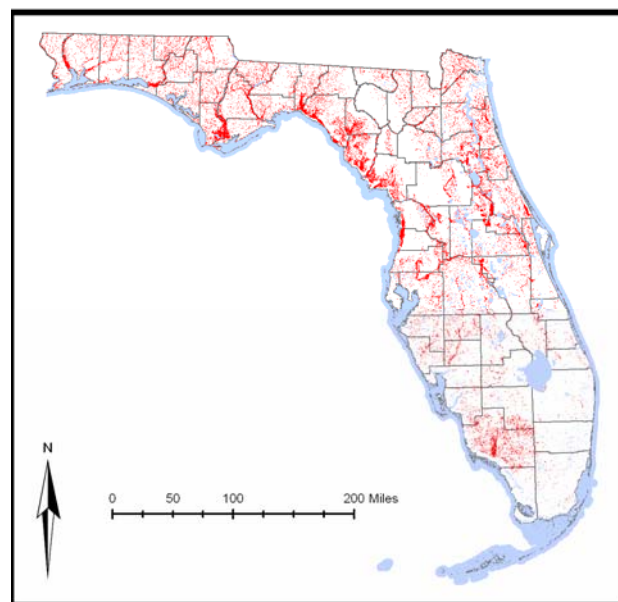


Hardwood Swamp/Mixed Wetland Forest



Status

Current condition: Good and declining. According to the best available GIS information at this time (see Appendix D. GIS Data Tables), 3,250,491 acres (1,315,427 ha) of Hardwood Swamp/Mixed Wetland Forest habitat exist, of which 36% (1,175,787 ac; 475,824 ha) are in conservation or managed areas. Another 8% (274,280 ac; 110,997 ha) are in Florida Forever projects and 11% (346,382 ac; 140,176 ha) are in SHCA-designated lands. The remaining 45% (1,454,042 ac; 588,430 ha) are other private lands.



Some habitat distributions or locations may be misrepresented on this map due to size, resolution and insufficient data sources.

Habitat Description

FNAI type: Bottomland Forest, Basin Swamp

These wooded wetland communities are composed of either pure stands of hardwoods, or occur as a mixture of hardwoods and cypress where hardwoods achieve dominance. This association of wetland-adapted trees occurs throughout the state on organic soils and forms the forested floodplains of non-alluvial rivers, creeks, and broad lake basins. Tree species include a mixed overstory containing black gum, water tupelo, bald cypress, dahoon holly, red maple, swamp ash, cabbage palm, and sweetbay. Also included in this category are mixed wetland forest communities in which neither hardwoods nor conifers achieve dominance. The mix can include hardwoods with pine or cypress and can represent a mixed hydric site or a transition between hardwoods and conifers on hydric/mesic sites. Hardwood Swamp/Mixed Wetland Forests occur on

low-lying flatlands or scattered low spots in basins and depressions that will only flood in extreme conditions. The canopy is usually dense and closed, keeping air movement and light penetration relatively low and, thus, keeping the humidity high. Due to these damp conditions, this habitat infrequently burns.

Associated Species of Greatest Conservation Need

Mammals

- | | |
|--|------------------------------|
| • <i>Blarina carolinensis shermani</i> | Sherman's Short-tailed Shrew |
| • <i>Sorex longirostris</i> | Southeastern Shrew |
| • <i>Myotis austroriparius</i> | Southeastern Bat |
| • <i>Myotis grisescens</i> | Gray Bat |
| • <i>Lasiurus borealis</i> | Eastern Red Bat |
| • <i>Lasiurus seminolus</i> | Seminole Bat |
| • <i>Corynorhinus rafinesquii</i> | Rafinesque's Big-eared Bat |
| • <i>Ursus americanus floridanus</i> | Florida Black Bear |
| • <i>Lutra canadensis lataxina</i> | River Otter |
| • <i>Mustela vison evergladensis</i> | Everglades Mink |
| • <i>Mustela vison halilimnetes</i> | Gulf Salt Marsh Mink |
| • <i>Mustela vison lutensis</i> | Atlantic Salt Marsh Mink |
| • <i>Mephitis mephitis</i> | Striped Skunk |
| • <i>Puma concolor coryi</i> | Florida Panther |

Birds

- | | |
|--|----------------------------|
| • <i>Egretta thula</i> | Snowy Egret |
| • <i>Egretta caerulea</i> | Little Blue Heron |
| • <i>Nycticorax nycticorax</i> | Black-crowned Night-Heron |
| • <i>Nyctanassa violacea</i> | Yellow-crowned Night-Heron |
| • <i>Mycteria americana</i> | Wood Stork |
| • <i>Elanoides forficatus</i> | Swallow-tailed Kite |
| • <i>Ictinia mississippiensis</i> | Mississippi Kite |
| • <i>Haliaeetus leucocephalus</i> | Bald Eagle |
| • <i>Buteo platypterus platypterus</i> | Broad-winged Hawk |
| • <i>Buteo brachyurus</i> | Short-tailed Hawk |
| • <i>Aramus guarauna</i> | Limpkin |
| • <i>Picoides villosus</i> | Hairy Woodpecker |
| • <i>Campephilus principalis</i> | Ivory-billed Woodpecker |
| • <i>Protonotaria citrea</i> | Prothonotary Warbler |
| • <i>Limnothlypis swainsonii</i> | Swainson's Warbler |
| • <i>Wilsonia citrina</i> | Hooded Warbler |

Amphibians

- | | |
|-----------------------------------|--------------------------------|
| • <i>Amphiuma pholeter</i> | One-toed Amphiuma |
| • <i>Desmognathus auriculatus</i> | Southern Dusky Salamander |
| • <i>Stereochilus marginatus</i> | Many-lined Salamander |
| • <i>Eurycea chamberlaini</i> | Chamberlain's Dwarf Salamander |
| • <i>Rana virgatipes</i> | Carpenter Frog |

Reptiles

- *Terrapene carolina major* Gulf Coast Box Turtle
- *Drymarchon couperi* Eastern Indigo Snake

Fish

- *Atractosteus spatula* Alligator Gar
- *Notropis melanostomus* Blackmouth Shiner
- *Umbra pygmaea* Eastern Mudminnow
- *Acantharchus pomotis* Mud Sunfish
- *Etheostoma proeliare* Cypress Darter

Conservation Threats

Threats to Hardwood Swamp/Mixed Wetland Forest habitat that were also identified for multiple other habitats are addressed in the Chapter Multiple Habitat Threats and Conservation Actions. These threats include:

- Conversion to agriculture
- Conversion to housing and urban development
- Groundwater withdrawal
- Incompatible fire
- Incompatible forestry practices
- Incompatible recreational activities
- Invasive animals
- Invasive plants
- Roads
- Surface water withdrawal and diversion

Threats specific to Hardwood Swamp/Mixed Wetland Forest include changes to the fire and hydrological regimes that have resulted in loss of marsh or seepage wetlands embedded within this forested wetland habitat. Water control structures from weirs to dams and surface drainage from agricultural and developed areas into these wetlands have exacerbated water level and quality changes.

The following stresses and sources of stress threaten this habitat:

| Stresses | | Habitat Stress Rank |
|----------|--|---------------------|
| A | Altered hydrologic regime | High |
| B | Altered community structure | High |
| C | Altered species composition/dominance | High |
| D | Altered landscape mosaic or context | Medium |
| E | Habitat destruction or conversion | Medium |
| F | Fragmentation of habitats, communities, ecosystems | Medium |
| G | Missing key communities, functional guilds, or seral stages | Medium |
| H | Altered fire regime | Medium |
| I | Altered water quality of surface water or aquifer: nutrients | Low |
| J | Habitat degradation/disturbance | Low |
| K | Erosion/sedimentation | Low |
| L | Altered soil structure and chemistry | Low |

The sources of stress, or threats, were used to generate conservation actions.

| Sources of Stress | | Habitat Source Rank | Related Stresses (see above) |
|---|---|----------------------------|--|
| 1 | Surface water withdrawal | High | A, C, D, F, H |
| 2 | Invasive plants | High | B, C, H |
| 3 | Incompatible forestry practices | High | B, C, G |
| 4 | Invasive animals | Medium | B, C |
| 5 | Roads | Medium | A, D, E, F, H |
| 6 | Incompatible fire | Medium | C, H |
| 7 | Conversion to agriculture | Medium | D, E |
| 8 | Conversion to housing and urban development | Medium | D, E |
| 9 | New dams | Medium | B, C, G |
| 10 | Incompatible vegetation harvest | Low | B, C |
| 11 | Groundwater withdrawal | Low | A |
| 12 | Dam operations | Low | B, C |
| 13 | Management of nature–water control structures | Low | A |
| 14 | Incompatible recreational activities | Low | C, E |
| 15 | Incompatible grazing and ranching | Low | C |
| 16 | Incompatible animal harvest | Low | C |
| Statewide Threat Rank of Habitat | | High | |

Conservation Actions

Actions to abate the threats to Hardwood Swamp/Mixed Wetland Forest that were also identified as statewide threats (Surface water withdrawal and diversion, Invasive plants, Incompatible forestry practices (also see actions below), Invasive animals, Roads, Incompatible fire, Conversion to agriculture (also see actions below), Conversion to housing and urban development (also see actions below), Groundwater withdrawal, Incompatible recreational activities) are in the Chapter Multiple Habitat Threats and Conservation Actions.

Actions to abate specific threats that were identified for Hardwood Swamp/Mixed Wetland Forest are below. These actions were designed to restore more natural fire and hydrological regimes, the latter through alteration of both local surface water drainage and retrofitting and restoring existing water control structures.

Conversion to Agriculture

| Overall Rank | Economic and Other Incentives | Feasibility | Benefits | Cost |
|--------------|---|-------------|----------|------|
| M | Encourage incentives for maintenance and conversion of lands to agricultural uses that use less water and result in lower nutrient outputs into Florida's waters and wetlands, and create market-based incentives to compensate private landowners for the environmental services they provide to the state through management that increases water storage and nutrient reduction. | M | M | H |

Conversion to Housing and Urban Development

| Overall Rank | Economic and Other Incentives | Feasibility | Benefits | Cost |
|--------------|---|-------------|----------|------|
| L | Encourage tax or other incentives, such as density transfers, for environmentally friendly comprehensive development plans for projects that front on rivers and floodplains. | M | L | VH |

Dam Operations

| Overall Rank | Capacity Building | Feasibility | Benefits | Cost |
|--------------|--|-------------|----------|------|
| H | Coordinate interstate Strategy actions to ensure that all fish and wildlife resources in all states are protected when changing dam operations in shared basins. (USFWS) | M | H | L |
| L | Coordinate multiagency review of USACE activities, including biological aspects (fish spawn guidelines, protection of fish and wildlife resources) of water control plans for interstate water projects, fish spawn guidelines, re-establishing natural seasonal fluctuation of flows. | H | L | M |
| Overall Rank | Land/Water/Species Management | Feasibility | Benefits | Cost |
| M | Work with all affected parties to reassess the value in implementing the U.S. Forest Service plan to remove Rodman Dam and restore impacted aquatic and wetland habitat. | H | M | H |
| Overall Rank | Research | Feasibility | Benefits | Cost |
| H | Determine the appropriate hydrological flows and levels for water reservations on the Apalachicola, Yellow, Ochlockonee, and other interstate rivers using the ESWM (Ecologically Sustainable Water Management) approach. | M | H | H |

Management of Nature – Water Control Structures

| Overall Rank | Economic and Other Incentives | Feasibility | Benefits | Cost |
|--------------|--|-------------|----------|------|
| M | Explore options for enhancing economic benefits to landowners that improve or remove water control structures. | VH | L | L |
| Overall Rank | Land/Water/Species Management | Feasibility | Benefits | Cost |
| M | Work with affected parties to reassess the value in implementing the U.S. Forest Service plan to remove Rodman Dam and restore the lower Ocklawaha River. | VH | L | VH |
| L | Establish a fund for fish and aquatic wildlife passage research and improvements to existing dams and other water control structures to facilitate movement of migratory species (e.g., Apalachicola Woodruff Dam work). | H | L | VH |

| | | | | |
|---------------------|--|--------------------|-----------------|-------------|
| L | Encourage incentive-based programs to replace or retrofit existing stop log or manually controlled structures with V-notch weirs in agricultural drainage systems. Give priority to those control structures that are identified as acting as barriers to wildlife movement or sheet flow. | H | L | H |
| Overall Rank | Policy | <i>Feasibility</i> | <i>Benefits</i> | Cost |
| H | Form an interagency task force to streamline the permitting process for wetland restoration projects on private lands and public lands that involve removing small, local water control structures. | VH | M | M |
| Overall Rank | Research | <i>Feasibility</i> | <i>Benefits</i> | Cost |
| M | Fund research to identify the habitat needs and movement requirements of native SGCN aquatic species, inventory water control structures, and identify the extent to which particular existing water control structures negatively affect species ecology. | VH | L | M |