

The Nature
Conservancy



Protecting nature. Preserving life.™

NATIONAL CONFERENCE ON ECOSYSTEM RESTORATION



Nelwyn McInnis
Mitigation Program Manager
The Nature Conservancy
MS/LA

“To conserve the lands and waters on which all life depends”

LARGE-SCALE ECOSYSTEM RESTORATION USING MITIGATION BANKING

National Conference on Ecosystem Restoration

Nelwyn McInnis

2013





NATIONAL CONFERENCE ON ECOSYSTEM RESTORATION



© David Blevins

www.blevinsphoto.com

TNC has long recognized the importance of scale to achieve long-term conservation benefits

Follow the best available science to identify the ecologically-strategic locales or issues where we should be focusing

Find the opportunities to achieve results

“To conserve the lands and waters on which all life depends”

NATIONAL CONFERENCE ON ECOSYSTEM RESTORATION



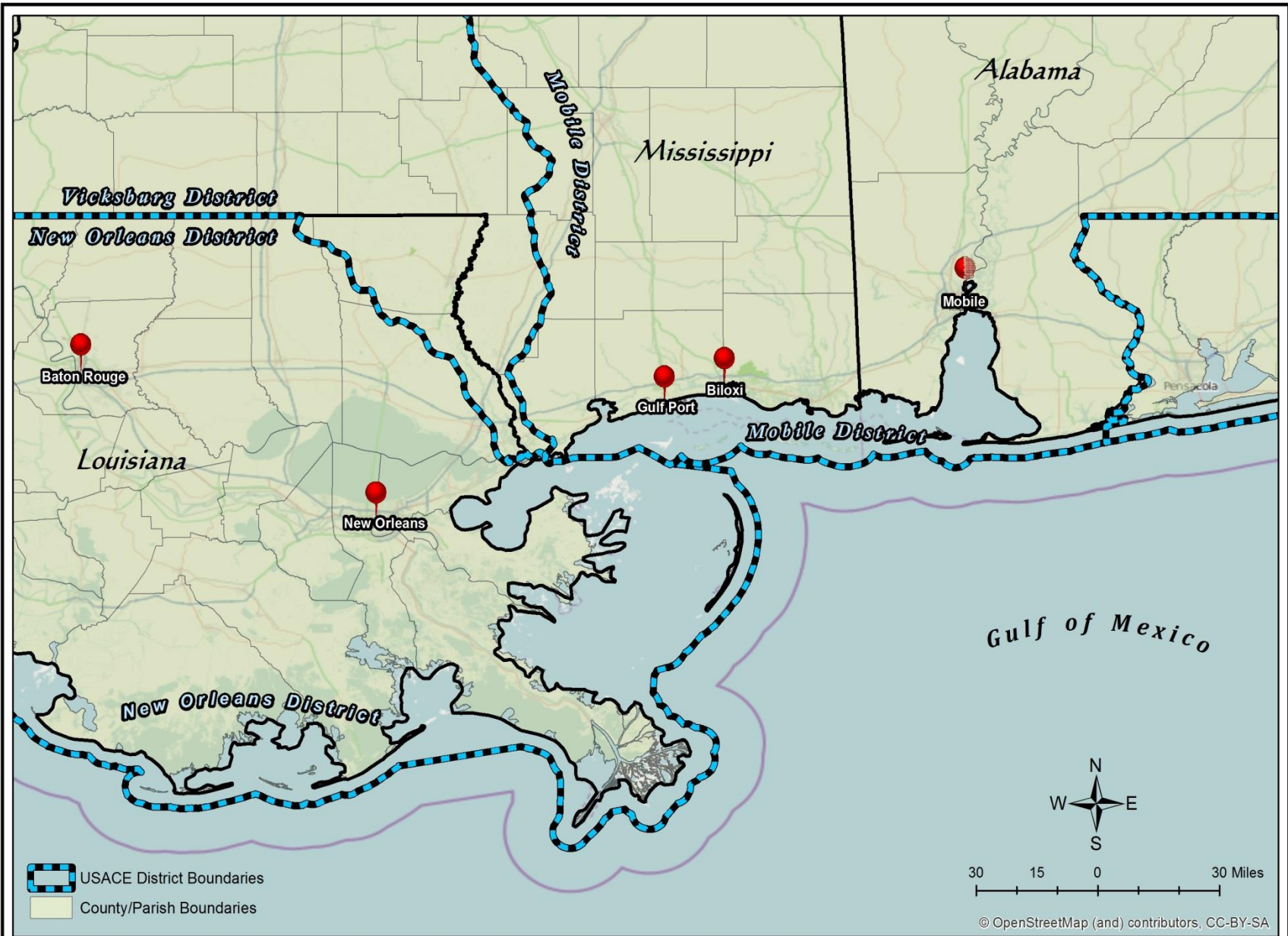
Plan to Discuss:

- ✓ 2 examples where TNC has used wetland and stream mitigation to help achieve conservation at scale
- ✓ Importance of these sites/ why selected
- ✓ How these sites contribute to landscape/watershed health
- ✓ Mitigation fit and general restoration activities

Will not Discuss:

- Details of mitigation banking

“To conserve the lands and waters on which all life depends”



Historic Range of Longleaf Pine

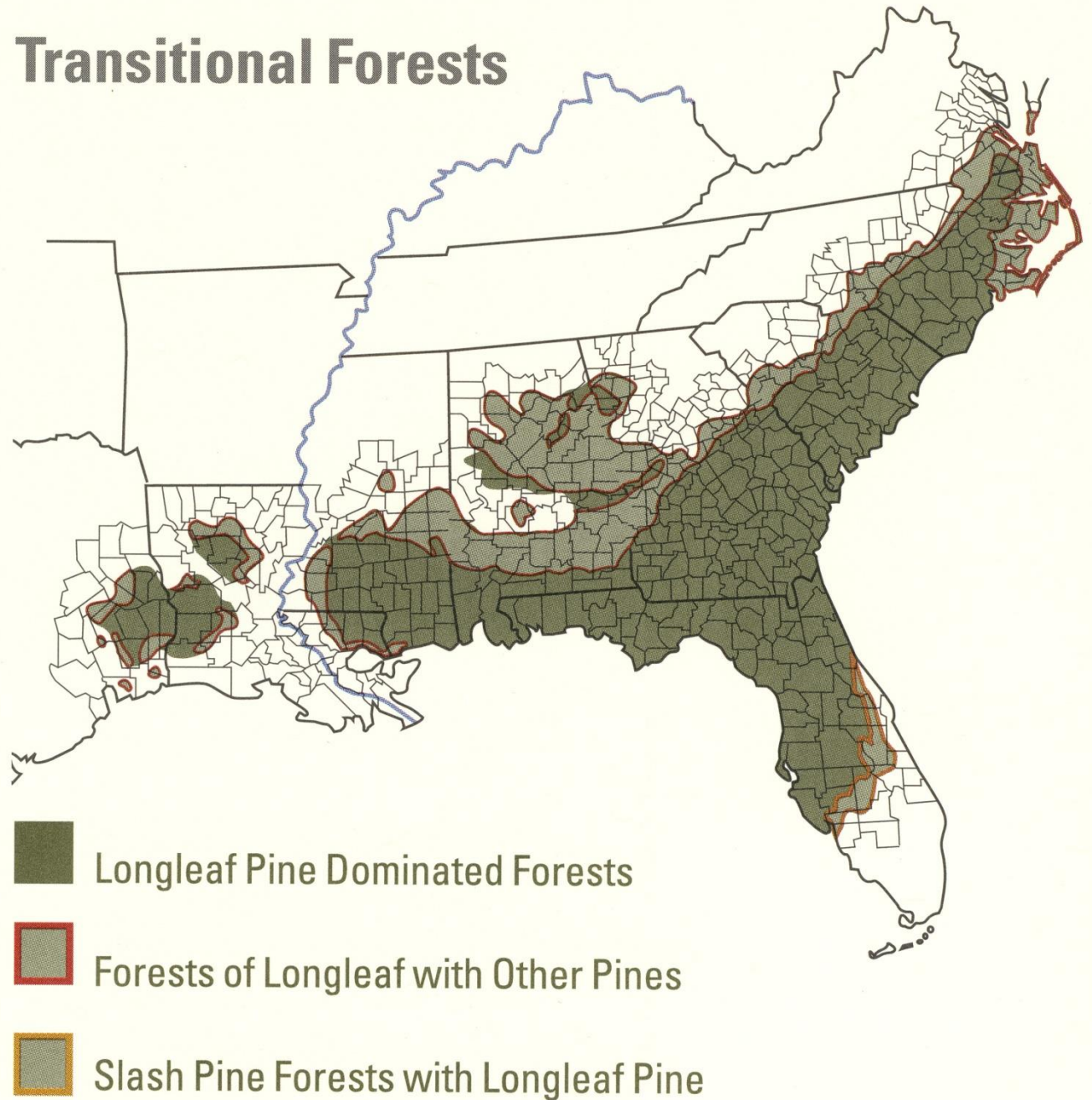
Occupied the outer Atlantic and Gulf coastal plains

Originally 70 – 90 million acres

Today < 3% of original

Map from J. Moore, N. McInnis, et al:
“Managing the Forest and the Trees: A Private Landowners Guide to Conservation Management of Longleaf Pine”

Transitional Forests



LONGLEAF PINE SAVANNA

Extremely Rich Herbaceous Communities

Many Highly Restricted/Endemic Plants

Up to 40 plant species in a square meter



The map displays the East Gulf Coastal Plain region, which is shaded in light brown. Within this region, three specific areas are highlighted with different patterns: a dotted pattern (labeled 10), a diagonal hatched pattern (labeled 12), and a vertical hatched pattern (labeled 13). A scale bar at the bottom indicates distances of 80, 0, 80, and 160 miles. The map also shows state boundaries and a grid of latitude and longitude lines.

**Recognized Center of Plant Endemism
East Gulf Coastal Plain
122 Endemic Plants**

Map & Data from Sorrie & Weakley, 2001

10

12

13

80

0

80

160 Miles

Sarracenia psittacina
Parrot Pitcher Plant



Insectivorous
Plants

Pinguicula lutea
Yellow Butter-wort



Sarracenia alata
Yellow Pitcher Plant



Calopogon multiflorus

Many-flowered grass-pink orchid

G2G3



GOPHER TORTOISE

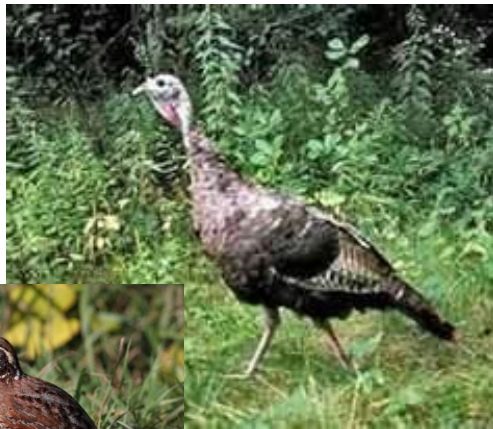


Wildlife



HENSLOW'S SPARROW

WILD TURKEY



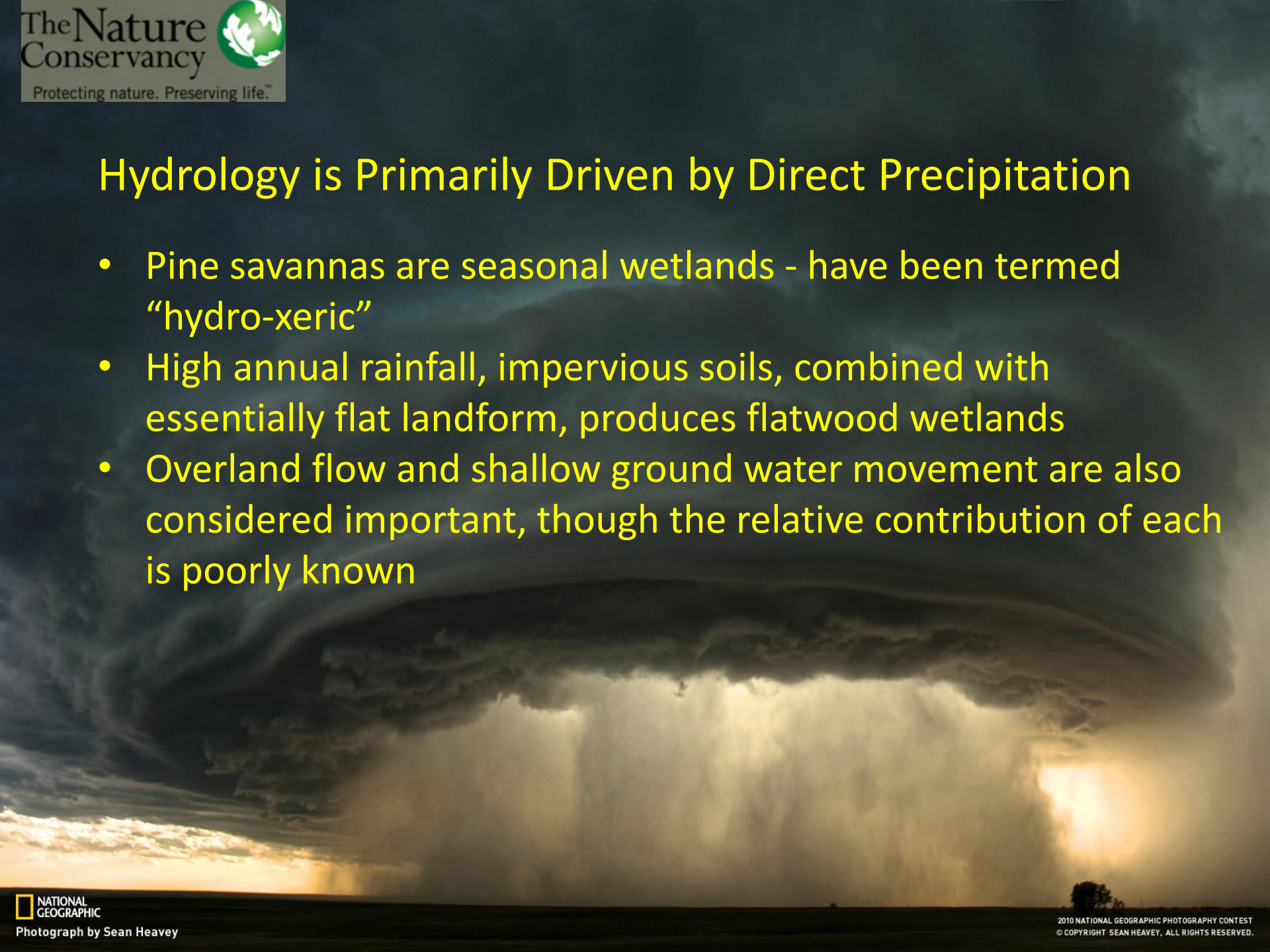
BOBWHITE
QUAIL



MUD SALAMANDER

Hydrology is Primarily Driven by Direct Precipitation

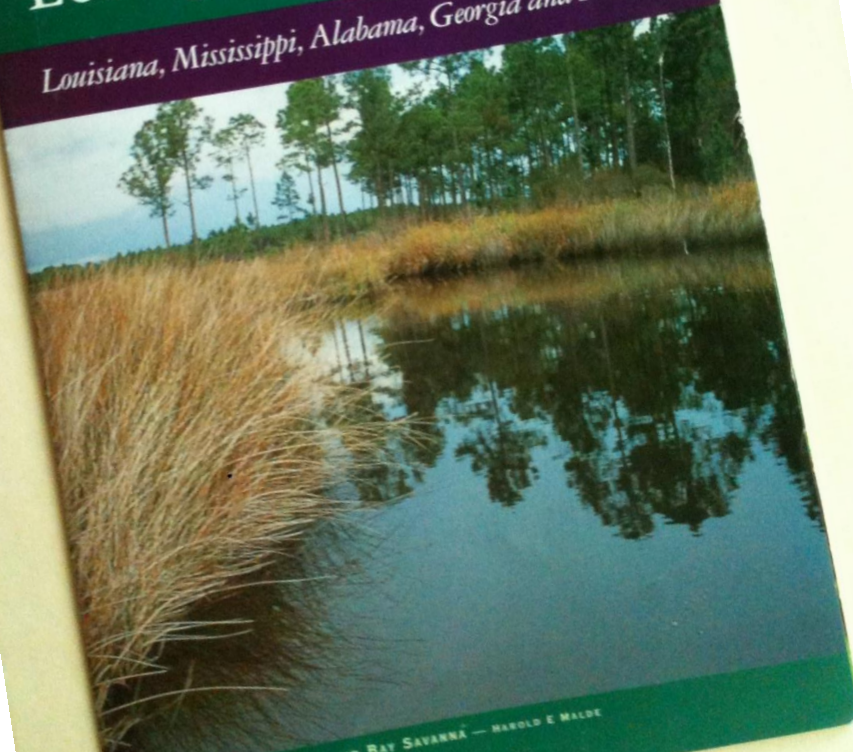
- Pine savannas are seasonal wetlands - have been termed “hydro-xeric”
- High annual rainfall, impervious soils, combined with essentially flat landform, produces flatwood wetlands
- Overland flow and shallow ground water movement are also considered important, though the relative contribution of each is poorly known



THE NATURE CONSERVANCY

The East Gulf Coastal Plain Ecoregion

Louisiana, Mississippi, Alabama, Georgia and Florida



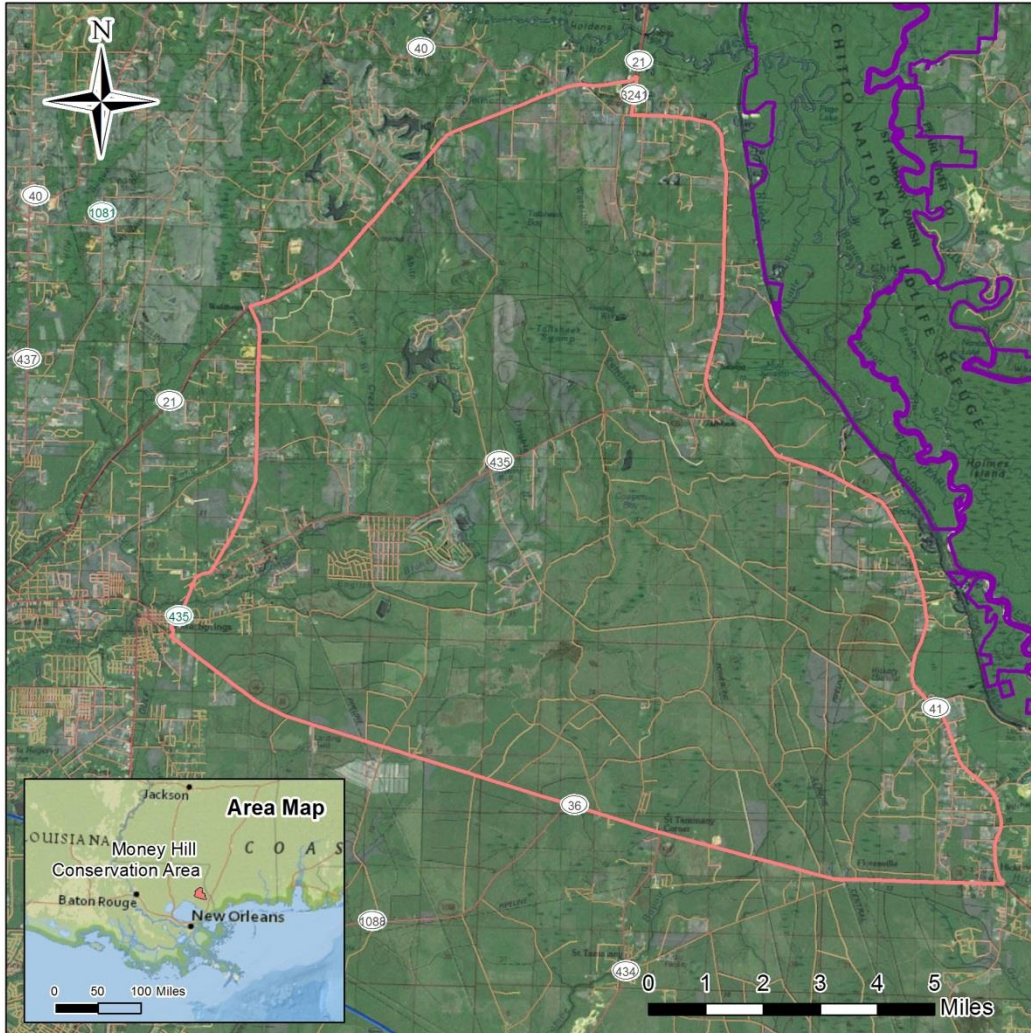
INTERTIDAL MARSH, GRAND BAY SAVANNA — HAROLD E. MALDE

ECOREGIONAL PLANS


CONSERVATION AREA
PLANS

GROUND-
TRUTHING

Money Hill Conservation Area



Legend

-  USFWS Bouge Chitto NWR
-  Money Hill Conservation Area

- ❖ Over **25** state rare species of plants and animals
- ❖ **10** globally-rare species
- ❖ Diversity of plant communities
- ❖ Important migratory bird habitat
- ❖ **120** species of birds
- ❖ **13** bird species of concern by Partners in Flight
- ❖ Near Bogue Chitto River NWR

WHAT IS MITIGATION?

- Section 404 of Clean Water Act of 1972
- 2008 Rule (Compensatory Mitigation for Losses of Aquatic Resources)
- No net loss: acres and functions
- Preference for in-watershed and in-kind and mitigation banks
- Mitigation hierarchy
 - Avoid
 - Minimize
 - Mitigate




Dredging the Kissimmee Canal, 1960

Compensatory Mitigation Methods

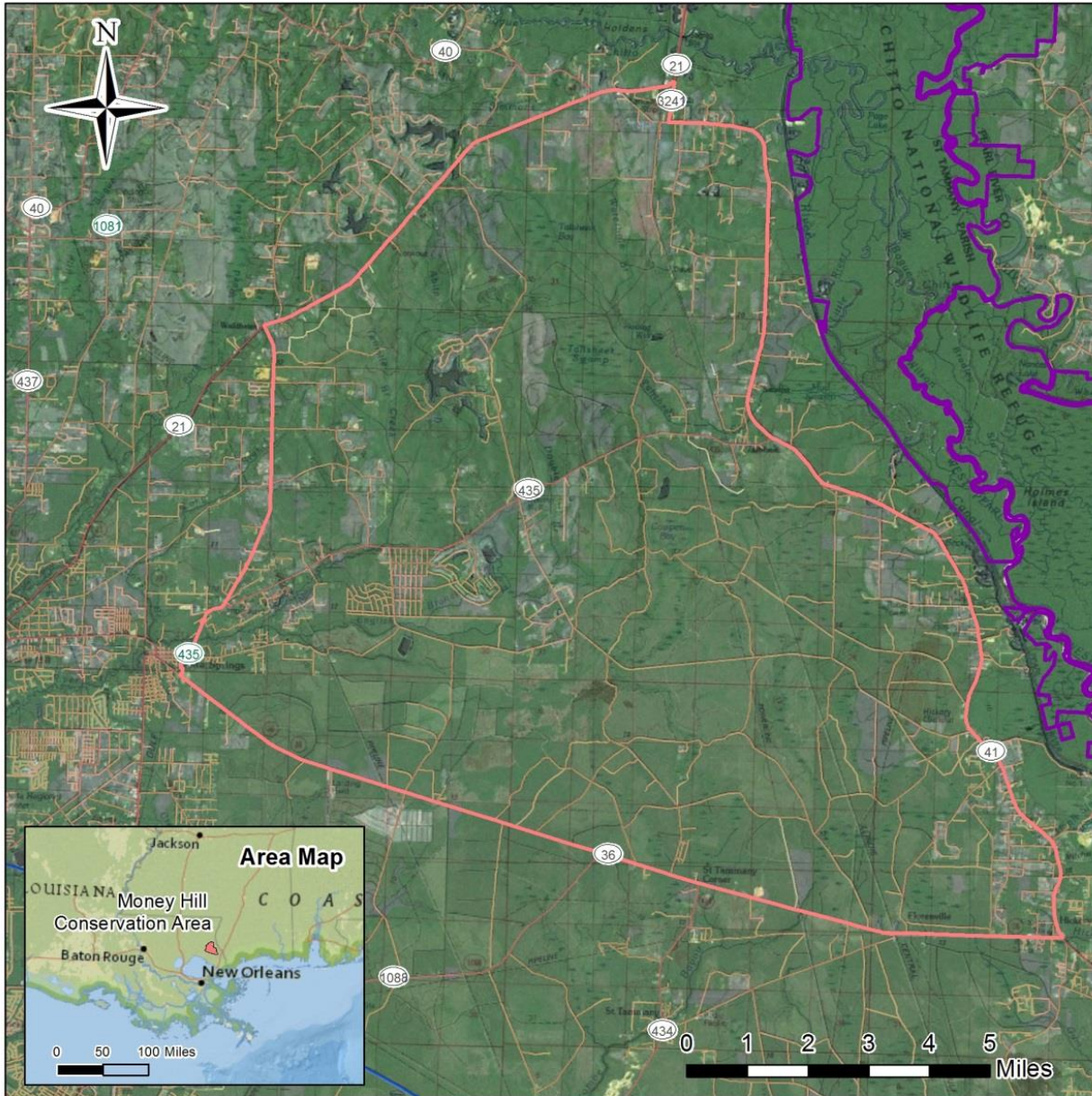
- Restoration
- Enhancement
- Establishment
- Preservation

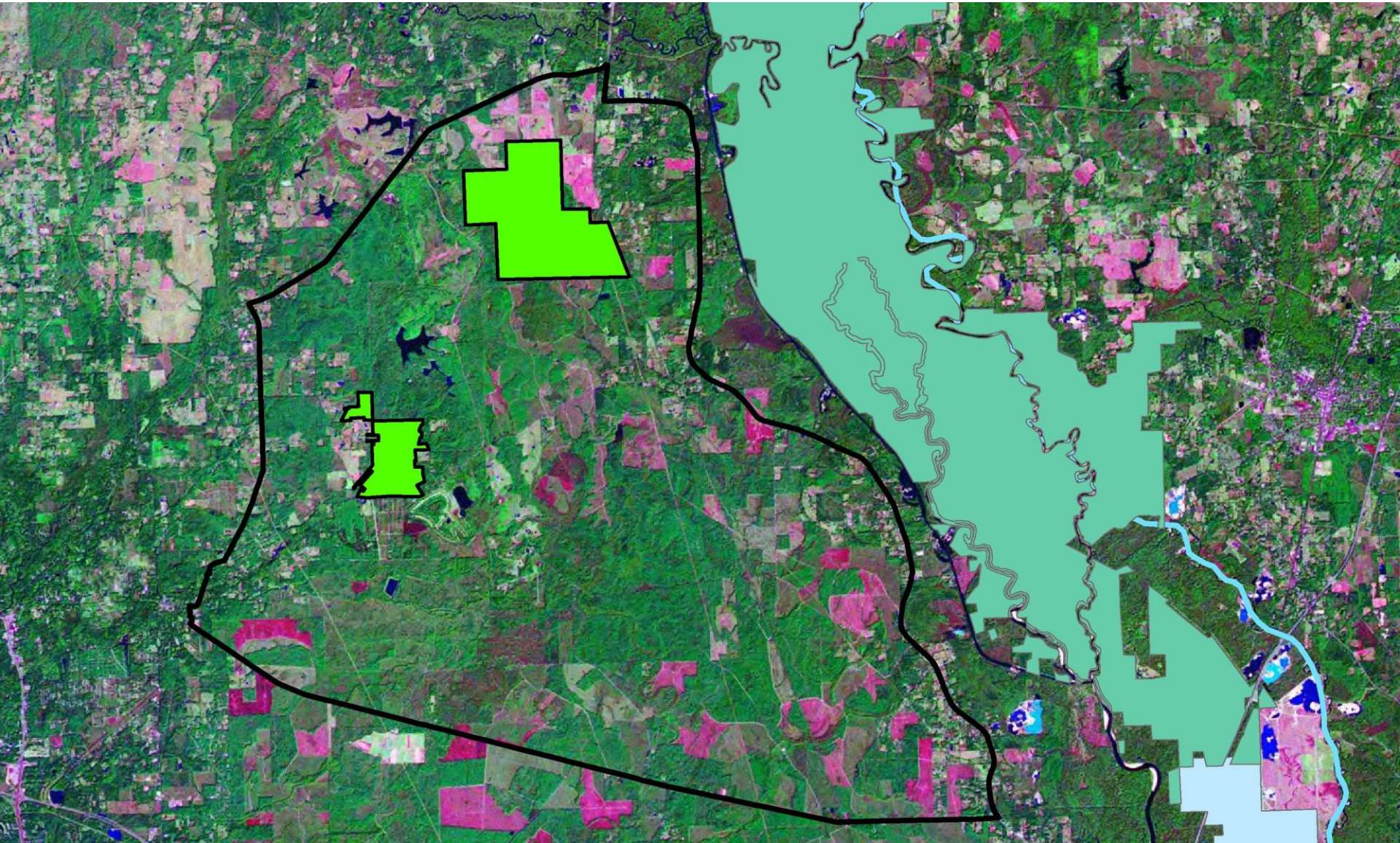


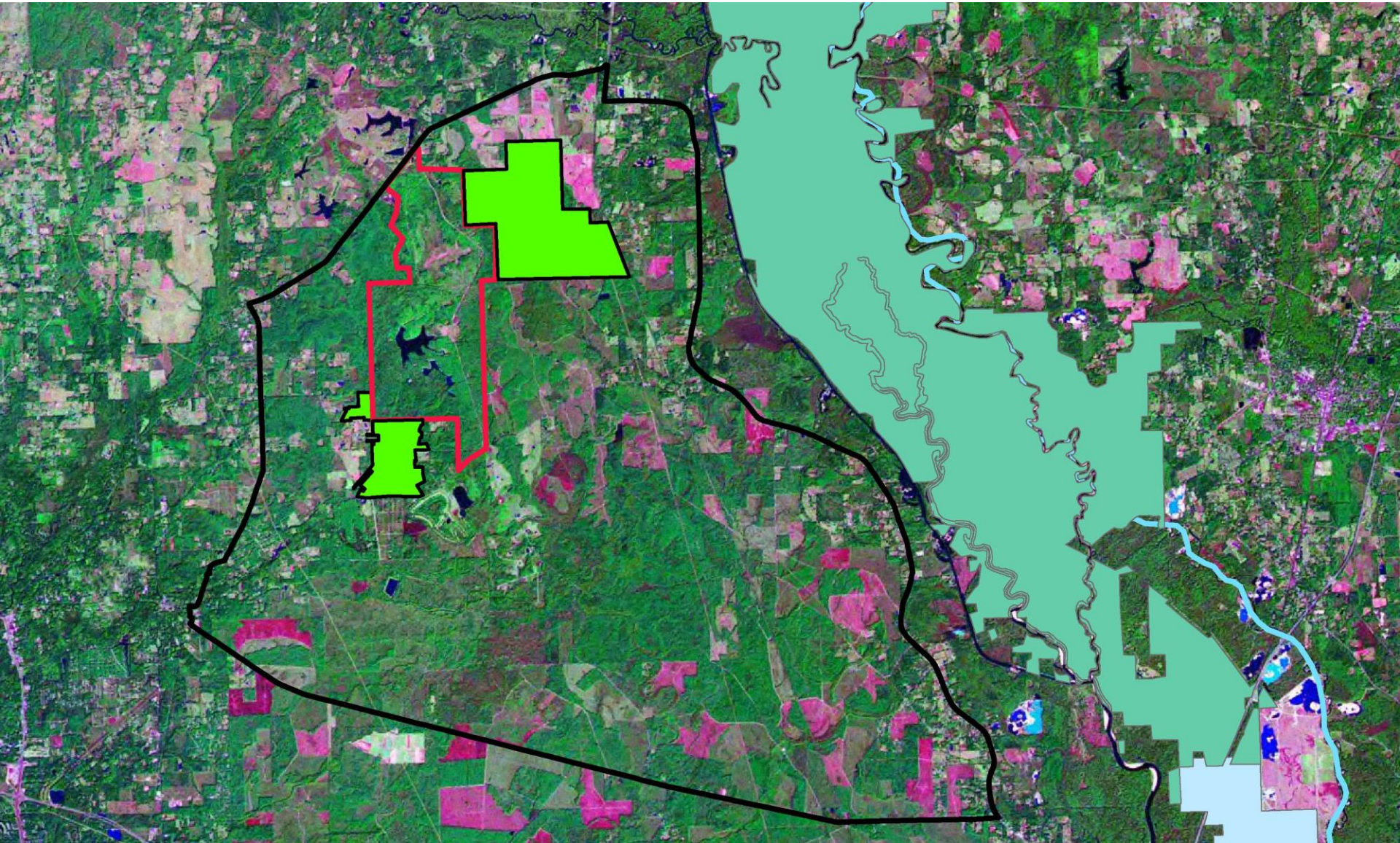


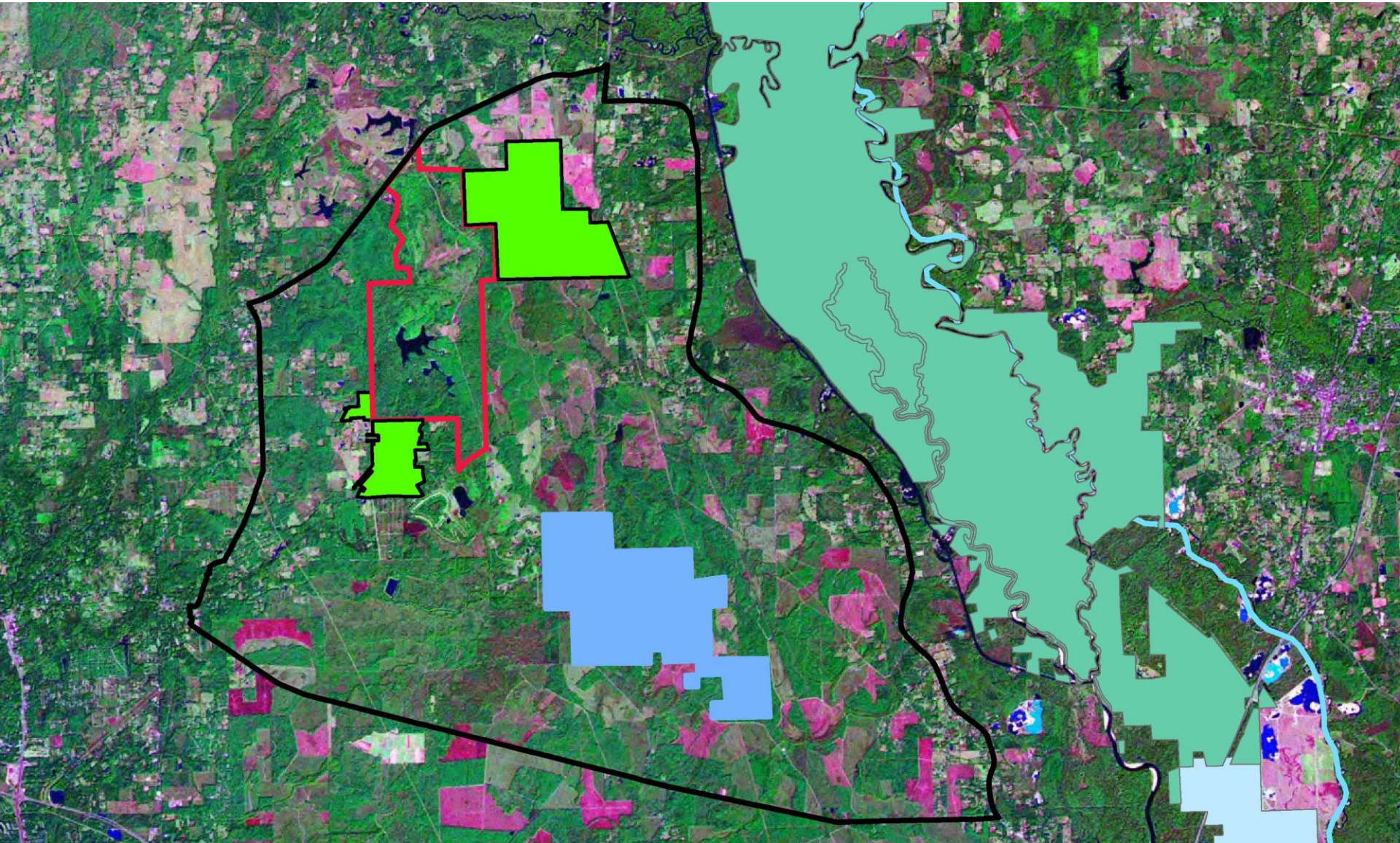
SOUTHEAST
LOUISIANA
PINE
FLATWOOD
WETLAND
MITIGATION
BANK

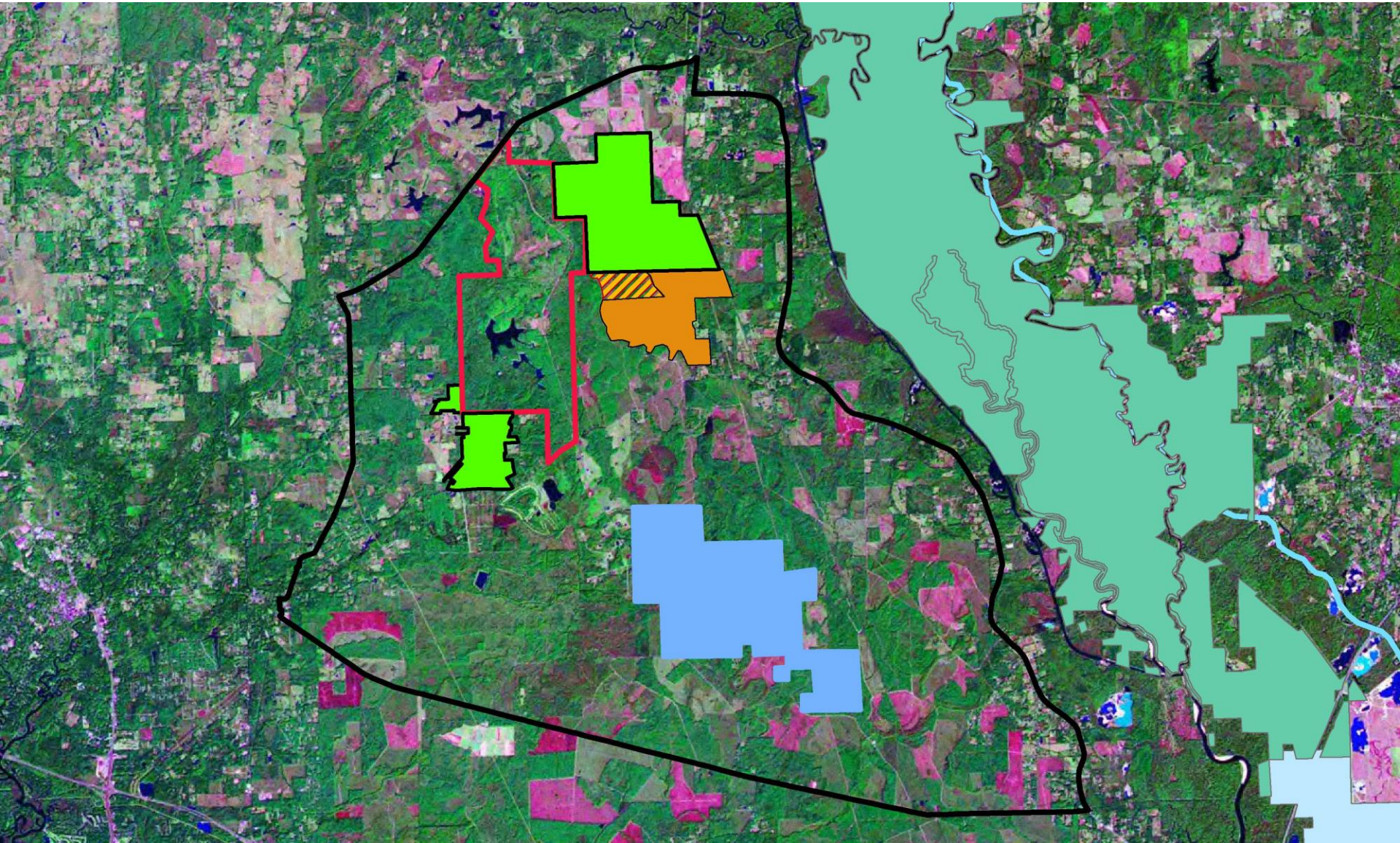
Money Hill Conservation Area

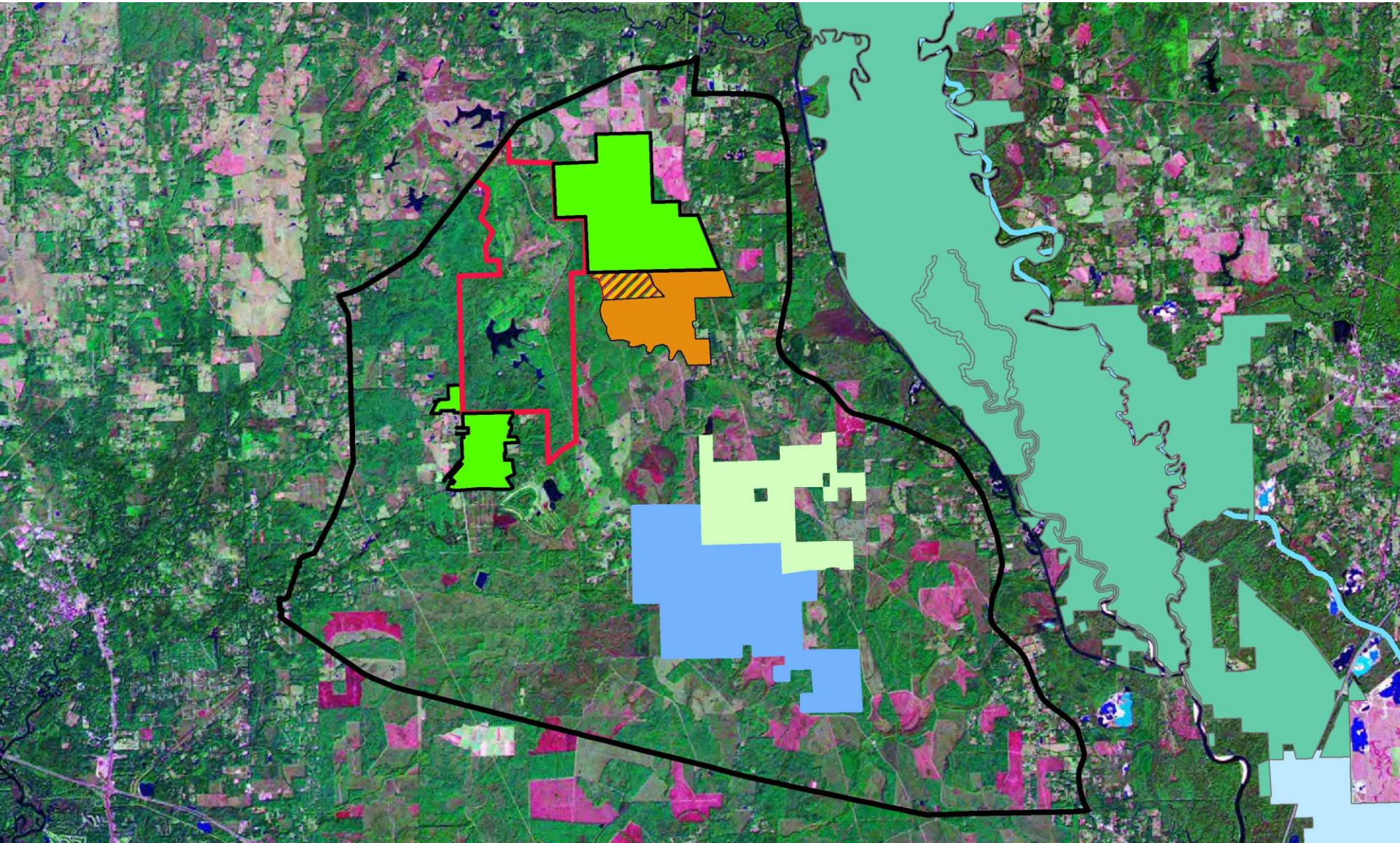












Typical Starting Situation:

- General lack of longleaf pine
- Much “off site” pine and hardwood overstory, and brush
- Suppressed native ground cover
- Lack of appropriate fire
- Presence of non-native exotics
- Altered hydrology?

**Want to go from
this....**



To this.....

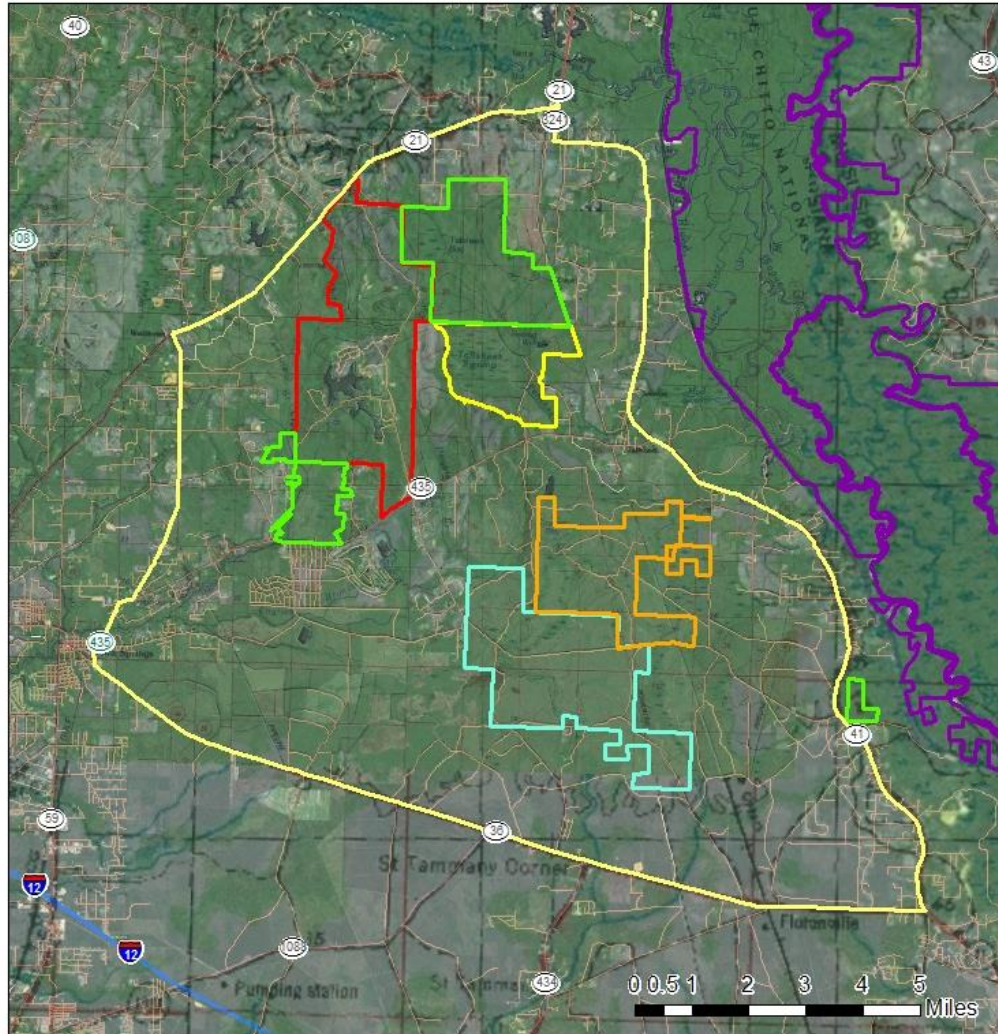








Money Hill Conservation Area

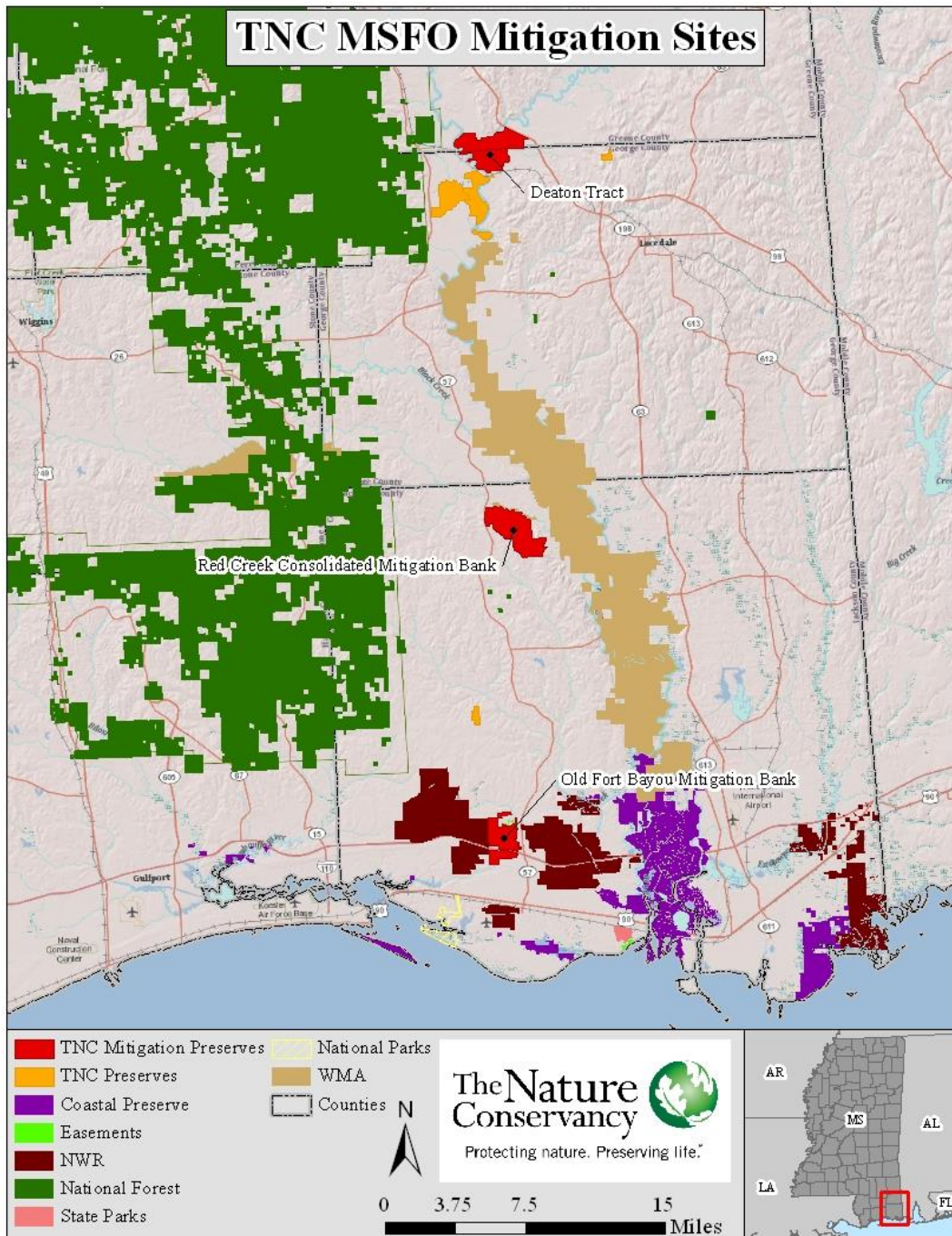


Legend

- USFWS Bouge Chitto NWR
- Money Hill Conservation Area
- The Nature Conservancy
- EIP Mossy Hill
- Bayou Lacomb
- Money Hill



TNC MSFO Mitigation Sites



Pascagoula River System and Coastal Mitigation Banks (est. 1997)

- ❖ 150 fishes/325 birds
- ❖ Mosaic of alluvial floodplain forest, cypress swamp, mesic longleaf pine matrix, tidal marshes
- ❖ 42 Animals of Conservation Concern
- ❖ TNC worked with partners to conserve 70,000 Acres in an 80-mile corridor
- ❖ 6500 protected via mitigation

IMPORTANT SPECIES



Deaton Tract Restoration



PRIMARY RESTORATION ACTIVITIES:

- Removal of invasive species that out compete native plants and inhibit turtle nesting
- Clearing pine plantations
- Planting hundreds of thousands of native hardwood trees
- Restoring natural water flow by removing manmade barriers



Hydrology Remediation

Includes addressing obvious on-site artificial features that affect surface water movement, such as:

Levees

Berms

Road beds

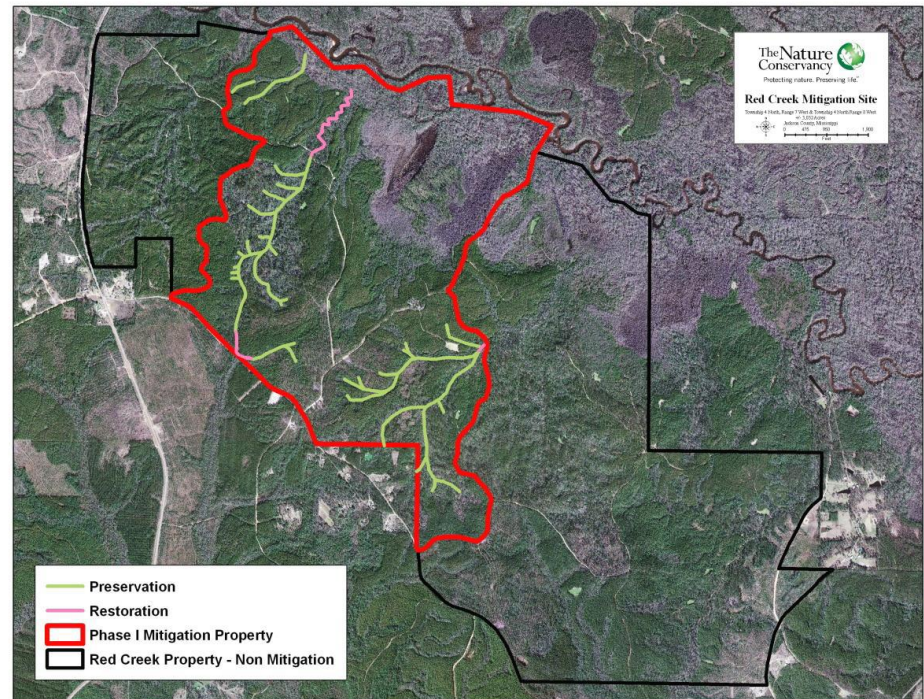
Ditches

Red Creek Consolidated Mitigation Bank Stream Mitigation



← Incised Stream Channel
Sediment Reduction

Stream Length Protected: over 63,000 linear feet (12 miles) of streams restored, enhanced or preserved.



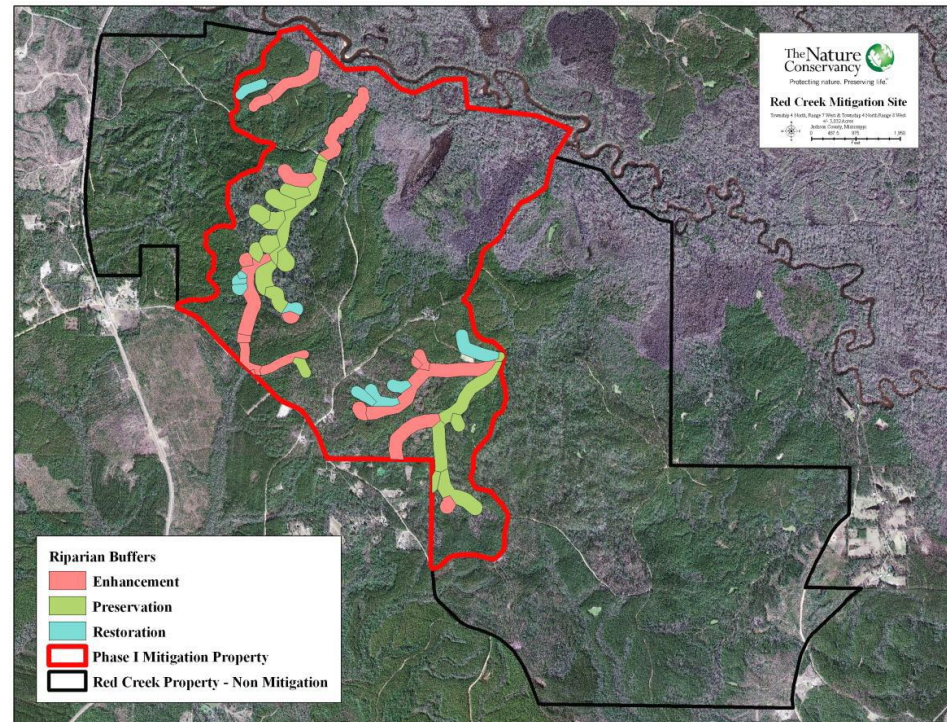


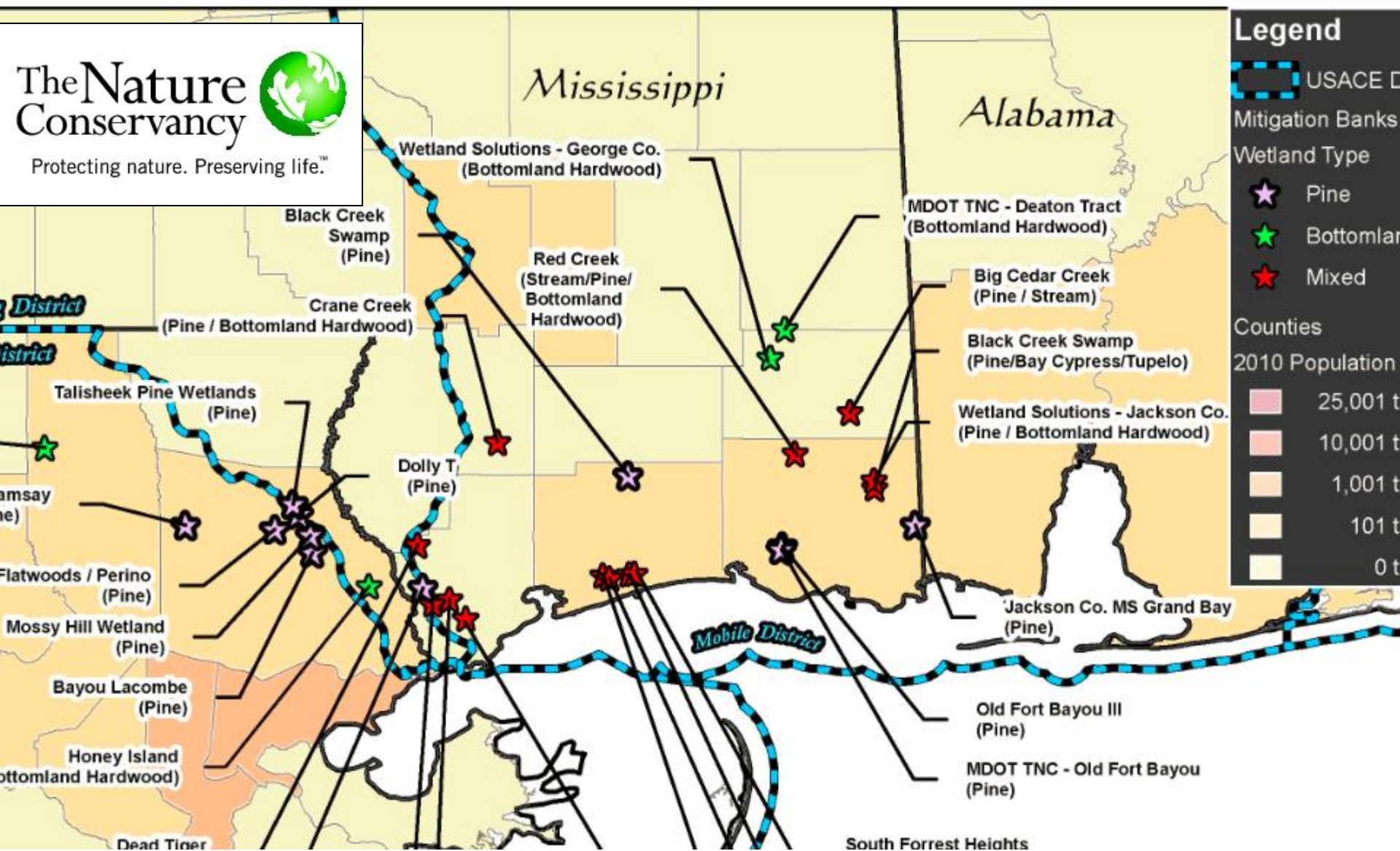
Red Creek Consolidated Mitigation Bank

Stream Mitigation – Riparian Buffers



← Pine plantation in riparian zone

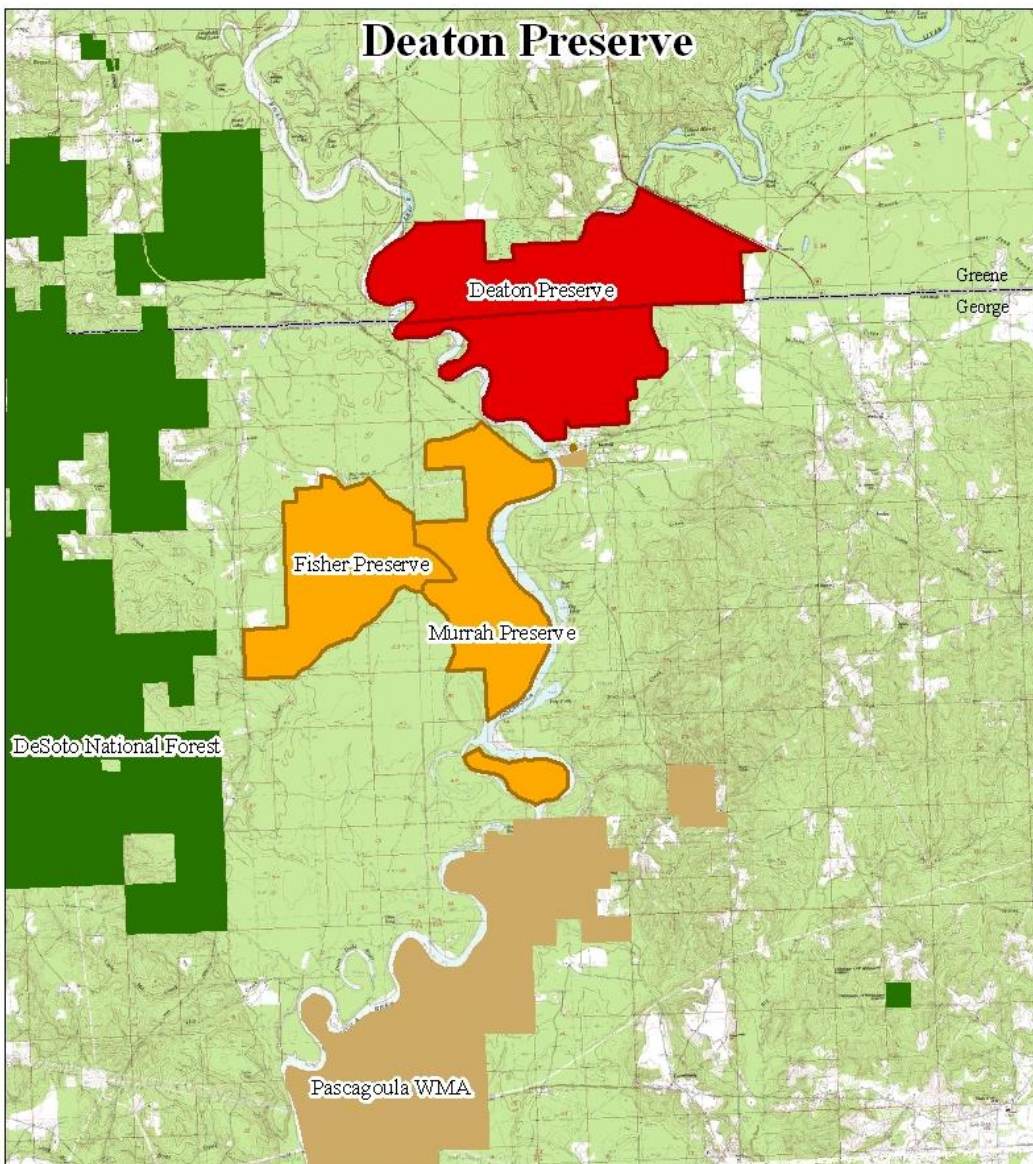




Legend

- USACE District
- Mitigation Banks
- Wetland Type**
- Pine
- Bottomland Hardwood
- Mixed
- Counties**
- 2010 Population**
- 25,001 +
- 10,001 +
- 1,001 +
- 101 +
- 0 +

South Forrest Heights



Upper Pascagoula Mitigation Sites

Deaton Preserve - Addition to OFBMB of 3300 acres in 2000

Established in partnership with MDOT, who purchased almost all credits up-front

Fisher Preserve purchased with SEP funds

Murrah Preserve – 90 acres restored with SEP funds

The Nature Conservancy



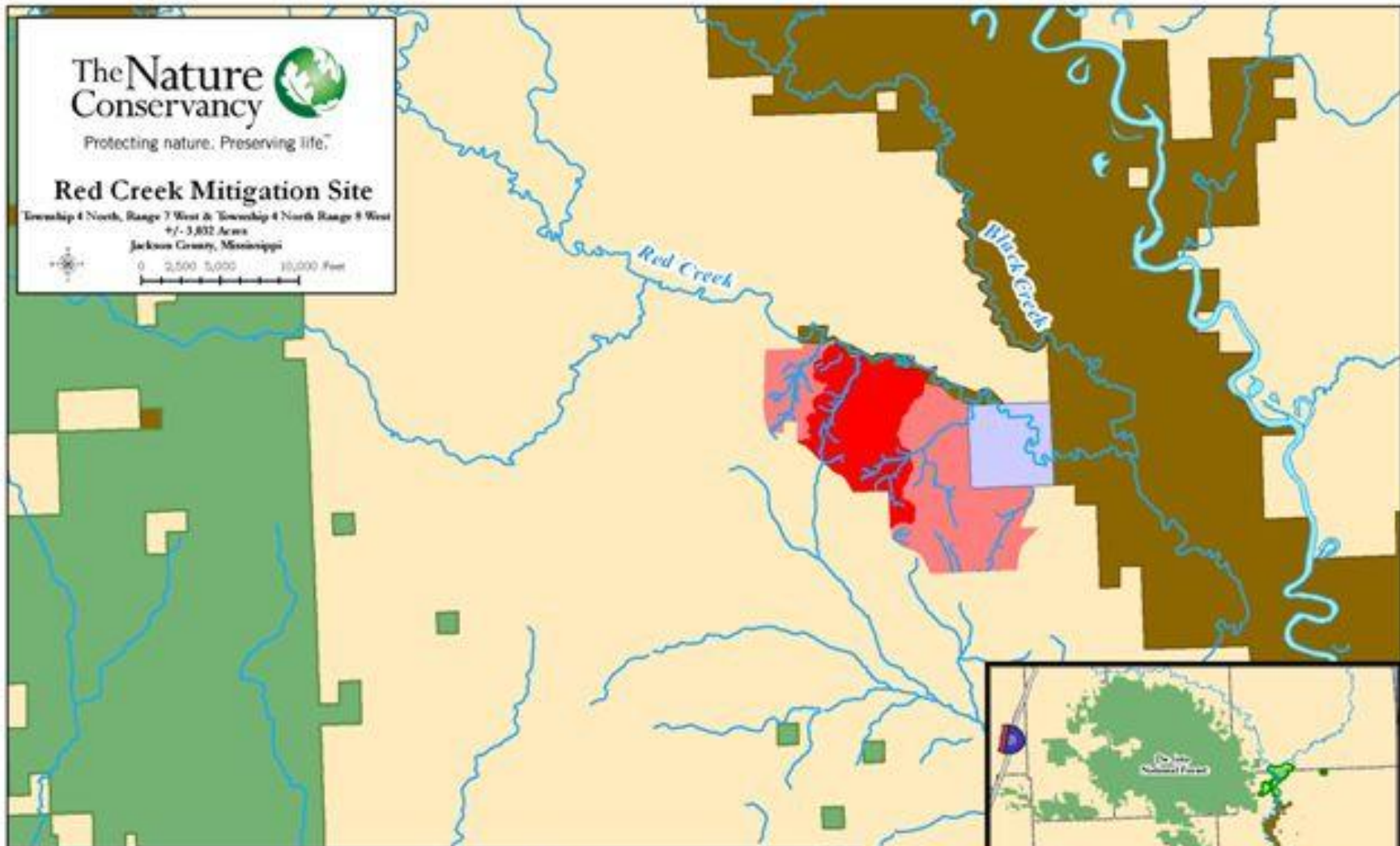
Protecting nature. Preserving life.™

Red Creek Mitigation Site


Township 4 North, Range 7 West & Township 4 North Range 8 West
±/- 3,832 Acres

Jackson County, Mississippi


0 2,500 5,000 10,000 Feet




 Phase I Mitigation Property


 Red Creek Property - Non Mitigation


 National Forest

 National Wildlife Refuge

 Wildlife Management Area

 TNC Property

 16th Section Land

 Mississippi Counties

 Rivers

 Highways



BENEFITS OF WORKING AT A LANDSCAPE/WATERSHED SCALE

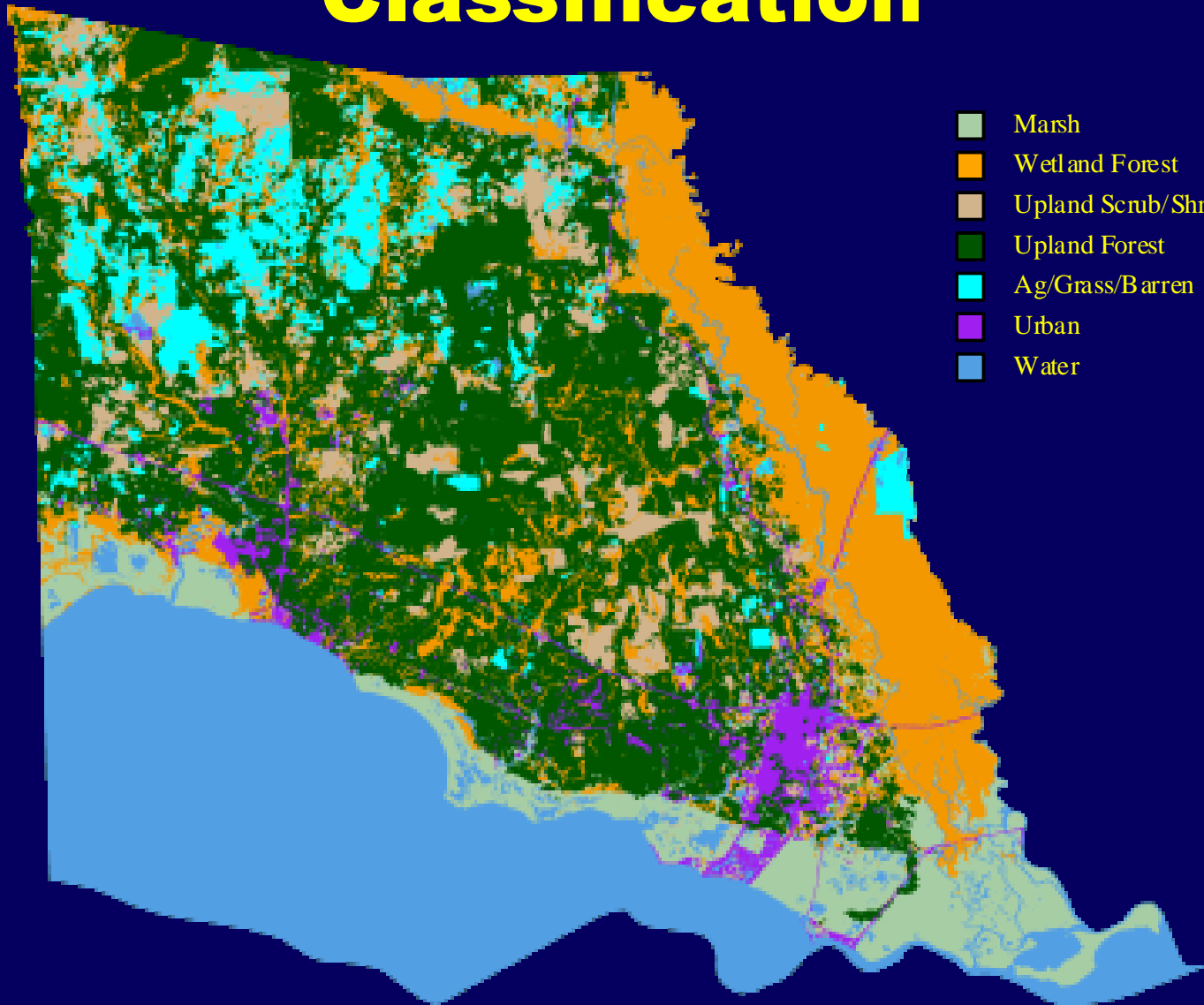
2008 Rule: Goal of a watershed approach is to maintain and improve the quality and quantity of aquatic resources and functions and to do so over time in changing landscape

Considerations: Habitat requirements of important species; Habitat loss and conversion trends; Sources of watershed impairment; Location factors (hydrology, surrounding land use); Influence of riparian or upland areas; Site conditions that favor or hinder success of mitigation projects

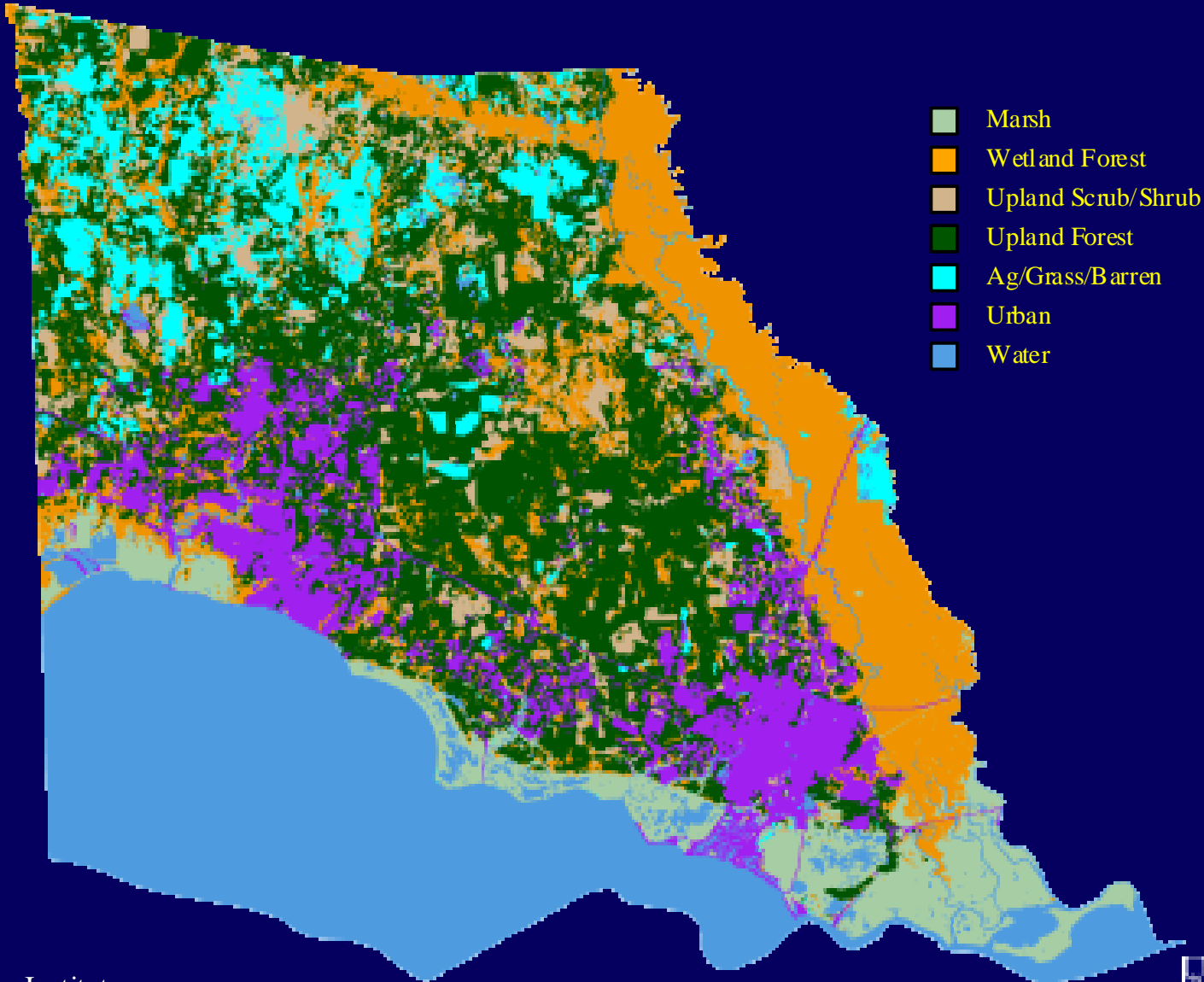
KEY: Site suitability and Functionality

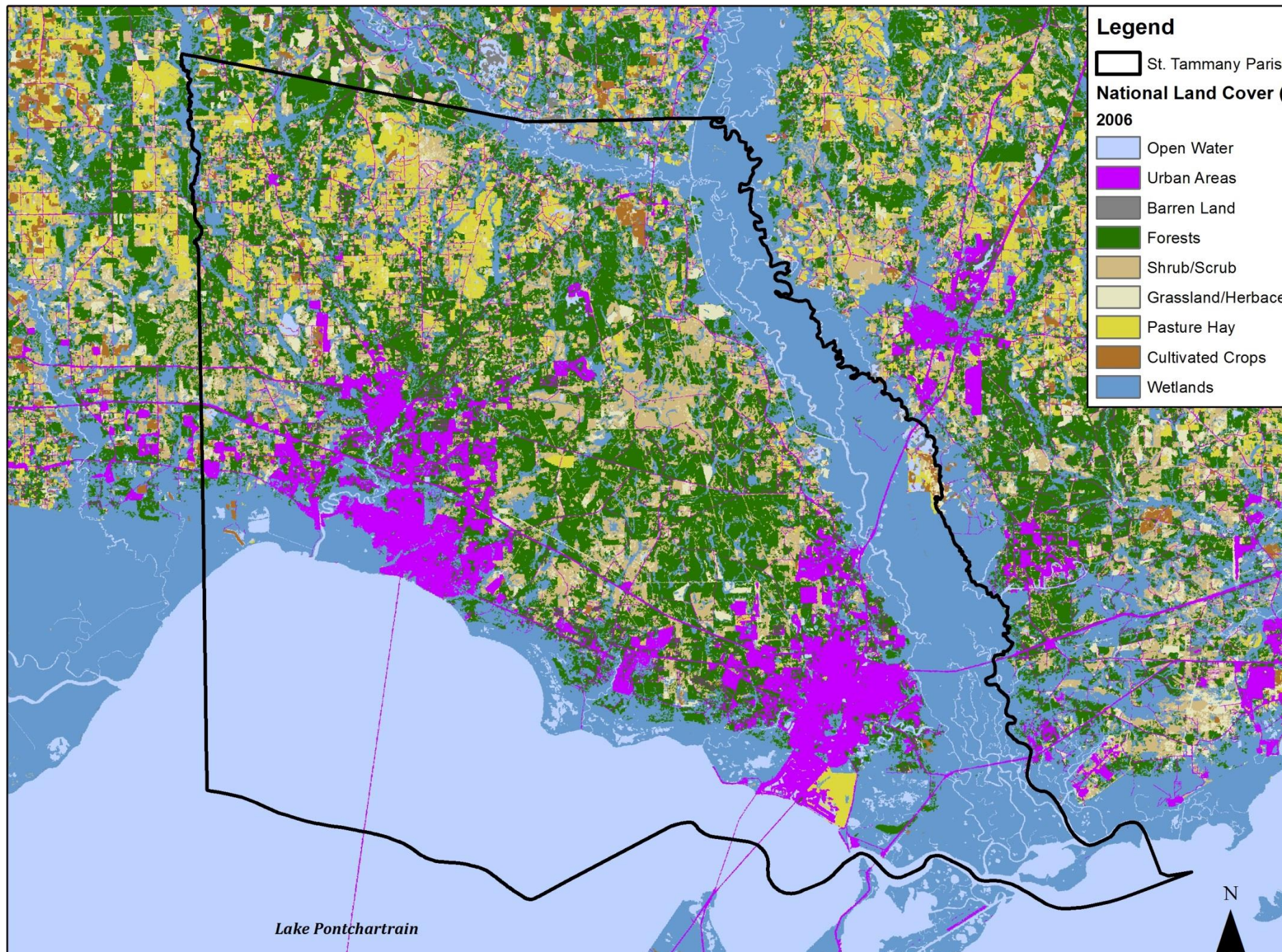
The success of a wetland or stream restoration project depends as much on the watershed context as it does on the quality of the restoration work itself

St. Tammany December 1982 Classification



St. Tammany 2000 Classification





Lake Pontchartrain

N

BENEFITS OF WORKING AT A LANDSCAPE/WATERSHED SCALE

Landscape context is key for successful mitigation and conservation.

By strategic site selection through looking at the landscape level, TNC has successfully used mitigation to achieve greater aquatic resource and biodiversity conservation than isolated mitigation sites alone would achieve.

We have achieved results beyond replacement of local wetland loss and helped achieve broader conservation goals such as long lasting biodiversity conservation.

ACKNOWLEDGEMENTS



- Latimore Smith – Director of Science and Stewardship – LA TNC
- Poiani et al. 2000. Biodiversity Conservation at Multiple Scales: Functional Sites, Landscapes, and Networks. Bioscience.
- Watershed Approach Handbook, Environmental Law Institute and TNC, Funded by EPA, Draft May 2013

The Nature
Conservancy



Protecting nature. Preserving life.™

NATIONAL CONFERENCE ON ECOSYSTEM RESTORATION



Nelwyn McInnis
Mitigation Program Manager
The Nature Conservancy
MS/LA

nmcinnis@tnc.org
985-320-9284

“To conserve the lands and waters on which all life depends”