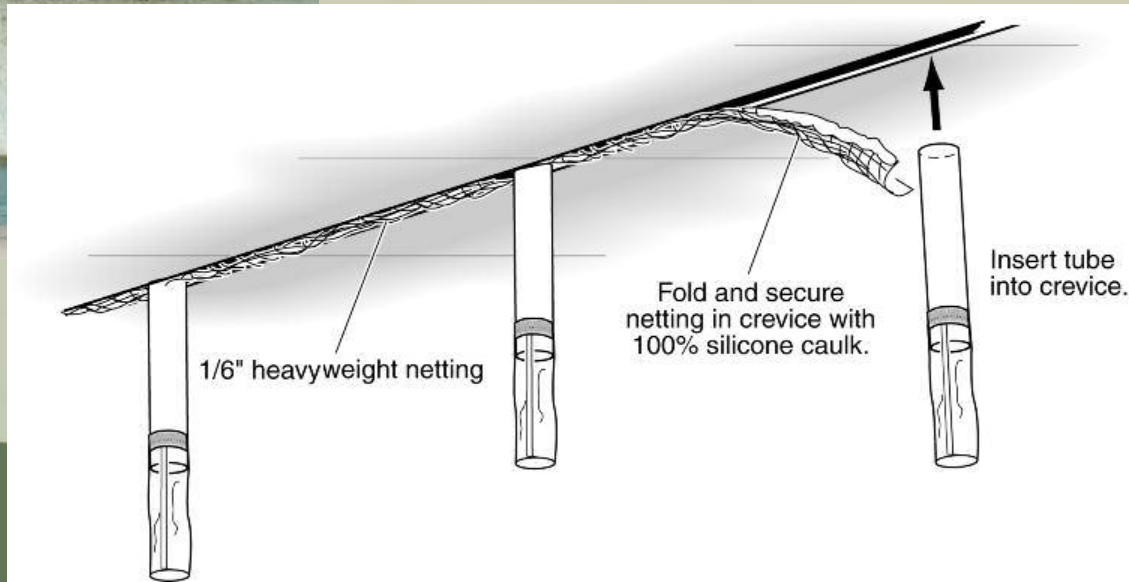
Examples of well-sealed openings

Example of an Effective Exclusion Technique - Can be Used in Multiple Situations



Example of Another Good Exclusion Technique





- Note the excluded bats on the outside of the screen, trying to return to their roost

Examples of Poor Exclusion Techniques

This is what a really bad exclusion technique looks like

And these are some of the bats that were killed because of that

Recommendations

- Identify existing bat roost sites as early as possible
  - Avoid take issues, potential contract problems, and work delays
  - Contact FWC for input when necessary
- In South Florida it is important to determine whether Florida bonneted bats are present

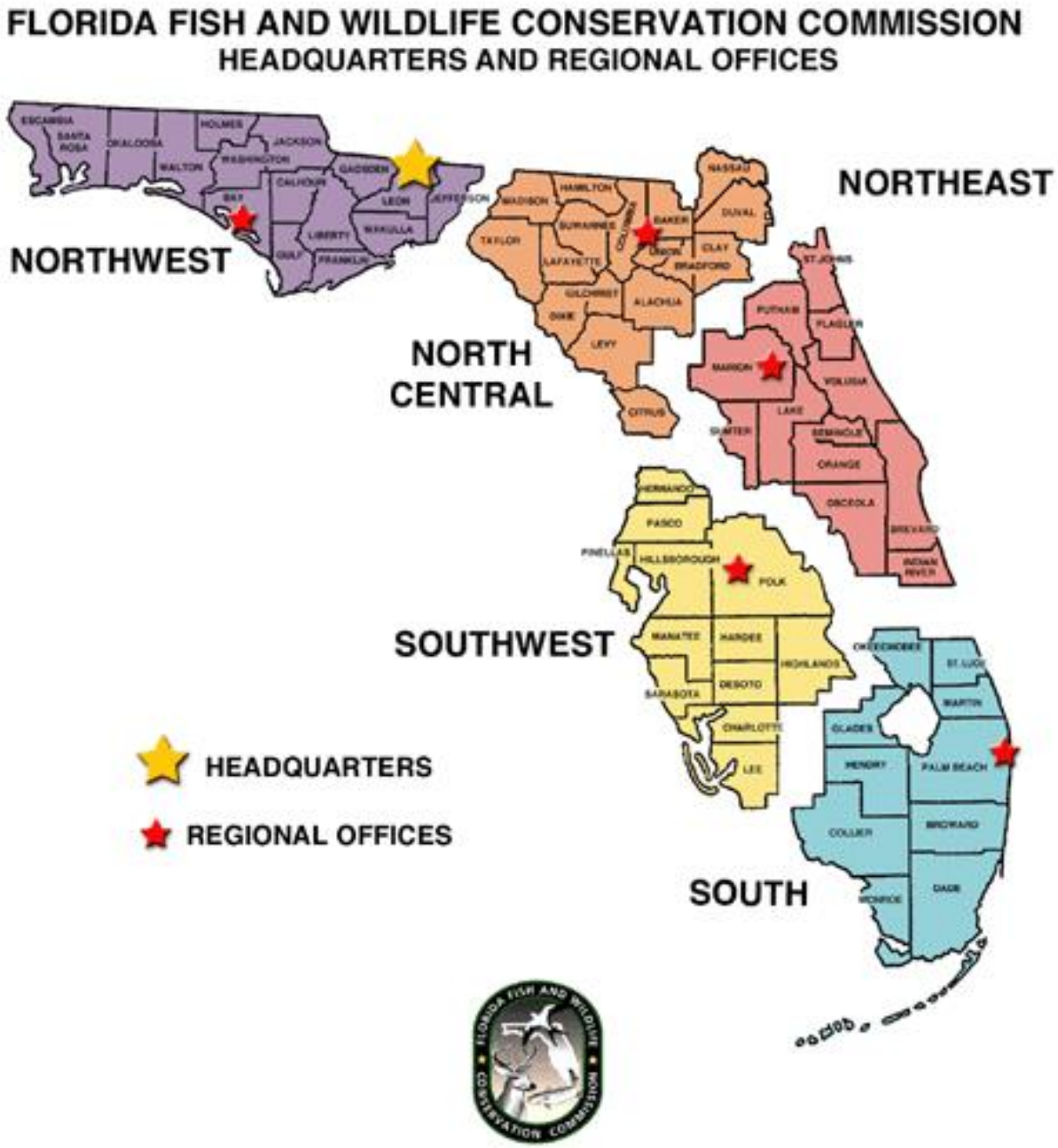
A Rafinesque's big-eared bat roosting under a bridge

Recommendations

- Exclude bats only where they create problems for required work
  - Protect bats where they are not causing problems
  - Provide workers with information about the bats
- Retain roost sites or provide new roosts whenever possible

FWC Contacts for Additional Information

FWC Regional Offices:
http://myfwc.com/contact/fwc-staff/regional-offices/



QUESTIONS?

Protections for Florida's Birds

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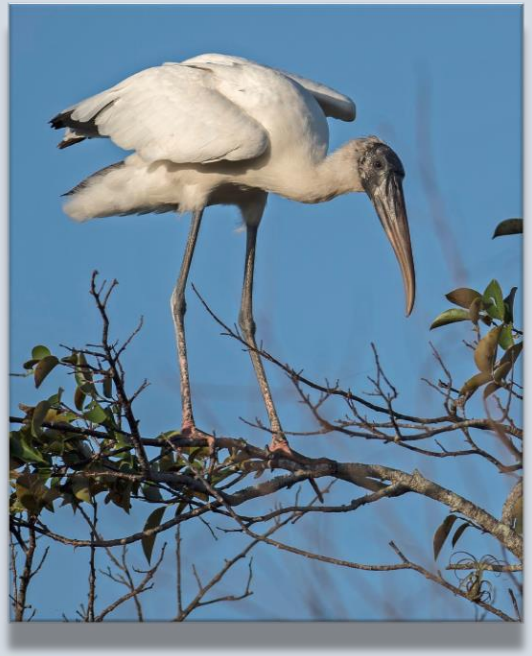
Avian Conservation Coordinator
Craig.Faulhaber@MyFWC.com
(352) 620-7346

All Native Florida Birds are Protected

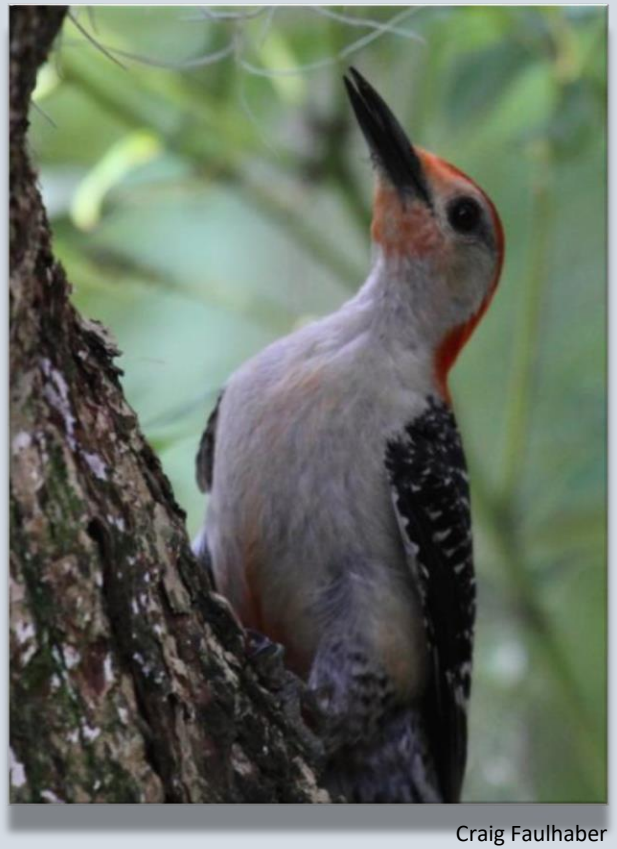
- Even **non-listed** birds are protected
- Some birds have special **federal** protection
- Some birds have special **state** protection



All Native Florida Birds are Protected

- All native birds in Florida are protected by…
  - —General prohibitions (68A-4.001 F.A.C.)
  - —Federal Migratory Bird Treaty Act (MBTA)
  - —State rule adopting MBTA (68A-16.001 F.A.C.)
  - —Bird trap rule (68A-16.006 F.A.C.)*

  * In effect as of Oct. 3, 2019



Craig Faulhaber

Non-listed Species

68A-4.001, F.A.C., General Prohibitions — No wildlife or freshwater fish or their nests, eggs, young, homes or dens shall be **taken**, transported, stored, served, bought, sold, or possessed…

68A-1.004, F.A.C., Take—The term shall include taking, attempting to take, pursuing, hunting, molesting, capturing, or killing any wildlife…or their nests or eggs by any means…

Non-listed Species

- The **Migratory Bird Treaty Act (MBTA) & associated state rule (68A-16.001)**
  - — Prohibits the pursuing, hunting, taking, capturing, possessing, selling, purchasing, & transportation of native birds
  - — Also applies to nest, eggs, and parts

Craig Faulhaber

Non-listed Species

Craig Faulhaber

- The **MBTA** formerly covered both intentional and incidental take
- Now interpreted as covering only *intentional* take (M-37050)

Active Nests of Non-listed Birds

- Can *active* nests be taken under MBTA?
  - — Yes, if incidental
  - — No, if purposeful

Active Nests of Non-listed Birds

- Are active nests protected under state rule?
  - Yes, removal of active nest considered prohibited without state permit
    - — Typically, only issued for removal of active nest for human health/safety*

*Would also need federal permit if purposeful

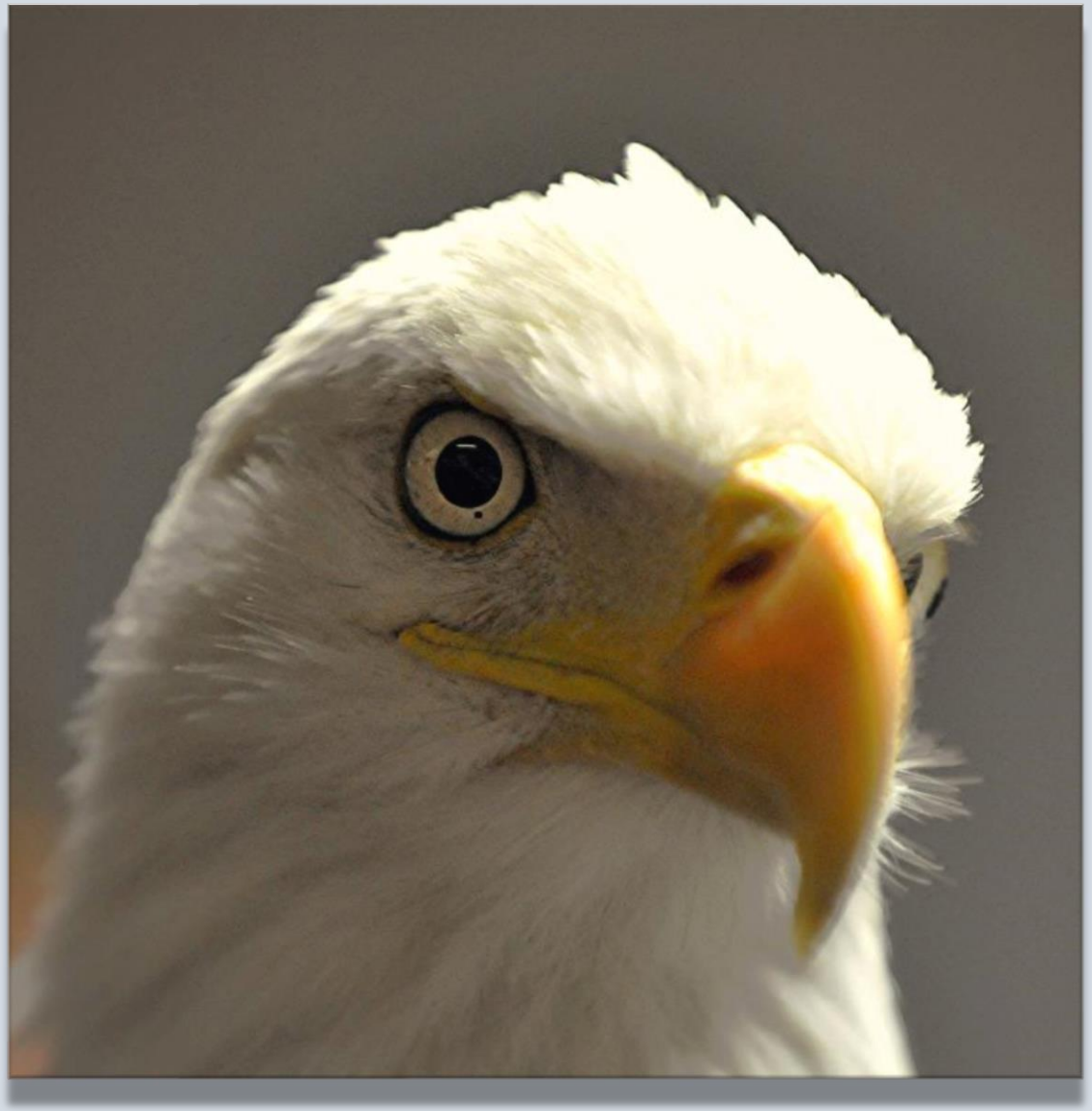
68A-16.006- Prohibitions Related to Bird Traps

- As of October 2019, regulates use & placement, or allowing placement, of bird traps without a permit, with exceptions
- To address illegal trapping of songbirds
- Please report bird traps to FWC law enforcement

Birds with Special Federal Protection

Bald Eagles

- Bald and Golden Eagle Protection Act
- State Eagle Rule (68A-16.002)

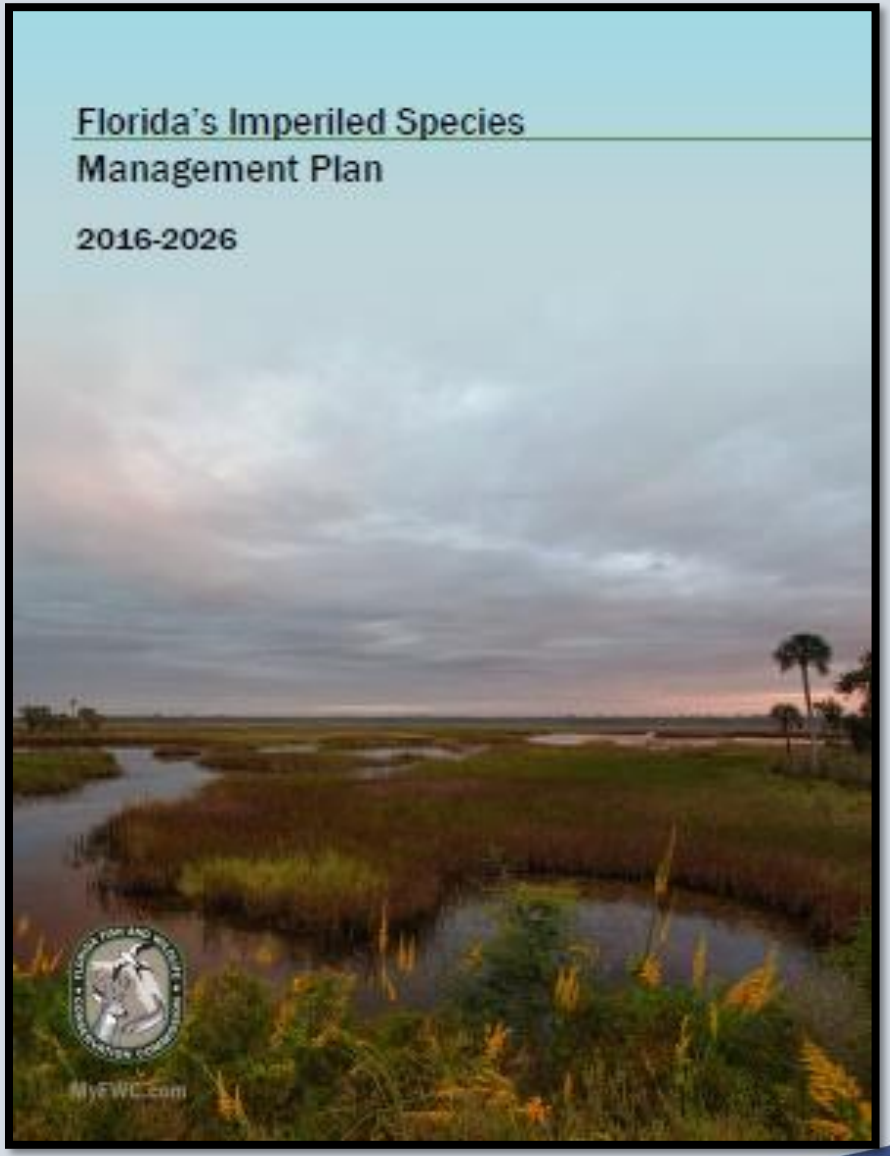


The Endangered Species Act

- Federal Law, prohibits “take”
- Definition same as for state Threatened
- USFWS handles permitting
- No separate FWC permit needed

Birds with Special State Protection

- Imperiled Species Management Plan
- Florida's Endangered and Threatened Species List



State Threatened Species

- 68A-27.003(a), F.A.C. No person shall **take**, possess, or sell any of the endangered or threatened species included in this subsection, or parts thereof or their nests or eggs except as allowed by specific federal or state permit or authorization.

Ron Bielefeld, Whistling Wings Photography

What is “take?”

- 68A-27.001: “Take – to **harass**, **harm**, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct.”

What does it mean to “harm?”

- 68A-27.001: “The term ‘harm’…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.”

- An example: A beach-raker runs over an egg.

What does it mean to “harass?”

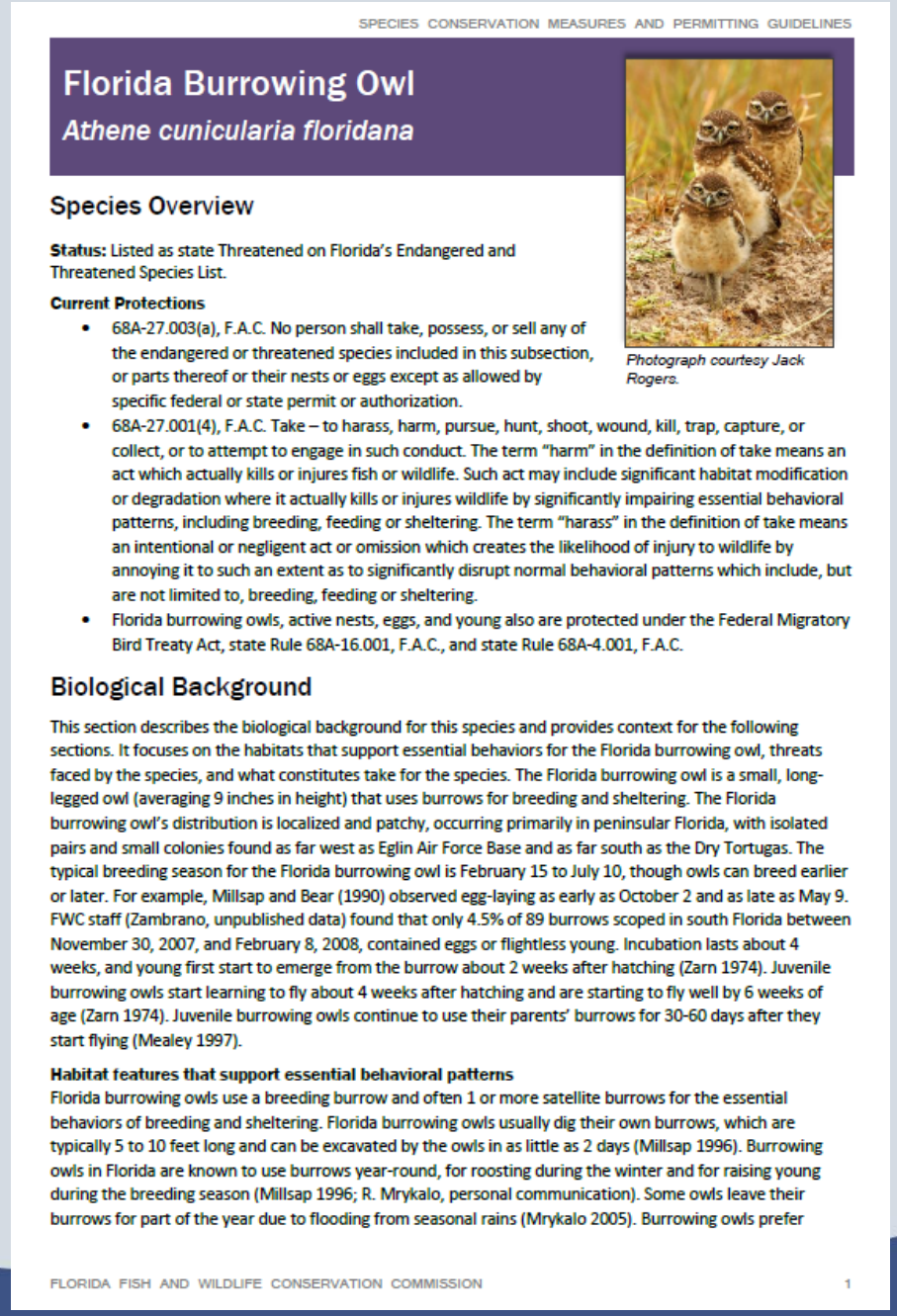
- 68A-27.001: “The term ‘harass’…means an intentional or negligent act or omission which **creates the likelihood of injury** to wildlife by annoying it to such an extent as to **significantly disrupt normal behavioral patterns** which include, but are not limited to, breeding, feeding or sheltering.”

- An example: A beach-raker repeatedly drives through an important breeding site to keep birds from nesting.

Ron Bielefeld, Whistling Wings Photography

Permitting Guidelines

- A single source for technical assistance and permitting
- Helps explain what constitutes take for each species
- Available for these birds:
  - — burrowing owl
  - — sandhill crane
  - — osprey
  - — white-crowned pigeon
  - — wading birds
  - — *more on the way!*



SPECIES CONSERVATION MEASURES AND PERMITTING GUIDELINES

Florida Burrowing Owl

Athene cunicularia floridana

Photograph courtesy Jack Rogers.

Species Overview

Status: Listed as state Threatened on Florida's Endangered and Threatened Species List.

Current Protections

- 68A-27.003(a), F.A.C. No person shall take, possess, or sell any of the endangered or threatened species included in this subsection, or parts thereof or their nests or eggs except as allowed by specific federal or state permit or authorization.
- 68A-27.001(4), F.A.C. 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.
- Florida burrowing owls, active nests, eggs, and young also are protected under the Federal Migratory Bird Treaty Act, state Rule 68A-16.001, F.A.C., and state Rule 68A-4.001, F.A.C.

Biological Background

This section describes the biological background for this species and provides context for the following sections. It focuses on the habitats that support essential behaviors for the Florida burrowing owl, threats faced by the species, and what constitutes take for the species. The Florida burrowing owl is a small, long-legged owl (averaging 9 inches in height) that uses burrows for breeding and sheltering. The Florida burrowing owl's distribution is localized and patchy, occurring primarily in peninsular Florida, with isolated pairs and small colonies found as far west as Eglin Air Force Base and as far south as the Dry Tortugas. The typical breeding season for the Florida burrowing owl is February 15 to July 10, though owls can breed earlier or later. For example, Millsap and Bear (1990) observed egg-laying as early as October 2 and as late as May 9. FWC staff (Zambrano, unpublished data) found that only 4.5% of 89 burrows scoped in south Florida between November 30, 2007, and February 8, 2008, contained eggs or flightless young. Incubation lasts about 4 weeks, and young first start to emerge from the burrow about 2 weeks after hatching (Zarn 1974). Juvenile burrowing owls start learning to fly about 4 weeks after hatching and are starting to fly well by 6 weeks of age (Zarn 1974). Juvenile burrowing owls continue to use their parents' burrows for 30-60 days after they start flying (Mealey 1997).

Habitat features that support essential behavioral patterns

Florida burrowing owls use a breeding burrow and often 1 or more satellite burrows for the essential behaviors of breeding and sheltering. Florida burrowing owls usually dig their own burrows, which are typically 5 to 10 feet long and can be excavated by the owls in as little as 2 days (Millsap 1996). Burrowing owls in Florida are known to use burrows year-round, for roosting during the winter and for raising young during the breeding season (Millsap 1996; R. Mrykalo, personal communication). Some owls leave their burrows for part of the year due to flooding from seasonal rains (Mrykalo 2005). Burrowing owls prefer

Example: State Threatened Wading Birds

- Reddish Egret – Coastal species
- Roseate Spoonbill – Mainly coastal, some inland
- Little Blue Heron and Tricolored Heron – statewide distribution

Photographs (clockwise from top left): little blue heron, reddish egret, and tricolored heron by Jack rogers; roseate spoonbill by FWC.

Example: State Threatened Wading Birds

- Survey seasons vary by region (North, Central, South) and species
- Known breeding sites are re-used and support breeding
  - Need a permit for actions that render part of all of an active or recent breeding site unsuitable for breeding

Photographs (clockwise from top left): little blue heron, reddish egret, and tricolored heron by Jack rogers; roseate spoonbill by FWC.

Example: State Threatened Wading Birds

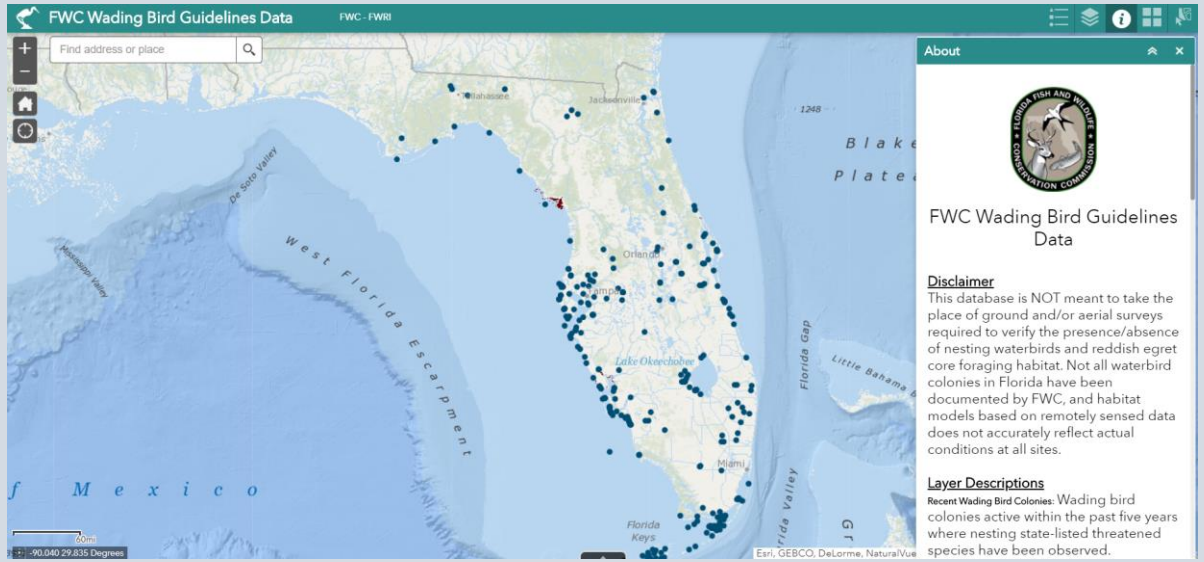
Definitions of take:

- Actions that result in loss of habitat within active or recent breeding sites
- Actions that could render a breeding site unusable (e.g. altering water levels, erecting permanent structures within 330 feet of breeding site)
- Ground, aerial, or water based activities that result in repeated flushing of active nests

Suggested buffer distance = 330 feet from active nests

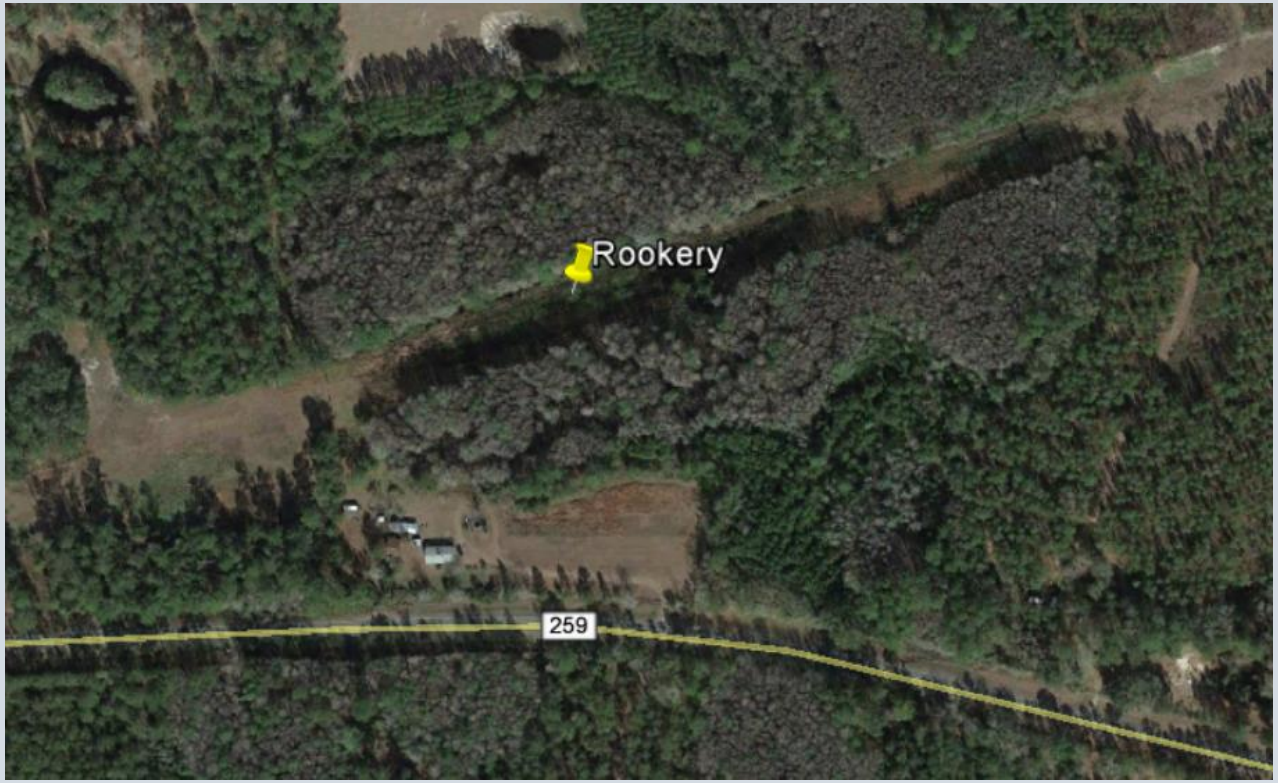
Example: State Threatened Wading Birds

- Database of recent breeding sites online: http://geodata.myfwc.com/pages/upland (under Wading Bird Guidlines)
- Not complete, recommend surveys during the breeding season in appropriate habitat



Threatened Wading Birds

- Not all breeding colonies are tree islands
- This wading bird colony in NW Florida is in a ROW that is not flooded year round
- To avoid take when the breeding colony is active, maintain 330-foot buffer



Example: State Threatened Wading Birds

Examples of activities not expected to cause take:

- Changes to canals, ditches or water control structures 330 feet from active breeding sites
- If activities are similar in nature, size, duration, and intensity
- Maintenance of existing roadways within 330 feet of breeding sites, provided outside of the breeding season and no degradation to the breeding site

Example: State Threatened Wading Birds

Other Authorizations:

- Emergency water management actions such as flood control
- Take due to loss of ***foraging*** habitat for Little Blue Herons, Tricolored Herons, and Roseate Spoonbills will be covered by ERP permits (does not apply to Reddish Egret or nesting sites)

Example: State Threatened Wading Birds

Other Authorizations:

- Routine vegetation maintenance activities within existing highway right of ways that avoid heavy equipment operation within 330 ft of active, known and visibly apparent nests.

Example: State Threatened Wading Birds

Mitigation options:

- Habitat protection or restoration
- Habitat enhancement
- Acquisition, mitigation bank credits or easements
- Funding options
- Information needs
- Programmatic options

Threatened Wading Birds

- Guidelines are available online at https://myfwc.com/wildlifehabitats/wildlife/species-guidelines/
- More information on surveys and definitions on take

Little Blue Heron, Reddish Egret, Roseate Spoonbill, Tricolored Heron

Egretta caerulea, Egretta rufescens, Platalea ajaja, Egretta tricolor

Photographs (clockwise from top left): little blue heron, reddish egret, and tricolored heron by Jack rogers; roseate spoonbill by FWC.

Species Overview

Status: The little blue heron (*Egretta caerulea*), reddish egret (*Egretta rufescens*), roseate spoonbill (*Platalea ajaja*), and tricolored heron (*Egretta tricolor*) (hereinafter "wading birds") are listed as state Threatened on Florida's Endangered and Threatened Species List.

Current Protections

68A-27.003(2)(a), F.A.C. No person shall take, possess, or sell any of the endangered or threatened species included in this subsection, or parts thereof or their nests or eggs except as allowed by specific federal or state permit or authorization.

68A-27.001(4), F.A.C. 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.

State-Threatened wading birds, active nests, eggs, and young also are protected under the Federal Migratory Bird Treaty Act, Rule 68A-16.001, F.A.C., and Rule 68A-4.001, F.A.C.

Biological Background

Florida's Endangered and Threatened Species List includes 4 state-Threatened wading birds: the little blue heron, reddish egret, roseate spoonbill, and tricolored heron. The snowy egret (*Egretta thula*) and white ibis (*Eudocimus albus*) were removed from Florida's Endangered and Threatened Species List in 2017 and will be discussed in a separate set of Guidelines. This section describes the biological background for the 4 state-Threatened wading birds (hereafter, wading birds) and provides context for the following sections. This section focuses on the habitats that support essential behaviors for these species, threats faced by the species, and what constitutes take for the species. For more information about life history and conservation actions for wading birds, please refer to A Species Action Plan for Six Imperiled Wading Birds.

All 4 species are year-round residents in Florida (Greenlaw et al. 2014). Little blue herons, roseate spoonbills, and tricolored herons are found throughout the state, though roseate spoonbills currently nest only in peninsular Florida (Greenlaw et al. 2014; Florida Ornithological Society, unpublished data). Reddish egrets are found almost exclusively in coastal areas, with nesting occurring from south Florida to at least Levy County on the Gulf Coast and Brevard County on the Atlantic Coast (Lowther and Paul 2002, Cox et al. 2017*b*).


QUESTIONS?

Photo: T. Long, FWC

Sea Turtles and Lights

Balancing Property Rights, Safety, and Sea Turtle Survival

Tonya Long, Luke Davis, Rachael Stevenson

Imperiled Species Management

Florida Fish & Wildlife Conservation Commission

Sea Turtles Nesting in Florida

Loggerhead
(Caretta caretta)
Status: Threatened

Leatherback
(Dermochelys coriacea)
Status: Endangered

Green
(Chelonia mydas)
Status: Threatened

Kemp's Ridley
(Lepidochelys kempii)
Status: Endangered

Hawksbill
(Eretmochelys imbricata)
Status: Endangered

Sea Turtle Nesting 101

- Nesting season is May 1 – October 31 (March 1 – October 31 in Brevard through Broward)
- Nesting and hatching both occur at night.
- Nests contain ~100 eggs and incubate ~2 months
- Females return to nest in the same areas where they hatched.
- About 40% of worldwide loggerhead nesting occurs in Florida – more than anywhere else in the world!

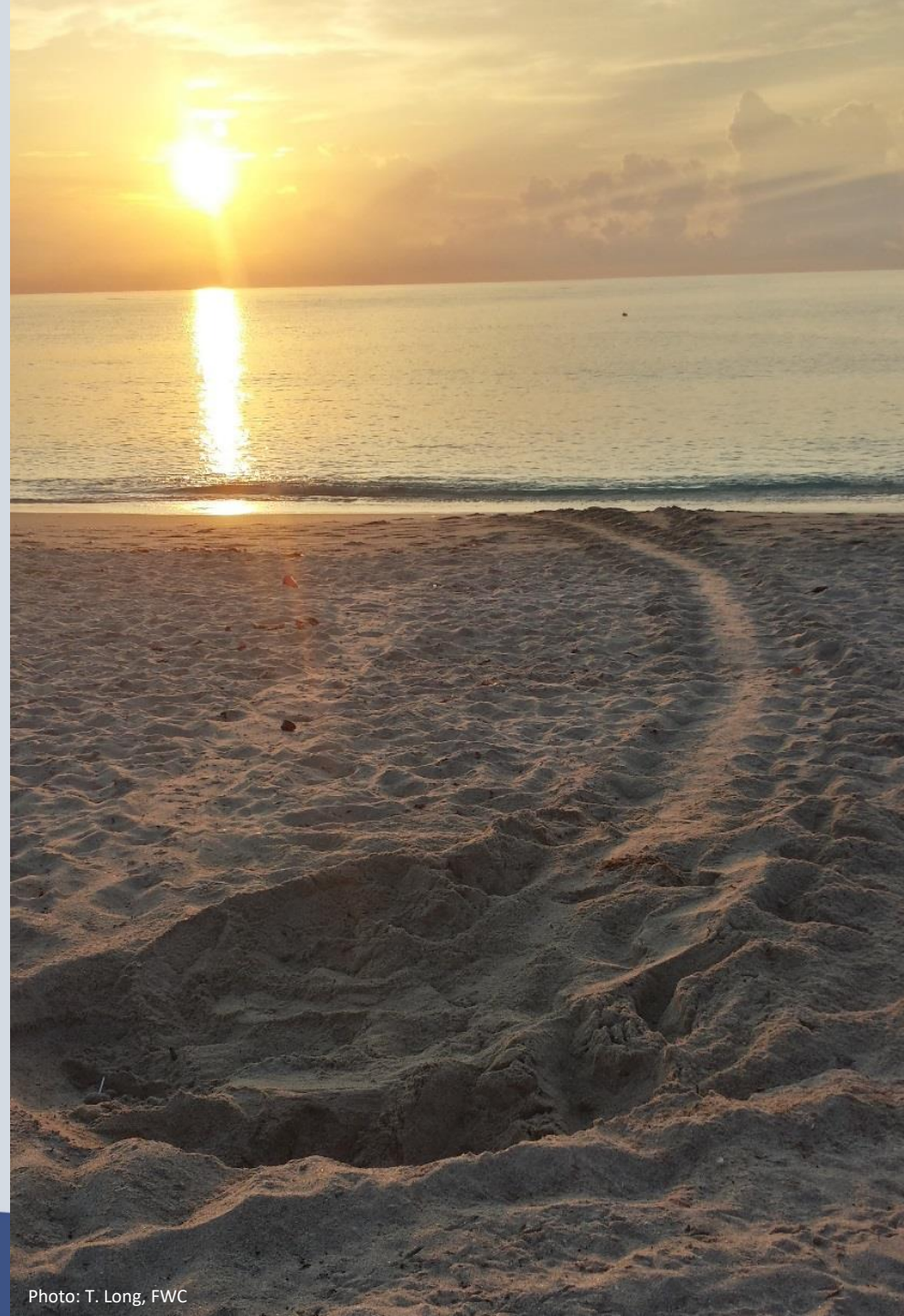
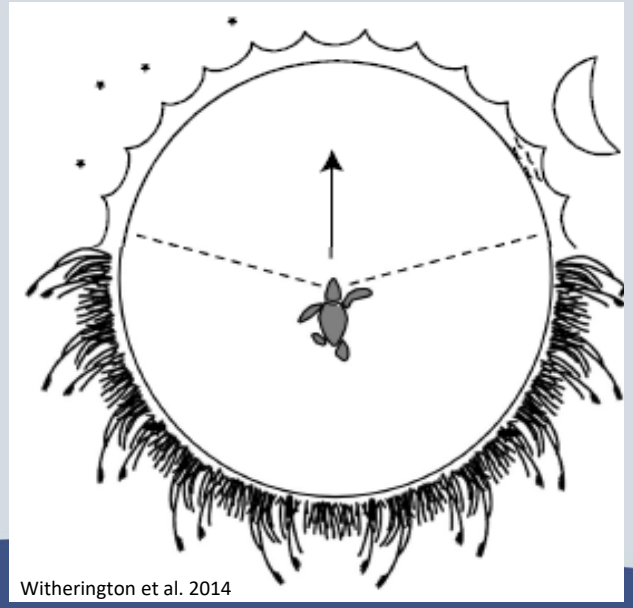


Photo: T. Long, FWC

Why is artificial lighting such a problem?

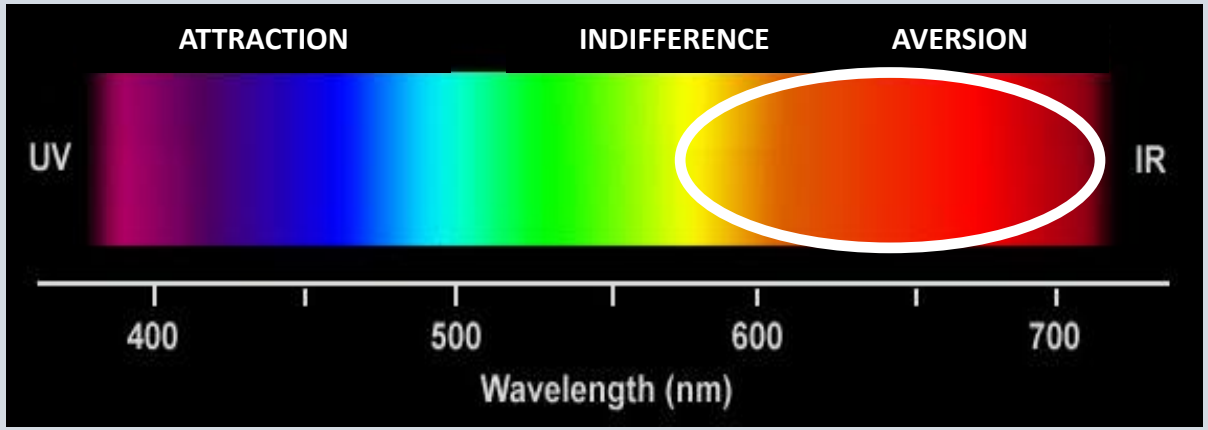
Hatchlings rely on multiple visual cues to find the water

- TOWARD bright open areas/horizons
- AWAY from dark silhouettes i.e. dunes and vegetation



Witherington et al. 2014

- Attracted to SHORT wavelength light
- Less disturbed by LONG wavelength light



Conflicting cues often lead to disorientation.


Photo: K. Schanzle, FWC

Undisturbed hatchlings: seaward orientation in a “V” formation

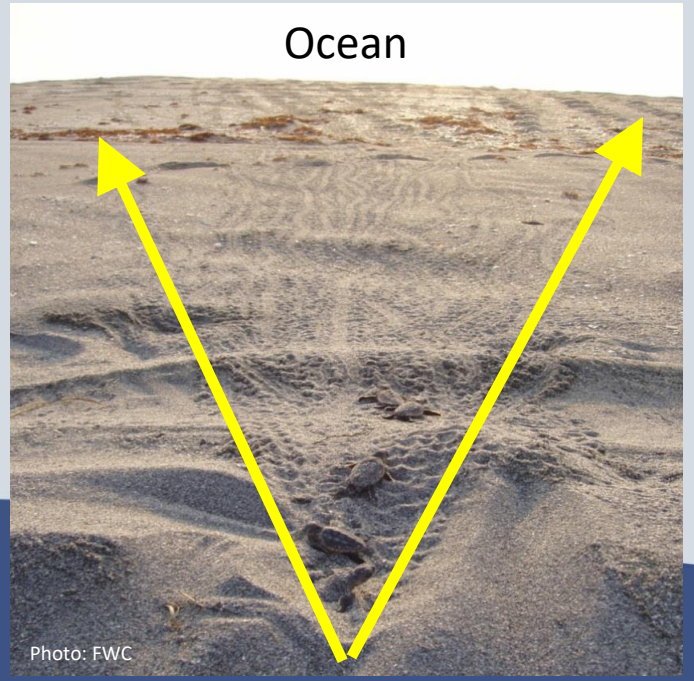


Photo: FWC

Disoriented hatchlings: circular orientation or not towards the ocean


Photo: K. Schanzle, FWC

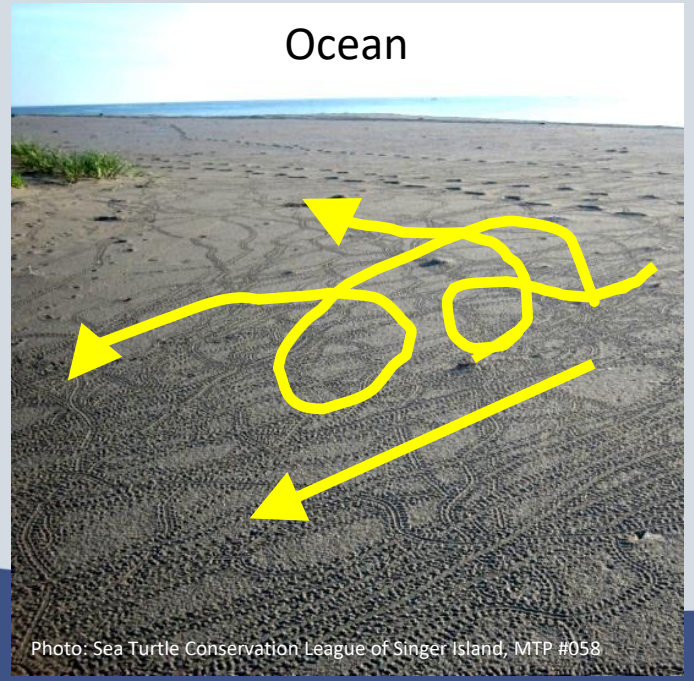


Photo: Sea Turtle Conservation League of Singer Island, MTP #058

Nesting females can disorient too!


Photo: S. Schaf, FWC

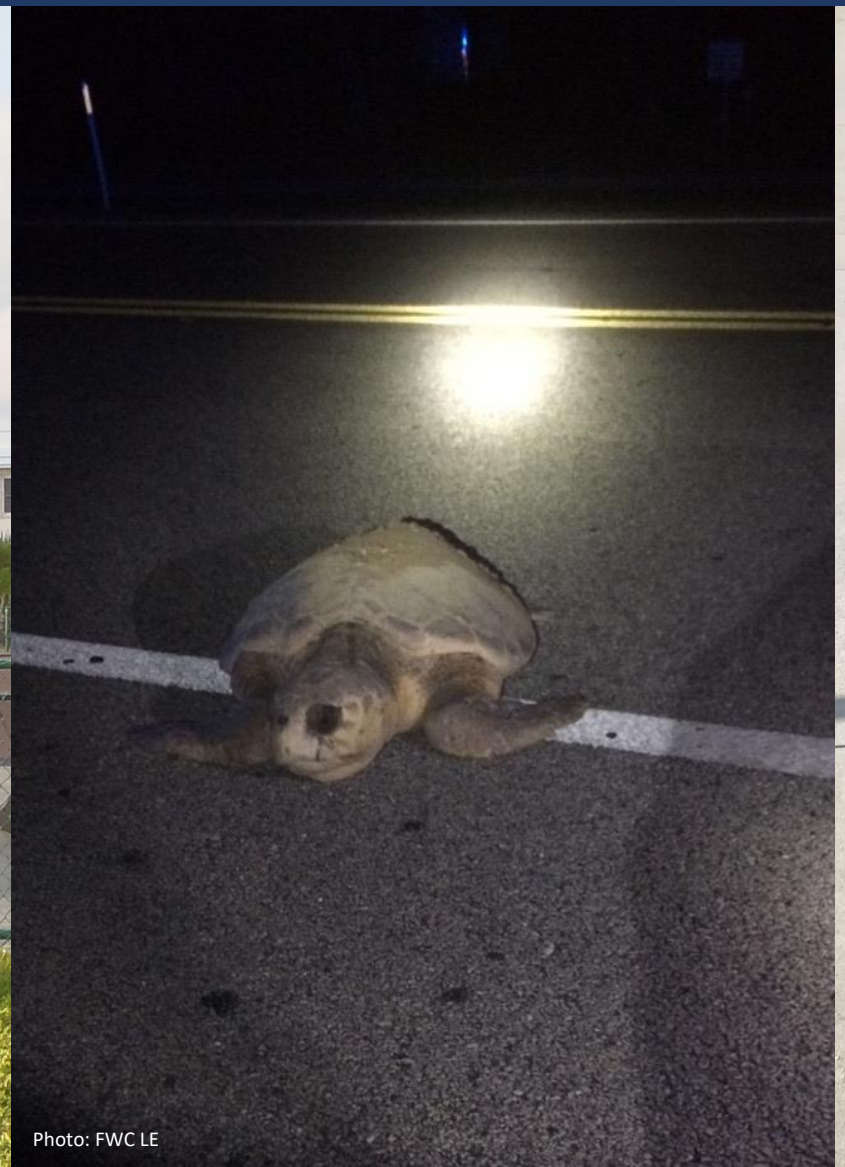


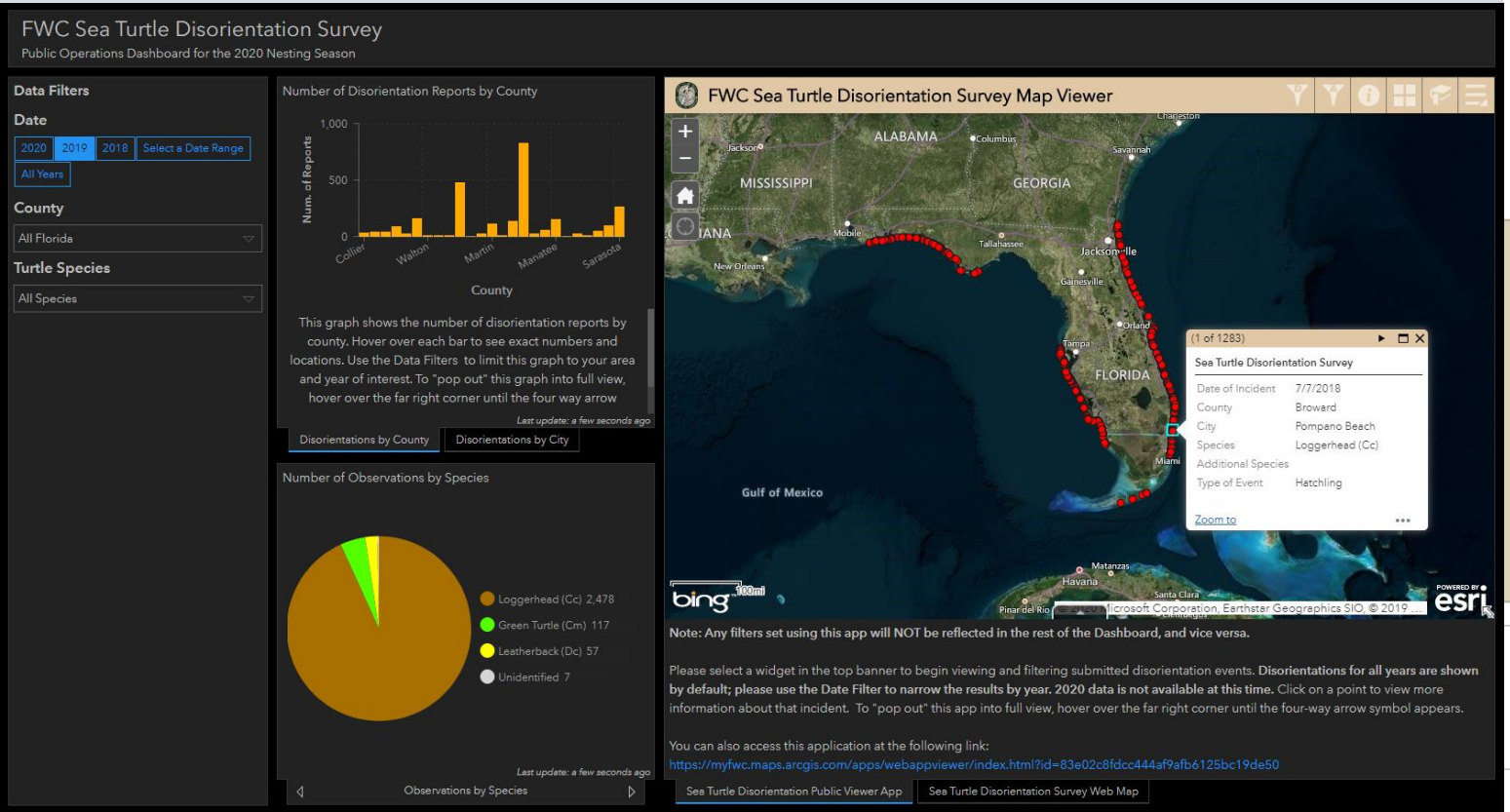
Photo: FWC LE

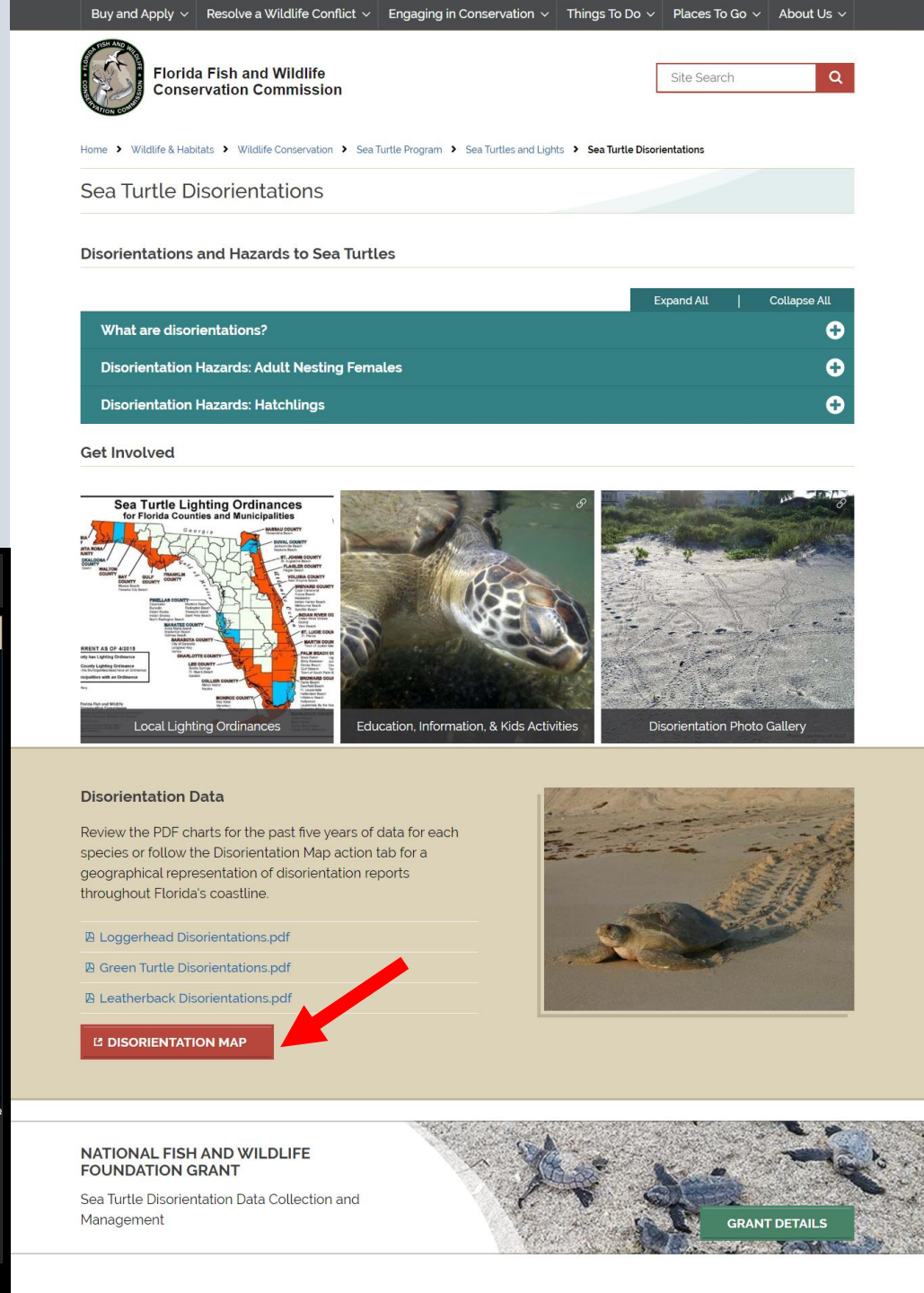

Photo: Ecological Associates, MTP #010

Tracking Disorientations

www.MyFWC.com

Search “disorientation”





You've identified the problems – now what?

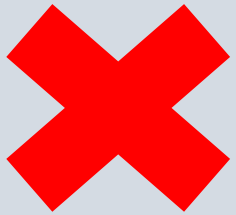
Lights should follow
FWC's Three Golden Rules:

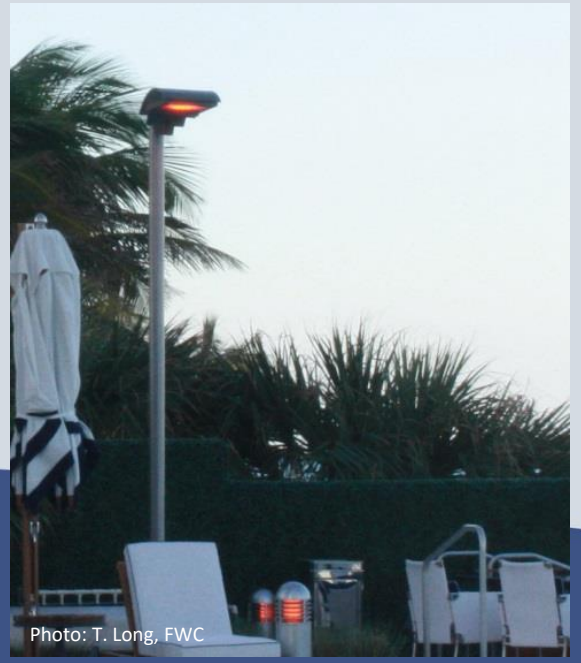
1) **Keep it Low**
2) **Keep it Long**
3) **Keep it Shielded**

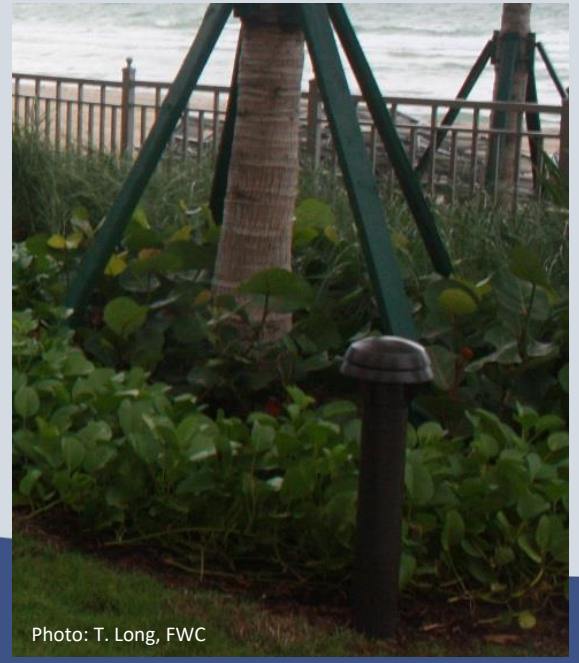
FWC Golden Rule Number 1

Keep it Low

- Keep mounting heights low to minimize light trespass.
- Keep it low also refers to lumens. Use only the lumen output needed. For most applications this can be minimal.







FWC Golden Rule Number 2

Keep it Low

Keep it Long (wavelength)

Use bulbs with wavelengths greater than 560 nm.

FWC Golden Rule Number 3

Keep it Low

Keep it Long

Keep it Shielded

Eliminate the point source of light.

- Use full cut-off or fully recessed fixtures.
- Use 180 to 270 degree external beachside shields when in proximity to the beach.

Photo: K. Schanzle, FWC

Photo: T. Long, FWC

Can streetlights really meet the Golden Rules?

YES!

Synergy Streetlight demo with FDOT – now being installed in Fort Lauderdale

Photo: T. Long, FWC

Cree RSW Series Streetlight demo with FPL – now on FPL approved products list

Photo: T. Long, FWC

FDOT Wildlife-Sensitive Roadway Designs

PROSECUTION AND PROGRESS – LIMITATIONS OF OPERATIONS – NIGHT WORK ALONG COASTAL ROADS. (REV 4-8-19) (FA 7-22-19) (1-2020)

SUBARTICLE 8-4.1 is expanded by the following new Subarticle:

- **8-4.1.1** Additional Requirements for Night Work Along Coastal Roads: The project is located adjacent to sea turtle nesting habitat. Direct all work zone lighting away from the beach to avoid illumination of or direct visibility from the beach. Shield luminaires to avoid lighting areas outside of the immediate construction area.

FDOT Design Manual (1/2020)

231.2.1 Wildlife-Sensitive Conventional Lighting

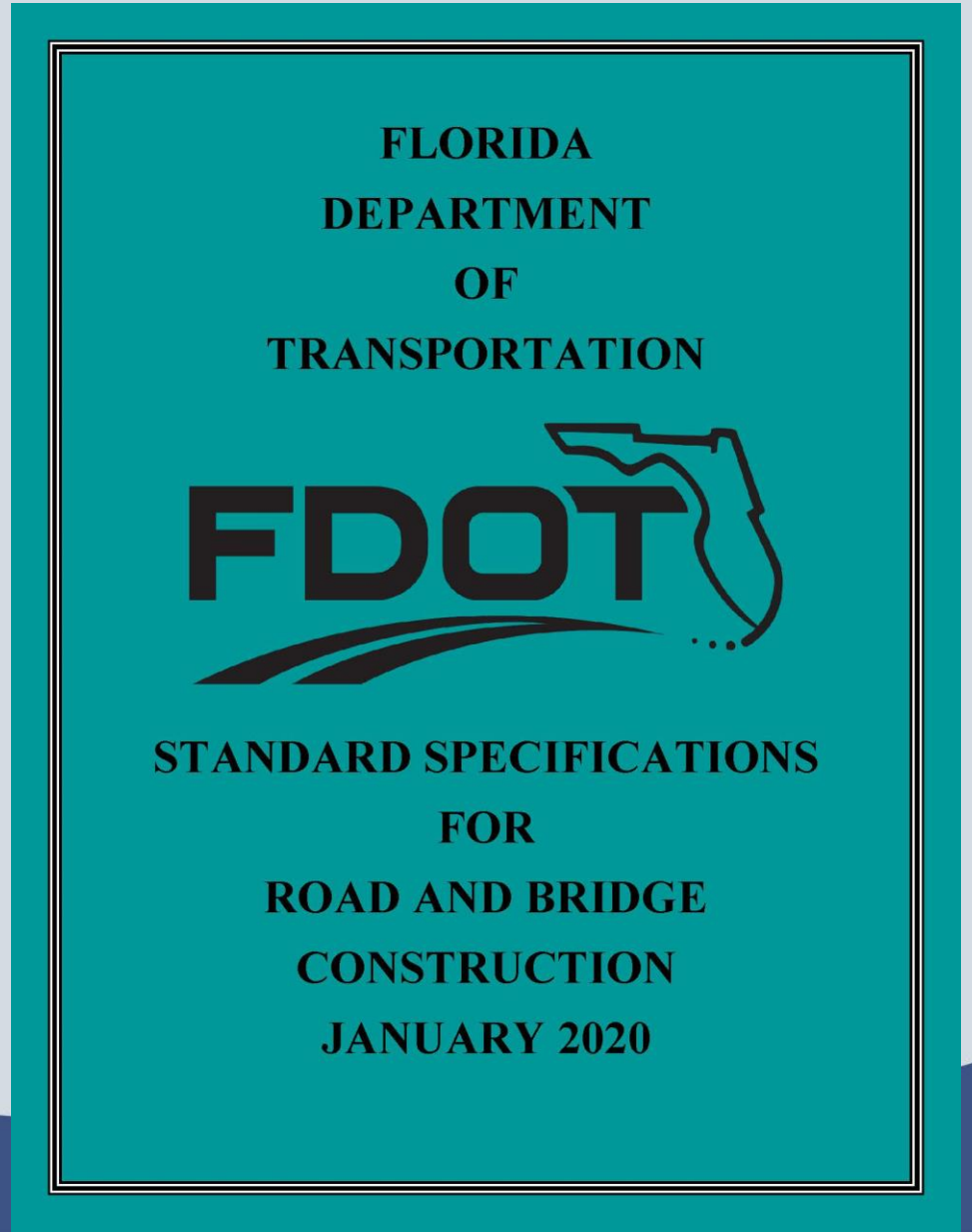
For conventional lighting near a wildlife area of concern (as determined by the Office of Environmental Management), incorporate the following design requirements:

1) Where feasible, orient luminaires away from the wildlife area of concern.
2) Design lighting system using luminaires from the Wildlife-Sensitive Conventional Lighting category of the APL.
3) Use the criteria for Wildlife-Sensitive Conventional Lighting from Table 231.2.1 in accordance with the requirements of FDM 231.3.

Standard Specifications for Road and Bridge Construction (1/2020)

992-2.4.2 Luminaires for Wildlife-Sensitive Conventional Lighting: Luminaires must meet the following additional requirements:

a. The light source for the luminaires must be true red, orange, or amber light-emitting diodes (LEDs) with no more than 1.75% of the spectral power distribution below 560 nm. Submit testing report.
b. The optics must have an IP 66 rating. Submit testing report.
c. The luminaire mounting assembly must be a slipfitter type designed to accommodate a nominal 2 inch pipe size (2-3/8 inch O.D.) arm or a pole top mounting assembly designed to accommodate a 2-3/8 inch pole top tenon.
d. Luminaires must have a IESNA light distribution curve (IES LM-79) designated by an EPA-recognized laboratory. Submit testing report.
e. Luminaires must meet a minimum pole spacing of 50 feet using the AGi32 lighting optimization tool in accordance with the settings shown in 992-2.4. Submit IES file.



“Halfway” Solutions to Lighting Problems

Timers, switching off lights, or changing LED colors seasonally are NOT recommended long-term solutions.

But WHY?

- Prone to malfunctions
- Turning off lights may create unsafe situations for drivers/pedestrians
- Switching colors fosters the perception that amber lighting is “less safe” than white lighting

Photos: T. Long, FWC

Thank you!

For questions, contact SeaTurtleLighting@MyFWC.com

Want more info?

www.MyFWC.com/seaturtle

FWC photo credit

Gopher Tortoise

Biology, Conservation, and Regulation

FDOT - 2020

Gopher Tortoise (*Gopherus polyphemus*)

- Only tortoise in North America east of Mississippi River
- Candidate for Federal Listing (ESA)

FWC photo credit

Gopher Tortoise (*Gopherus polyphemus*)

- Live to 40-60 years old
- Adults average 10 inches long
- Slow to reach sexual maturity
  - Between ages of 9 to 21

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Adults

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Juveniles

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Nests

- High predation on nests/juveniles
- Juvenile's shell stays soft for up to 7 years

FWC photo credits

Diet

- Herbivores
  - Low-lying vegetation
  - Broadleaf grasses, gopher apple, prickly pear, cactus, berries, and more
- Opportunistic
- Go up to 160 ft for food

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Habitat

Longleaf pine

Scrub

Coastal dunes

Pine flatwoods

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Habitat

FWC photo credits

Burrows

- Average 7 ft deep and 15 ft long
- Can have more than 1 burrow within home range
- Half-moon shape

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Burrows

- Proportional to size of tortoise
- Spend 80% of life in burrow
- Refresh burrow in fall and rest in winter

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Burrows

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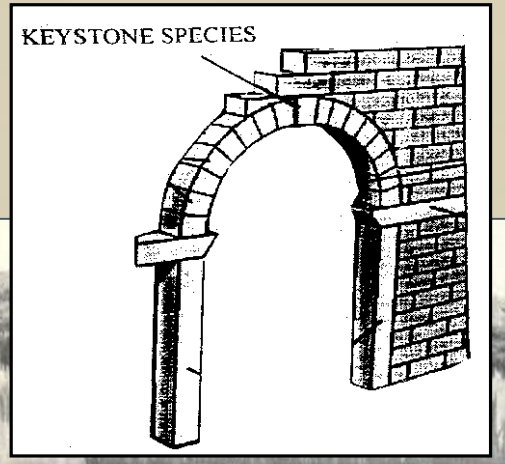
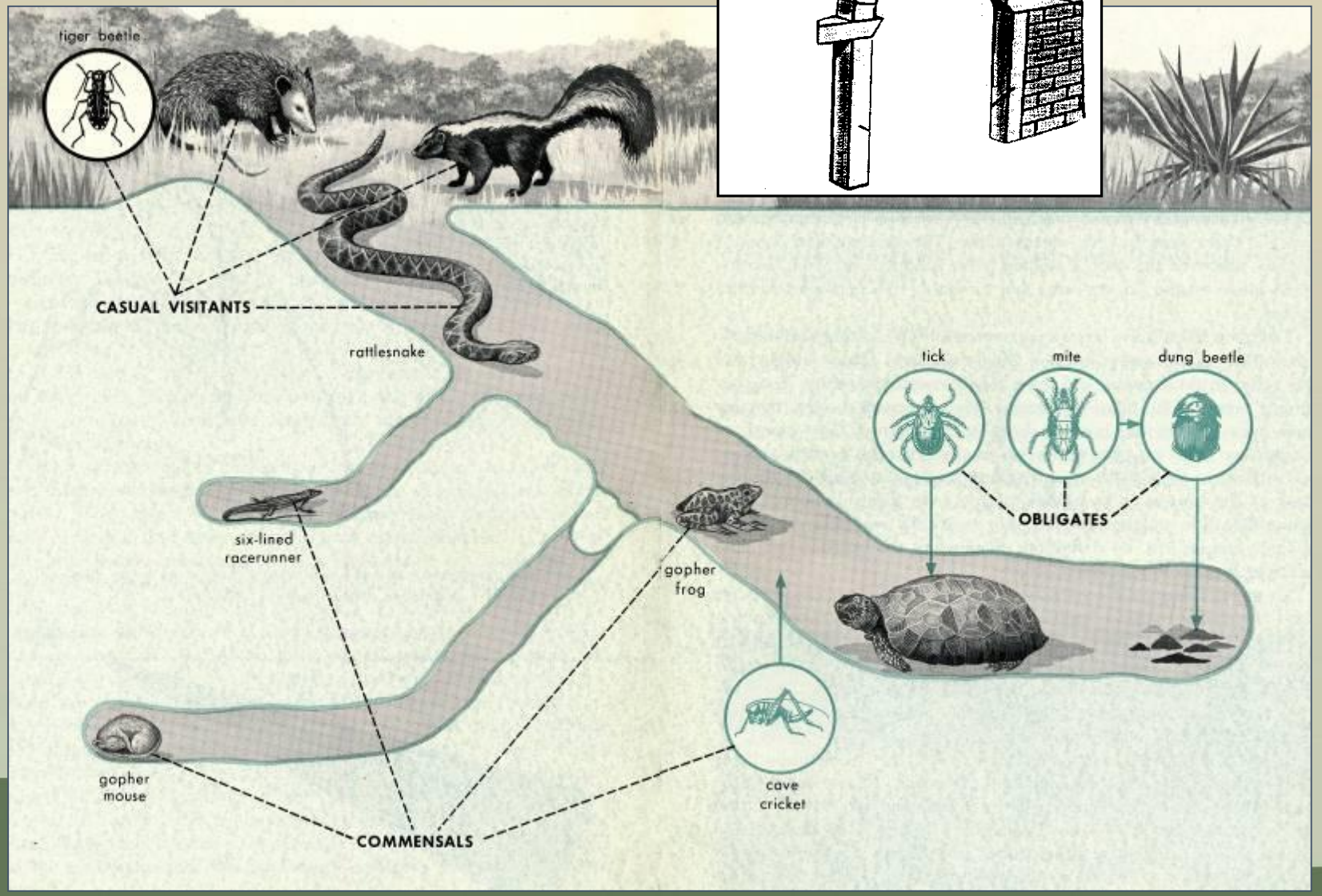
Keystone Species





Identifying GT Burrows

- Potentially Occupied
  - Active
  - Inactive
- Abandoned

FWC photo credits

Potentially Occupied

- Active
  - Half-moon shaped entrance
  - Clear of vegetation
  - Good repair
  - Loose soil
  - Tortoise tracks

FWC photo credits

Potentially Occupied

- Inactive
  - Half-moon shaped entrance
  - Vegetation growing
  - Good repair
  - Hard-packed soil
  - Partially covered with leaves
  - No tortoise tracks

FWC photo credit

Photo credit: Momoka Maeda

Abandoned

- Appears unused or dilapidated
- Entrance partially or completely collapsed
- Filled partially or completely with leaves or soil

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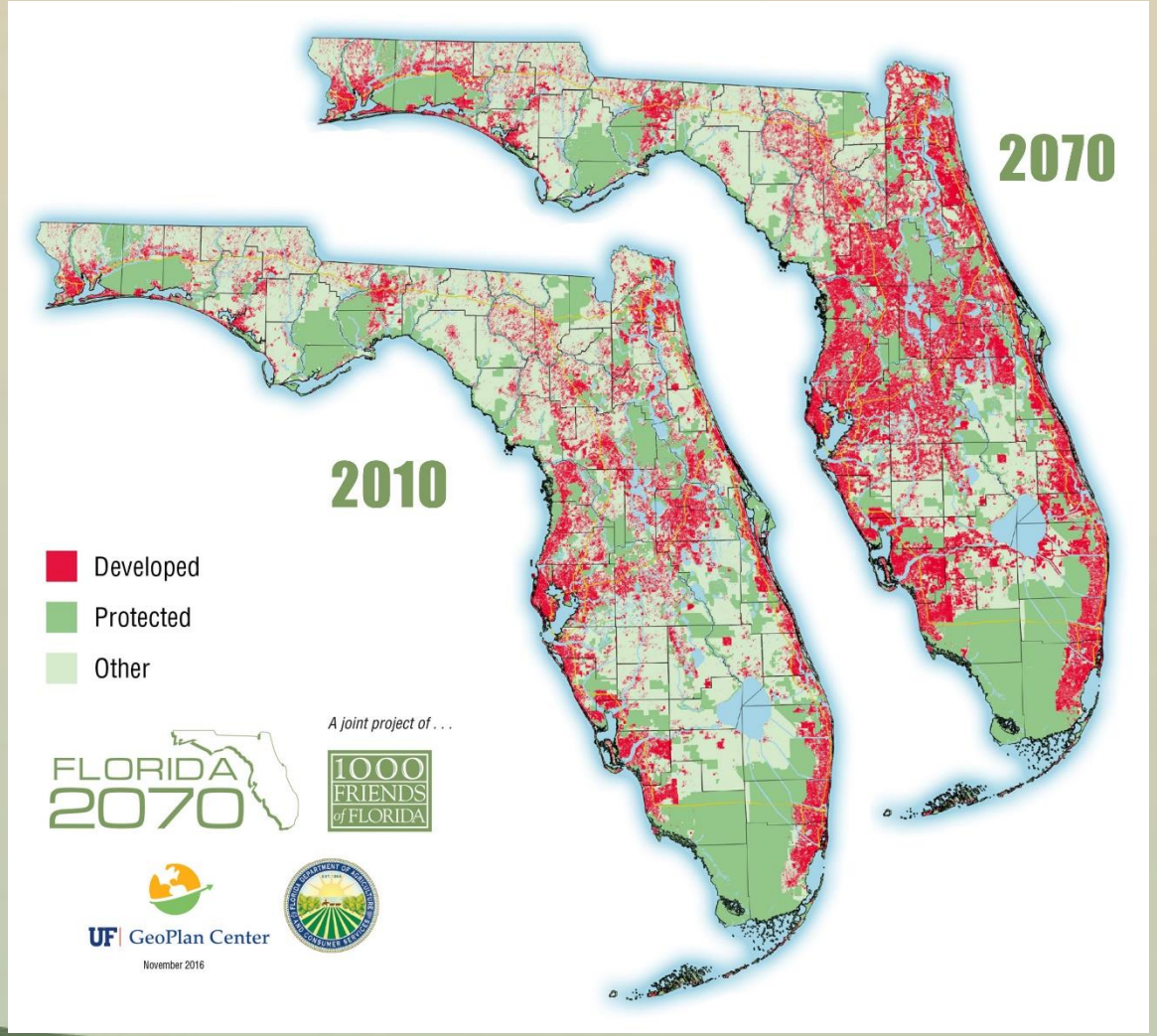
Why are populations declining?

- Habitat loss
- Fragmentation
- Degradation
- Disease
- Illegal harvest



Why are populations declining?

FWC photo credit

Upper Respiratory Tract Disease (URTD)

- Symptoms = discharge from nasal passage or eyes, swelling of area around eyes

FWC photo credits

Illegal Harvesting

FWC photo credits

What Actions Are Being Taken?

- Permitting
- Local Gov't Coordination
- Law Enforcement
- Habitat Preservation
- Habitat Management
- Population Management
- Disease Management
- Incentives
- Monitoring
- Education and Outreach
- Future Research

Photo Courtesy of www.floridastateparks.com

Management Plan (approved 2012)

- Goal = Restore/maintain viable populations so GT no longer needs listing
- Conservation action = regulation, permitting, law enforcement, etc.

Permitting Guidelines

- Permits provide authorization to impact tortoises and their burrows

Protections

- F.A.C. 68A-27.003(2)(d)3

  No person shall:

  - take or attempt to take
  - pursue, hunt, harass, or capture
  - possess, sell, or transport any gopher tortoise or parts thereof or their eggs
  - OR molest, damage, or destroy gopher tortoise burrows

Burrow Protections

- Without a permit, no person shall:
  - Place harmful substances or devices inside a burrow
  - Collapse any part
  - Block, cover, or fill
  - Exclude tortoises

FWC photo credit

Activities that **Do Not** Require a Permit

Bona fide…

- Routine agricultural practices
- Silvicultural activities
- Wildlife management activities
- Linear utility and highway right-of-way vegetation maintenance
- Routine yard maintenance that **does not damage a burrow**
- Hand trimming vegetation

FWC photo credits

Tips for Vegetation Maintenance

- Do not stand/drive equipment directly on top
- Mow at least 5 ft radius around burrow
- Hand trim up to burrow entrance

FWC photo credit

- Flag/stake hard-to-see burrows
- Use pesticides and herbicides according to label instructions + not immediately around burrow entrance

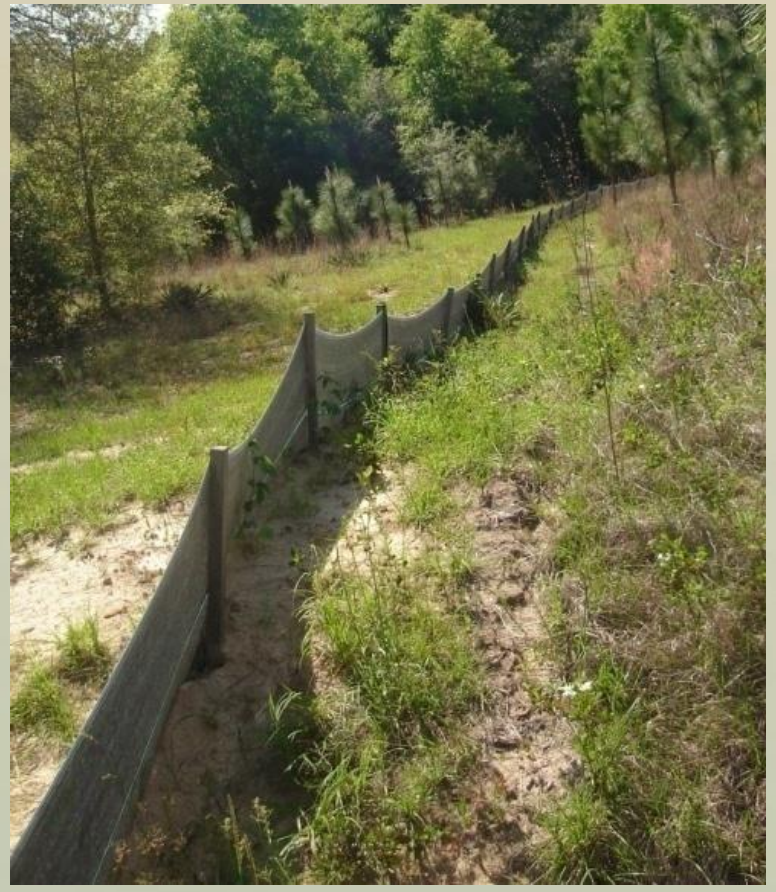
Activities that **Do** Require a Permit

- Any activity that may cause take, harassment, or molestation of GTs, or destruction of their burrows:
  - Clearing, grading, paving
  - Bulldozing, digging
  - Construction
  - Site preparation for development

FWC photo credit

Permit Types

- Authorized GT Agent
- Relocation
  - 10 or Fewer Burrows
  - Conservation
  - Temporary Exclusion
  - Disturbed Site
- Recipient Site
  - Long-term protected
  - Short-term
  - Public Conservation Lands
- Burrow Structure
- Scientific Collection



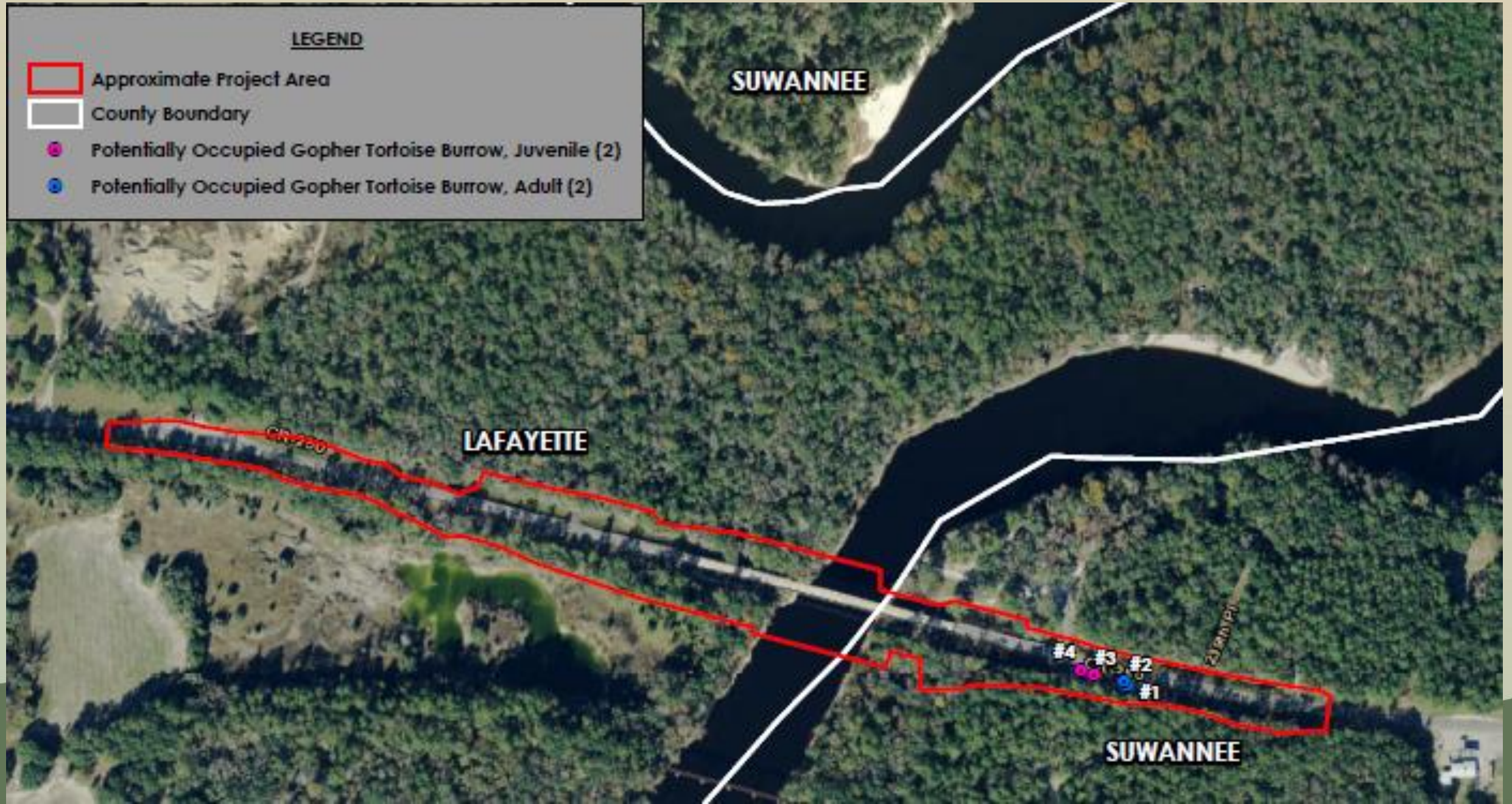
FWC photo credit

Authorized GT Agent Permit

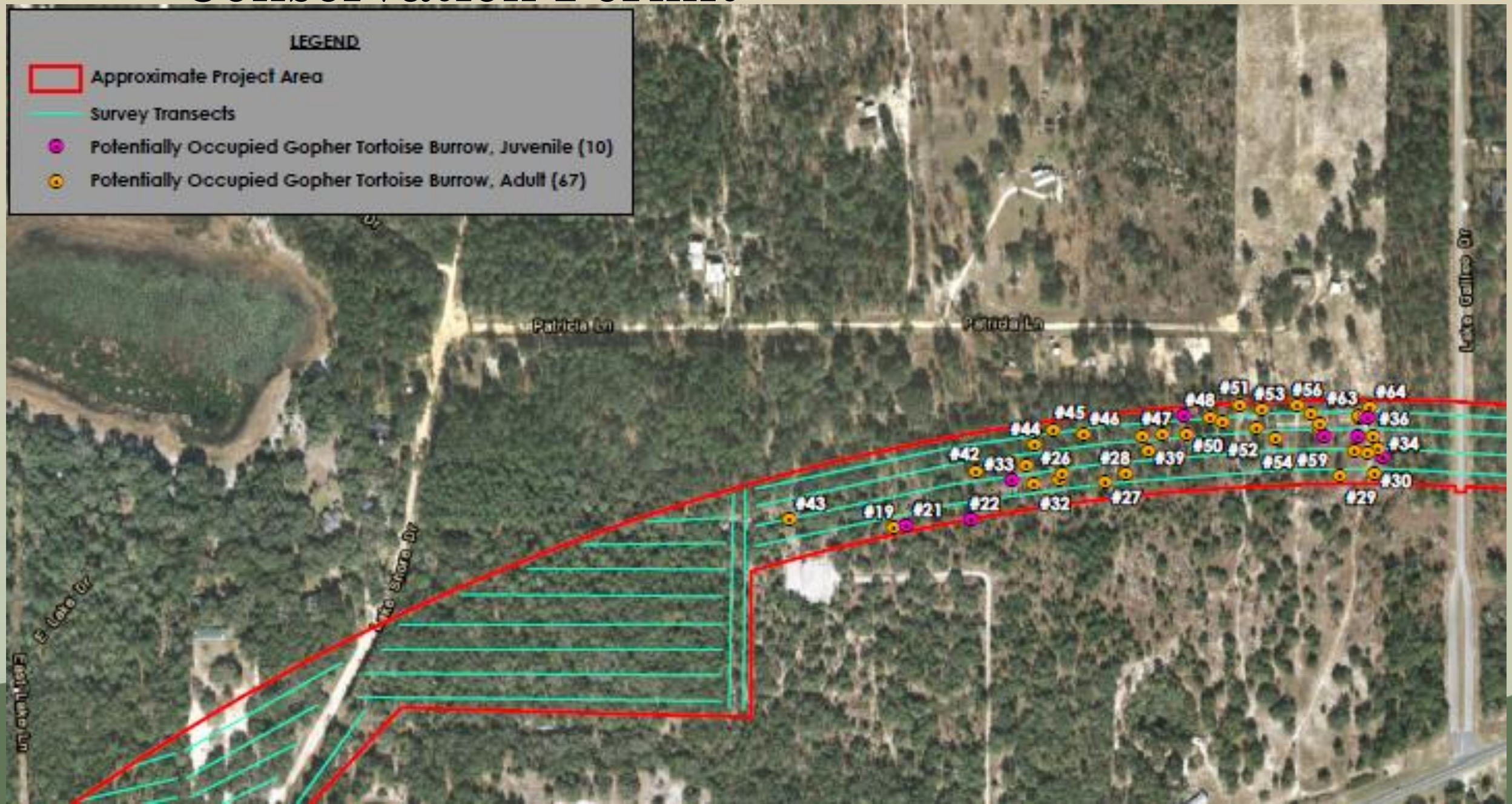
- Required when relocating tortoises to off-site location, for temporary exclusion permits, and for disturbed site permits
- Not all agents are permitted to perform every task

FWC photo credit

10 or Fewer Burrows Permit

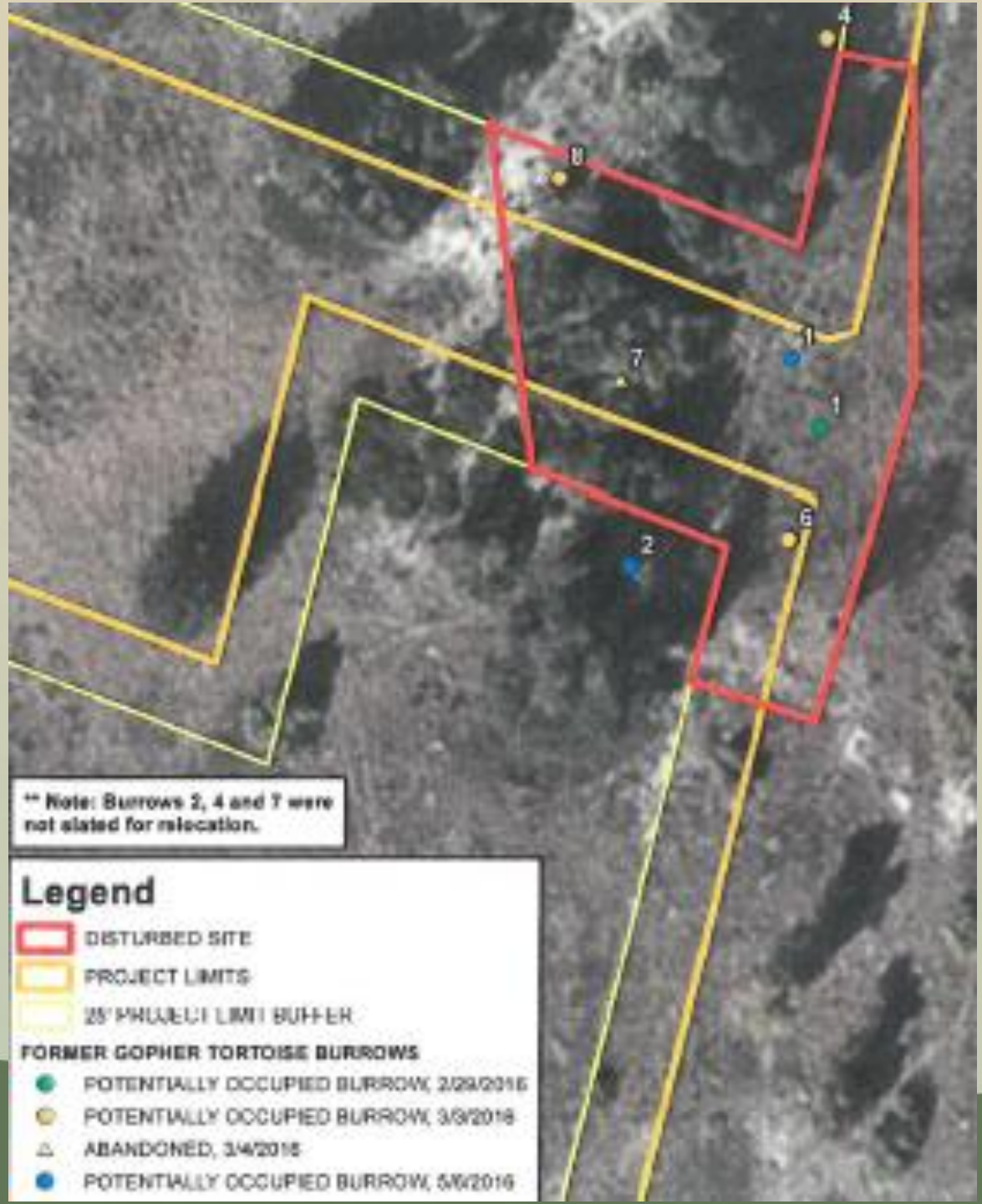


Conservation Permit



Disturbed Site Permit

Photo credit: Momoka Maeda



How to Avoid Need for a Permit

- Maintain 25-ft radius buffer during ground disturbance (e.g., fence installation, clearing vegetation or construction)

Avoid Creating “Islands”/“Crop Circles”

FWC photo credit

Tortoise-wise Community Program

- Tortoises do live in neighborhoods!
- Landscape with native plant species
  - Florida Guide to Gopher Tortoise Friendly Plants
  - Available at MyFWC.com/GopherTortoise
- Keep dogs away from burrows and tortoises
- Help tortoises across roadways
- Download GT App
- Report mortalities

FWC photo credit

Tortoises and Roads

- Move it to other side

  → in direction it was headed

- If injured: Contact Assistant Biologist to locate Rehabber (850) 921-1030

FWC photo credit

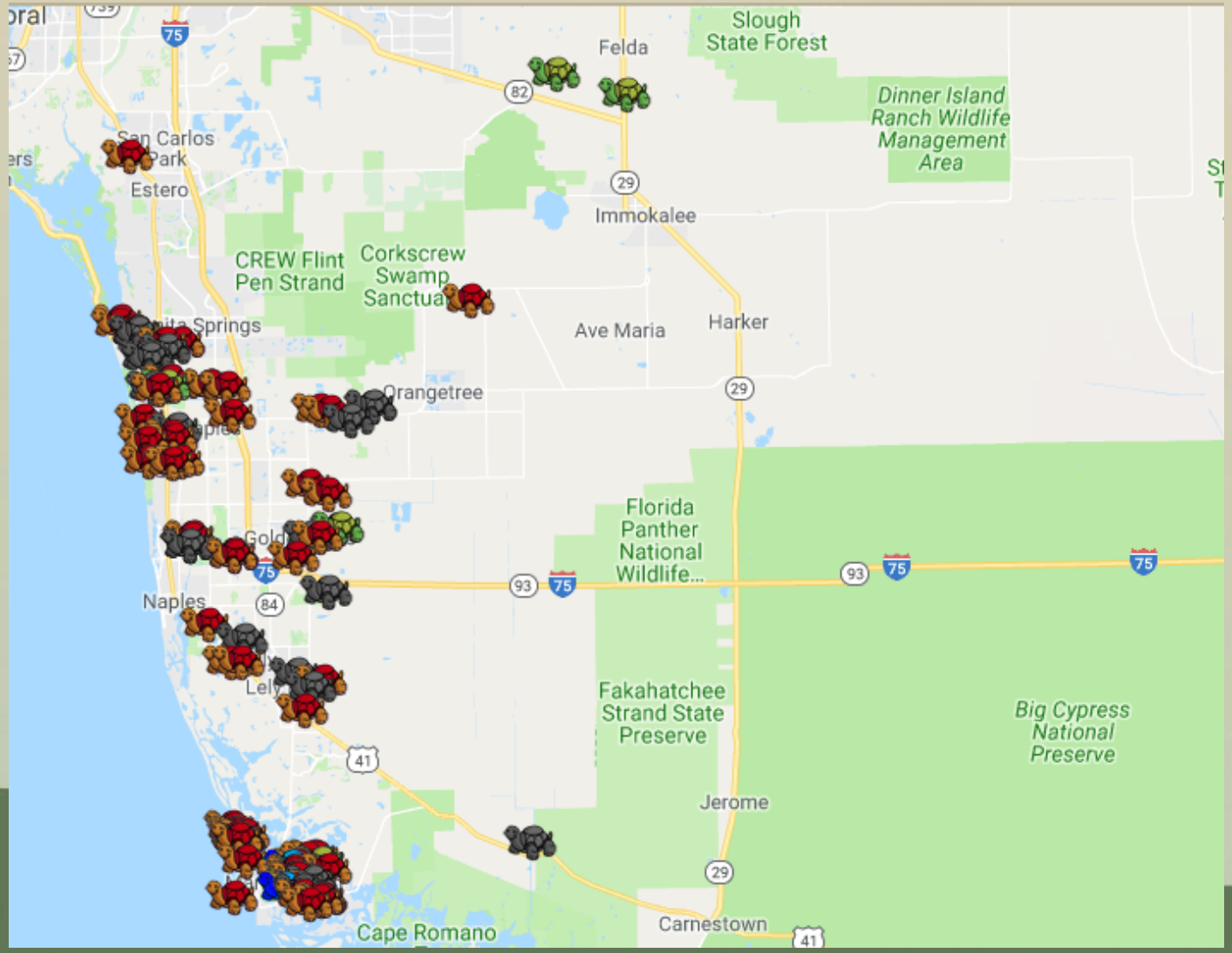
Waif Tortoises

- Waif = GT from unknown location, or kept as pets for many years
- Contact Assistant Biologist for options (850) 921-1030
- Please **DO NOT** relocate to parks, etc. → possible disease transmission!

FWC photo credit

Online Permit Locator Map

https://public.myfwc.com/maps/gtmapping/default.aspx



Wildlife Alert Hotline

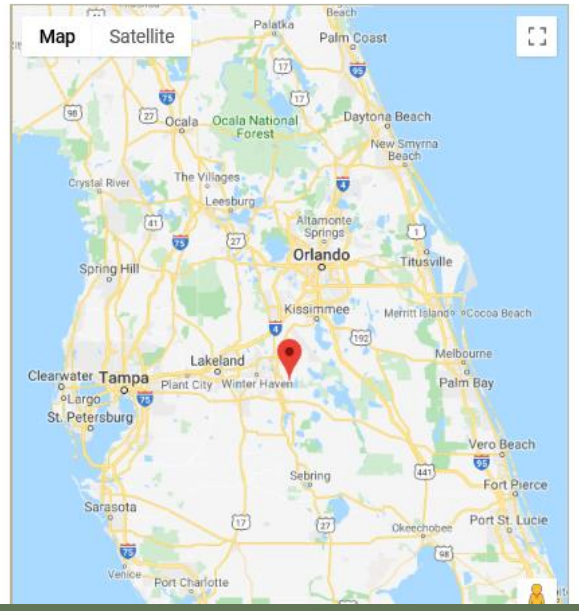
- Wildlife Alert Hotline: 888-404-FWCC (3922)
- Tip Line: Text or email Tip@MyFWC.com
- Wildlife violations vs Permit violations

Report Mortalities

Gopher Tortoise Mortality

To better protect and understand the gopher tortoise, data on mortality observations in Florida can help track the density of gopher tortoises in urban areas. The FWC and other conservation groups can use this data to further protection efforts. Florida's citizens are a valuable resource when it comes to gathering data. This survey will help to determine areas of higher mortality and help the FWC and other groups develop new plans to enhance the protection of the gopher tortoise.

Read More Information



Dead Gopher Tortoise Form

Read Instructions

* Required fields

Latitude * 27.990644851725232

Longitude * -81.55570060895947

Date of Sighting *

(MM/DD/YYYY)

Carapace Size (Upper shell length)

- ○ 1-7 inches
- ○ > 7 inches
- ○ Unknown

Best Description of Me

- ○ Professional (biologist, forester, professor)
- ○ General Public
- ○ Other

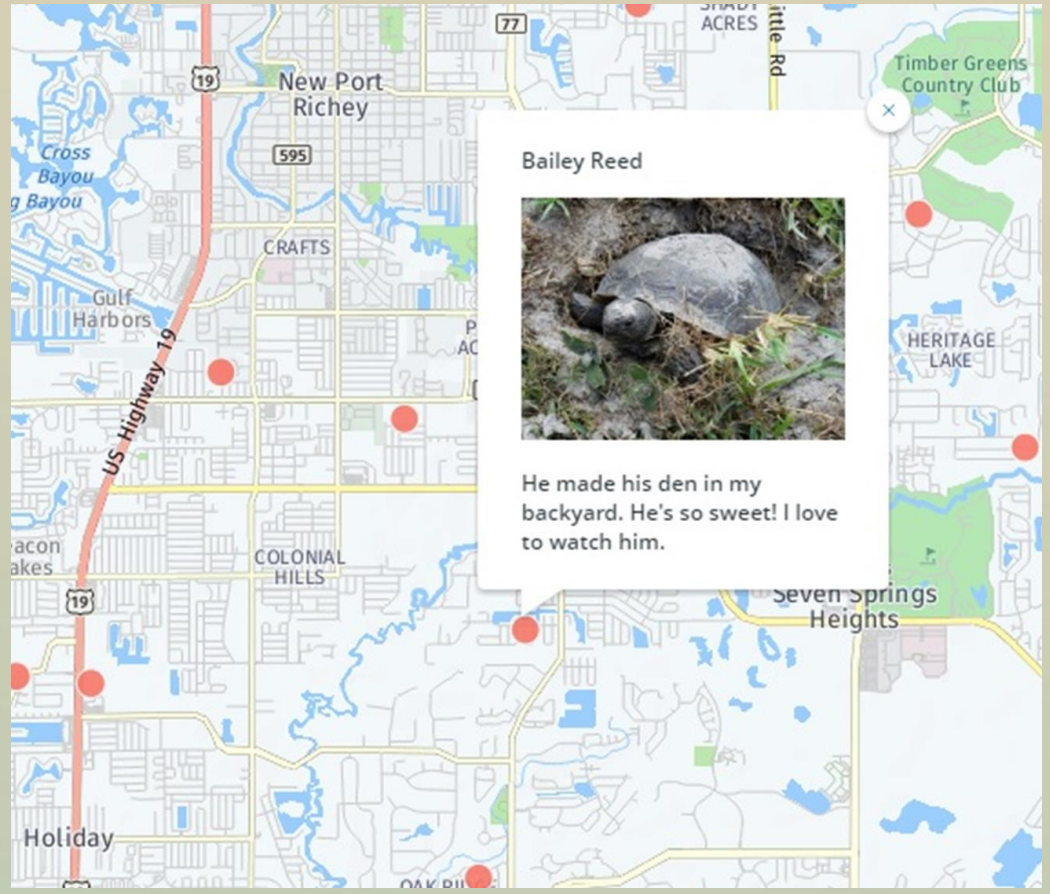
My Name *

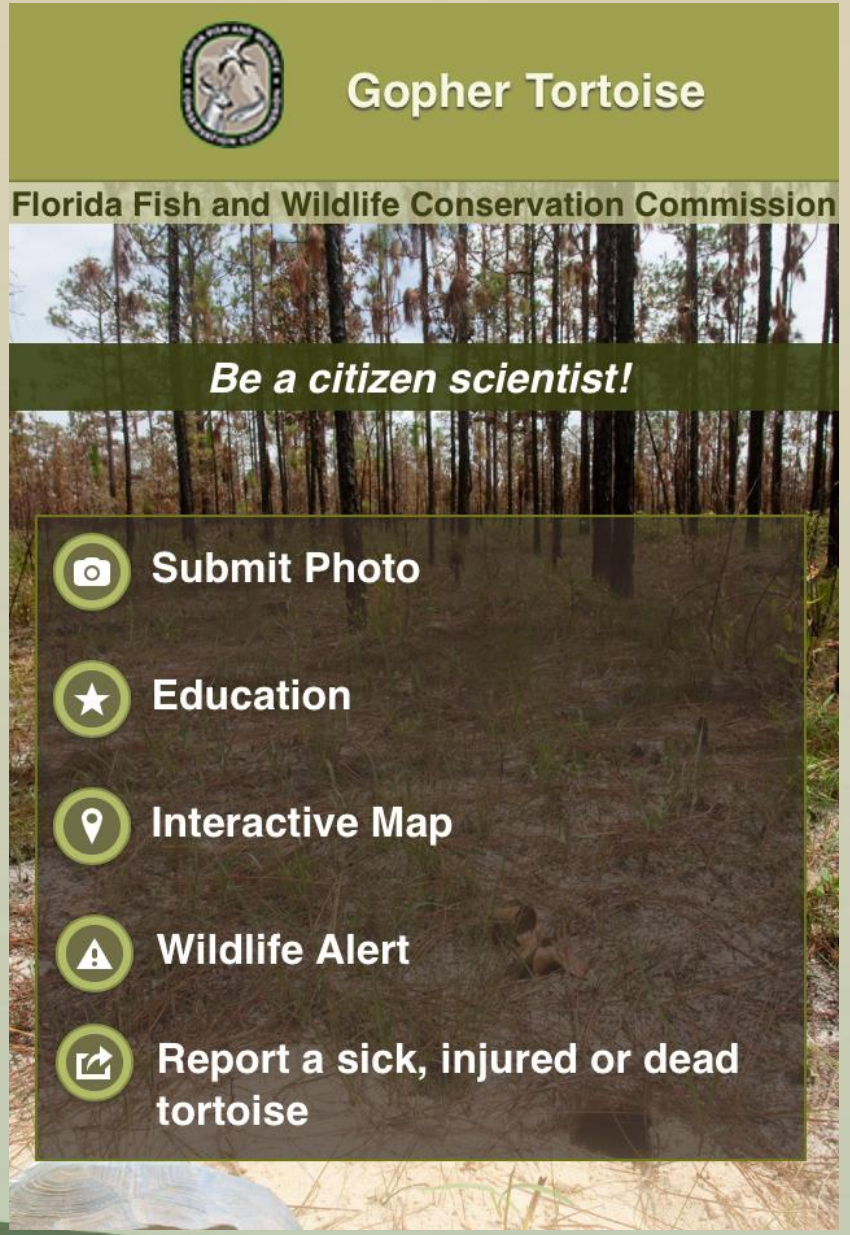
Organization Name

Email *

http://MyFWC.com/GopherTortoise

Tortoise App

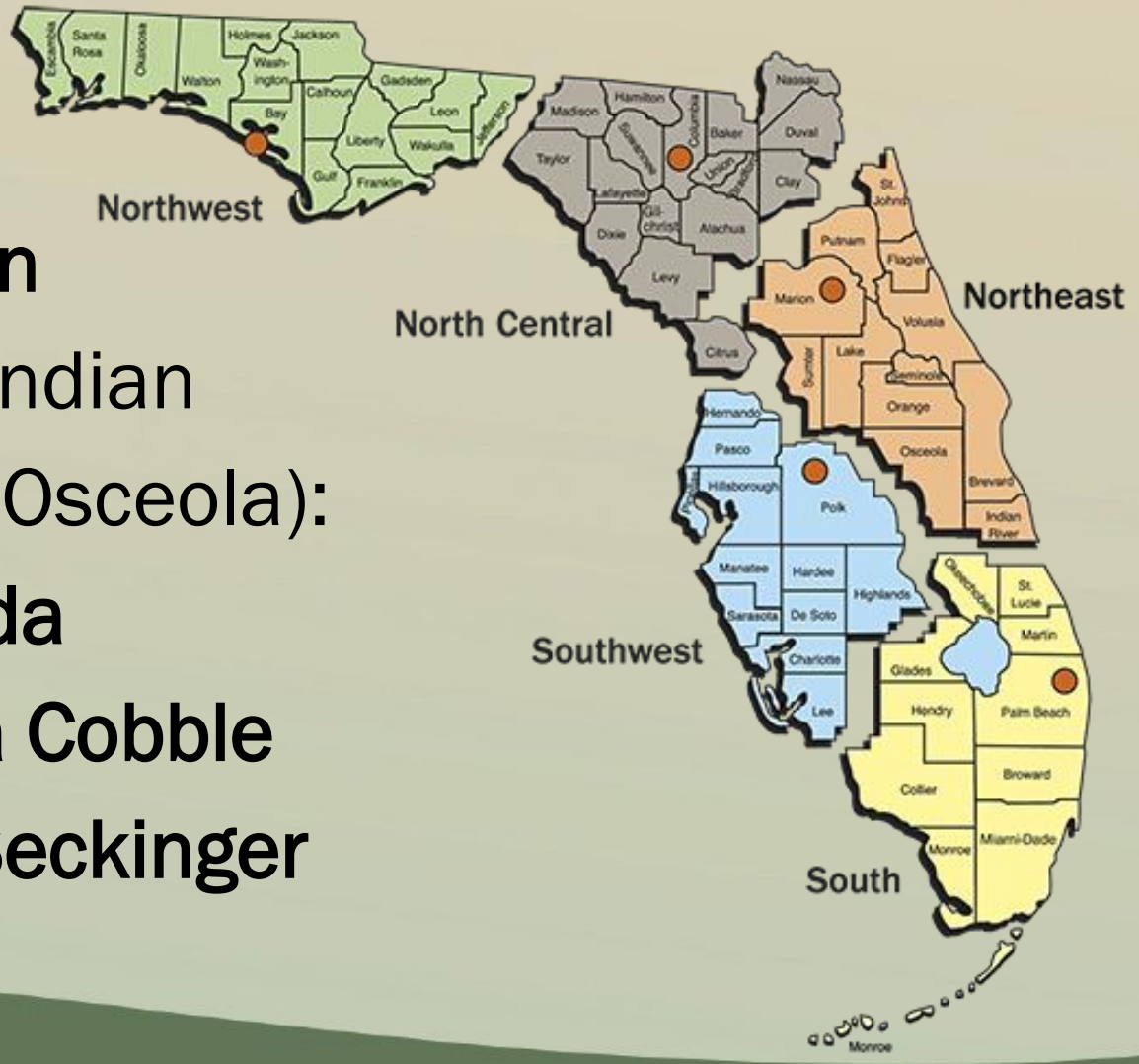




https://myfwc.com/wildlifehabitats/wildlife/gopher-tortoise/app/

Regional GT Biologists

- SW: **Kyle Brown**
- S (+ Brevard, Indian River, Orange, Osceola): **Momoka Maeda**
- NE: **Samantha Cobble**
- NW/NC: **Eric Seckinger**



http://MyFWC.com/GopherTortoise

THANK YOU!

FWC photo credit

http://MyFWC.com/GopherTortoise

Wildlife Crossings and Passage Structures

February 2020

Sean Greene, Land Use Planning Program

Office of Conservation Planning Services

Wildlife Passage Structures

- Three primary types:
  - Bridge underpasses
  - Culverts
  - Bridge overpasses
- Many originally designed to pass water beneath road infrastructure
- Fencing must be used to direct wildlife to passage structures
- Tend to focus on large mammalian species

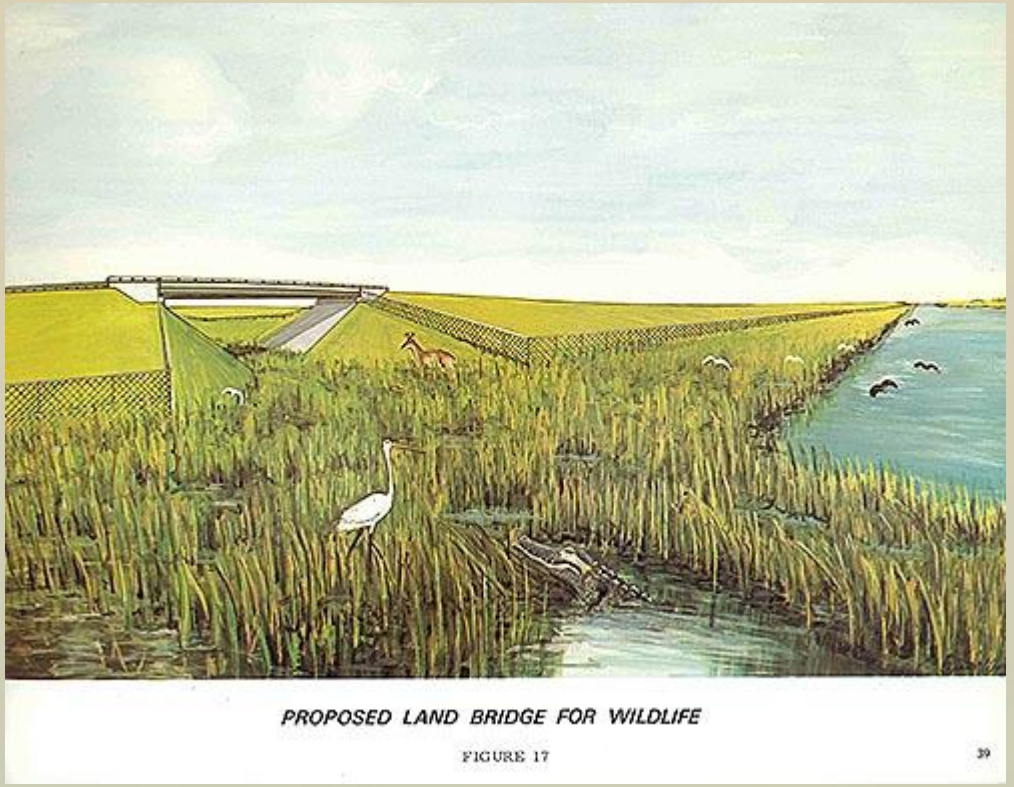
amusingplanet.com

humansandnature.org

arc-solutions.org

Wildlife Crossings in Florida

- Range in size from 12 inch culvert pipes to the bridge underpasses on I-75 that measure 8 feet high and 120 feet wide
- First wildlife crossings were included during the planning for the conversion of Alligator Alley to I-75 in 1972



PROPOSED LAND BRIDGE FOR WILDLIFE

FIGURE 17

39

- Hundreds of wildlife crossings in Florida today
- FDOT, FWC, and USFWS consider the need for wildlife crossings in all new road construction and expansion

FDOT Wildlife Crossing Guidelines

- Guidelines “evaluate the appropriateness of including wildlife crossings…for proposed projects”
- Consultation during the ETDM and PD&E
- Define situations when a crossing may be needed and identify the goals and limitations of crossings

Naples Daily News

- Regularly updated and have been valuable in codifying the cooperation between FDOT, FWC/USFWS, and local stakeholders

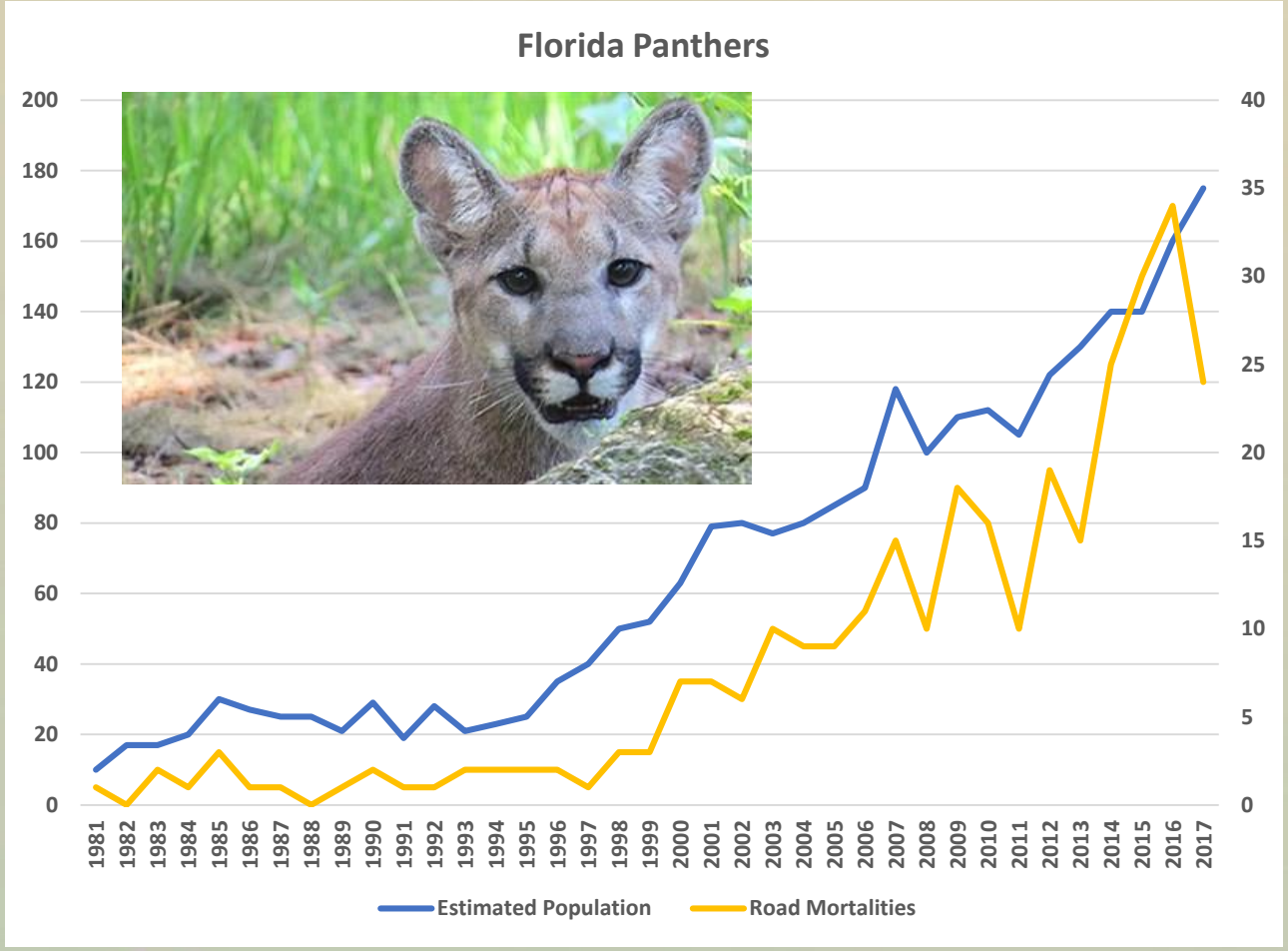
Wildlife Vehicle Collisions (WVCs)

- Reduce Wildlife Vehicle Collisions (WVCs)
  - 2.6 million WVCs per year in US
  - 59,000 human injuries
  - 440 human deaths
  - $21.8 billion in damages
  - 4-10% increase per year
- Florida Black Bears
  - WVCs account for over 90% of bear deaths in FL
  - WVCs with bears have increased steadily since 1981
    - Over 50% increase in last 10 years

K. Gunson, G. Mountrakis, L. Quackenbush (2011)

Florida black bears can weigh up to 740 pounds.

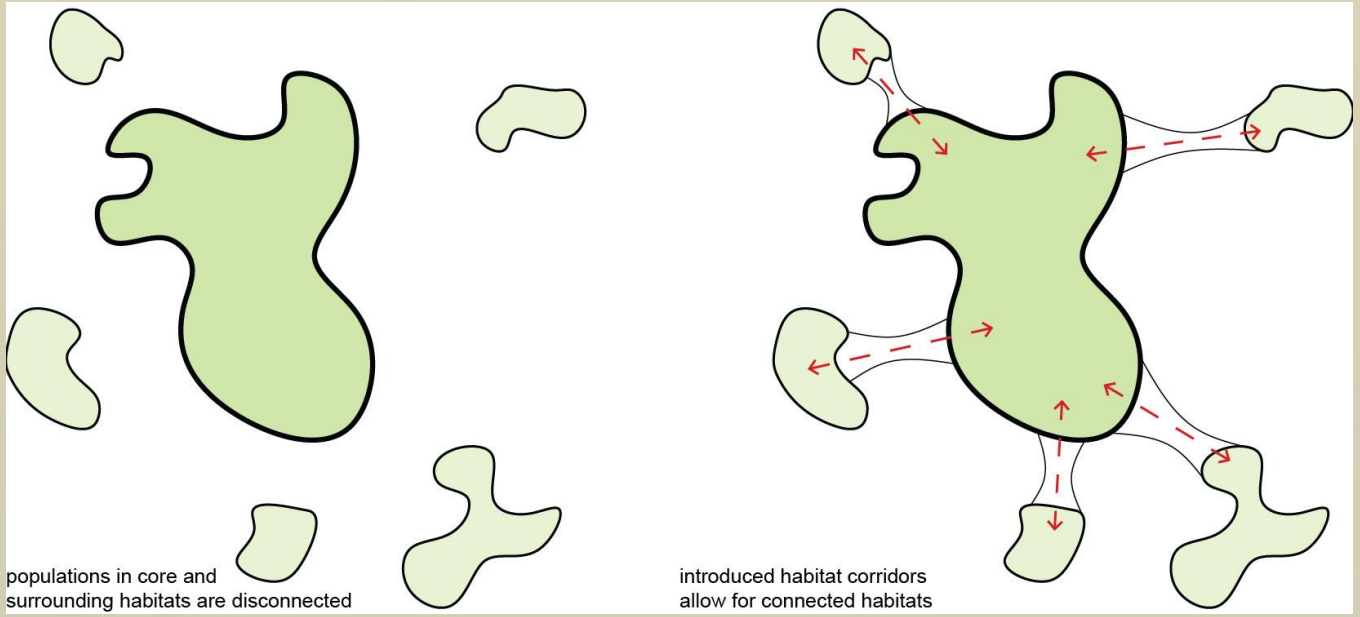
Florida Panther

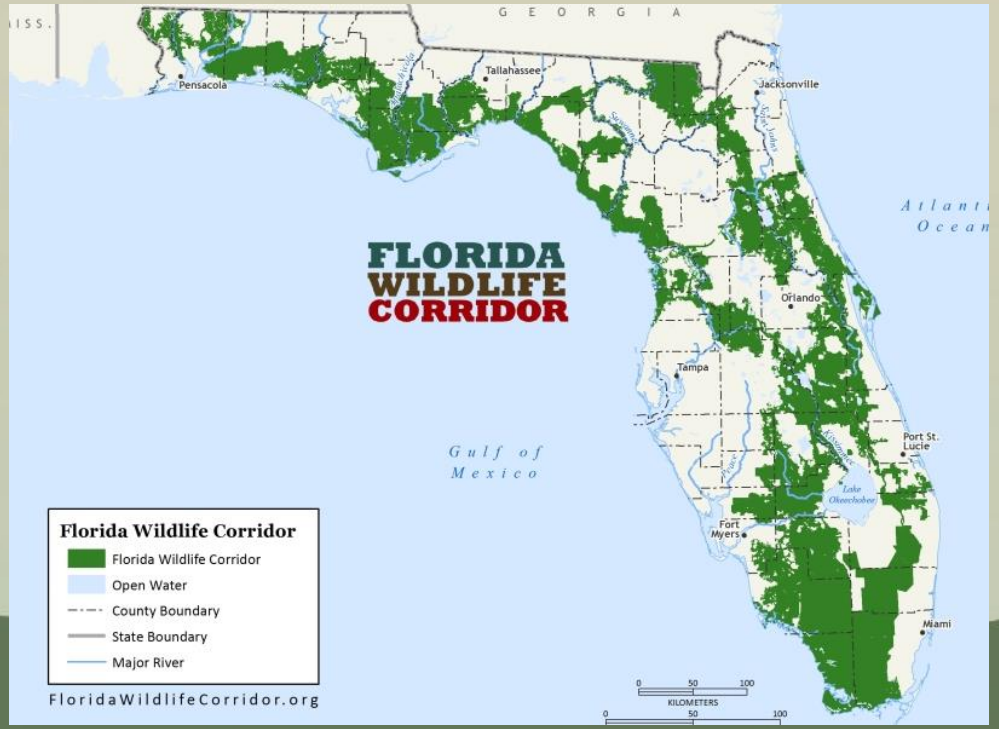


- 1981-1999: 1.5 mortalities per year
- 2000-2017: 15+ mortalities per year
- 59% of panther deaths are due to WVC
- 66% less than 3 years old
- Early measures:
  - Lower speed limits at night
  - Widening road shoulders
  - Reflectors
  - Rumble strips
  - Public information
- Most effective (and most expensive) measure remains wildlife crossings
- Early measures reduce WVCs, wildlife crossings can eliminate them

Wildlife Populations

- Habitat Connectivity
  - Deer – 7 square miles
  - Black Bear – 15 square miles
  - Coyote – 60 square miles
  - Panther – 200 square miles
- Genetic Isolation
  - “Island Populations”
  - Increased inbreeding and disease risk
  - Approximately 20 black bears isolated at Chassahowitzka





Case Study: Lake Jackson Ecopassage

- 4000 acre sinkhole lake bisected by US 27
- Turtles regularly cross in search of water
  - 2,710 crossing attempts per year per mile
- 11,000+ WVCs over 5 year period
  - 98% mortality rate for crossings
- FDOT, Capital Regional Transportation, Leon County, and NGOs work to address issue
- Construction of solid wall and multiple culverts in 2010
  - $3.4 million in federal stimulus money
  - 0 recorded mortalities since

Lake Jackson Turtle Rescue

Small Animal Design

- Entrance coverage
  - Especially for prey species
  - Montana Study
    - 42.9% increase in passage rate when coverage added
- Shelving throughout crossing
  - Especially when water present
  - Montana Study
    - 0 small animal species use of wet culvert without shelving
    - 14 species once shelving added

Illustration by Summer Ortiz

Large Animal Design

- Require a large cross-sectional space (passage height x width)
  - Limited to large (7+ foot diameter) culverts or bridge underpasses
  - Clear lines of sight are highly preferred
- More sensitive to influence of human co-use
  - Large mammals will develop strategies to minimize human interactions
  - Temporal divergence (humans at day, wildlife at night)
  - Physical divergence (humans cross on north path, wildlife on south)
- In Washington study, one paired bridge underpass had a cement trail frequented by humans during the day
  - Over 90% of wildlife crossings occurred through the opposite underpass

Photo by Carlton Ward Jr.

Conclusions

- Bridge underpasses and culverts play a valuable role in maintaining habitat connectivity and reducing wildlife vehicle collisions
- Wildlife crossings are the only method proven to fully eliminate wildlife vehicle collisions on targeted sections of roadway
- A wide variety of species will make use of wildlife crossings
- Specific design elements can increase the utility of wildlife passage structures for specific types of species

- Jason Hight, Program Administrator
  Land Use Planning Program Administrator
  (850) 413-6966

- Sean Greene, Land Use Planning Biologist
  14495 Harllee Road
  Palmetto, FL 34221
  (386) 406-0814

Questions?

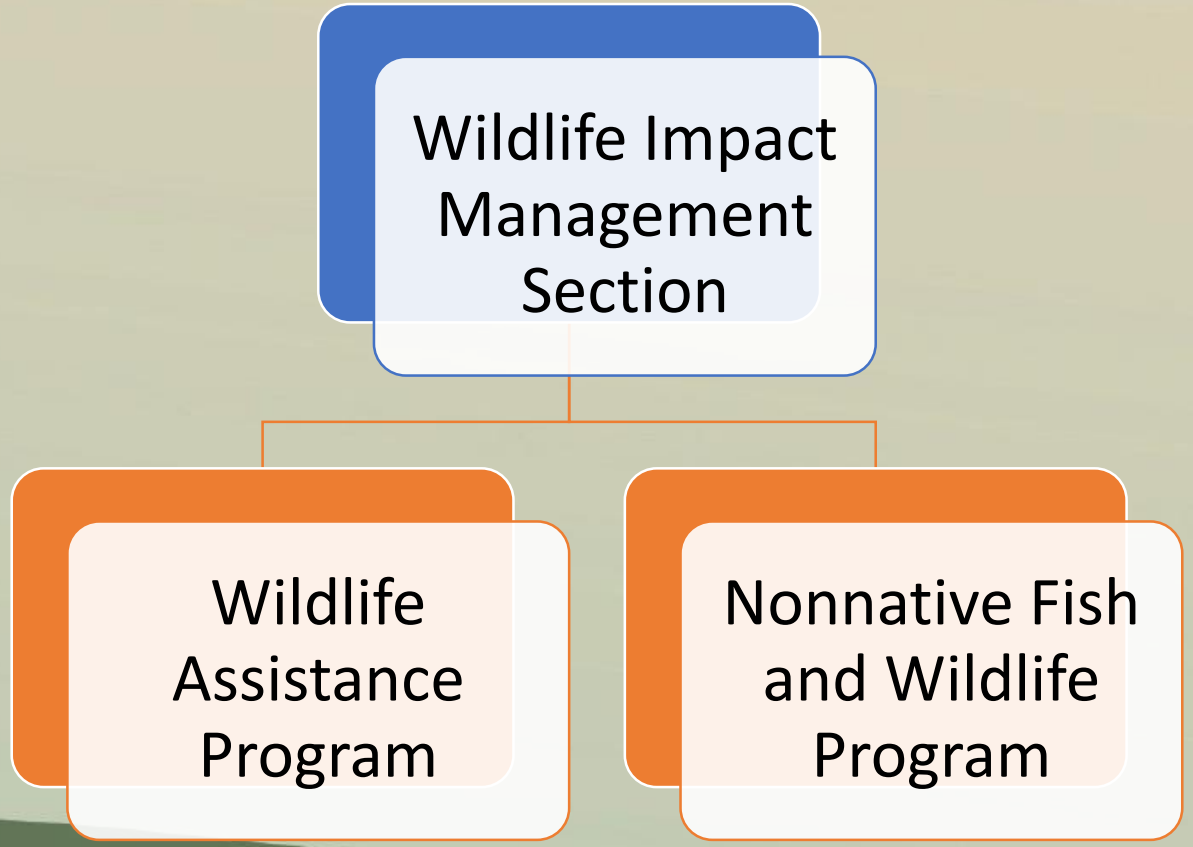





Wildlife Assistance Program

Greg Kaufmann
Florida Fish and Wildlife Conservation Commission
Wildlife Impact Management Assistant Section Leader

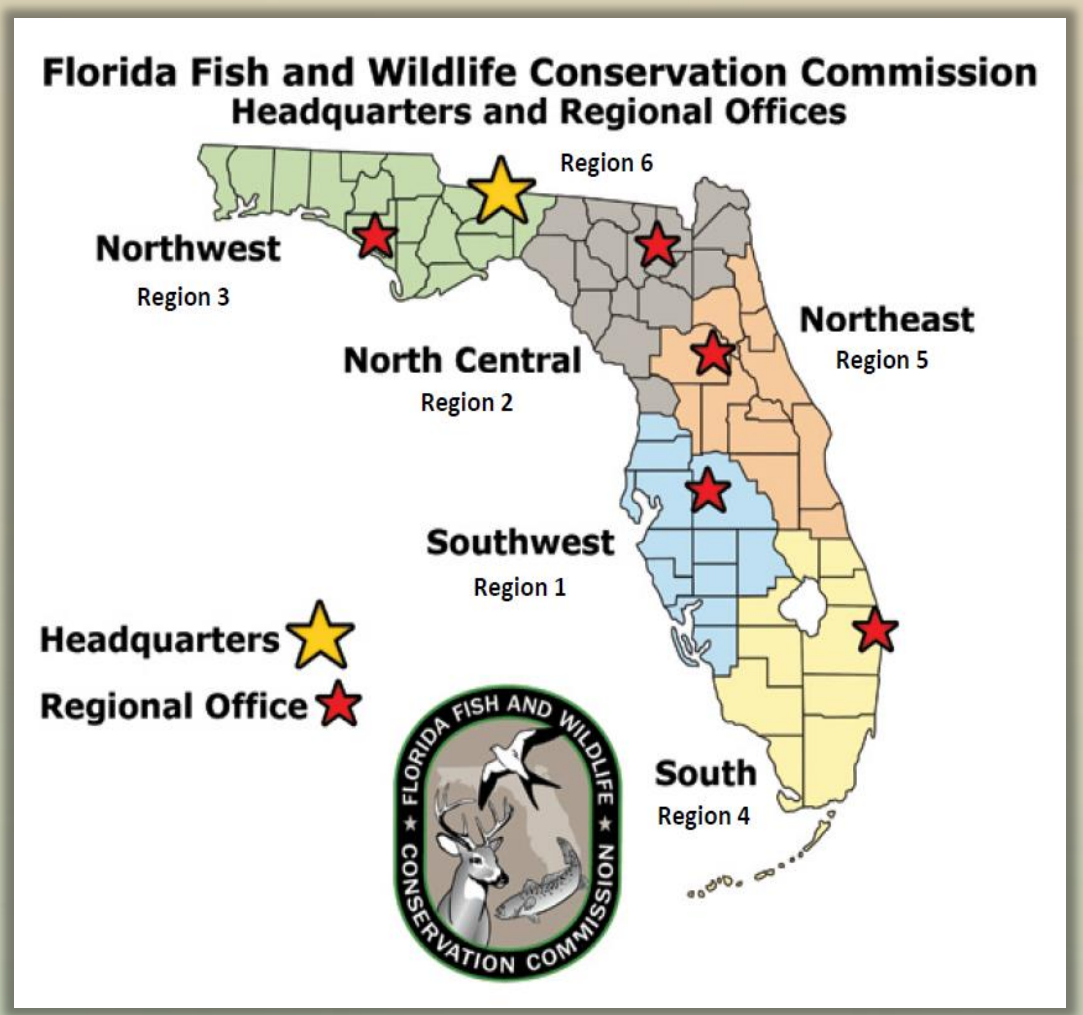
Mission: Minimize adverse impacts of fish and wildlife on Florida's environment, economy, and human health and safety.



Wildlife Assistance Program

…Addressing Conflict, Fostering Coexistence

- Six regional staff providing technical assistance to foster coexistence
  - Primarily over the phone
  - Equipment loans available
- Partnerships and coordination with other agencies and NGOs
- Pro-active engagement of communities and neighborhoods



Quick Facts

- Current population ~ 22 million (third most populous state)
- ~1000 people coming into Florida per day
- ~ 100 million visitors each year
- Estimations predict Florida's population to reach 26 million by 2030

Current Trends

- Human-wildlife conflict & Floridians
- Increase in overall complaints
- Public not aware of agency role
  - Media covers trapping & rescue events of:
    - Sea turtles
    - Panthers
    - Manatees
    - Bears

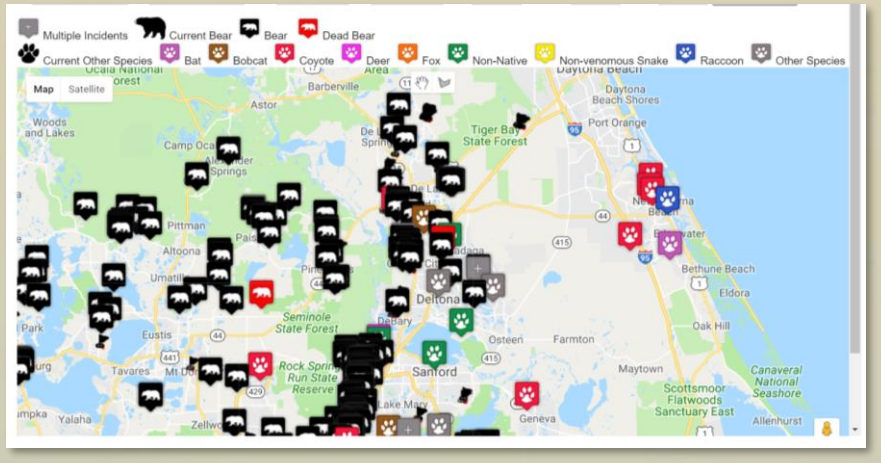
Florida Panther, FWC photo- Palm Beach County

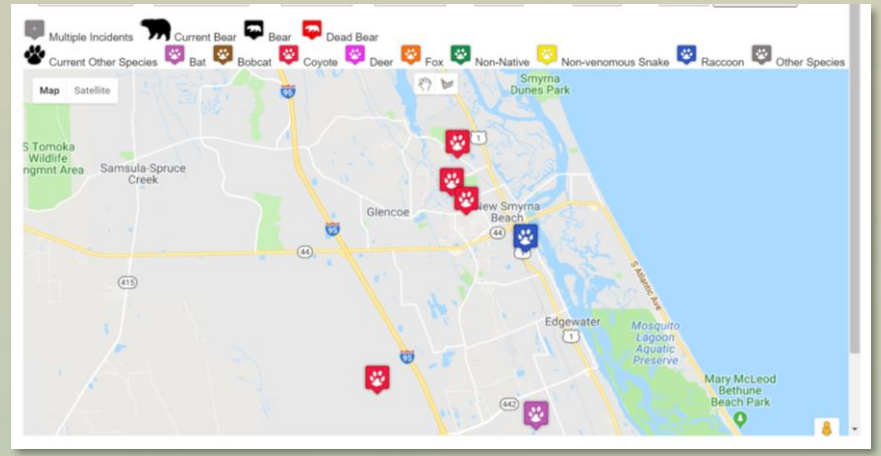
Florida black bear, FWC photo- Lake County

Wildlife Incident Management System

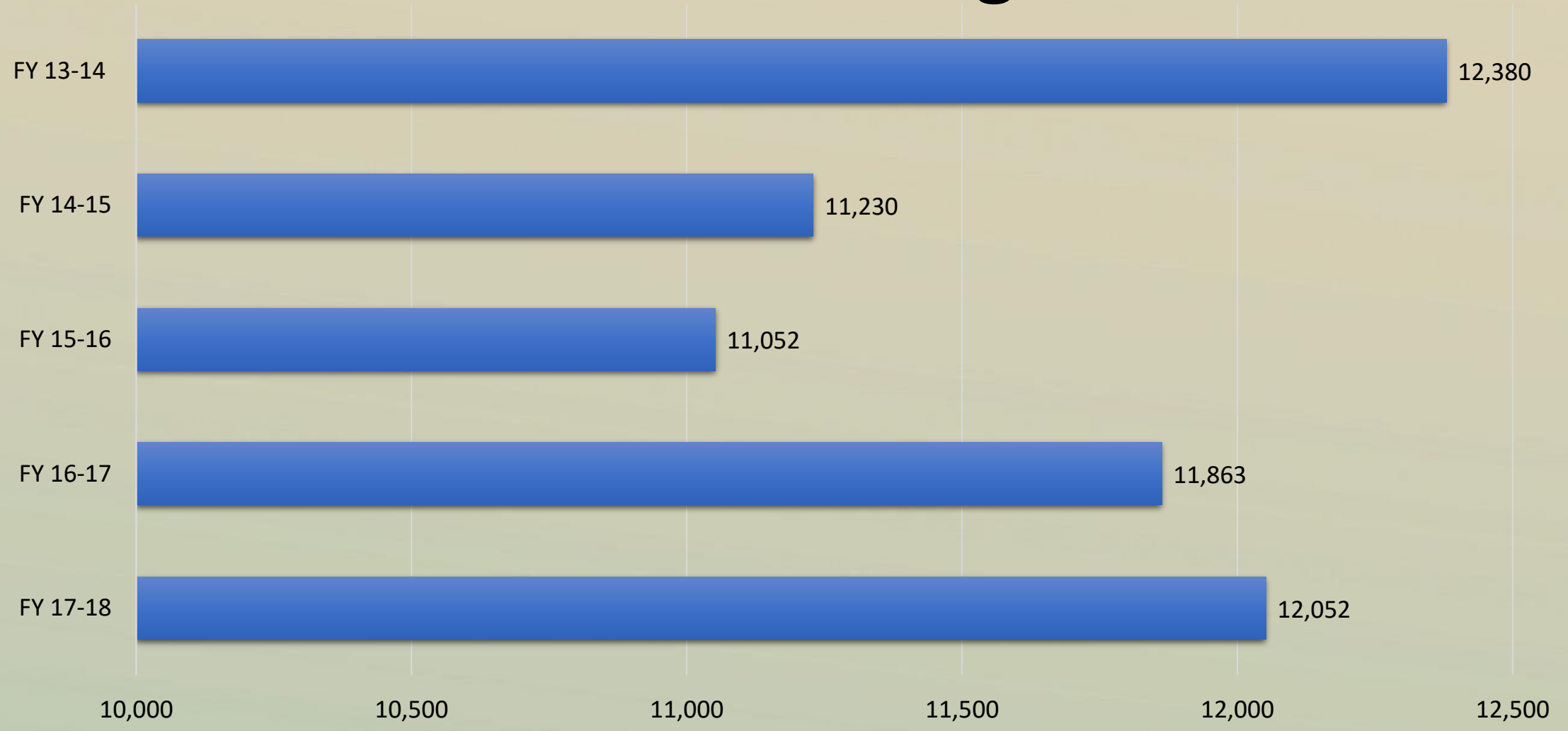
- Statewide database for recording incidents regarding wildlife conflicts and nonnative species

- Maps incidents for visual to help pinpoint areas for proactive outreach



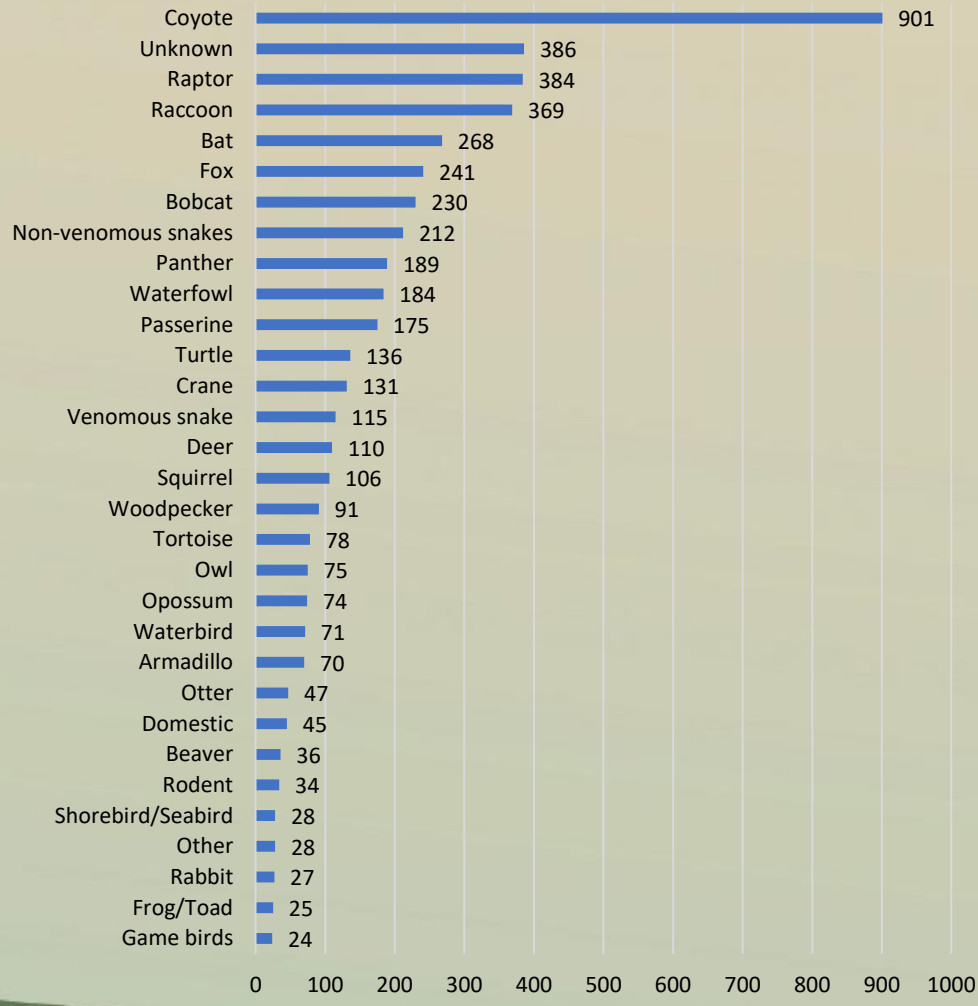


Wildlife Assistance Program Totals



Calls by Native Species Type, Fiscal Year 2017-2018 (non-bear)

Total = 5,845



Coyote

- Omnivorous, highly adaptable
- Adults 25-40 lbs.
- Home range size: natural areas ~15 mi^2, urban areas ~3 mi^2
- Mate in Winter
- Pups in Spring
- Litter size ~6 pups
- Both parents care for young

FWC photo- Clearwater

FWC trail camera photo- Big Cypress

Coyote

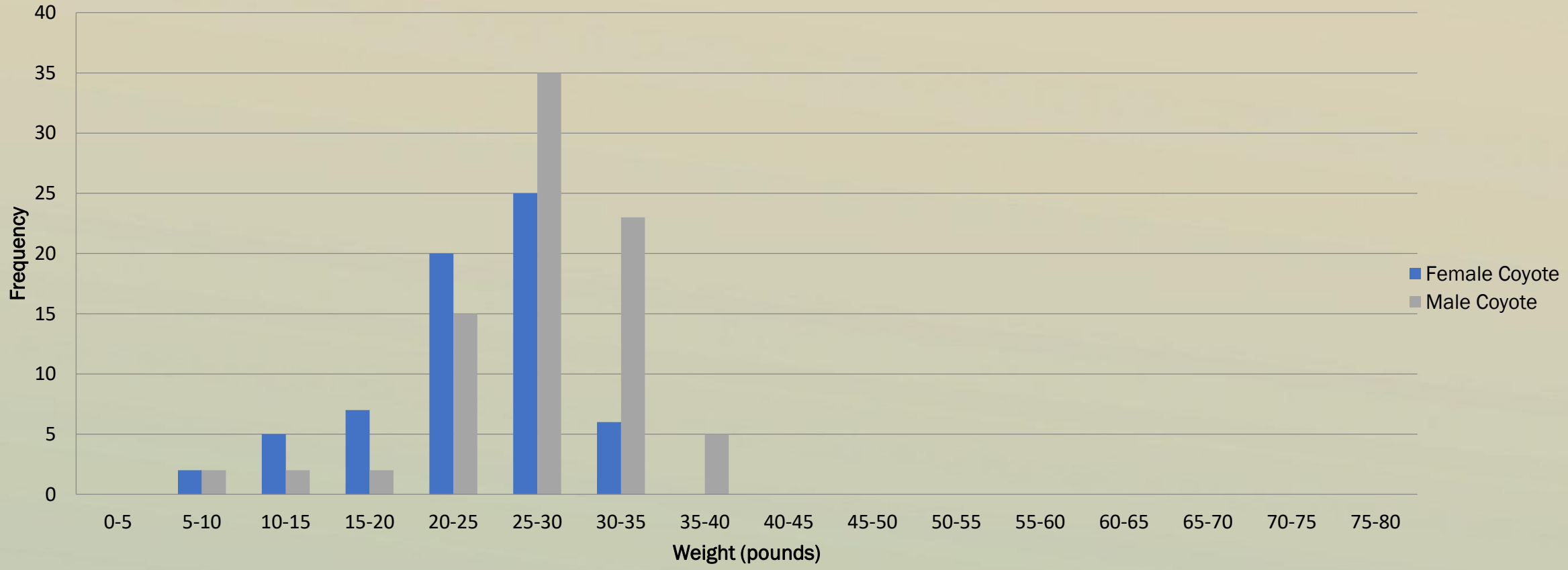
Coyotes have a mixed public reputation

Common myths and misconceptions:

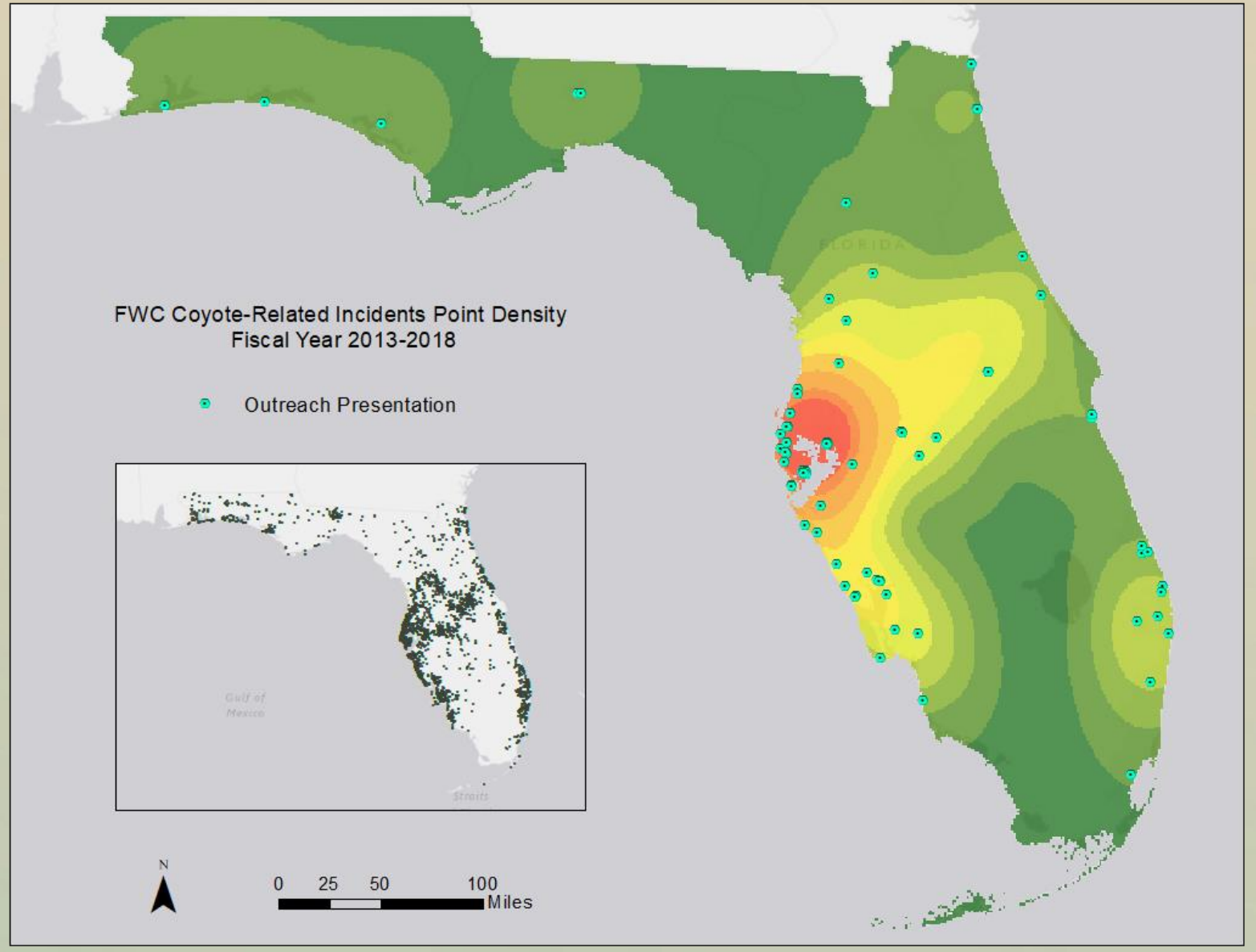
- Size
- Packs
- Disease
- Hollywood
  - Wiley coyote

FWC photo- Clearwater

Actual weights of coyotes



FWC diet study-149 coyote carcasses collected statewide from 2011-2013


FWC Coyote-Related Incidents Point Density
Fiscal Year 2013-2018
Outreach Presentation
Gulf of Mexico
Straits
N
0 25 50 100
Miles

Raccoon

- Eat a wide variety of prey:
  - Fruits, vegetables acorns, seeds
  - Eggs
  - Crayfish, frogs, small mammals
  - Fish
  - Human-related foods
- Typically nocturnal, but day activity not unusual
- *Densities of 100 per square mile can be attained with abundant food resources*
- Breeding occurs at one year of age, with litters born in March and April
- Litters average 3-4 young

Panther vs. Bobcat

Identifying Florida's Native Cats

Florida Panther

Description: uniformly tan, adults not spotted, tail nearly length of body

Weight: 60-160 lbs

Total length: 7-8 ft
Body Length: 4.5 ft
Tail Length: 3 ft
Shoulder height: 2.25 ft

Back of ears: black

Tip of tail: black all around

Bobcat

Description: reddish brown, spots evident but variable, tail much shorter than length of body

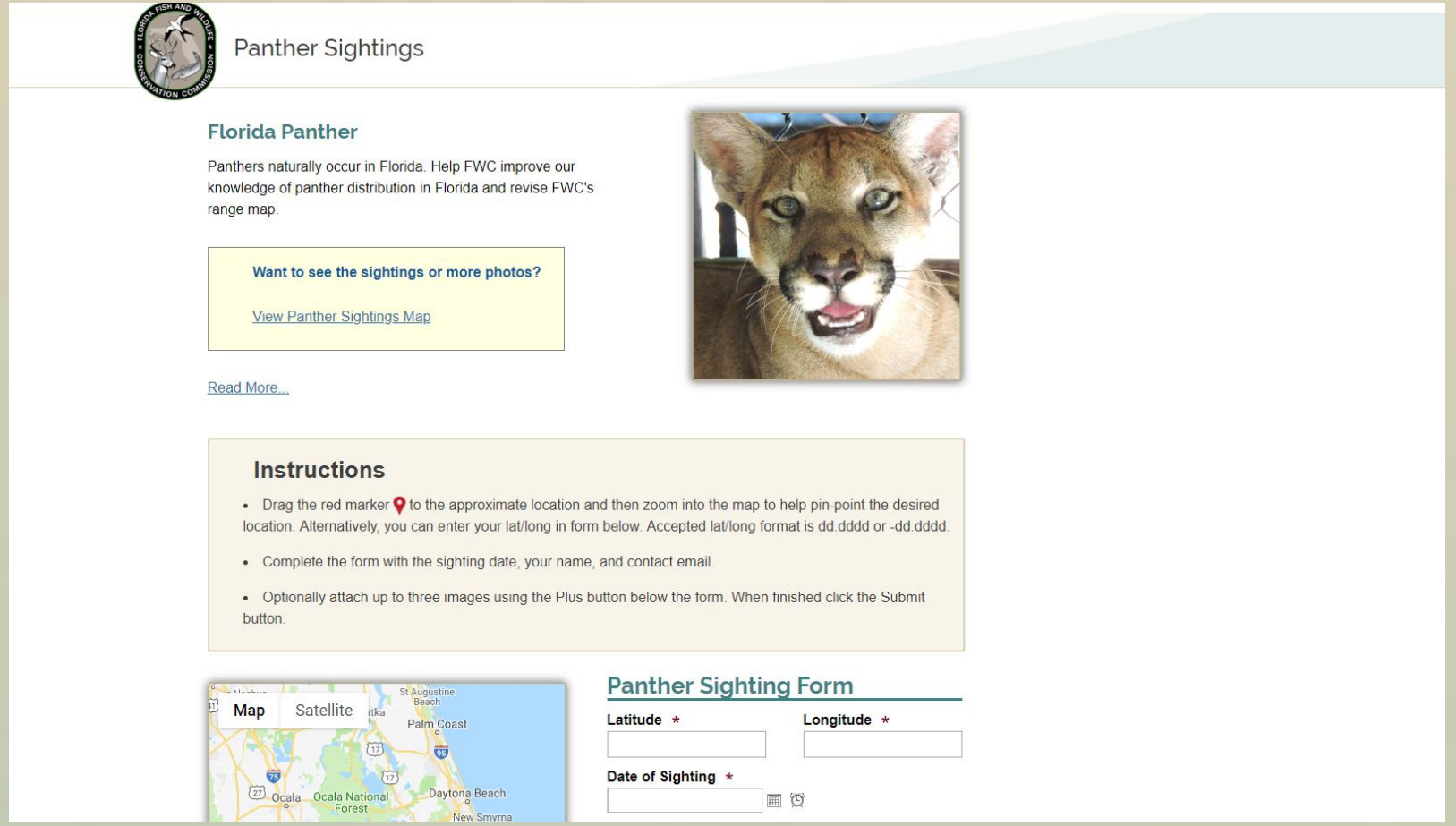
Weight: 20-30 lbs

Total length: 3 ft
Body Length: 2.5 ft
Tail Length: 6 in
Shoulder height: 1.5 ft

Back of ears: white spot

Tip of tail: white underside

Reporting Panther Sightings:



Native Snakes

Red Rat Snake

Water Snake

Water Moccasin

Wild Hog *(Sus scrofa)*

- Nonnative
- Diet- primarily vegetation, but will eat just about anything
- Damage- feeding on crops, tusking & rooting, wallowing, disease

FWC Photo

Wild Hog

- 500,000+ in Florida (in every county)
- 1-2,000,000 in the Southeast
- Several million in 39 states and provinces
- ~1 mile^2 (450-740 acres)
  - Depends on food
- 1 hog / 32 acres

Wild Hog

- Start breeding at 1 yr of age
- Breeding peaks in spring & fall
  - Produce 2 litters of 1-13 piglets each
- Full grown in 3-5 years
- Average life span: 4-5 years
- Solutions
  - Exclusionary fencing
  - Shooting/ hunting
  - Trapping

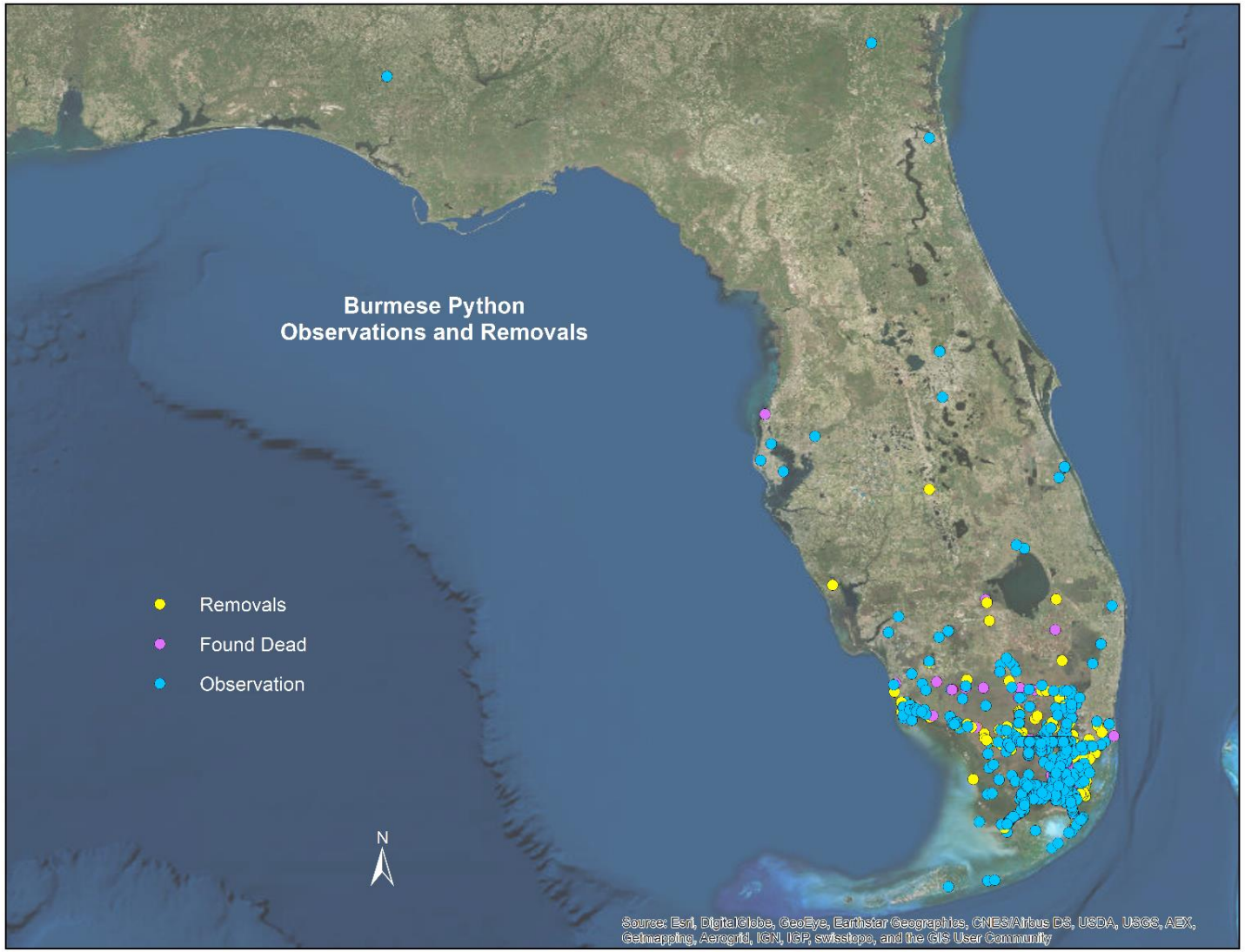
Burmese Python

Dark arrowhead-shaped wedge on back of head

Dark irregular blotches on tan background (like puzzle pieces that fit together or the markings on a giraffe)

Burmese pythons/Photo credit Edward Mercer

Burmese Python

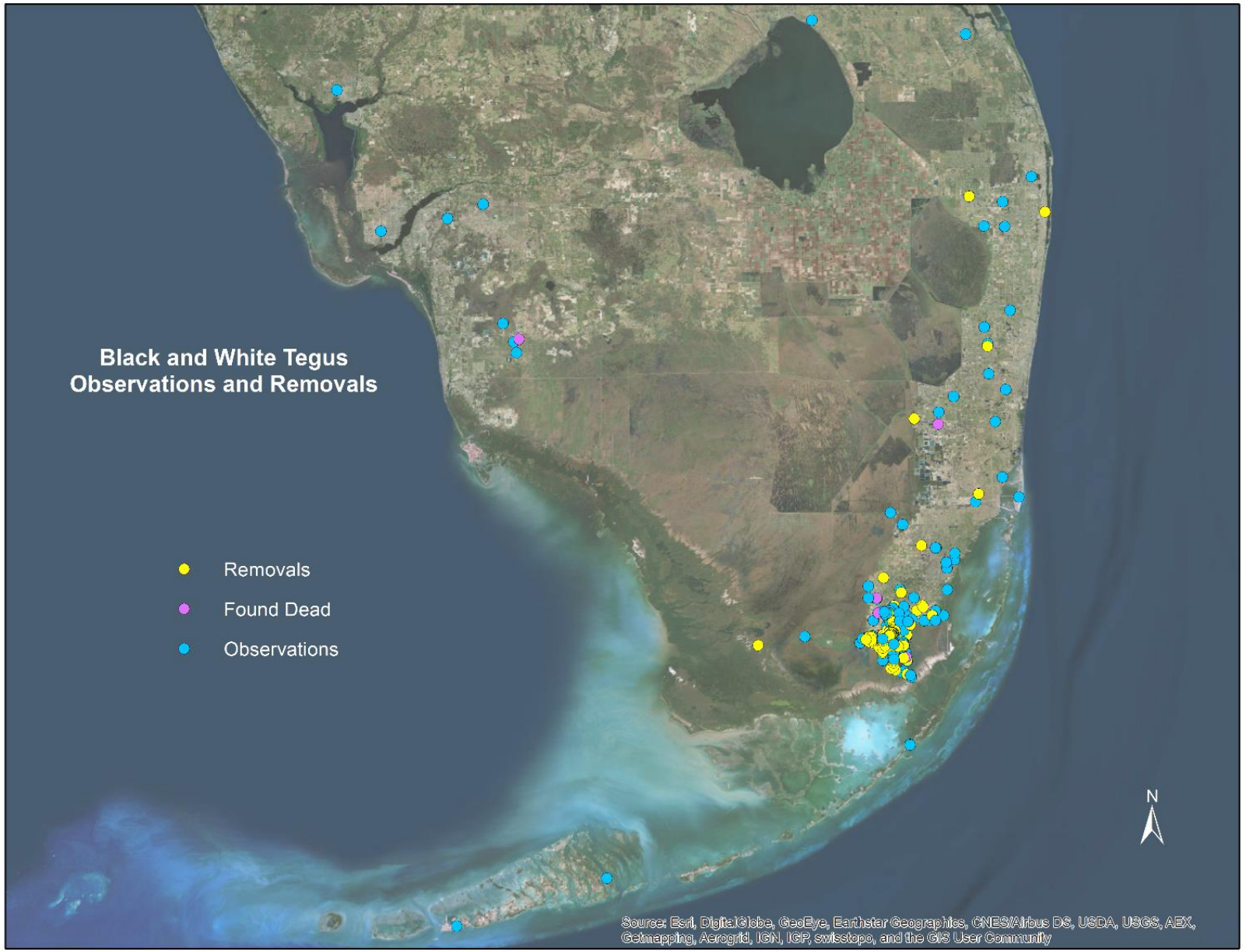

Burmese Python
Observations and Removals
Removals
Found Dead
Observation
N
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Argentine Black and White Tegu

Thick jowls on males

White bands across dark body

Argentine black and white tegu/Photo credit FWC

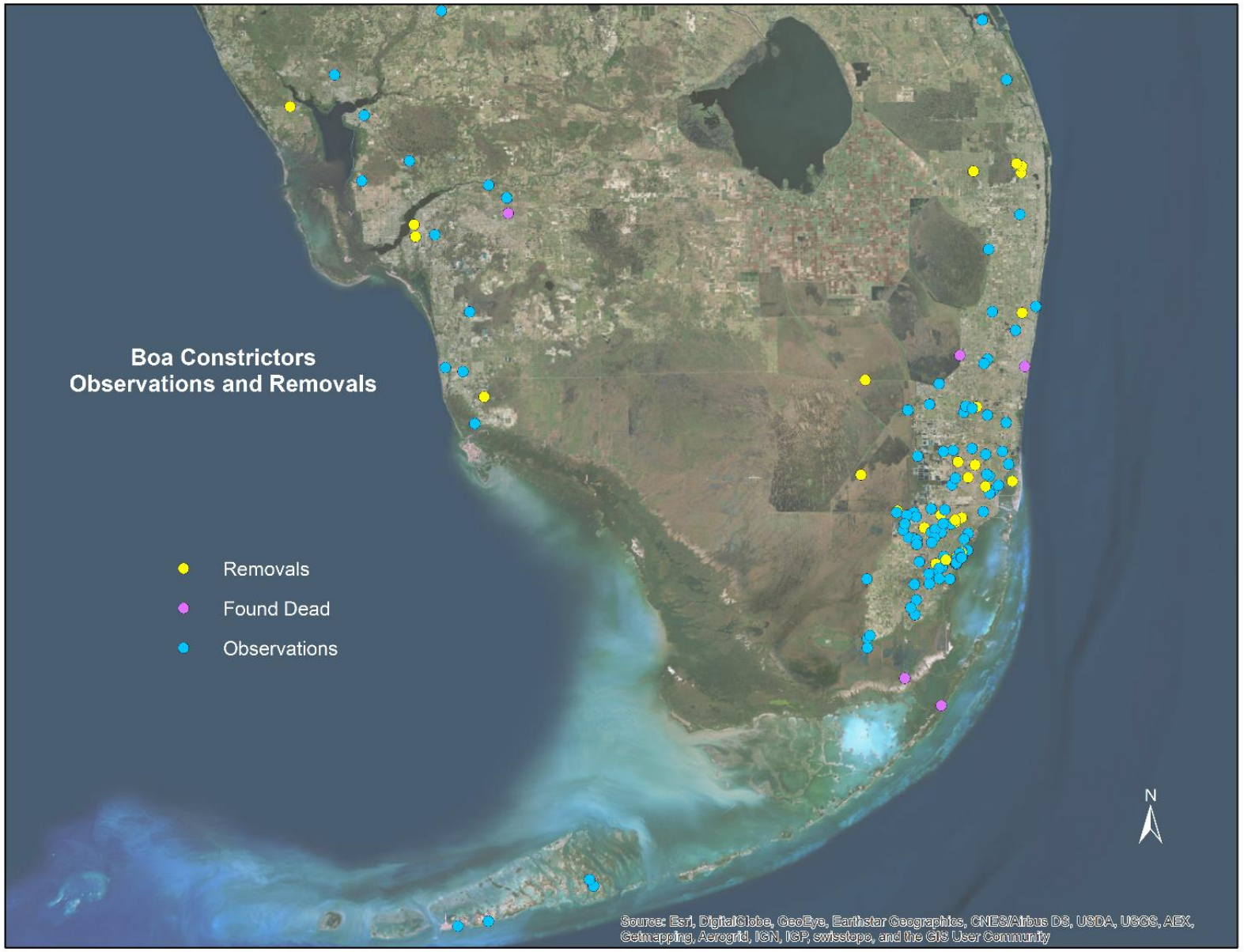

Black and White Tegus
Observations and Removals
Removals
Found Dead
Observations
N
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Boa Constrictor

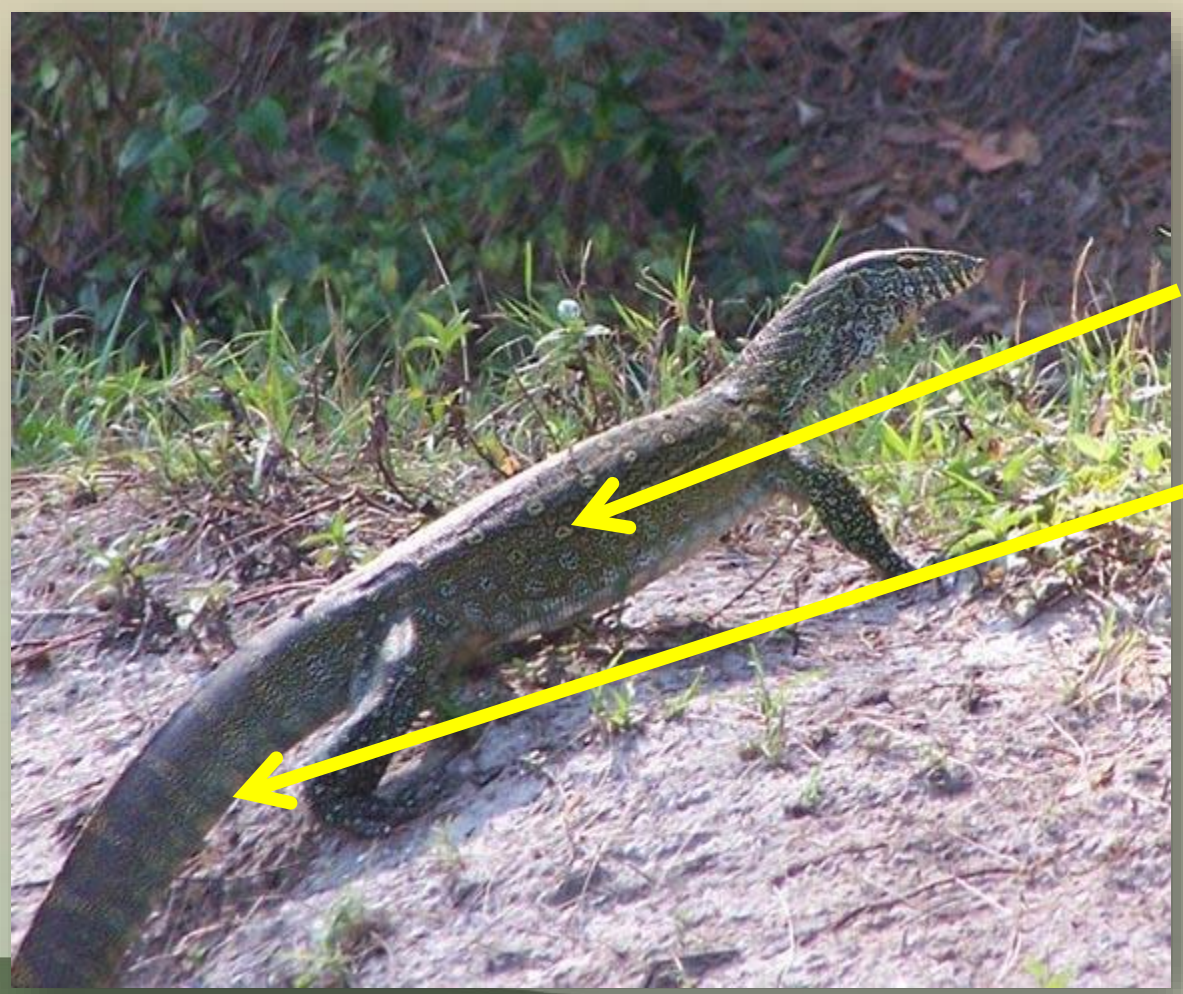
Tan ovals separated by dark brown saddles; ovals turn red near the tail on red-tailed boas

Thin dark-colored line on head

Boa constrictor/Photo credit Adam Stern


Boa Constrictors
Observations and Removals
Removals
Found Dead
Observations
N
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

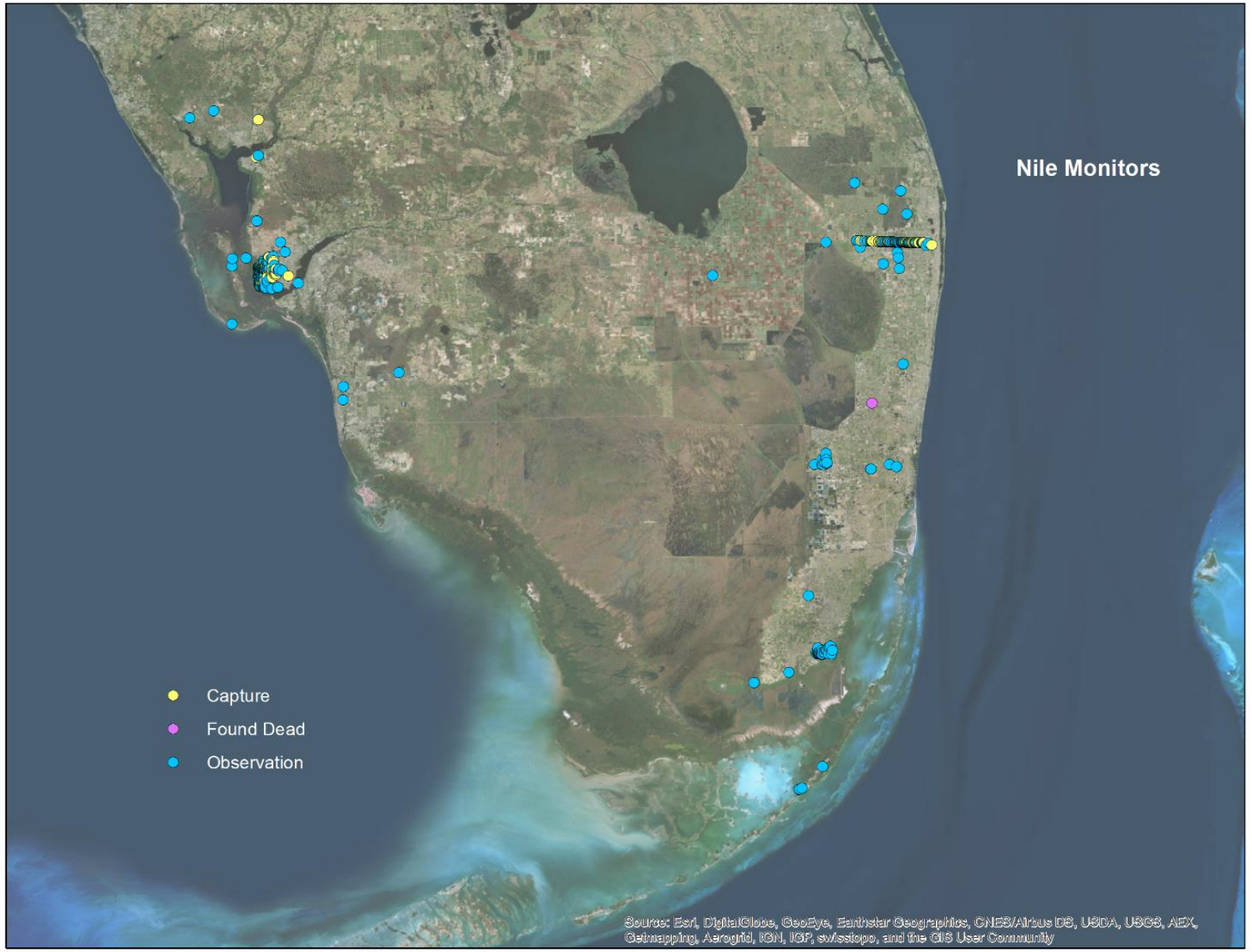
Nile Monitor



Bands of spots or “coins” across back

Bands across tail

Nile monitor


Nile Monitors
Capture
Found Dead
Observation
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Ball Python

Light dumbbell-shaped (or alien head-shaped) blotches on dark background

Dark wedge on back of the head, like Burmese pythons

Ball python/Photo credit Adam Stern

FWC Contact Information

- Northwest Regional Office Phone:
  (850) 265-3676
- Wildlife Alert Hotline / Rewards Program:
  (888) 404-3922

  Text/email Tip@myfwc.com
- Exotic Species Hotline:
  (888) 483-4861
- AskFWC for online inquiries
- SNAP: (866) FWC GATOR

Safety First

- Always use caution
- Take photos while approaching
- Keep a safe distance

THANK YOU!