Restoration And Habitat Enhancement For The Flatwoods Salamander At Naval Air Station (NAS) Whiting Filed OLF Holley

Presented by: Mr. Robby Smith, Navy Region Southeast Natural Resources Manager, NAVFAC SE Natural Resources Section Head
Historical Distribution

Reticulated Flatwoods
(*Ambystoma bishopi*)

Frosted Flatwoods
(*Ambystoma cingulatum*)
Frosted Flatwoods (*Ambystoma cingulatum*)
Reticulated Flatwoods (*Ambystoma bishopi*)

Counties with records, 1999-2003
From: (Pauley 2007)
Flatwoods Salamander Life History

- **Life History:** As adults, Flatwoods salamanders are primarily fossorial, living in burrows just below the soil surface. Triggered by rain-laden cold fronts during the fall and early winter breeding season, mature salamanders nocturnally migrate to isolated wetlands en masse.

- **Habitat:** This salamander is endemic to mesic flatwoods habitats within the vanishing longleaf pine-wiregrass community. Nearly all flatwoods salamander sites currently dominated by slash pine have been converted from historic longleaf pine stands. Breeding sites are typically shallow, ephemeral cypress and/or swamp tupelo ponds or "domes," although flooded borrow pits, roadside ditches, and deep firebreaks are occasionally used.

- **Diet:** Adults are known to eat earthworms, but likely consume other invertebrates as well. Larvae eat a variety of aquatic invertebrates, especially crustaceans such as amphipods and isopods. Captive larvae readily eat small tadpoles and may also do so in the wild.
Outlying Landing Field (OLF) Holley

Landscape Perspective
literally the 20,000 ft view

Holley Airfield
Santa Rosa Co. FL

ENGAGE   ENABLE   SUSTAIN
History of Flatwoods Salamander Sightings on OLF Holley

February 1996:

Pond 1: multiple larvae (John Jensen) in Printiss and Hipes, 1997;

November 2001:

drift fence mid-site: 1 adult female (Catone, 2002)

December 2009:

Pond 2: One adult gravid female (SREL)

March 2010:

Pond 2: Ten small larvae (SREL)

May 2010:

Pond 2: One metamorph under log (SREL)

April 2011:

Pond 1: Two large larvae (SREL)

Holley is 1 mile West to East (red line)
OLF Holley Encroachment Over Time

1955

1969

1978

1999

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OLF Holley Encroachment Over Time

2005  Google Earth Images  2016

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Reticulated Flatwoods Salamander OLF Holley Pond 2 in 2009

10 DEC 2009
OLF Holley Pond 2 Habitat Conditions

Myrtle-leaved holly shrub formed thick canopy in breeding pond, some water located in the basin

10 DEC 2009
Flatwoods larvae found via dip-netting.

Pond had filled by February that year, flooded to where gravid female was found under a log in December 2009

4 MARCH 2010
Flatwoods metamorph found under log, 5 m from pond edge.

Pond 2 was drying down in May. To the left of the bucket is a 10m width of Curtiss Sandgrass (*Calamovilfa curtissii*)

7 MAY 2010
Current Habitat Conditions Adjacent to Pond 2

450m distances (red lines) to other habitats
Pond 2 Stays Dry

6 April 2011
OLF Holley Pond 1

- Typical/classic flatwoods breeding site
- J. Jensen dipnetted larvae in 1996
- Winter burns occur on-site, Pond 1 was typically too wet for optimal results
- Now mostly dominated by Myrtle-leaved holly, small patch clump grasses.
- Horan and Grosse dipnet 2 large larvae on 6 April 2011
Water Table Near Surface at Pond 1

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Brainstormed with Installation INRMP stakeholders and species experts.  
(January 10, 2012)

• Arlo Kane, Florida Fish and Wildlife Conservation Commission
• John Himes, Florida Natural Areas Inventory
• Harold Mitchell, U.S. Fish and Wildlife Service, Flatwoods Sal Recovery Lead
• Ron Cherry, U.S. Navy Natural Resources, Whiting NAS and Holley OLF
• Robby Smith, Naval Facilities Engineering Command- NAVFAC Southeast, Jacksonville, FL
• Kurt Buhlmann, SREL
Management Actions: Fix the Hydrology

We evaluated existing firebreaks and roadways to determine if they were adversely affecting the hydrology in and around Pond 2.

Use of LIDAR
This fire road is now blocked to enhance hydrology and promote native wiregrass communities and their associated habitats.
Management Actions: Reducing Woody Encroachment

March 2012
Management Actions: Mechanical Removal and Herbicide Treatments

28 FEB 2013

Specimen Label

Dow AgroSciences

Garlon® 4 Ultra

Specialty Herbicide

For the control of woody plants and annual and perennial broadleaf weeds in non-crop areas, including industrial manufacturing and storage sites, rights-of-way such as electrical power lines, communication lines, pipelines, roadides, railroads, fence rows, non-irrigation ditch banks, forests and in the establishment and maintenance of wildlife openings. Use on these sites may include application to grazed areas.

ActiveIngredient:

Triclopyr 3,5,6-trichloro-2-pyridinylacetic acid butoxyethyl ester .................................................. 60.46%

OtherIngredients .................................................. 39.54%

Total........................................................................ 100.00%

Acid equivalent: Triclopyr = 43.49% - 4 (lb/ gal)

EPA Reg. No. 02719-507

Keep Out of Reach of Children
Management Actions: Mosaic Over-story Removal

22 APRIL 2013
Management Actions: Growing Season
Prescribed Fire: June 4, 2013
Management Actions: Growing Season
Prescribed Fire: June 4, 2013
What Does the Future Hold for the Flatwoods Salamander at OLF Holley?

GOALS:
• The Navy will continue to implement the Installation Integrated Natural Resources Plan (INRMP) projects that enhance native ecosystems and protect rare, threatened, and endangered flora and fauna.
• Our objective is that restoration of habitat will promote a recovery response in the flatwoods salamander population at OLF Holley.

QUESTIONS:
• Can OLF Holley be a site where current management actions sustain and maintain a viable population?
• Will OLF Holley be a site where salamanders can be produced for other recovery efforts?
• Depending habitat restoration efforts and results, would the OLF Holley population need to be the recipient of a translocation effort to be a viable and sustainable population??
Species That Once Inhabited the Earth?

Can proactive management prevent species extinction??

Or will our stewardship actions only slow the inevitable?
Special Thanks and Acknowledgements:

- Kurt Buhlmann, Savannah River Ecological Laboratory (SREL)

- Ron Cherry, Naval Air Station (NAS) Whiting Field, Natural Resources Manager

- Andrew Grosse, Savannah River Ecological Laboratory (SREL)

- Robert Horan, Savannah River Ecological Laboratory (SREL)
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DON'T LET IT LOOSE!
BE A RESPONSIBLE PET OWNER

STOP! THINK!

Releasing an exotic pet:

is harmful to the animal.
A species not native to the area may be unable to find suitable food or avoid attack by local predators.

threatens native fish and wildlife populations.
Exotic animals may cause changes to the existing native animal community through competition for a common food source, spread of exotic parasites or diseases, and/or predation.

is illegal. Releasing an exotic animal is considered a crime by both the state and federal government.

www.sfrc.ever.nps.gov

Pythons in Everglades National Park

The Burmese python was first reported as breeding in Everglades National Park in 2000. In recent years, multiple observations of individuals of different conditions support the probable establishment of the Burmese python in Everglades National Park. Since December 2000, thirty-five Burmese pythons have been captured and removed or found dead on the road. The measured total length for males recovered ranged from sixty-five centimeters to three hundred thirty-five centimeters, including the hatching sized animals recovered in the summer of 2006.

The Burmese python can reach a length greater than twenty feet. Individuals that grow to length have been seen with some regularity in the park. In the past, the python’s diet includes gray squirrel, opossum, cotton rat, black rat, house wren, and pied-billed grebe. Raccoons and other small mammals such as the native marsh rice rat, a species of special concern, could provide a suitable food base for pythons in the park. As pythons are known to eat birds, the presence of python sightings to the Punta Gorda would likely not be surprising. This non-native species is a potential threat to human safety as well as a threat to the integrity of native wildlife communities.
Securing Viable Populations

• It may not be enough to protect only what we have left……… “i.e., conserving”

• “We must be aware of the “Shifting Baseline” (less over time)

• Consider, that we have to go on offense and start reclaiming habitats (through protection and restoration), but recovery of populations (through other population manipulations, such as translocations, head-starting)
Herpetofauna Species in Peril?

Southern Hognose Snake

(Heterodon simus)

Flatwoods Salamander(s)

(Ambystoma cingulatum

A. bishopi)
OLF Holley, Santa Rosa County, Florida
http://earthexplorer.usgs.gov/
Dramatic Seasonal Hydrological Changes in Pond 2

26 March 2015;
before remaining myrtle-leaved Holly cut and removed

Water level was 10 inches below deepest part of pond bottom