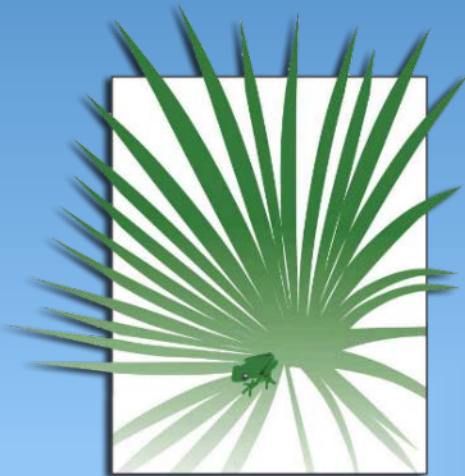


HISTORIC NATURAL COMMUNITIES AND RARE PLANT SURVEYS IN THE APALACHICOLA REGION

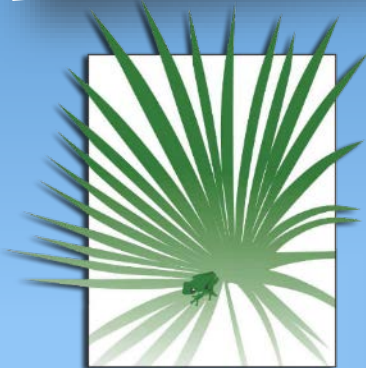


Amy Jenkins

**Florida Natural Areas Inventory
August 2018**



FLORIDA
Natural Areas
INVENTORY



NatureServe

FLORIDA
Natural Areas
INVENTORY



Collaborative Efforts on the ANF

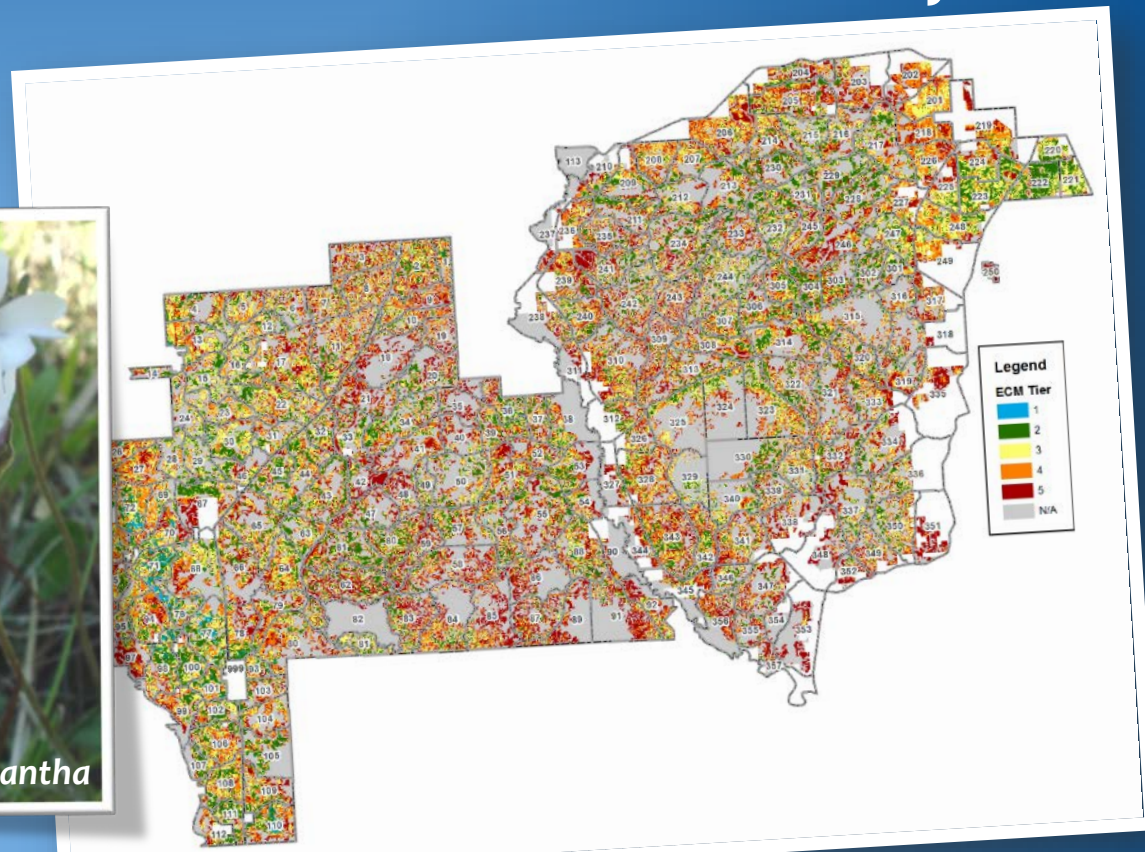
- *Historic natural communities of the ANF and the greater region*
- *Ecological Condition Model*
- *Pre-silvicultural treatment surveys*



Macbridea alba



Pinguicula ionantha



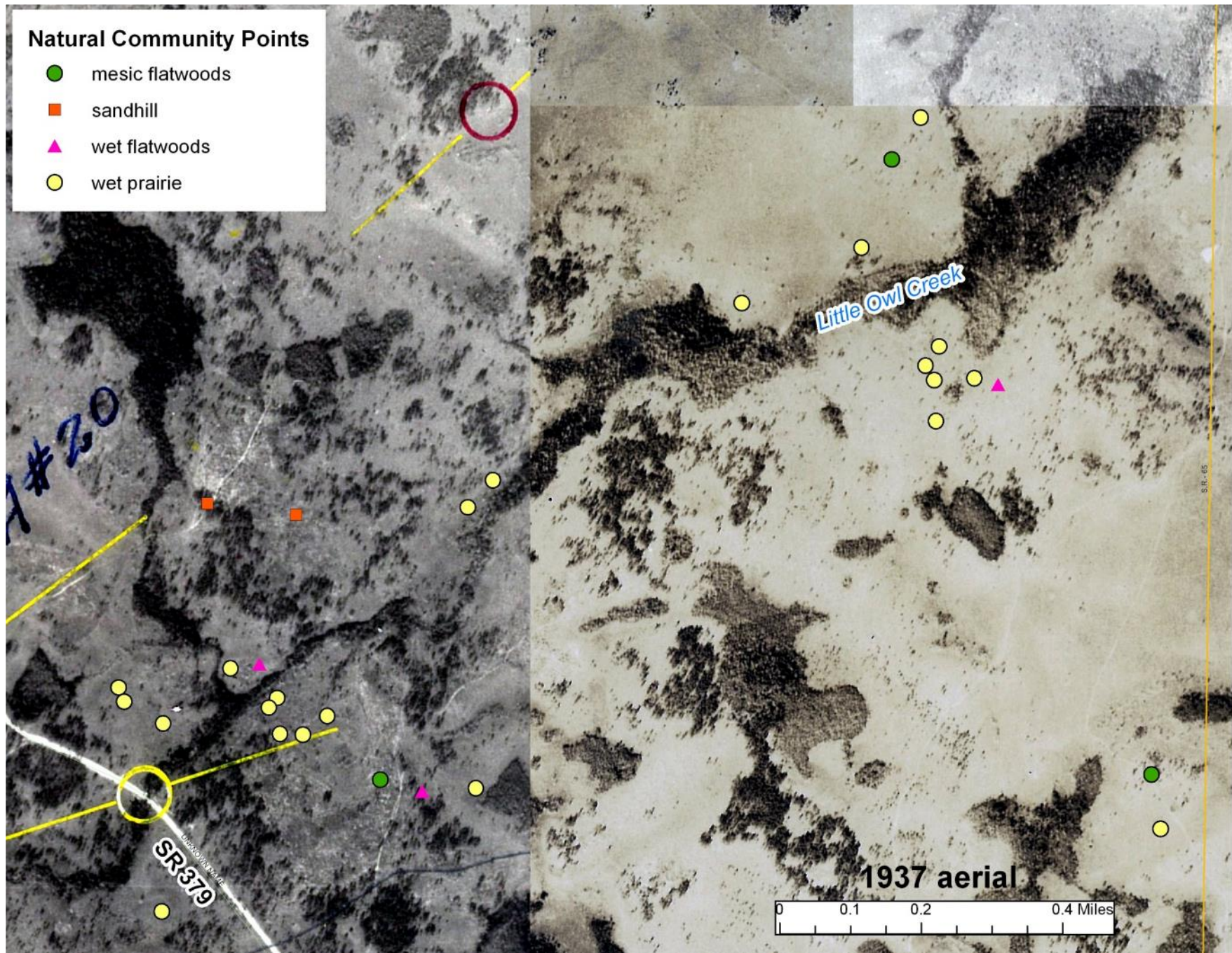
Crafting A Historic Natural Community Map

- 1937, 1952, limited 1942 aerials
- 1995, 1999, 2004, 2010 aerials
- Soils maps
- LiDAR data
- Our ECM and GPS natural community points
- Rare species locations
- Tate's Hell historic natural community map



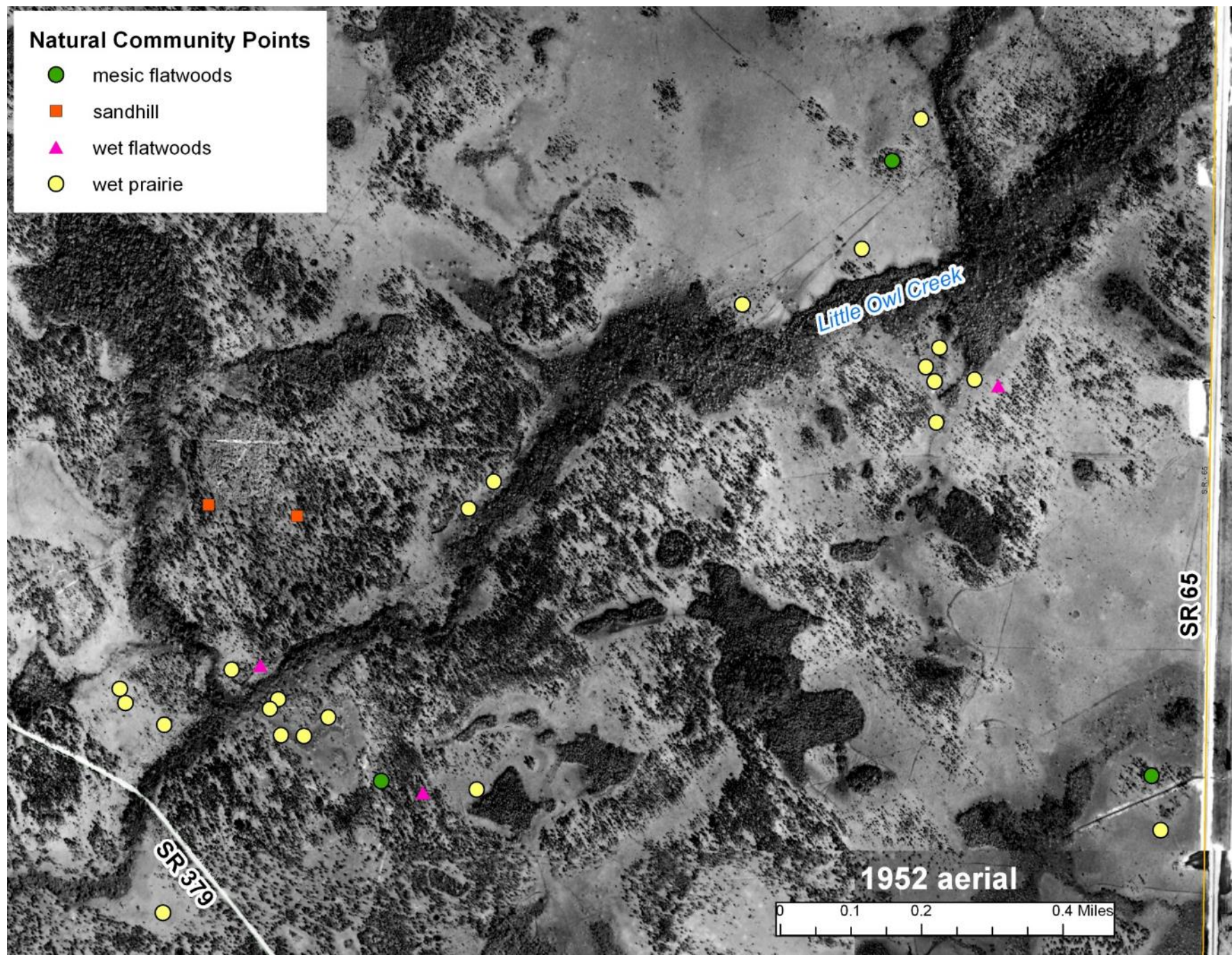
Natural Community Points

- mesic flatwoods
- sandhill
- ▲ wet flatwoods
- wet prairie



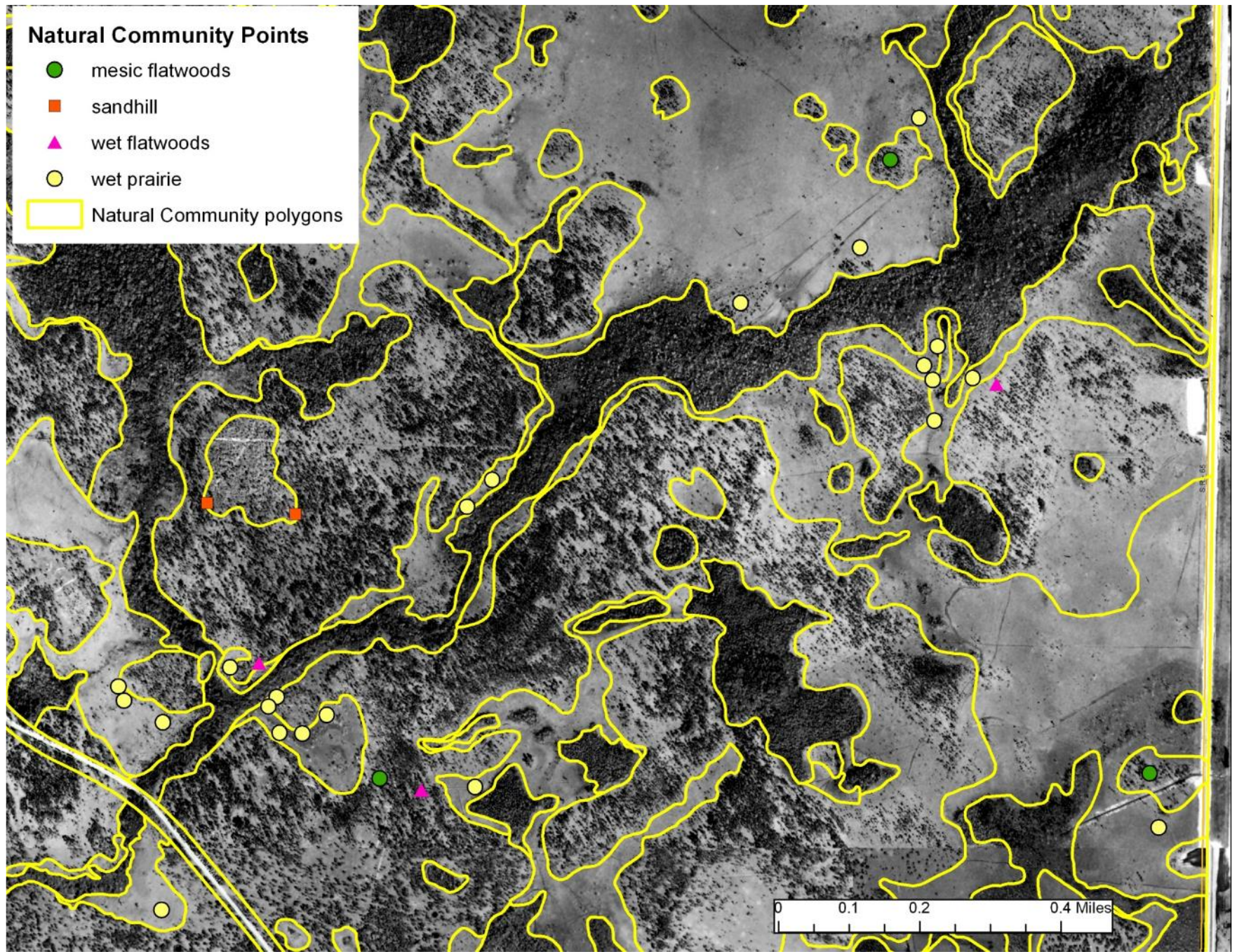
Natural Community Points

- mesic flatwoods
- sandhill
- ▲ wet flatwoods
- wet prairie

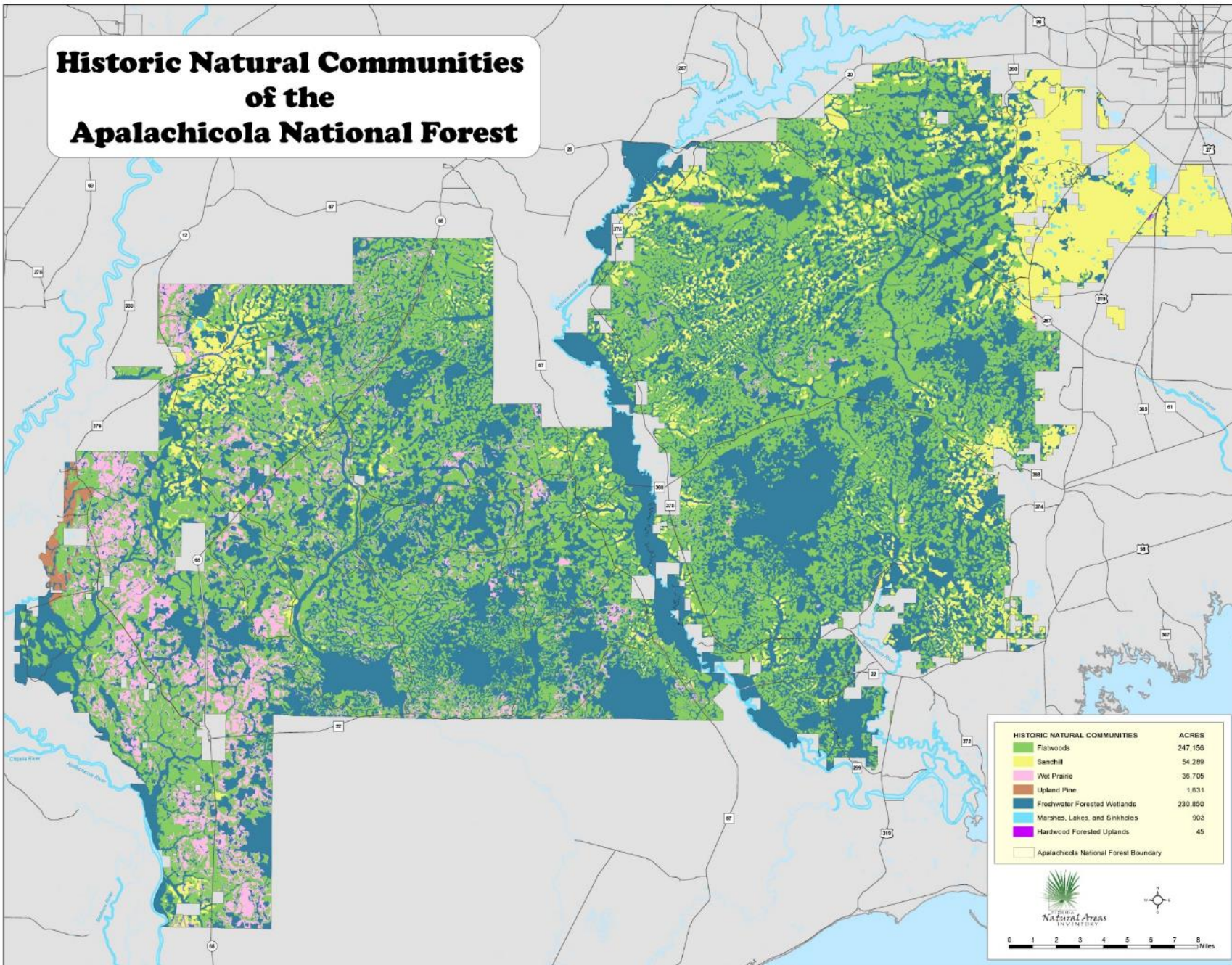


Natural Community Points

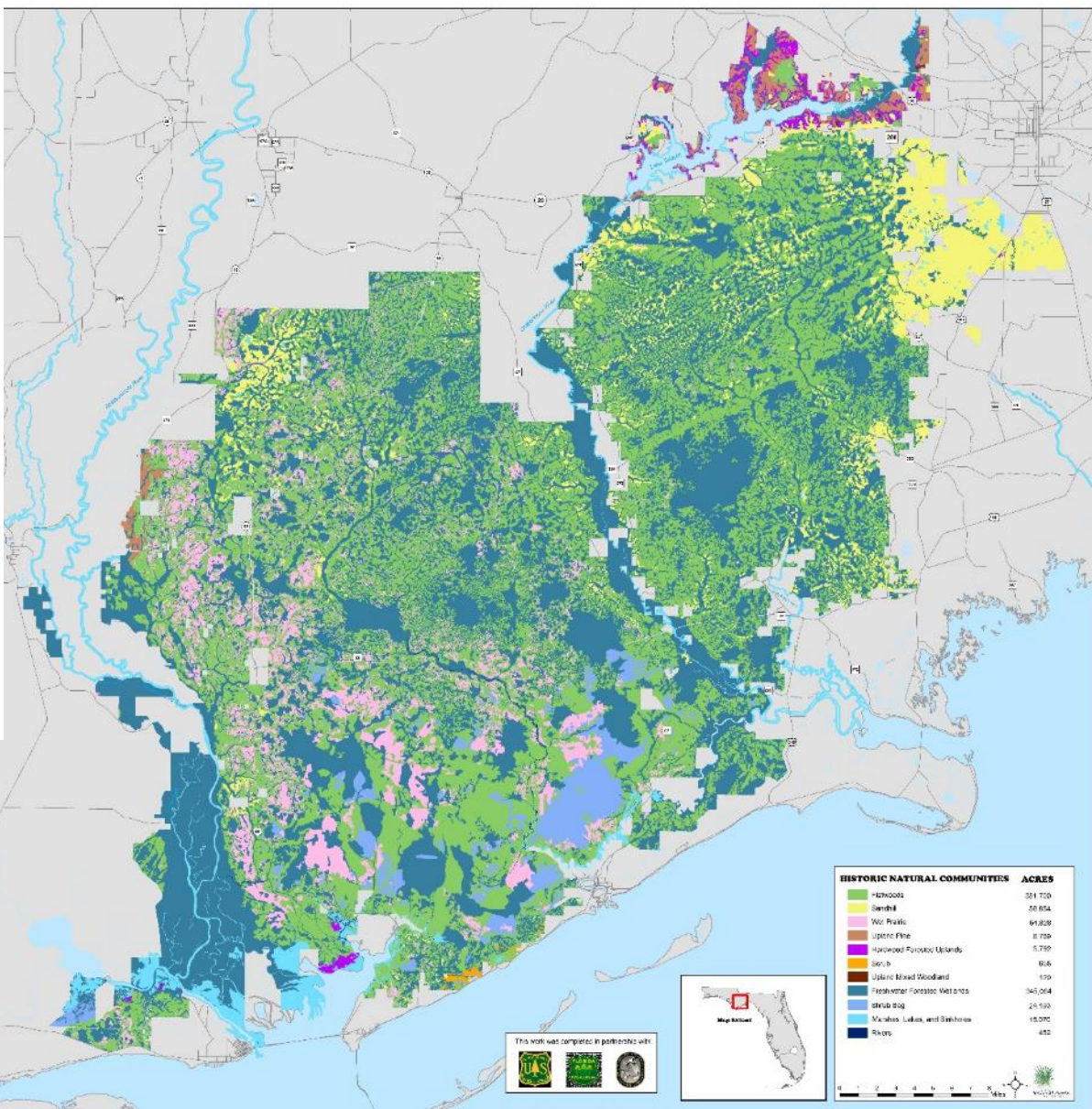
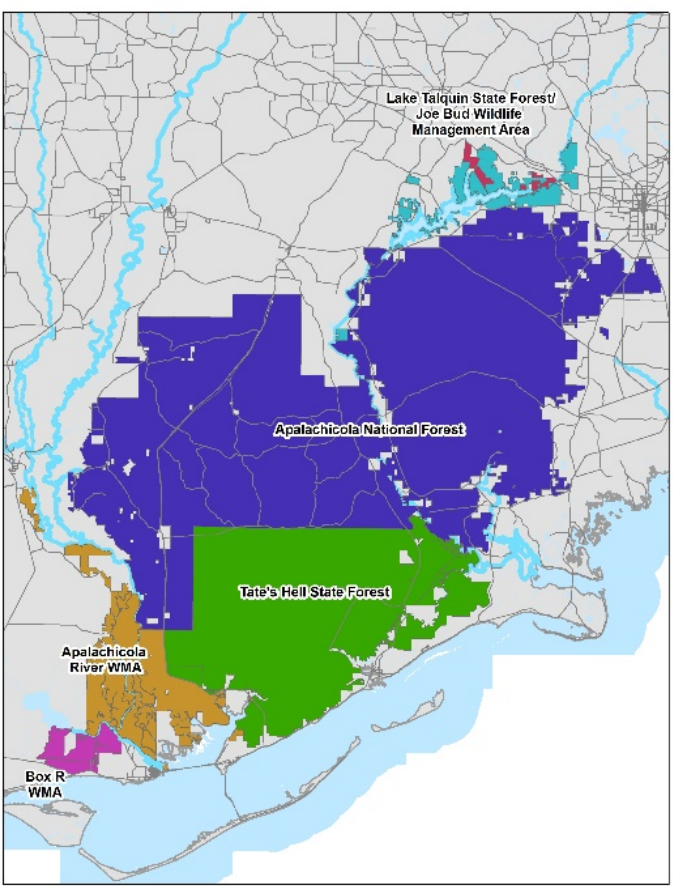
- mesic flatwoods
- sandhill
- ▲ wet flatwoods
- wet prairie
- Natural Community polygons



Historic Natural Communities of the Apalachicola National Forest



Regional Historic Vegetation Map



873,520 acres

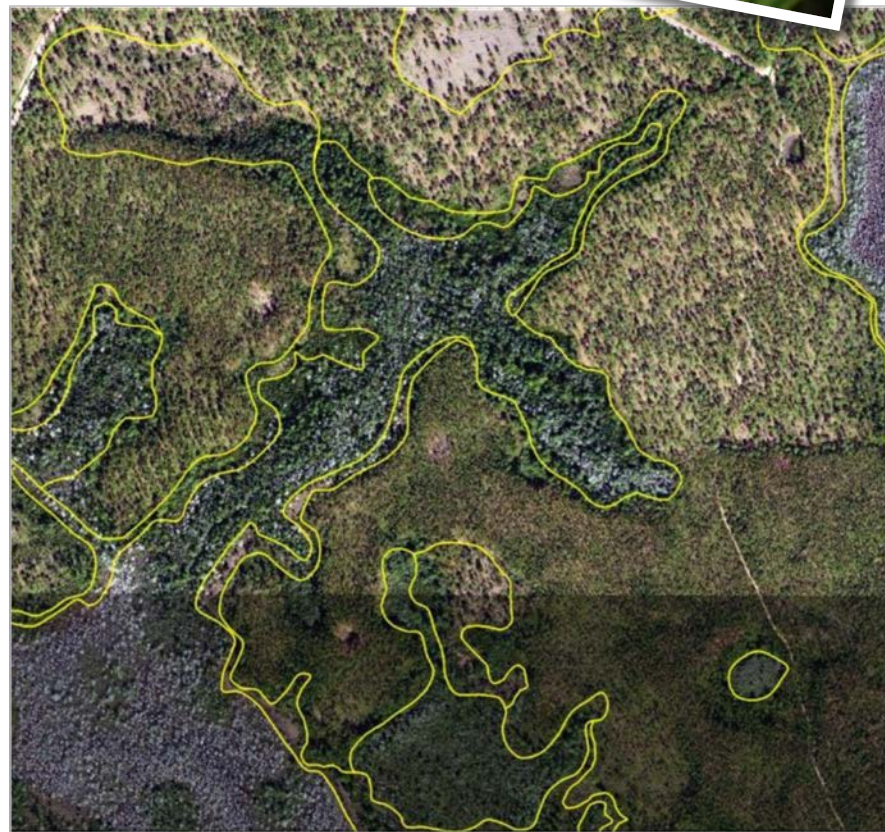
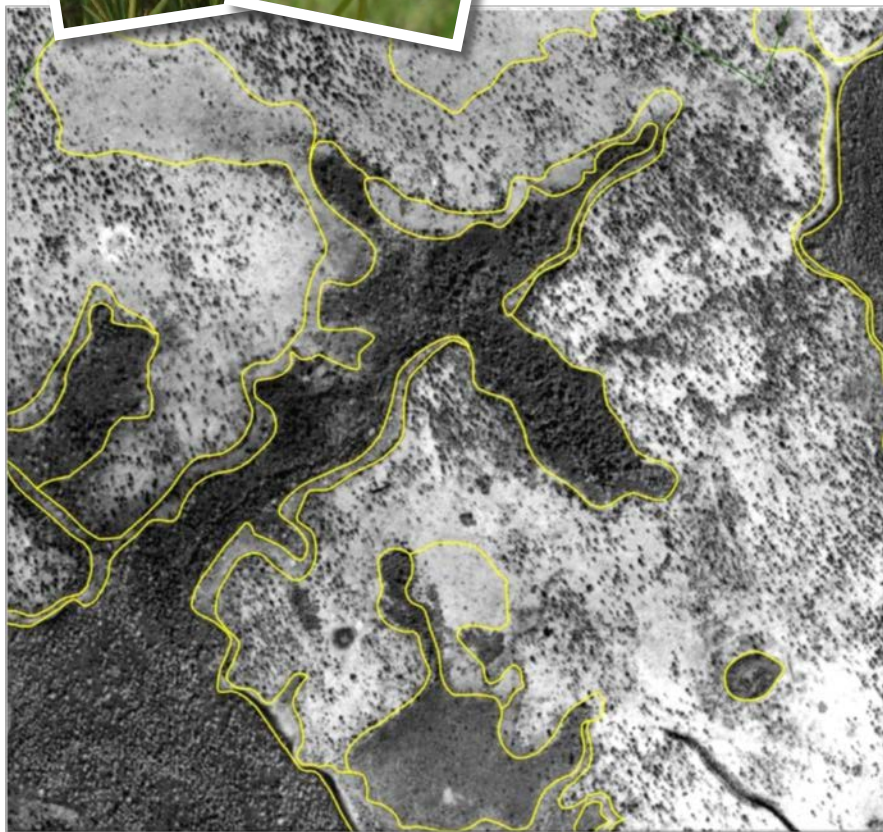
HISTORIC NATURAL COMMUNITIES	ACRES
Highwoods	351,170
Savannah	207,654
Non-Florida	49,808
Upland Pine	2,750
Harwooded Pocoson Islands	2,750
Savannah	806
Upland Mixed Woodland	170
Freshwater Forested Wetlands	340,004
Shrub bog	24,500
Marshes, Lakes, and Bayhous	15,070
Rivers	480



Titi Encroachment In Wet Prairie

1952

2013



Ecological Condition Model (ECM) Plots

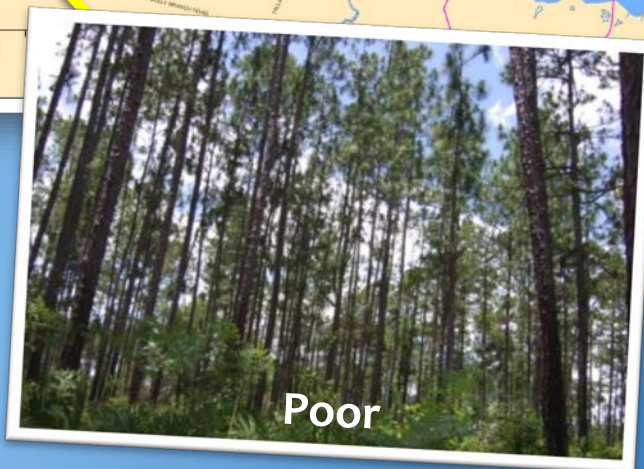
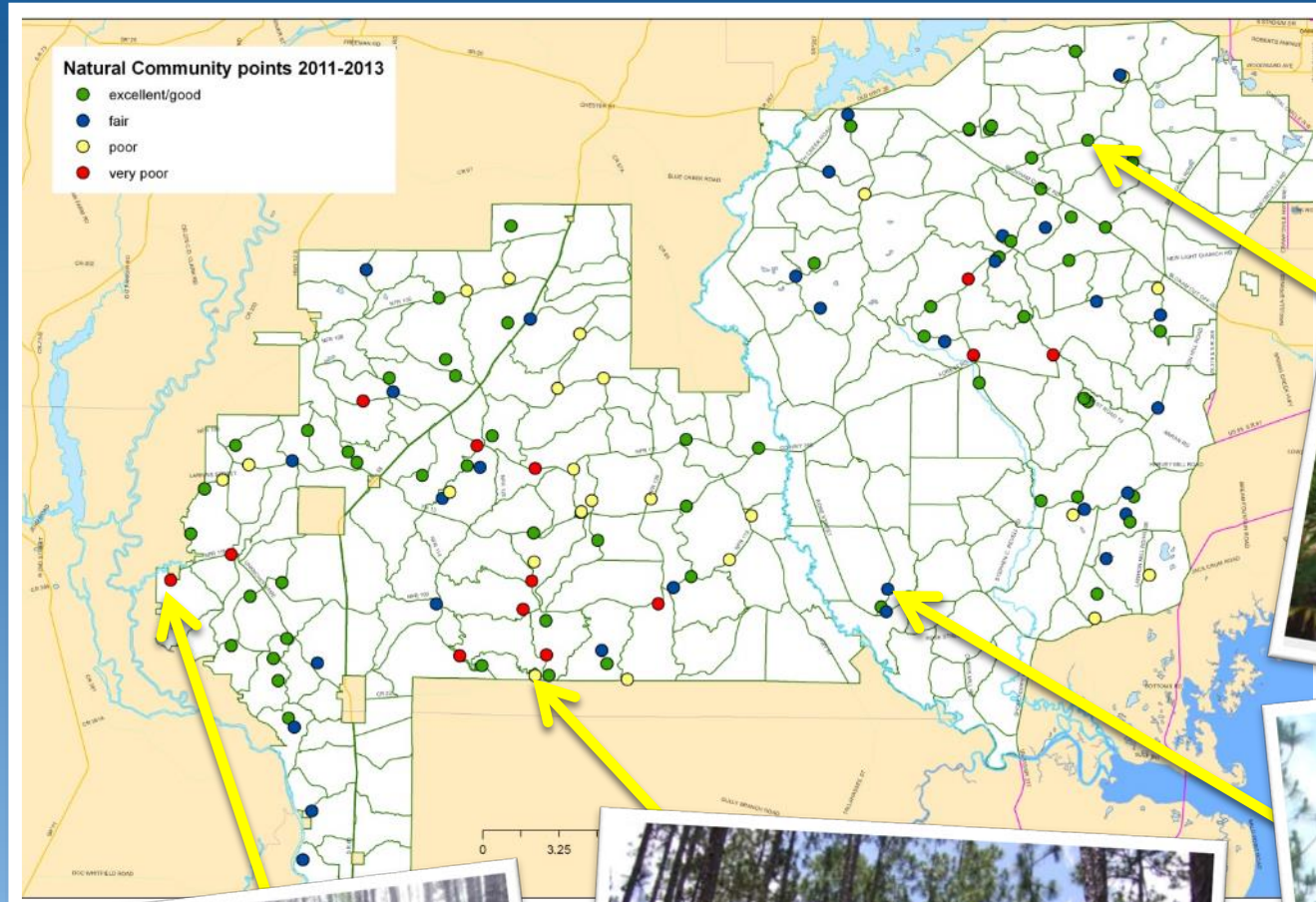
- *Canopy*
- *Midstory*
- *Shrubs*
- *Herbs*

- *Quantitative data taken at the canopy, midstory, shrub, and herb layers*
- *Qualitative condition ranking*



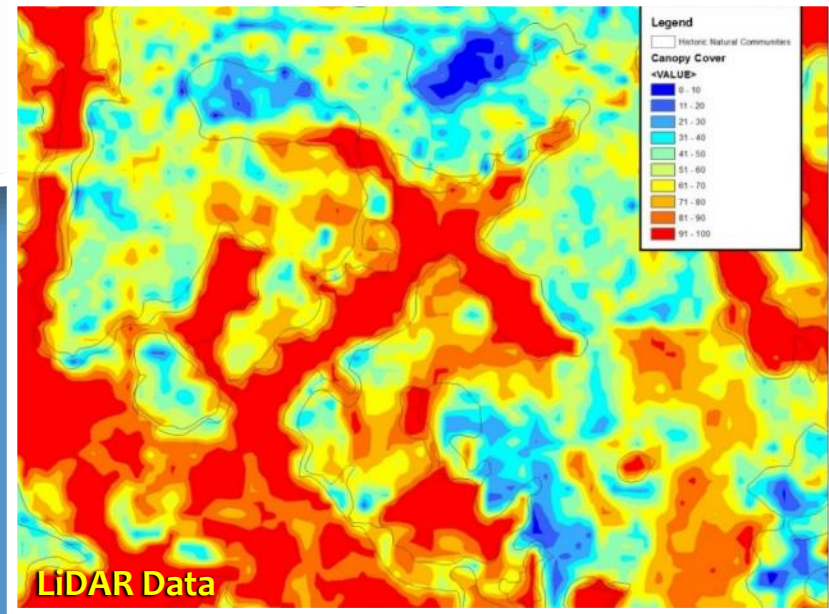
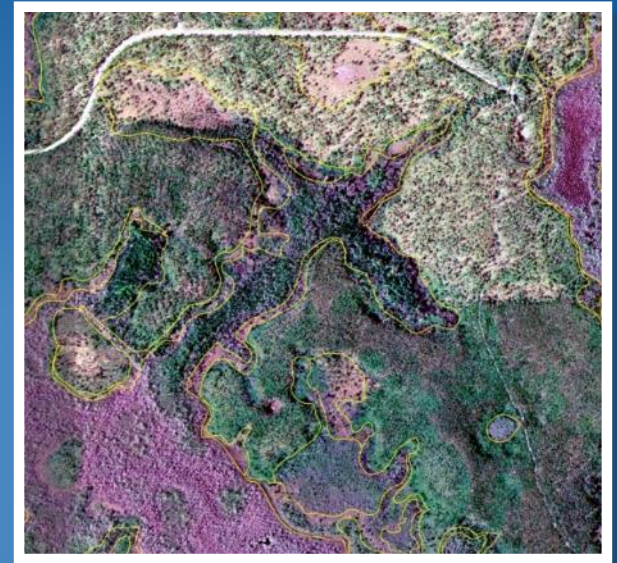
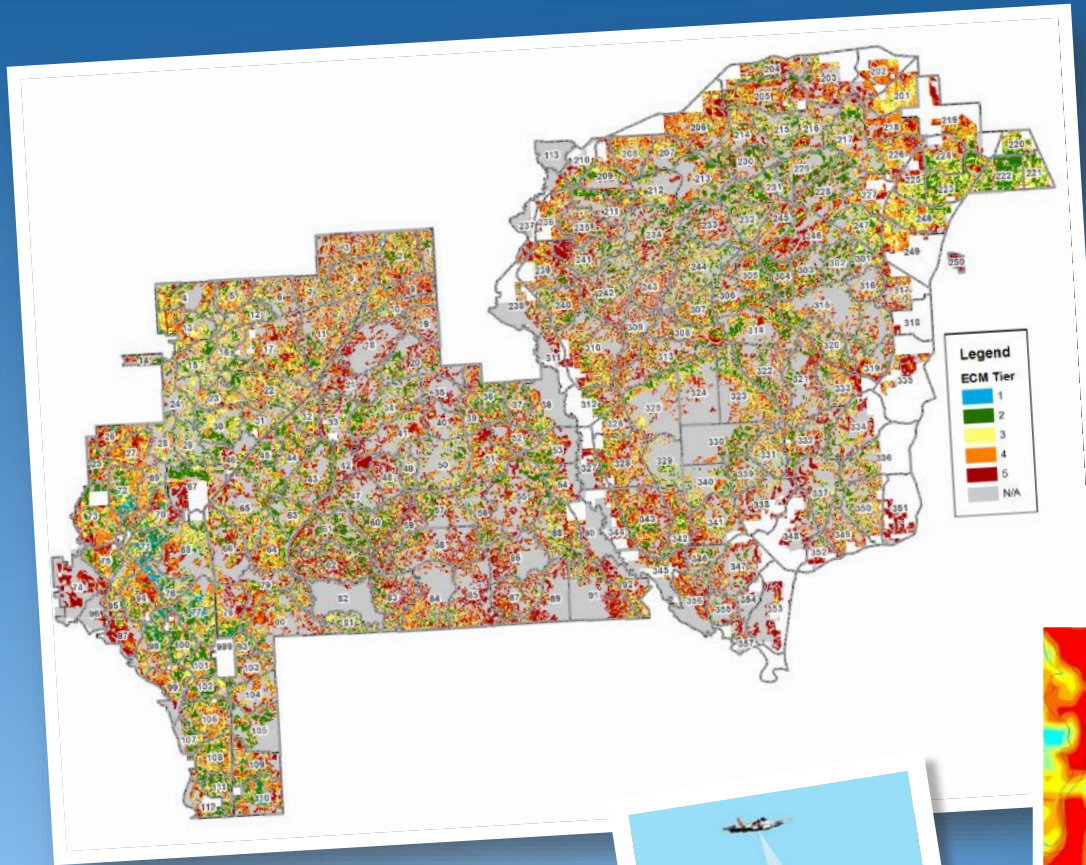
Rapid assessment method for collecting good quantitative data across a wide spectrum of habitats and conditions

Mesic Flatwoods ECM plots by Condition



Ecological Condition Model

based on **Desired Future Condition**



Tier 1: Excellent condition

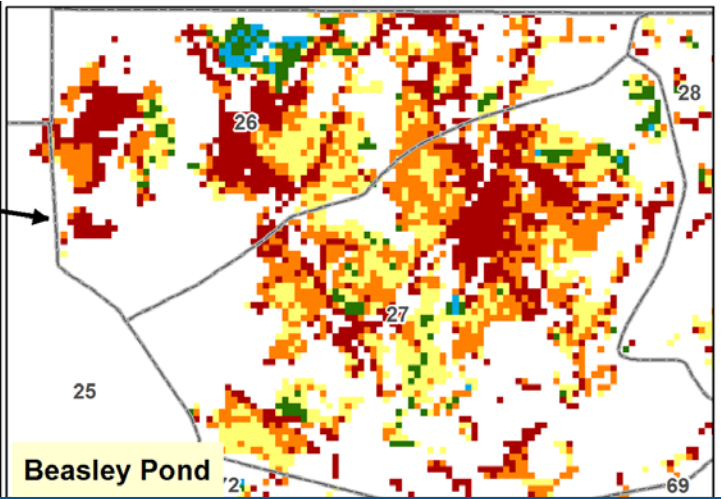
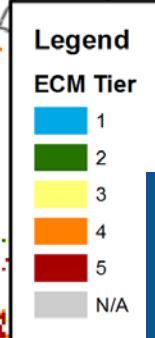
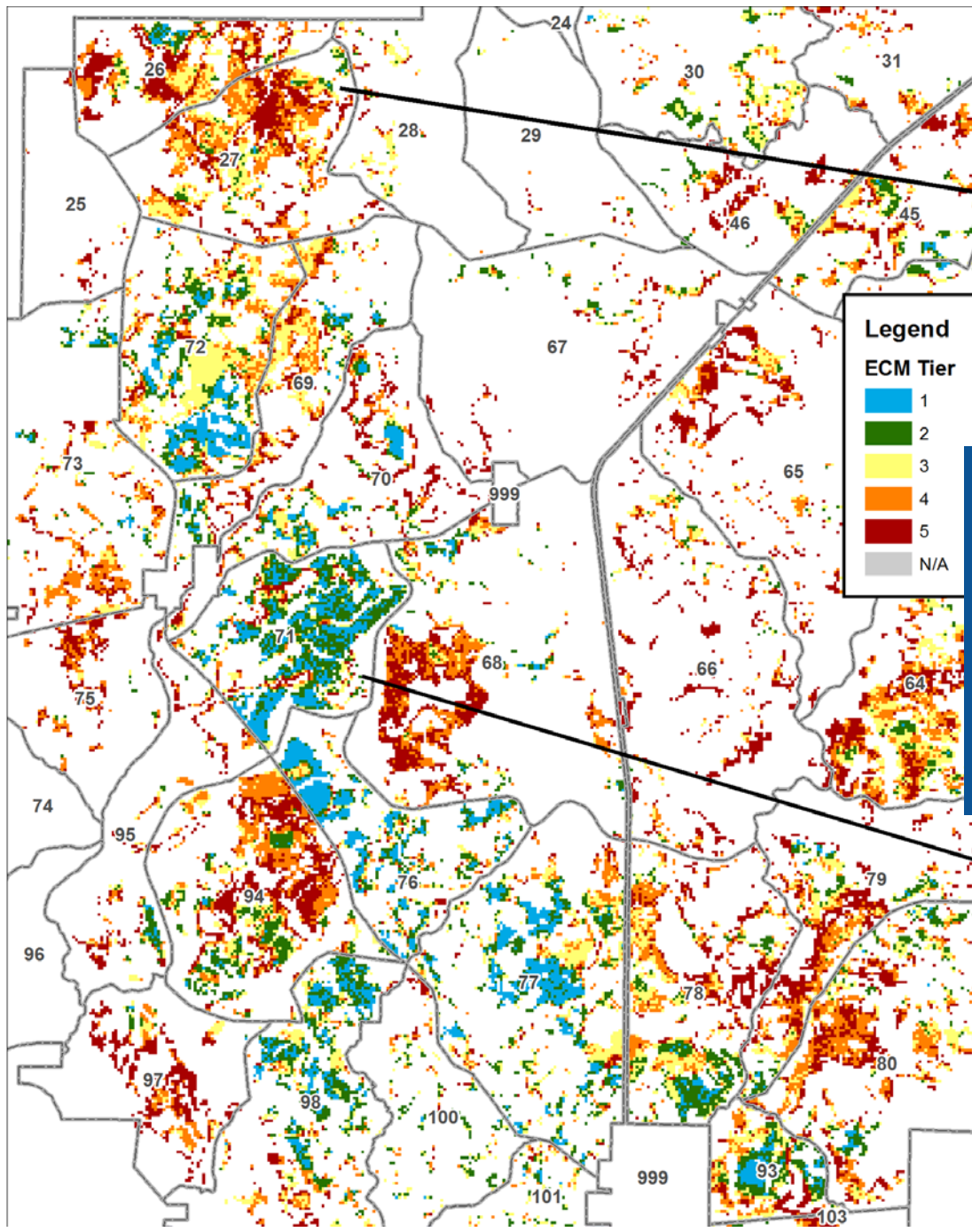
Tier 2: Good condition

Tier 3: Fair condition

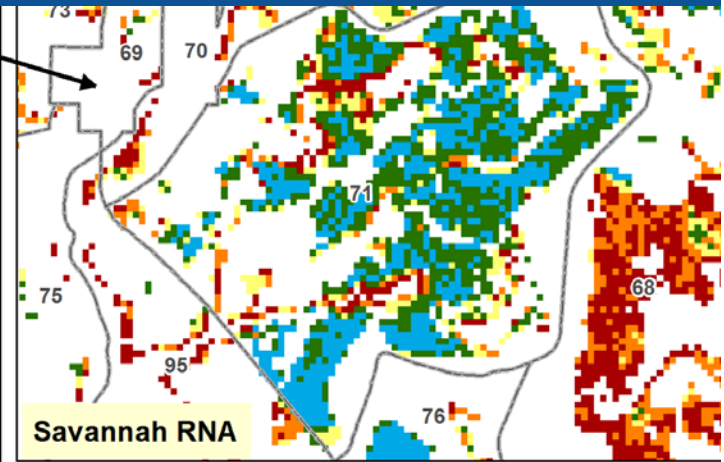
Tier 4: Poor condition

Tier 5: Very Poor condition

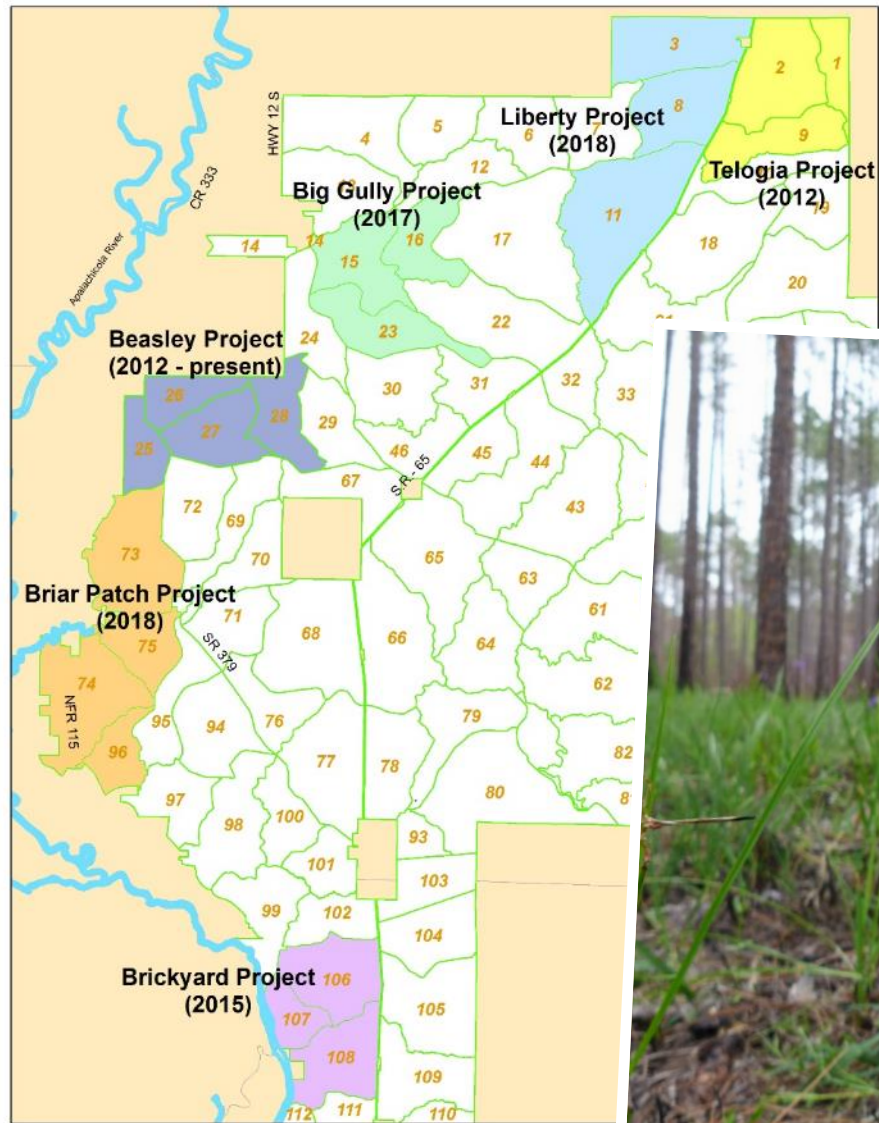




Tier 1/excellent:	1,823	(5%)
Tier 2/good:	4,871	(14%)
Tier 3/fair:	7,461	(22%)
Tier 4/poor:	8,123	(24%)
Tier 5/very poor:	12,222	(35%)



Special Surveys in Advance of Silvicultural Projects

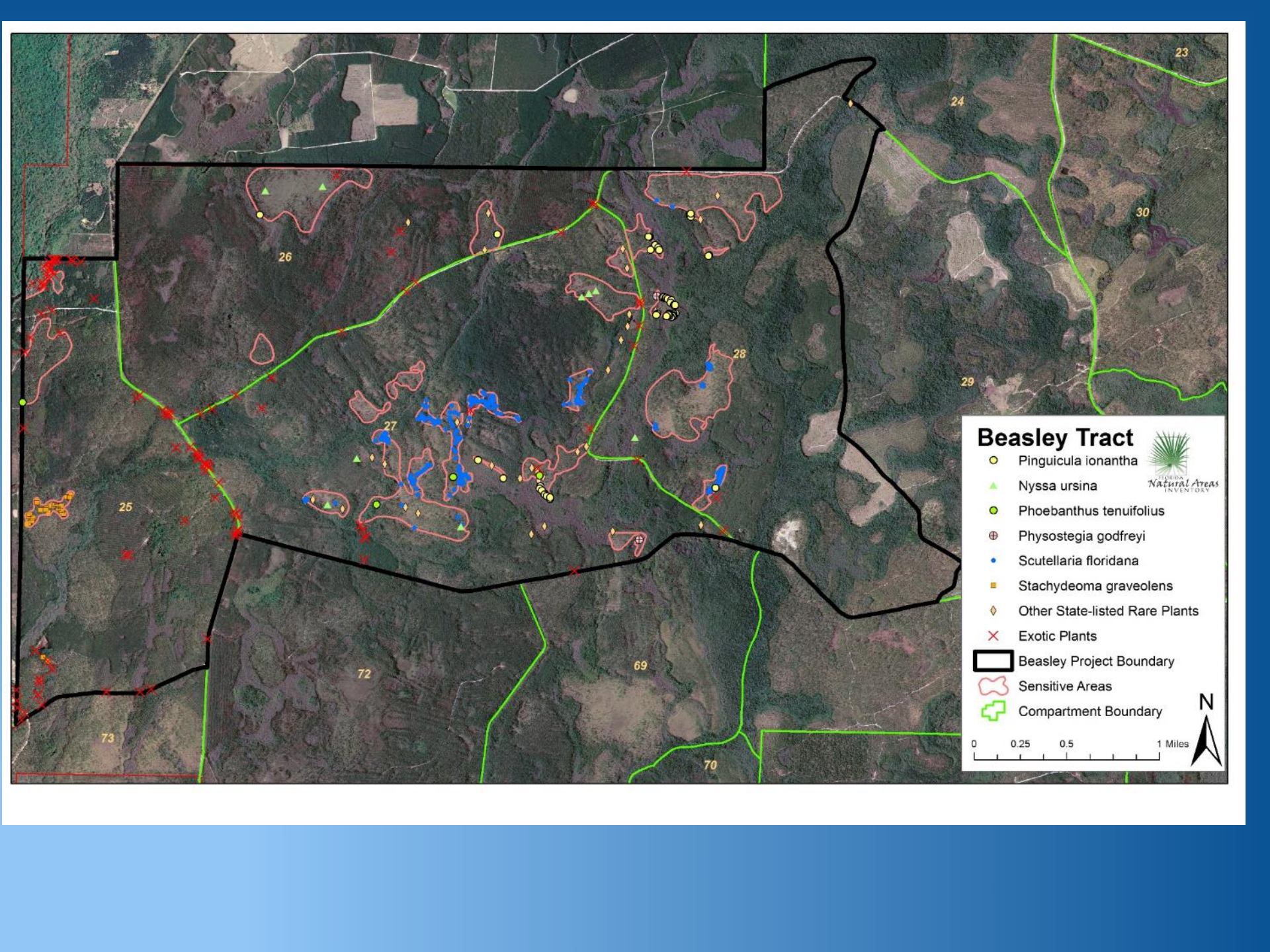


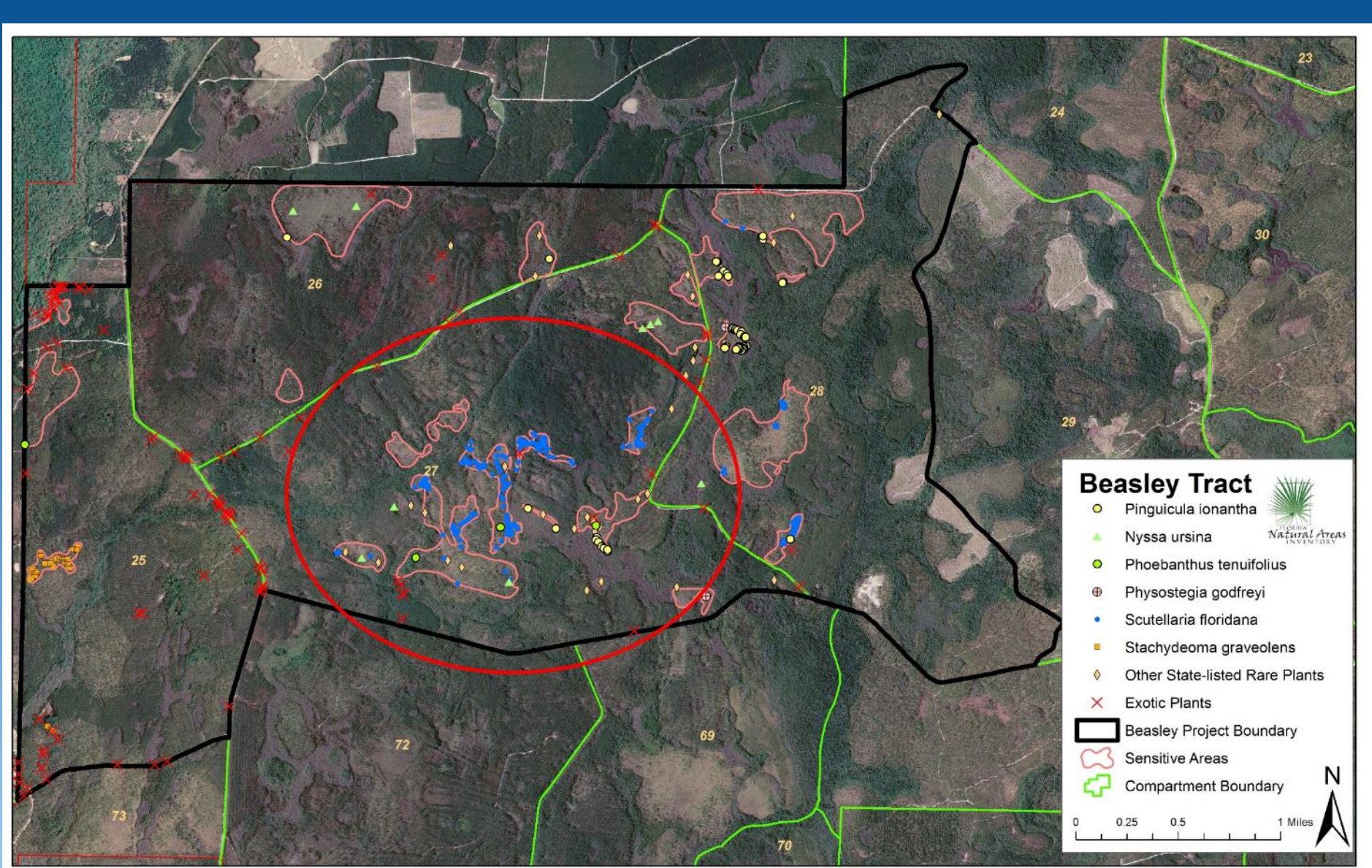
Beasley Tract

-  *Pinguicula ionantha*
-  *Nyssa ursina*
-  *Phoebanthus tenuifolius*
-  *Physostegia godfreyi*
-  *Scutellaria floridana*
-  *Stachydeoma graveolens*
-  Other State-listed Rare Plants
-  Exotic Plants
-  Beasley Project Boundary
-  Sensitive Areas
-  Compartment Boundary



0 0.25 0.5 1 Miles



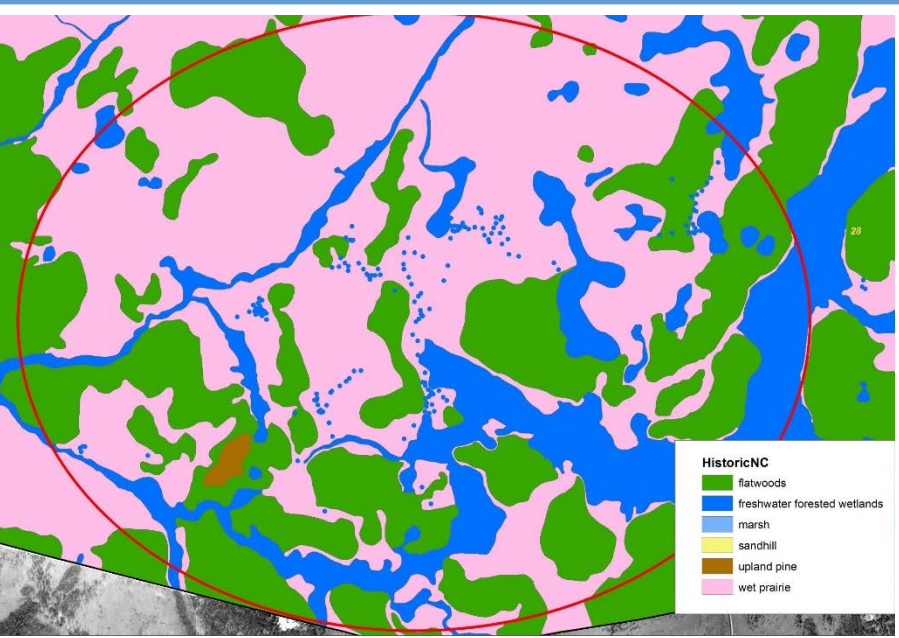
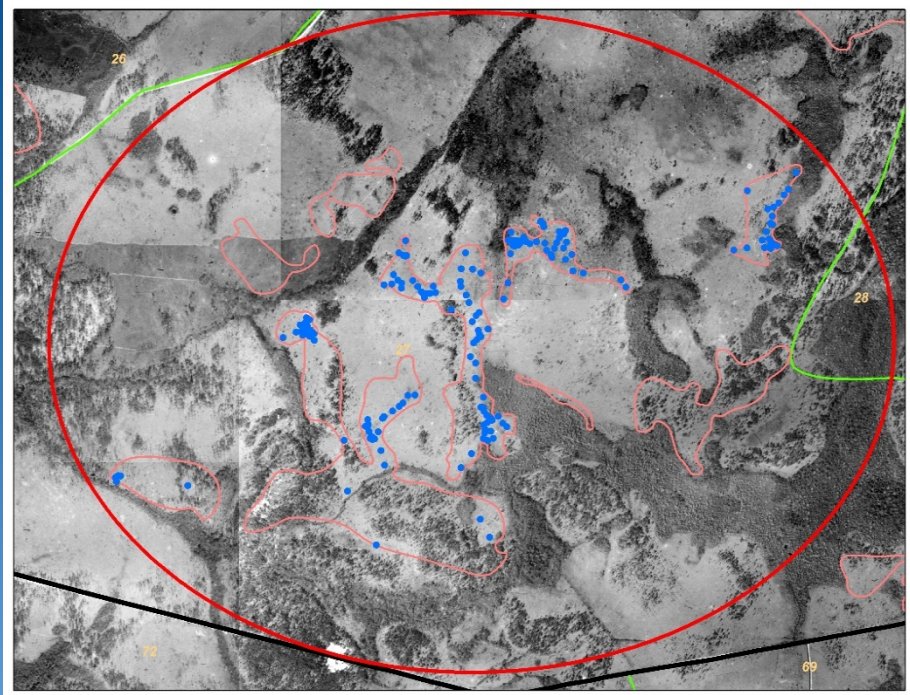
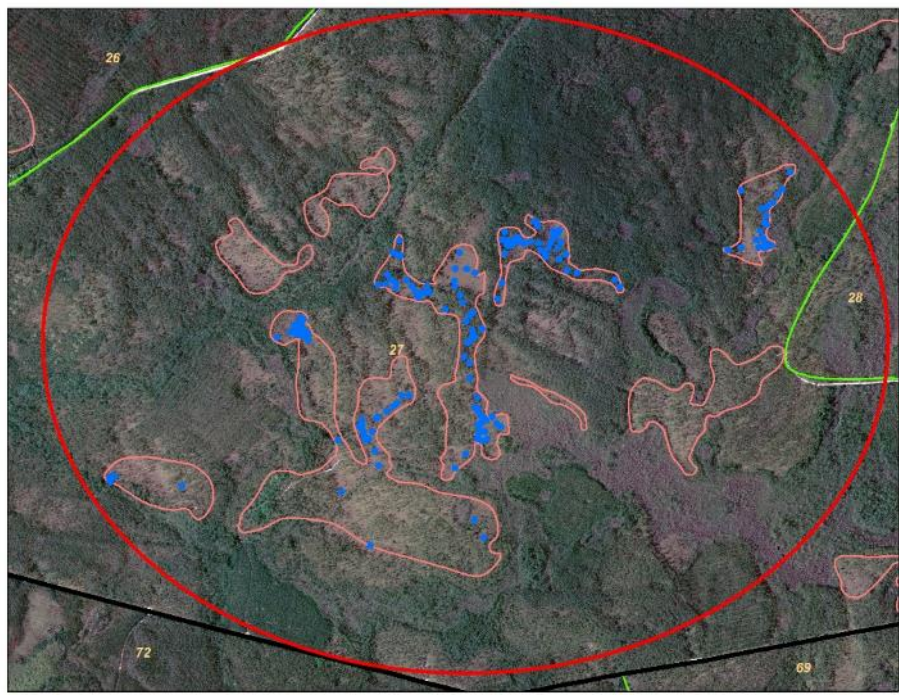


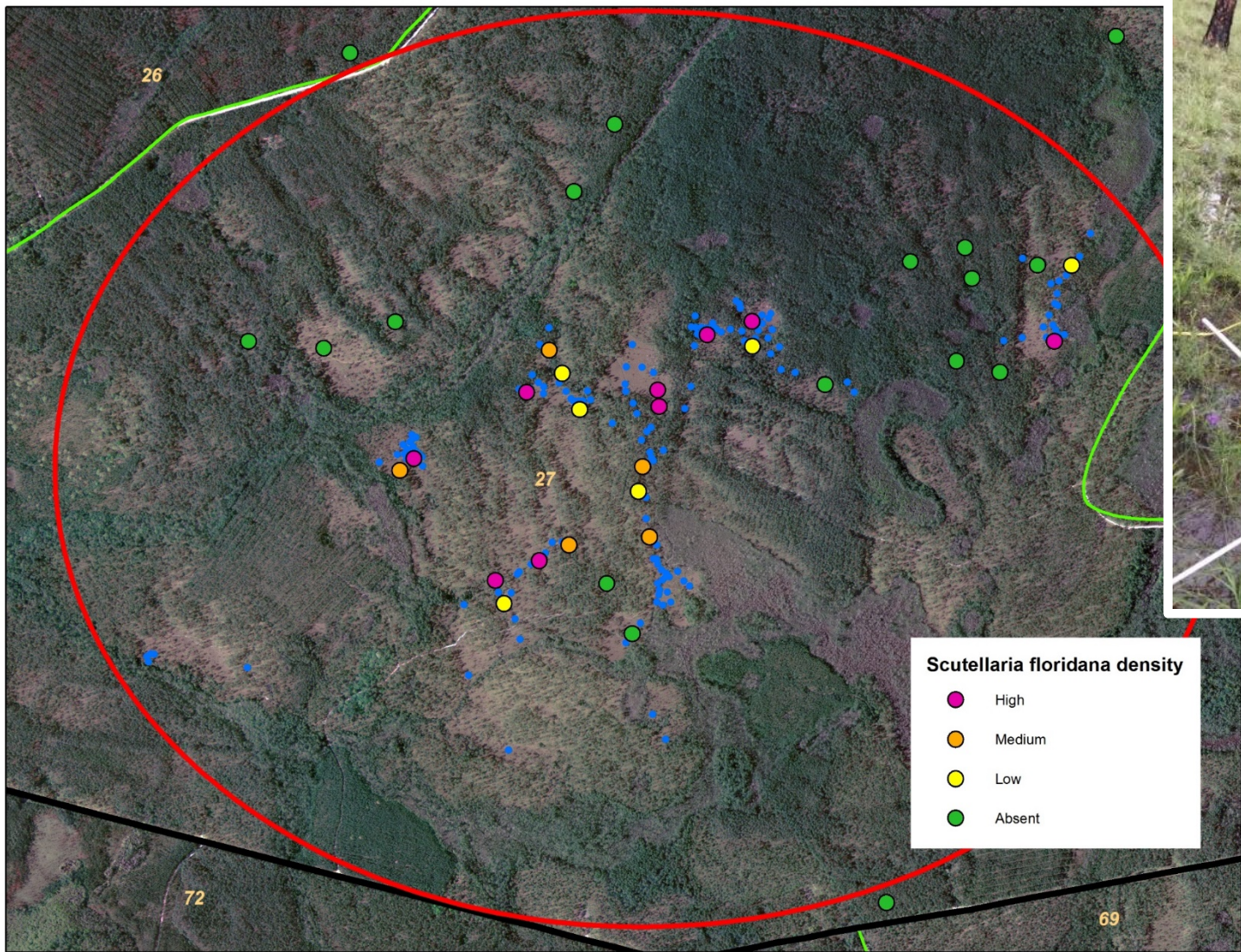
Beasley Tract

● *Pinguicula ionantha*
▲ *Nyssa ursina*
● *Phoebanthus tenuifolius*
⊕ *Physostegia godfreyi*
● *Scutellaria floridana*
■ *Stachydeoma graveolens*
◆ Other State-listed Rare Plants
× Exotic Plants
 Beasley Project Boundary
 Sensitive Areas
+ Compartment Boundary

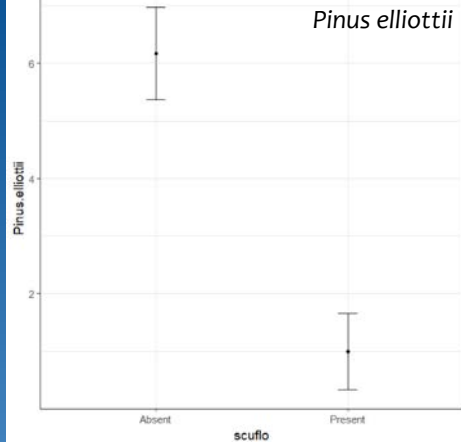
0 0.25 0.5 1 Miles

N



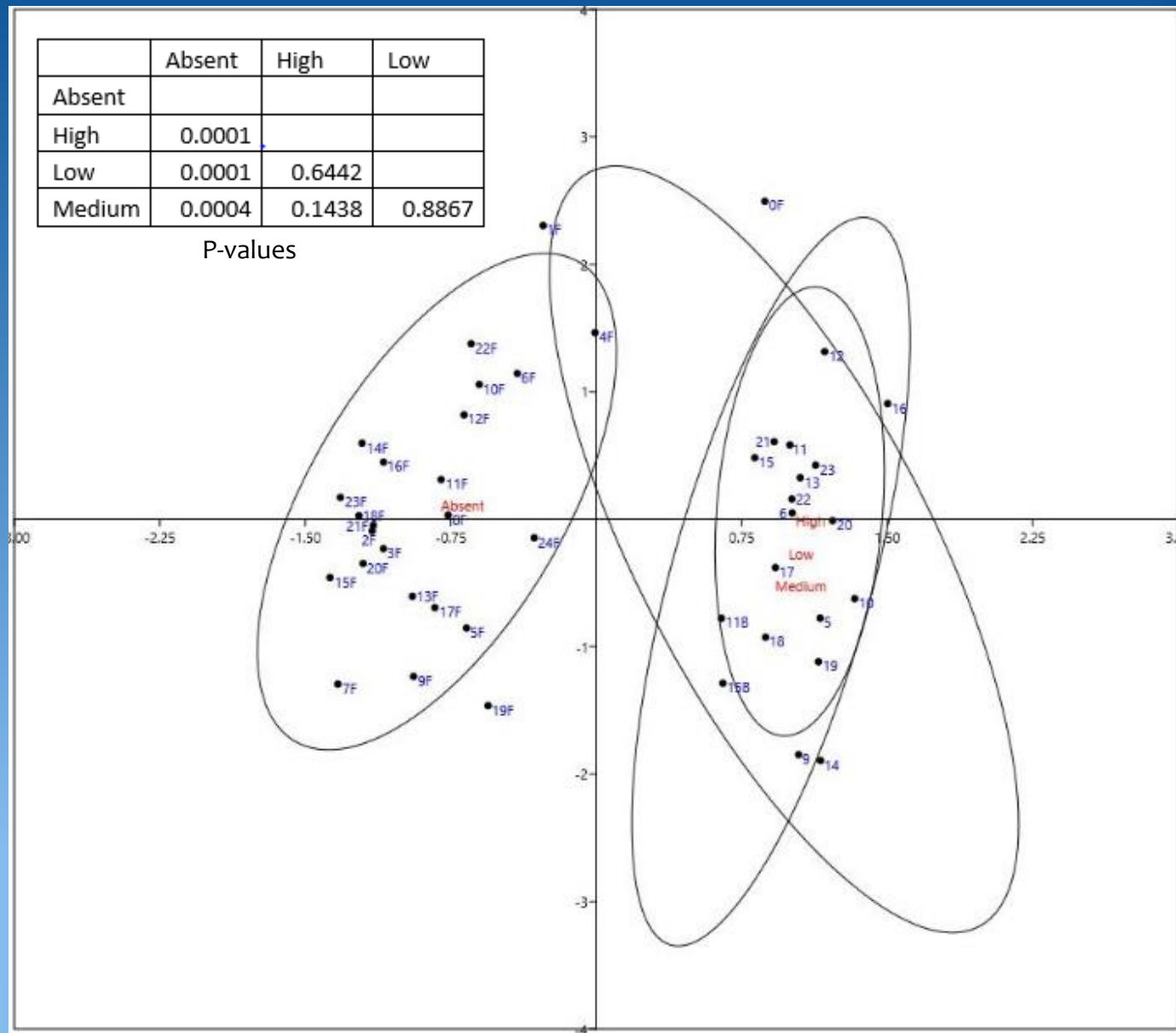


Pinus elliotii

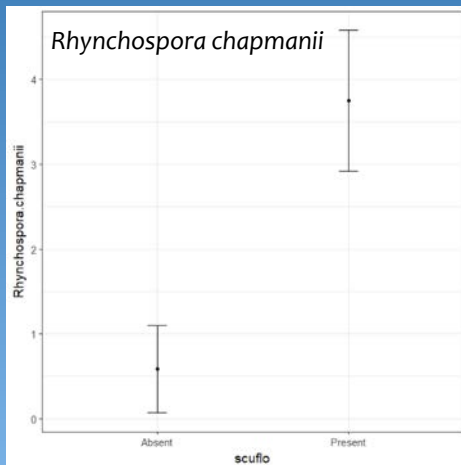


	Absent	High	Low
Absent			
High	0.0001		
Low	0.0001	0.6442	
Medium	0.0004	0.1438	0.8867

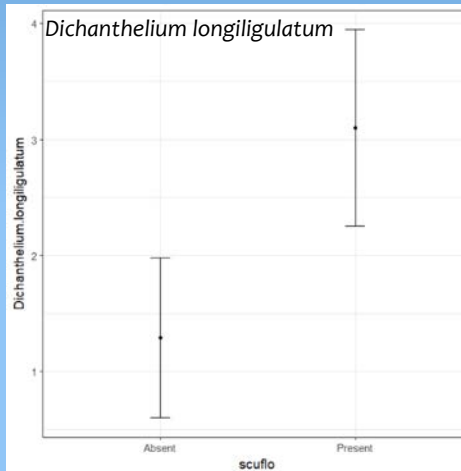
P-values



Rhynchospora chapmanii



Dichantheium longiligulatum





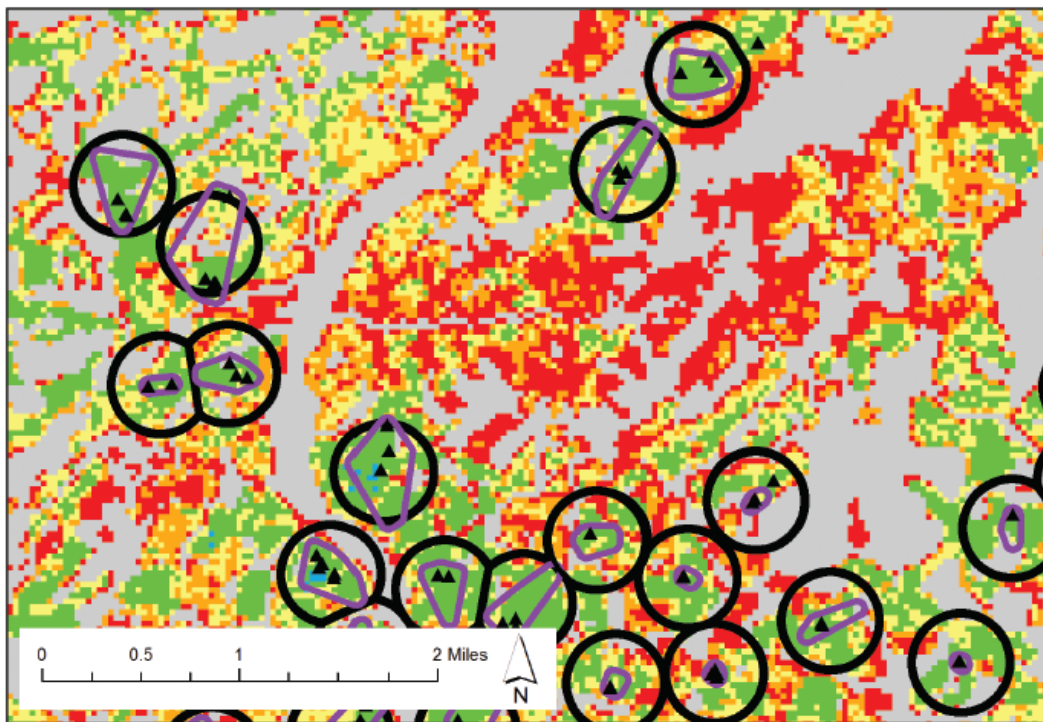


Thank you!

Amy Jenkins, Senior Botanist, FNAI, ajenkins@fnai.fsu.edu

Special thanks to the US Forest Service for their continued support of this collaborative work!



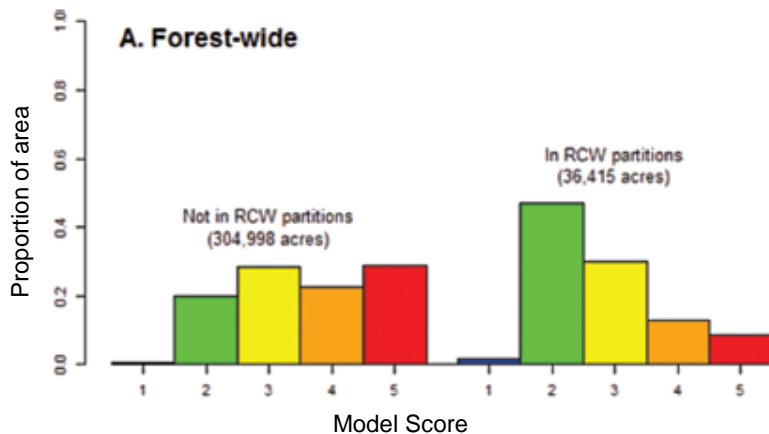


Legend

- ▲ Active RCW Trees
- ▭ Active RCW Cluster
- ▭ RCW partitions (1/4 mile)

ECM Score

- None- Forested wetland
- 1 - Excellent
- 2 - Good
- 3 - Fair
- 4 - Poor
- 5 - Very Poor



PRACTICE OF FORESTRY

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forest ecology

Mapping and Modeling Ecological Conditions of Longleaf Pine Habitats in the Apalachicola National Forest

Matthew D. Trager, Jason B. Drake, Amy M. Jenkins, and Carl J. Petrick

We developed a historical natural community map and a spatially explicit ecological condition model (ECM) to evaluate conditions of the Apalachicola National Forest's longleaf pine habitats. We identified and mapped historical vegetation patterns across the forest and then compared current vegetation structures derived from LiDAR and field surveys to desired conditions for the respective habitat types. In the first example of how these tools may be applied, we show how the natural community map improved our understanding of wet savanna distribution and how the ECM then revealed opportunities and challenges for managing this unique habitat. In the second example, we show that the ECM scores were closely aligned with red-cockaded woodpecker habitat selection at three nested spatial scales relevant for that species' ecology. Both of these analyses demonstrate how historical data and ecological condition assessments improve our understanding of resource patterns and may inform possible management actions.

Keywords: longleaf pine, ecological condition model, LiDAR, wet savanna, red-cockaded woodpecker

Restoring ecosystem integrity has been identified as an overarching goal for the United States Forest Service's (USFS) management of National Forest System lands. The increasing emphasis on restoration culminated in several national initiatives and policies, including establishing the Collaborative Forest Landscape Restoration program (in Title IV of the Omnibus Public Land Management Act of 2009) and revising regulations for forest planning under the National Forest Management Act that recognize "restoration of natural resources to make our NFS lands more resilient to climate change, protect water resources, and improve

forest health" as a primary purpose of Forest Service work (77 FR 68, p. 21164). However, when developing and implementing land management projects in national forests, it is not always clear how to identify the desired structural, functional, or compositional characteristics of managed landscapes that are necessary for defining restoration objectives.

Assessing landscapes for restoration potential requires comparing the focal area with some range of reference conditions thought to characterize high-quality habitat. In many cases, parameters for desired conditions of a specific area may be based on historical conditions at the same site or current conditions

at a less degraded site with a similar ecological history (White and Walker 1997; Keane et al. 2009; Landes, Morgan, and Swanson 1999). This approach is particularly informative when landscapes have been substantially altered due to past land management activities or disruption of processes that maintained conditions within a natural range of variation (Swetnam, Allen, and Betancourt 1999; Bollger et al. 2004). The difference between current conditions and reference conditions may then be used to identify management priorities and develop activities that could be implemented to promote desired structure and function of ecosystems (Görner et al. 2008; Hesburg et al. 2007). In the context of Forest Service management, rigorously evaluating the departure of current landscapes from reference conditions may provide a quantitative and defensible basis for restoration planning at multiple spatial scales, from project areas covering a few hundred or a few thousand acres to long-term planning for entire forests or regions (Bollenbacher, Geahm, and Reynolds 2014).

This paper briefly describes the development of a historical natural community map and a landscape-level ecological condition model from the Apalachicola National Forest

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Acknowledgments: Many USDA Forest Service and FNAI employees assisted with various aspects of the historical natural community map and ecological condition model. We especially thank Paul Madley and Duke Rankin for their comments on this manuscript. Three anonymous reviewers provided helpful suggestions and comments.

