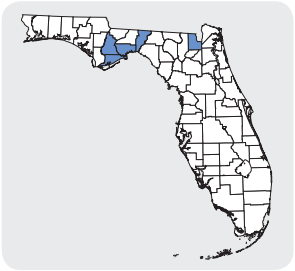
# Restoring wetlands to conserve the frosted flatwoods salamander

North Florida



## Introduction

North Florida's longleaf pine savannas are characterized by an open canopy of longleaf pines with a diverse understory of grasses and herbaceous plants. Intermixed with the savannas are small, shallow, ephemeral, or seasonal, wetlands. These isolated rain-influenced wetlands are of vital importance to the frosted flatwoods salamander, a federally threatened species. During breeding season in late fall and winter, the salamanders lay eggs on moist soil adjacent to the wetlands. As embryos develop within the egg capsule, rainfall associated with passing cold fronts inundates the moist soil surrounding the wetland basin. In response to rising water levels, the egg capsule hatches and young salamanders begin their early development stages in the wetlands. Only when fully developed do they leave for the surrounding longleaf pine savanna. But they will return to the wetlands in one to two years to restart the cycle. Historically, the ephemeral wetlands were dominated by a canopy of scattered cypress trees with dense grassy ground cover and minimal presence of hardwoods and pines. But a lack of routine fire allowed hardwoods, especially titi, to invade the wetlands, shading out ground cover and altering seasonally influenced water levels. That resulted in wetlands less suitable for salamander reproduction, making it difficult to sustain healthy populations of the frosted flatwoods salamander.

## Objectives

Reduce density of hardwoods in the canopy and midstory to:

- Increase light penetration to wetland floor and increase density or occurrence of grass and other herbaceous species.
- Return a more ephemeral (seasonal) pattern of water levels.
- Allow prescribed fire for long-term maintenance of habitat.

## Approach

The Florida Fish and Wildlife Conservation Commission (FWC), U.S. Department of Agriculture's Forest Service and The Nature Conservancy cooperatively developed a restoration strategy to improve ephemeral wetlands in the Apalachicola National Forest, located southwest of Tallahassee. This area contains one of the largest populations of frosted flatwoods salamanders in the state. Restoration focused on wetlands either currently or recently in use by the salamander and involved removal of invasive hardwoods from the wetlands.

*Frosted flatwoods salamander, Pierson Hill, FWC*

*Before Wetland Enhancement, U.S. Forest Service*

*1 Year Post Wetland Enhancement, U.S. Forest Service*

## Benefits

Restoring ephemeral wetlands in the Apalachicola National Forest will greatly improve the habitat of the frosted flatwoods salamander, as well as help conserve a variety of plants and other animals. Since 2011, about 82 acres of sensitive wetlands habitat has been enhanced. Once fully restored, these wetlands will serve as salamander breeding ponds, and in the long-term become dispersal ponds for the salamander's population expansion and genetic exchange. The FWC's Aquatic Habitat Conservation and Restoration Section considers this project a blueprint for future partnerships with other public agencies that own lands within the range of the frosted flatwoods salamander.

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