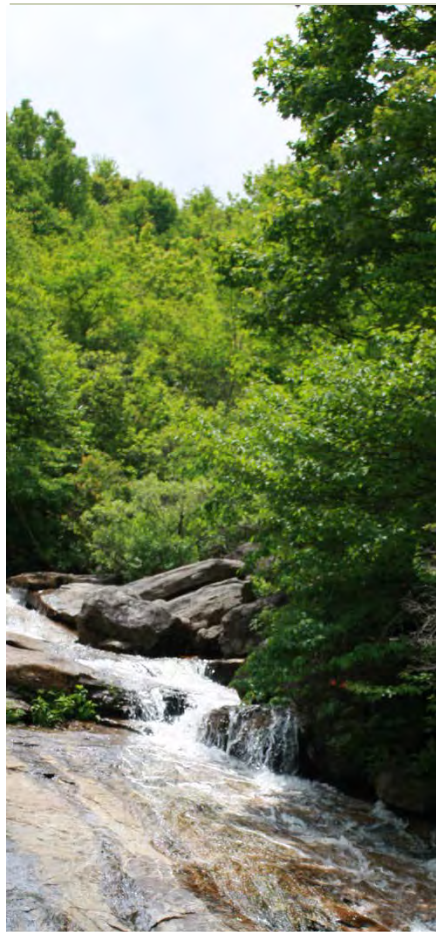
# Restoration Needs of Forest Ecosystems in Nantahala and Pisgah National Forests



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JANUARY 28 2014

# Overview

Background

Desired outcomes

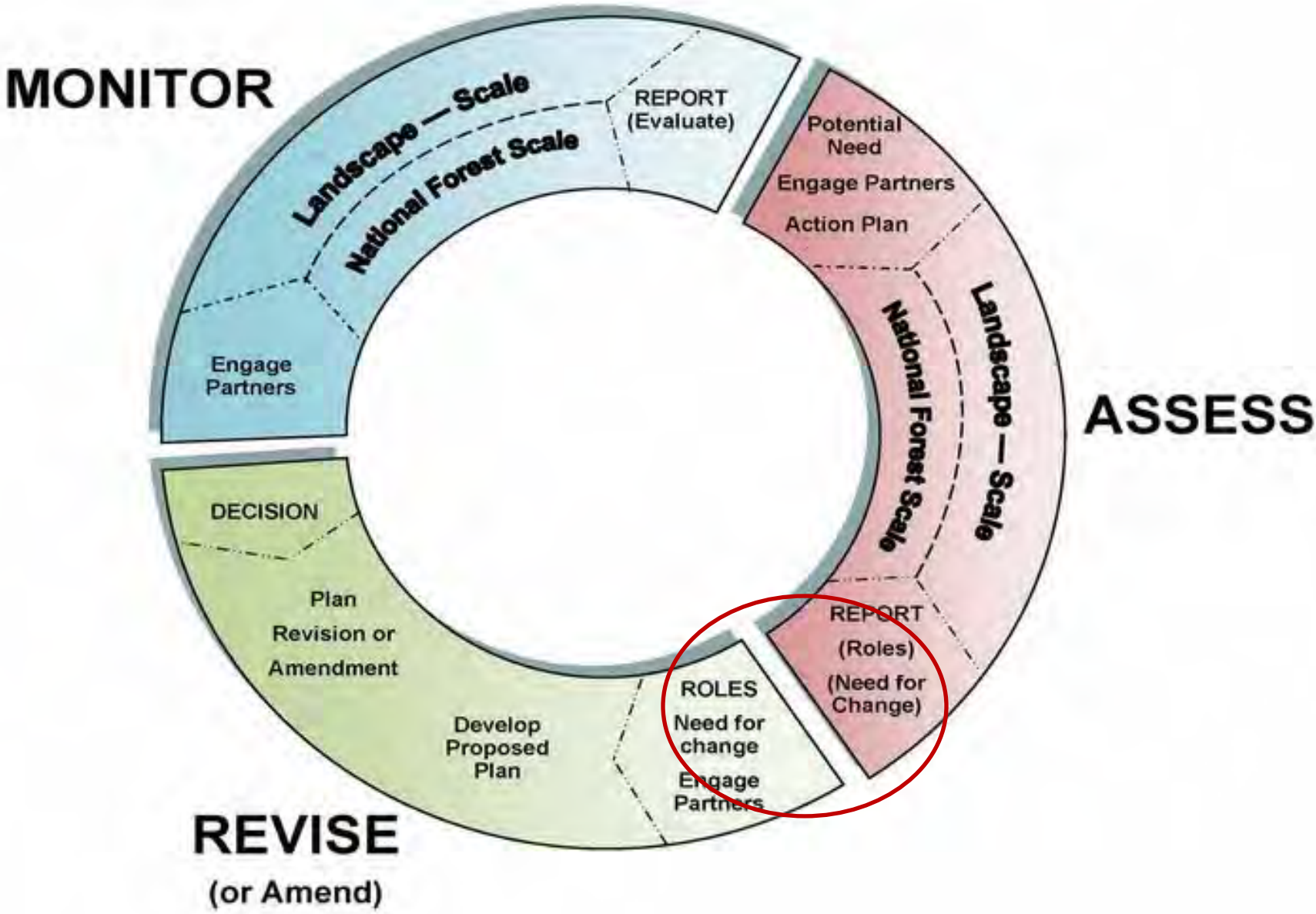
Methods

Overall results

Overview of systems in need of active restoration

# Importance of Restoration Needs Analysis

- Spatial representation
- Identifies potential areas for active or passive restoration
- Coincides with the Nantahala and Pisgah Land Management Plan Revision (LMP)


MONITOR
Landscape — Scale
National Forest Scale
REPORT
(Evaluate)
Engage
Partners
ASSESS
Potential
Need
Engage Partners
Action Plan
Landscape — Scale
National Forest Scale
REPORT
(Roles)
(Need for
Change)
DECISION
Plan
Revision or
Amendment
Develop
Proposed
Plan
ROLES
Need for
change
Engage
Partners
REVISE
(or Amend)


land
hiking
camp
clean water
horseback riding
diversity
enjoy
grouse
riding
solitude
nf
go
get
exercise
camping
fishing
food
jobs
time
health
hike
natural
beauty
area
habitat
provides
management
places
recreation
nature
trails
hunting
forest
love
trail
like
benefit
wildlife
areas
place
recreational

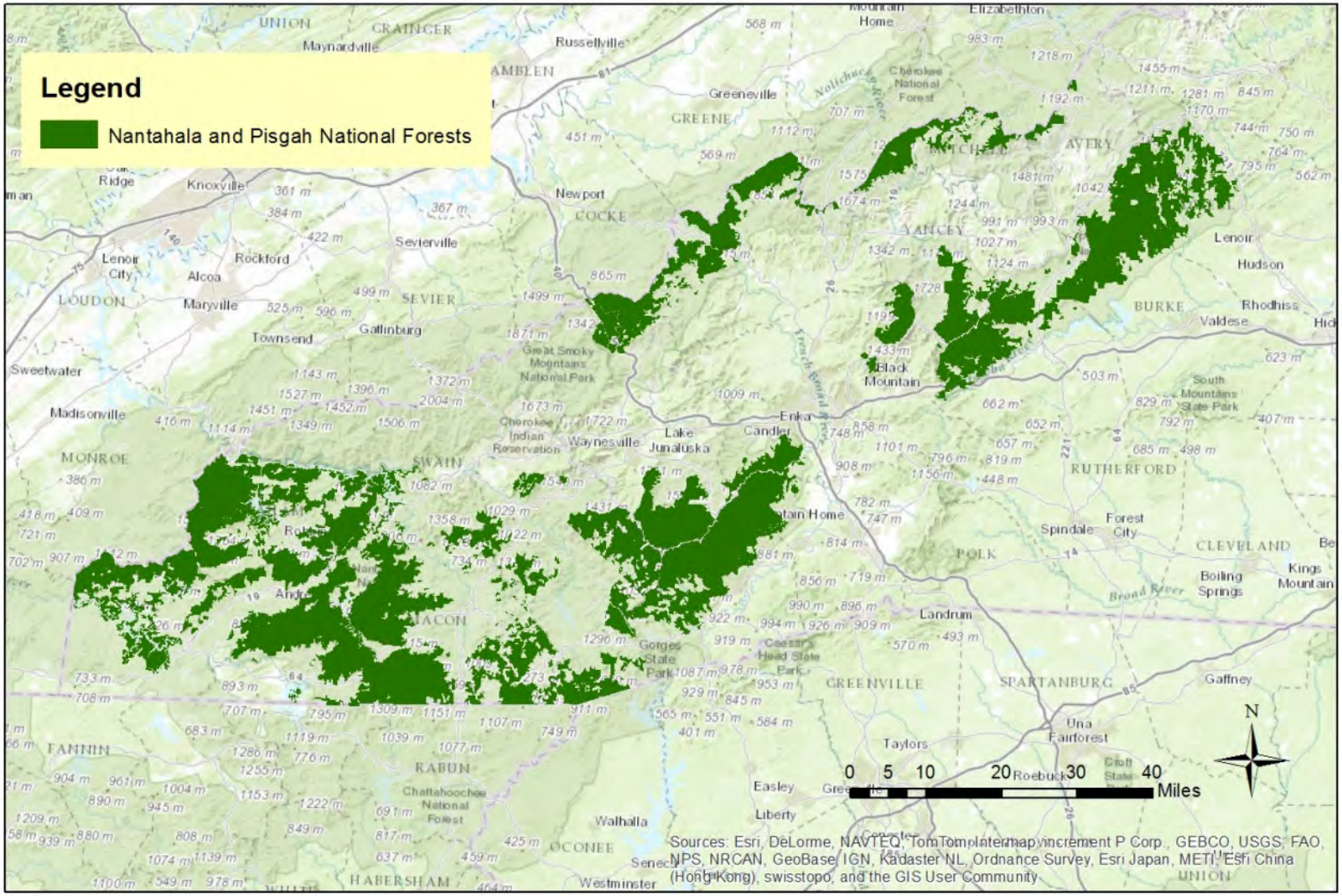
# Desired Outcomes

- Evaluate if the ecological departure analysis appropriately identifies major structural needs in each system
- Collect information on restoration priorities and methods
- Discuss the use of both fire and mechanical treatment appropriate in systems identified as in need of active restoration
- Discuss broad goals for each system in need of active restoration

# Key Assumptions

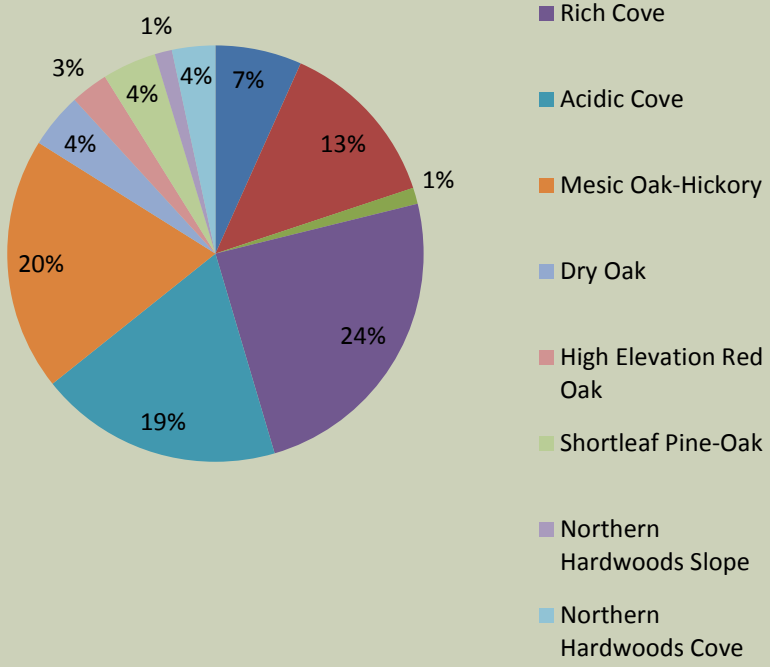
- Structural analysis, not species composition
- Focuses on active restoration
- Focuses on National Forest

# Nantahala and Pisgah National Forests

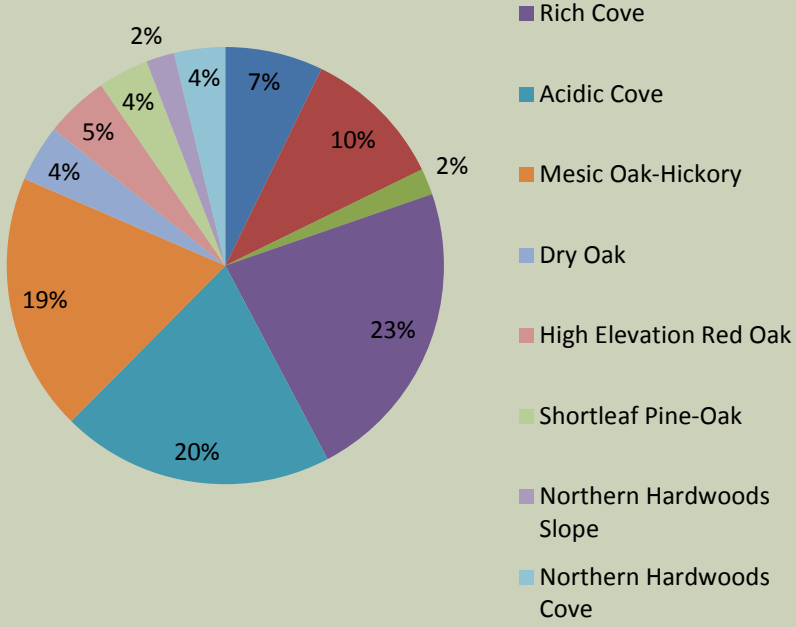


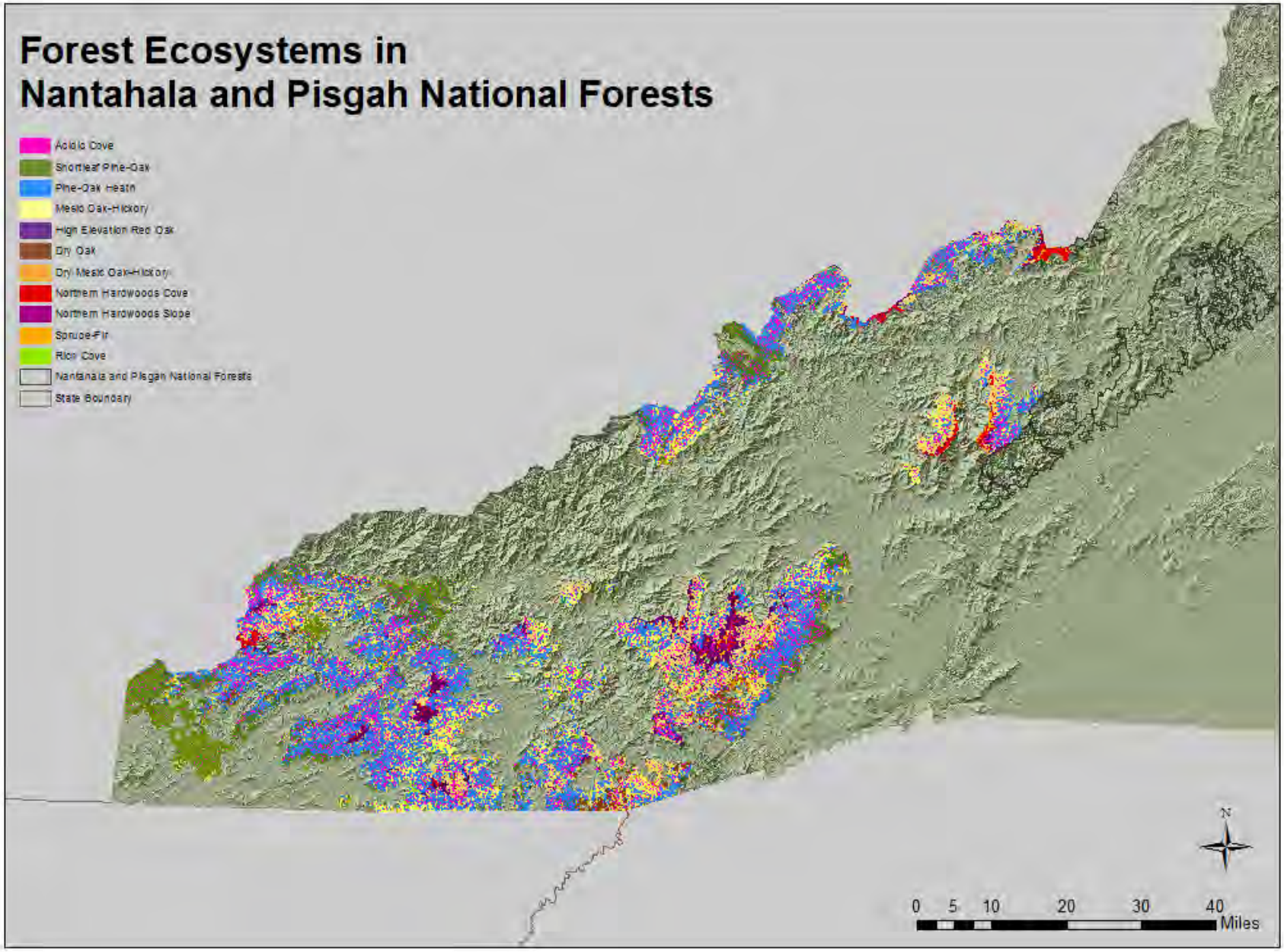
# Overview of Ecosystems

## Forest Ecosystems in All Lands




## Forest Ecosystems in National Forests




Forest Ecosystems in
Nantahala and Pisgah National Forests
Acidic Cove
Shortleaf Pine-Oak
Pine-Oak Heath
Mesic Oak-Hickory
High Elevation Red Oak
Dry Oak
Dry Mesic Oak-Hickory
Northern Hardwoods Cove
Northern Hardwoods Slope
Spruce-Fir
Rich Cove
Nantahala and Pisgah National Forests
State Boundary
N
0 5 10 20 30 40
Miles

# Methods

- Evaluated Josh Kellys ecological departure analysis
- Selected systems as in need of restoration if ~60% departed

| Ecosystem | National Forest | Other Lands | All Lands |
|---|---|---|---|
| Dry Oak | 84 | 80 | 80 |
| POH* | 83 | 74 | 79 |
| Shortleaf-Oak* | 83 | 63 | 71 |
| DMOH | 70 | 71 | 71 |
| Mesic Oak | 70 | 74 | 72 |
| HERO | 64 | 75 | 65 |
| Acidic Cove | 55 | 57 | 56 |
| Rich Cove | 54 | 56 | 56 |
| Spruce-Fir* | 34 | 43 | 39 |
| N Hardwoods* | 6 | 14 | 10 |

# Methods

- Evaluated each forest stage
- Calculated percentage departure per seral and canopy class
- Selected stages with at least 5% departure for evaluation

| System | Class and Canopy | % Departed from NRV | Departed Acres |
|---|---|---|---|
| **Shortleaf Pine-Oak** | Early | 21.65% | -6227.20 |
| | Mid-Open | 29.78% | -8564.20 |
| | Mid-Closed | 25.58% | 7357.80 |
| | Late-Open | 30.96% | -8904.80 |
| | Late-Closed | 56.81% | 15696.40 |

# Methods

- Classified restoration as active, passive, or active + passive
- Identified donating and receiving classes

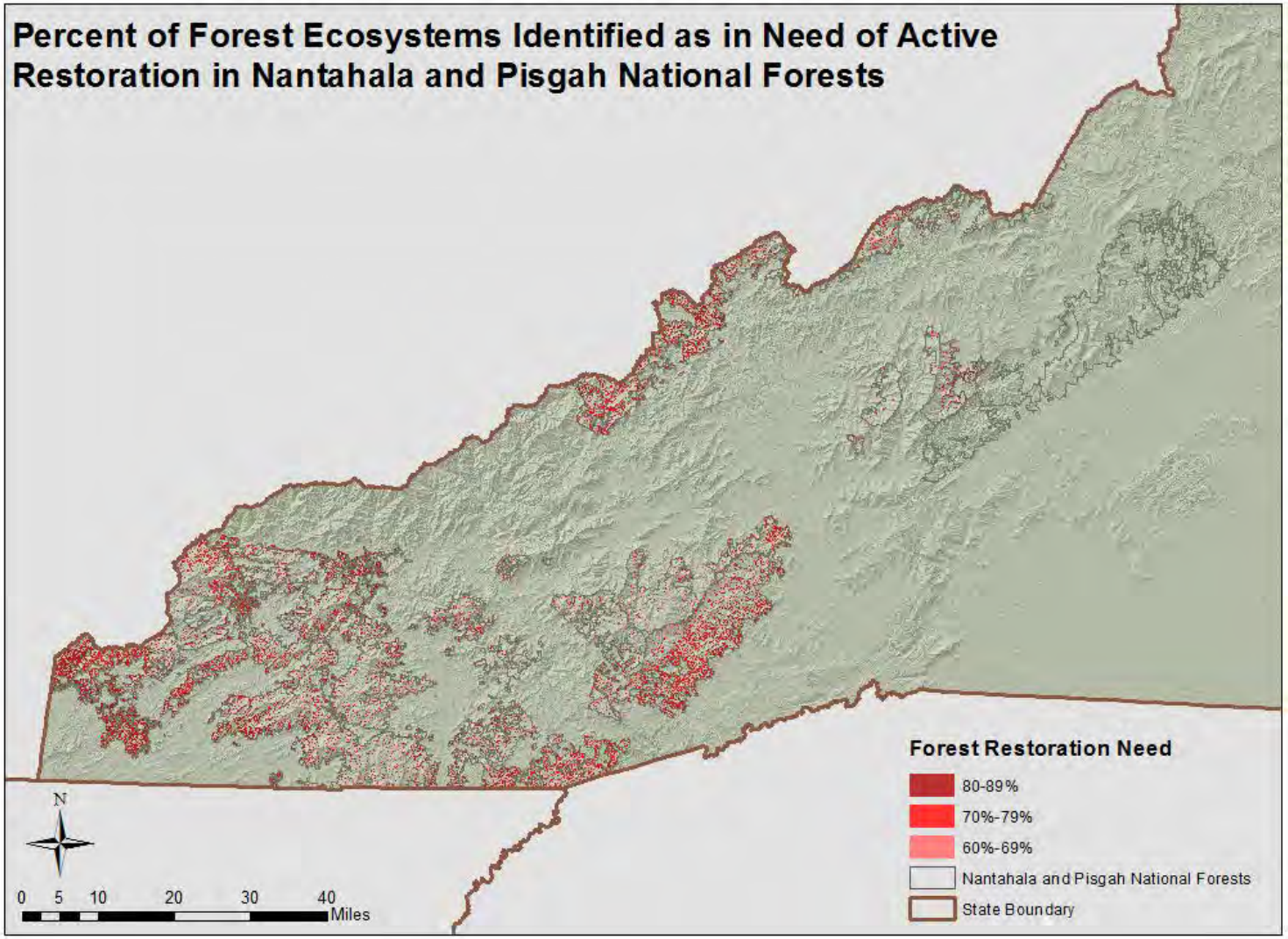
| System | Class and Canopy | % Departed from NRV | Departed Acres | Restoration Type | Receiving or Donating | Acres From or To |
|---|---|---|---|---|---|---|
| **Shortleaf Pine-Oak** | Early | 21.65% | -6227.20 | Maintenance | Receiving | Late-closed |
| | Mid-Open | 29.78% | -8564.20 | Maintenance | Receiving | Mid-closed |
| | Mid-Closed | 25.58% | 7357.80 | Active | Donating | Mid-open |
| | Late-Open | 30.96% | -8904.80 | Maintenance | Receiving | Late-closed |
| | Late-Closed | 56.81% | 15696.40 | Active | Donating | 1) Late-open 2) Early |

# Results

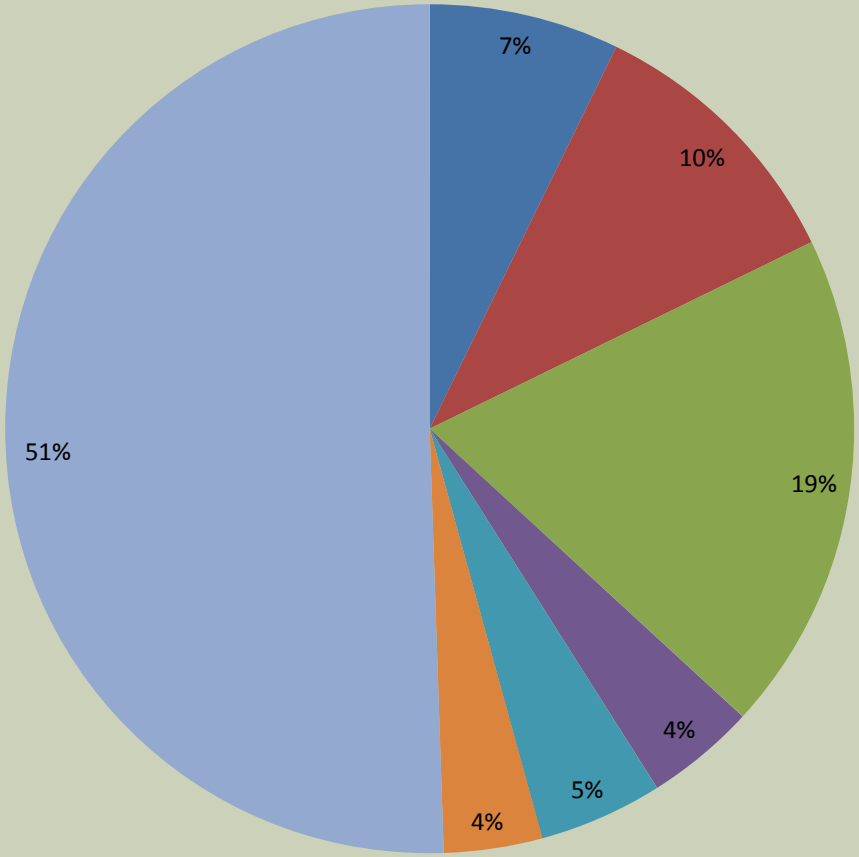
Six systems identified as having the *greatest* need of active restoration:

- Shortleaf Pine-Oak
- Dry Mesic Oak-Hickory
- Mesic Oak-Hickory
- High Elevation Red Oak
- Dry Oak
- Pine-Oak Heath

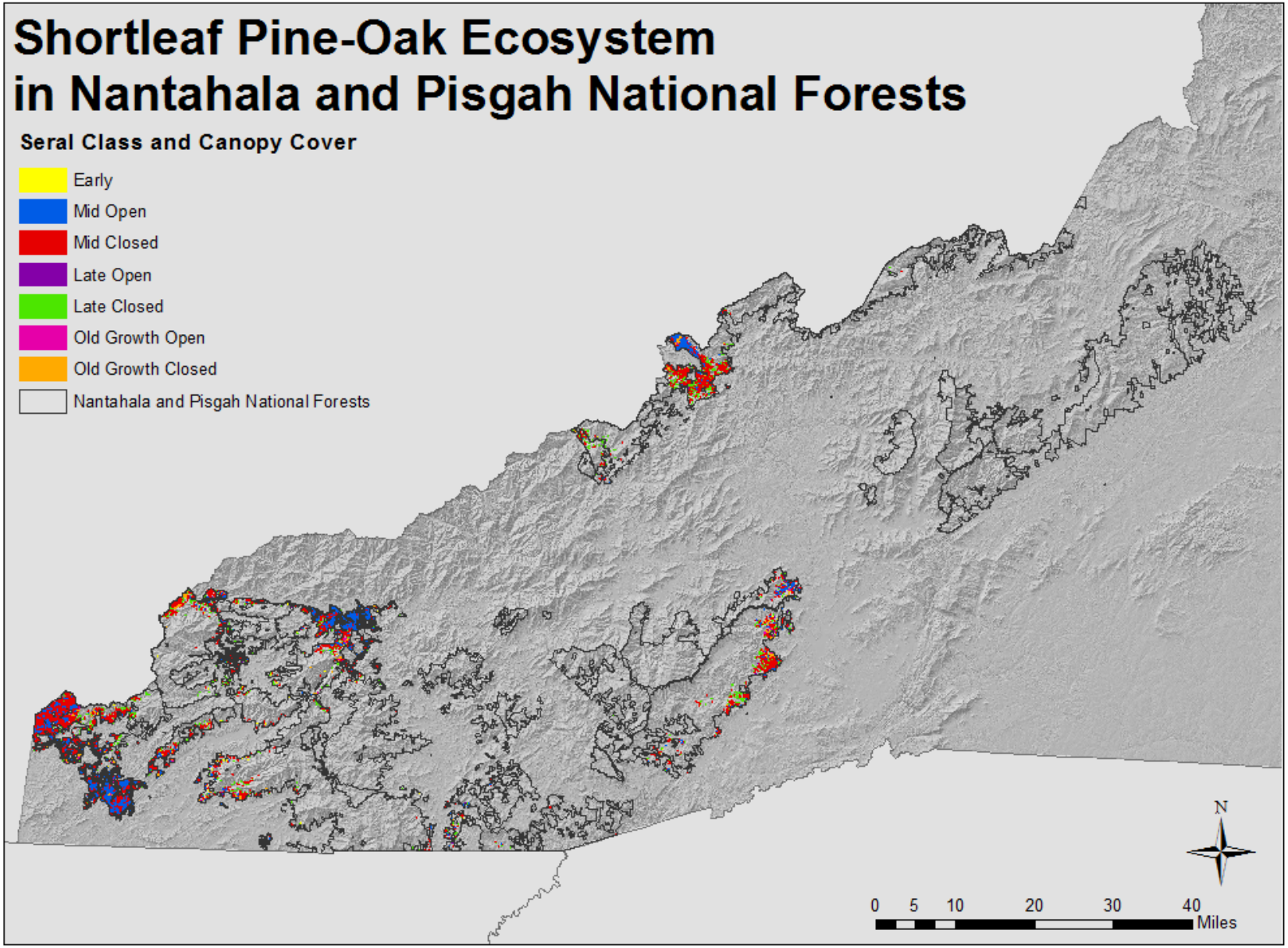
# Six systems identified as having the *greatest* need of active restoration

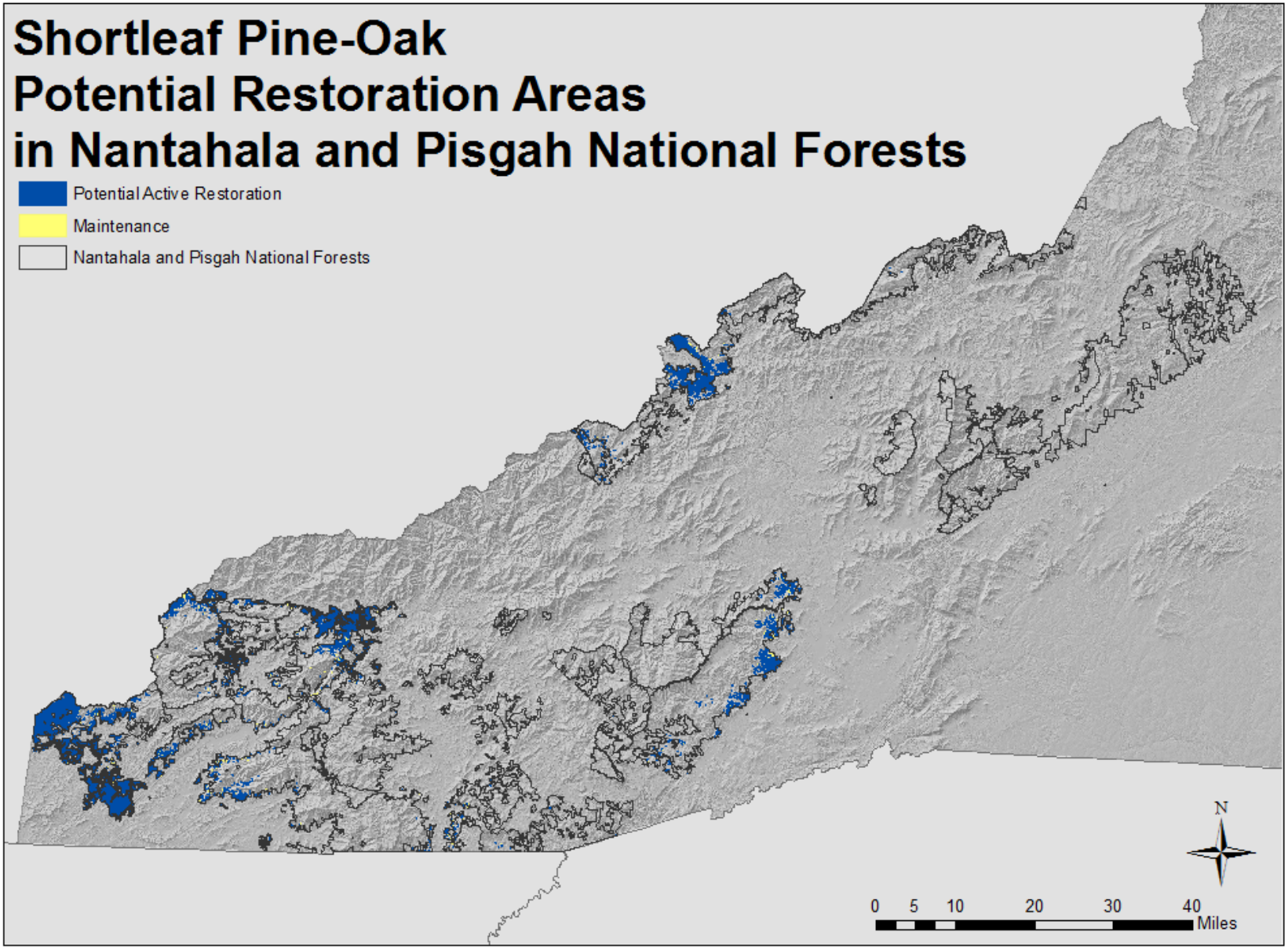


## Forest Ecozones Identified as Active Restoration

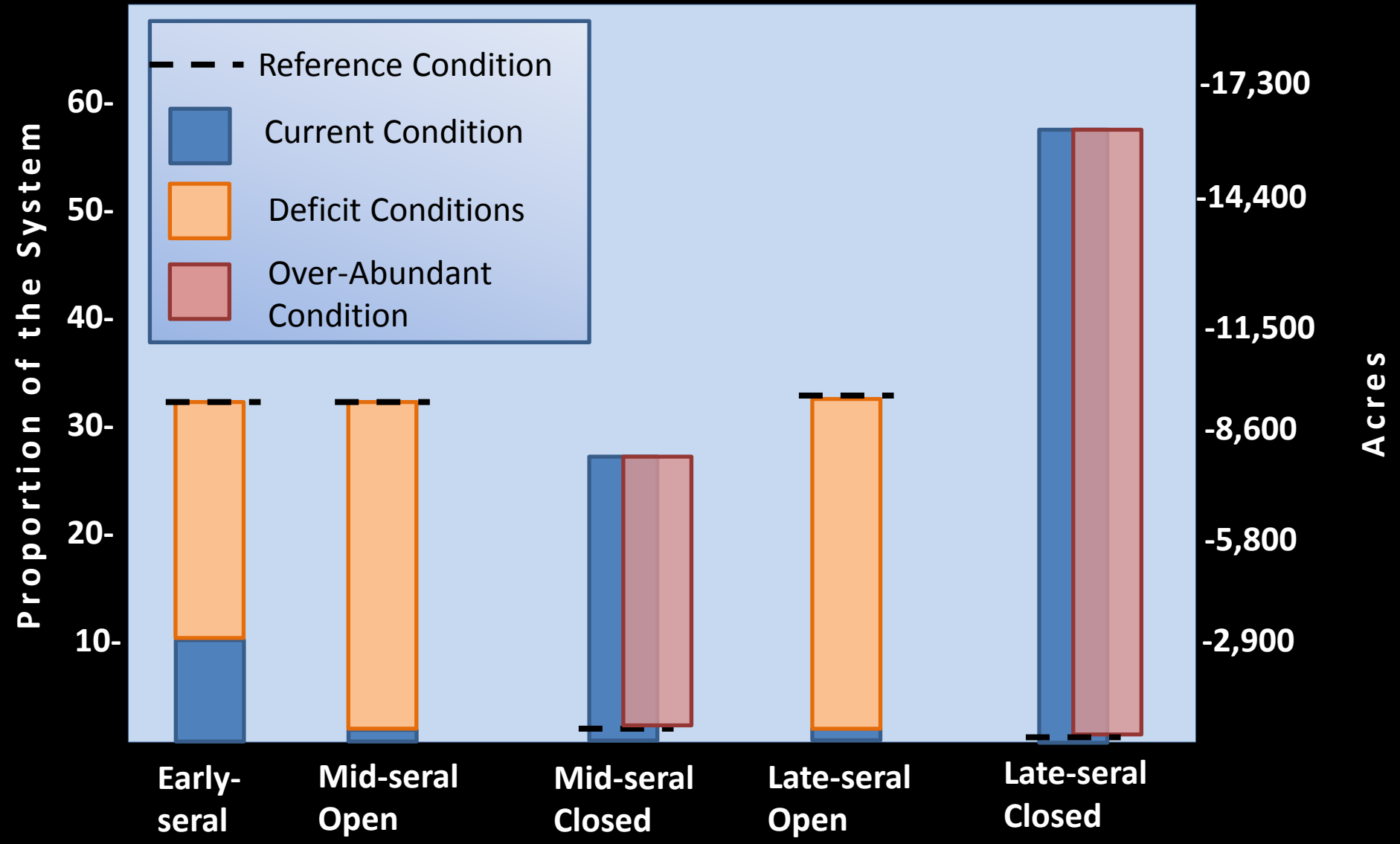


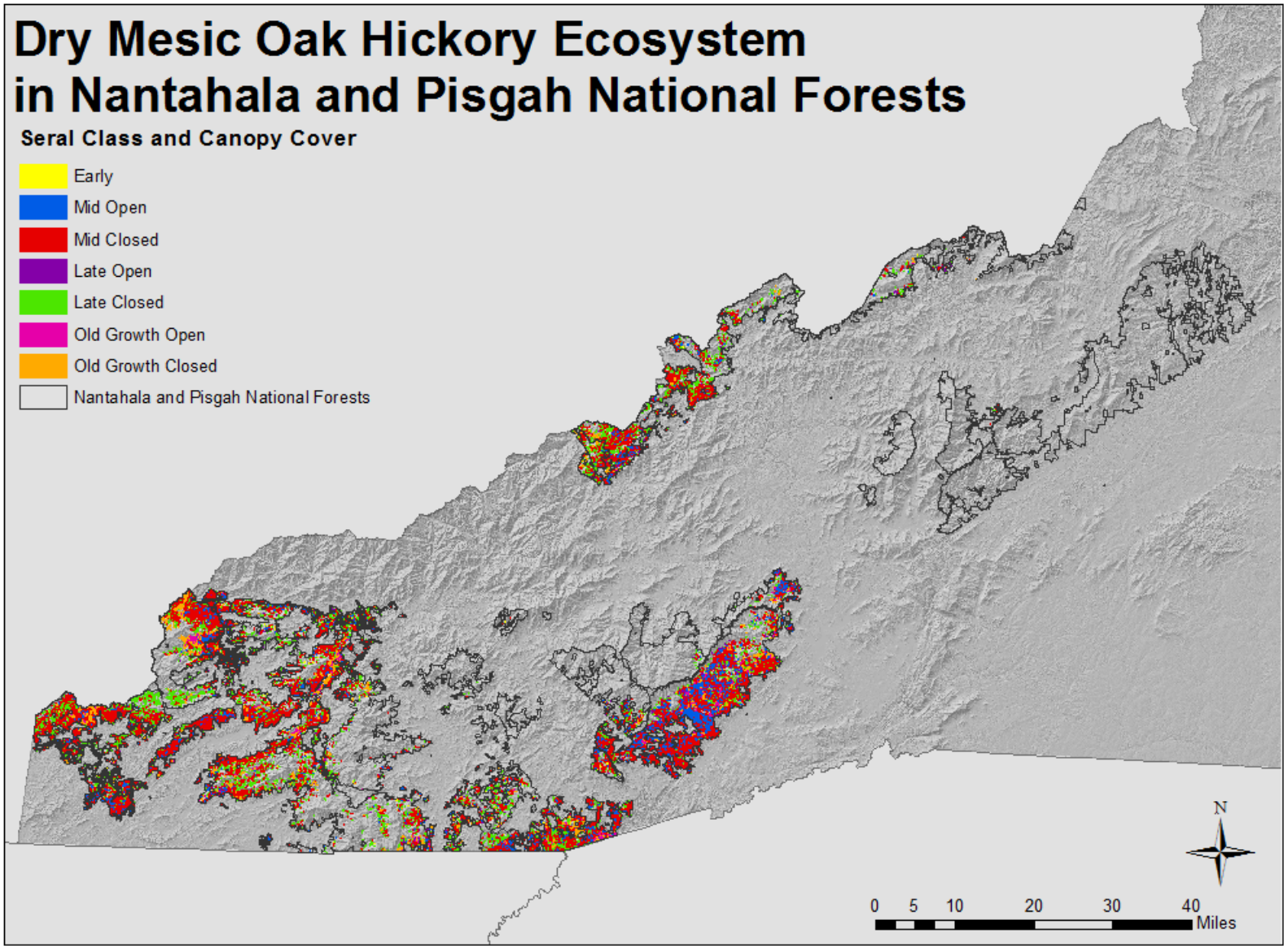

- Pine Oak/Heath
- Dry Mesic Oak Hickory
- Mesic Oak
- Dry Oak
- High Elevation Red Oak
- Shortleaf Pine-Oak
- Other

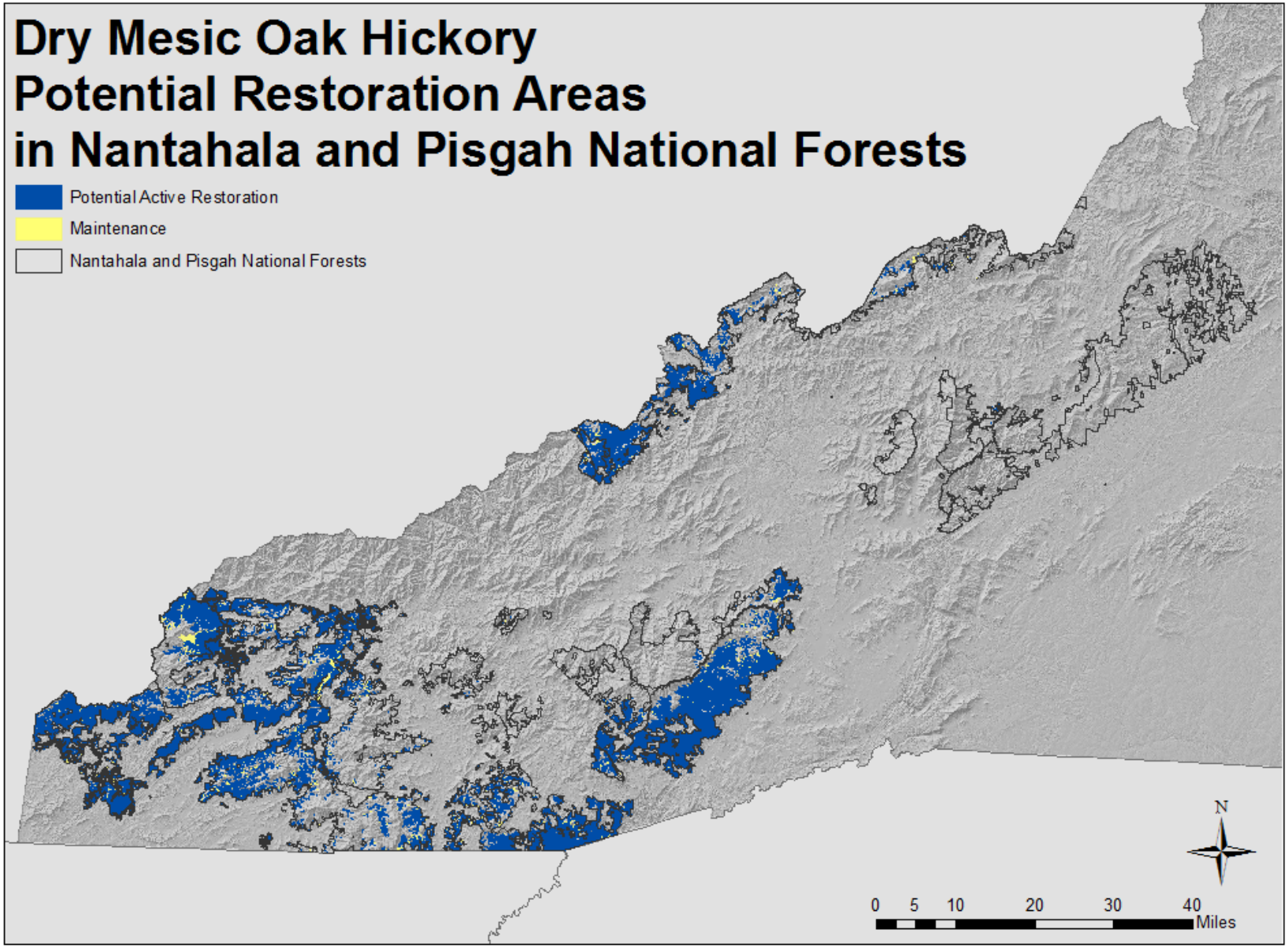

Shortleaf Pine-Oak Ecosystem
in Nantahala and Pisgah National Forests
Seral Class and Canopy Cover
Early
Mid Open
Mid Closed
Late Open
Late Closed
Old Growth Open
Old Growth Closed
Nantahala and Pisgah National Forests
N
0 5 10 20 30 40
Miles


Shortleaf Pine-Oak
Potential Restoration Areas
in Nantahala and Pisgah National Forests
Potential Active Restoration
Maintenance
Nantahala and Pisgah National Forests
N
0 5 10 20 30 40
Miles

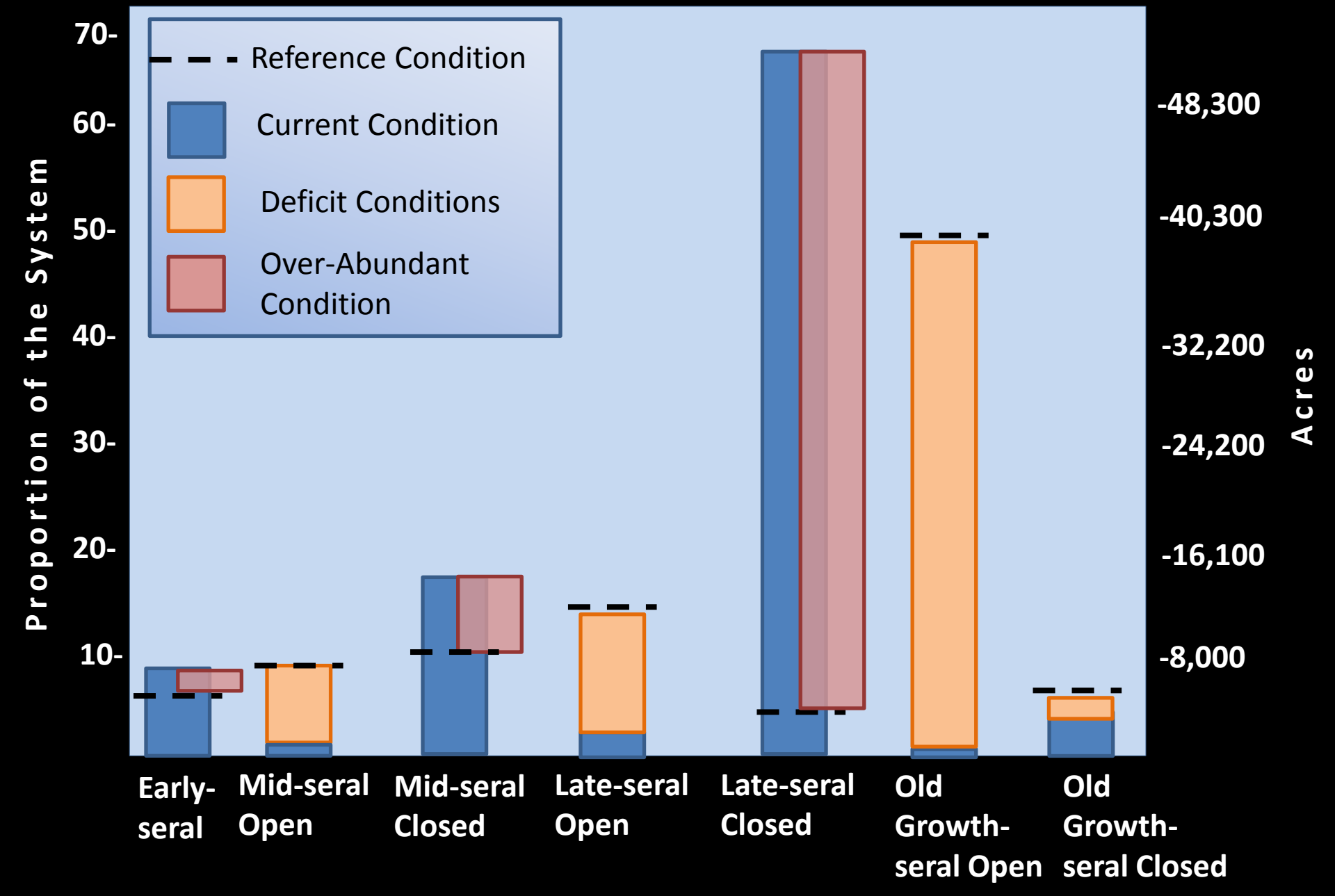
# Shortleaf Pine in National Forests

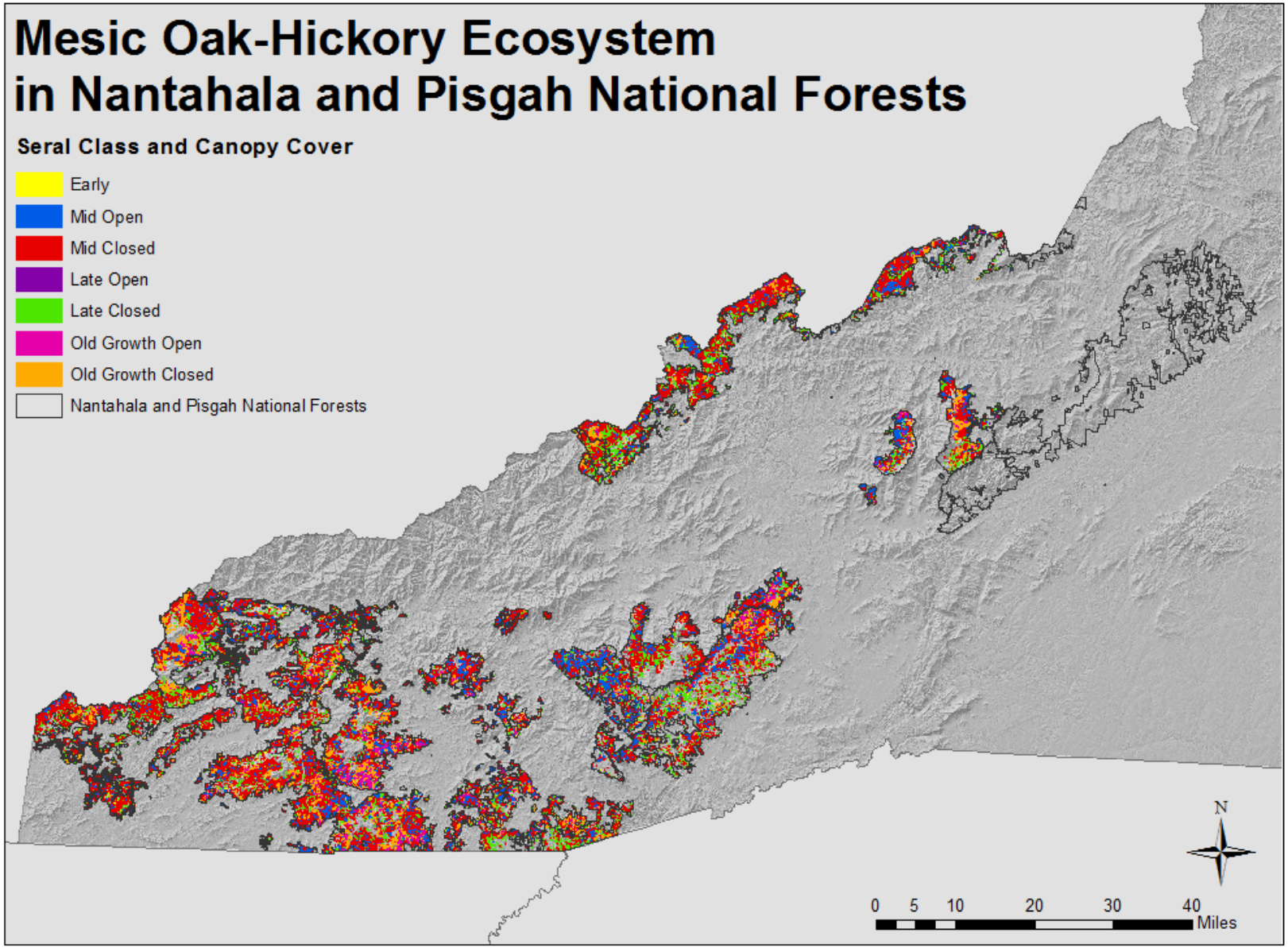


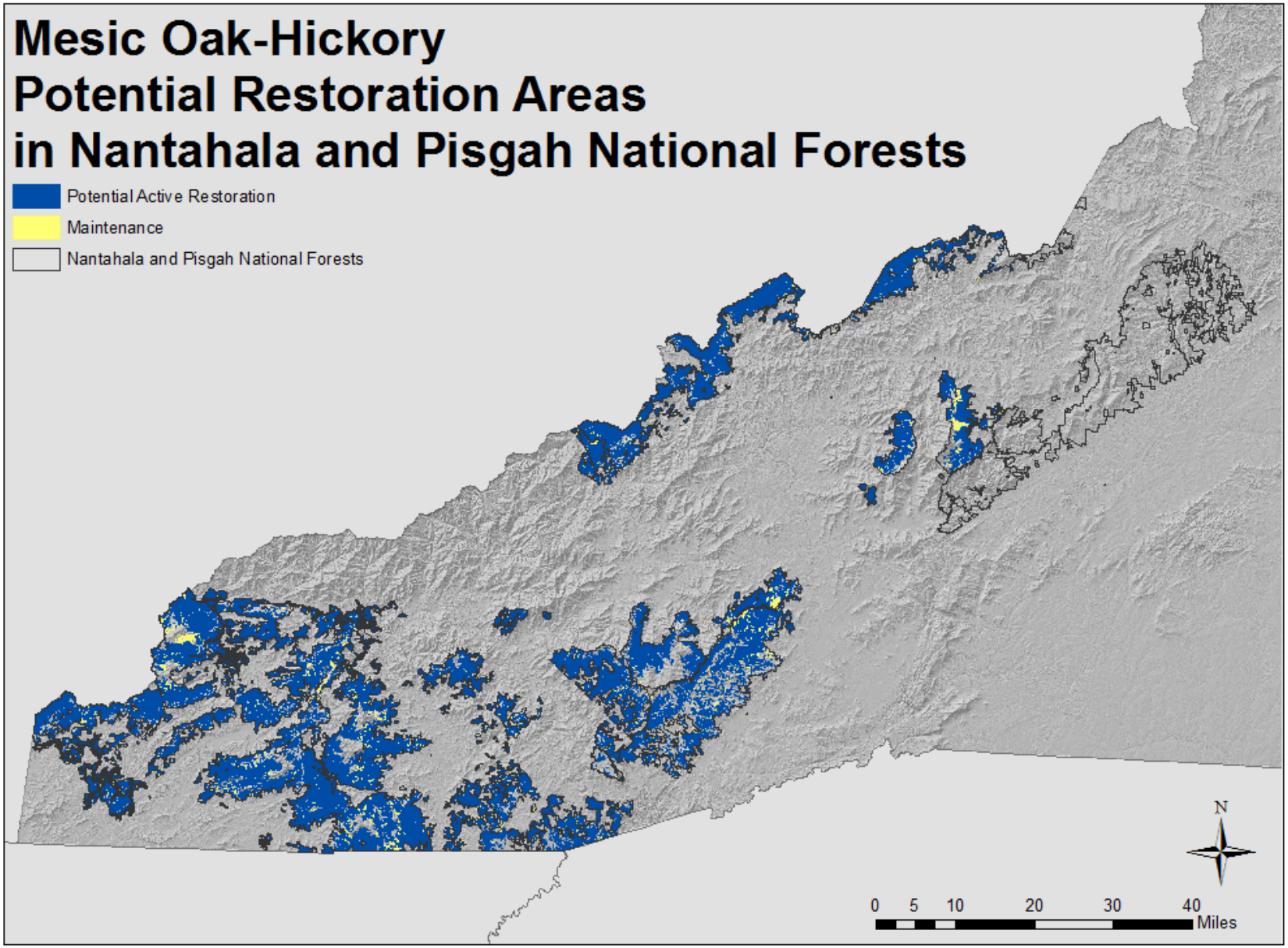

Dry Mesic Oak Hickory Ecosystem
in Nantahala and Pisgah National Forests
Seral Class and Canopy Cover
Early
Mid Open
Mid Closed
Late Open
Late Closed
Old Growth Open
Old Growth Closed
Nantahala and Pisgah National Forests
N
0 5 10 20 30 40
Miles


Dry Mesic Oak Hickory
Potential Restoration Areas
in Nantahala and Pisgah National Forests
Potential Active Restoration
Maintenance
Nantahala and Pisgah National Forests
N
0 5 10 20 30 40
Miles

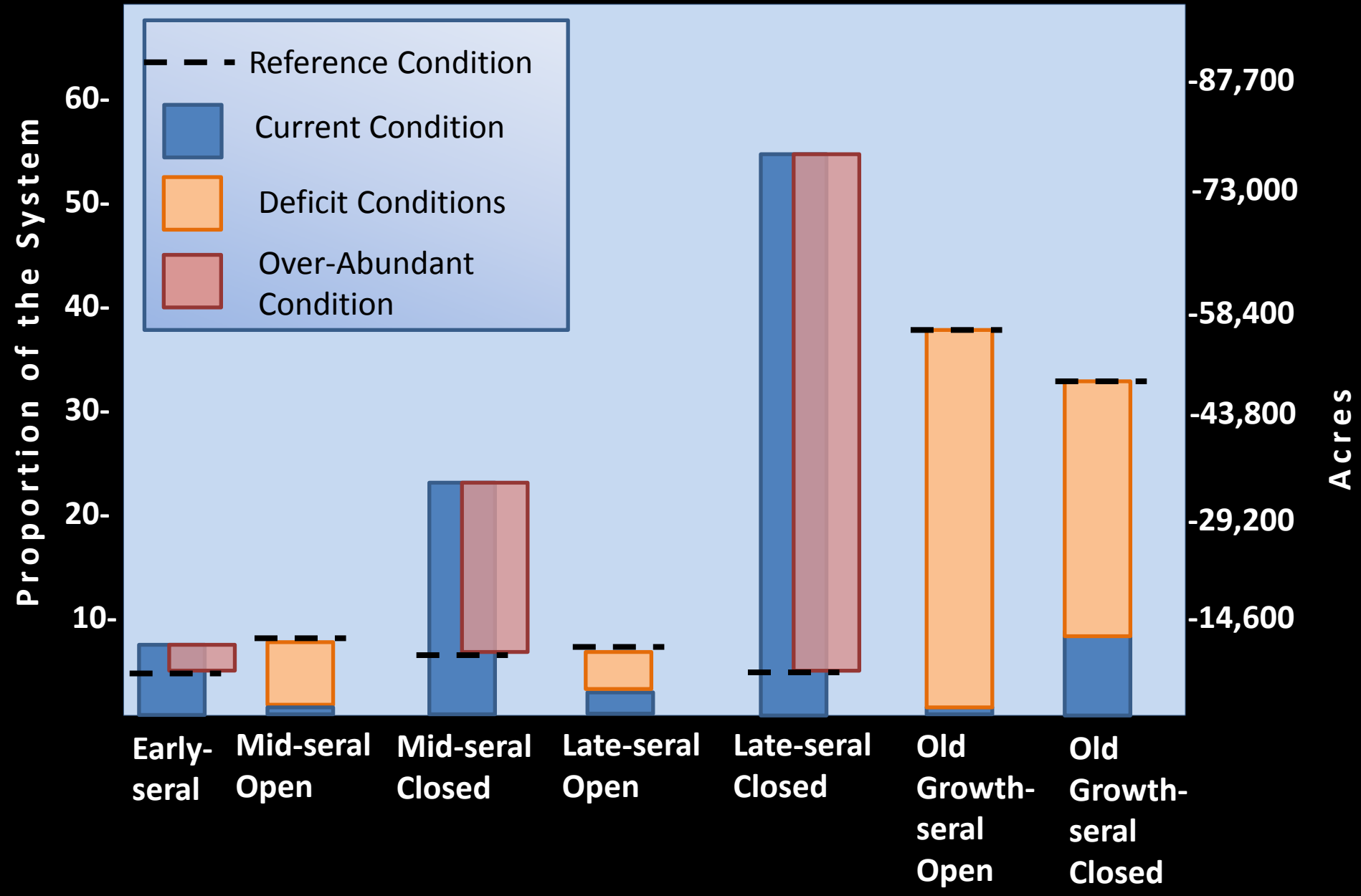
# Dry Mesic Oak Hickory in National Forests

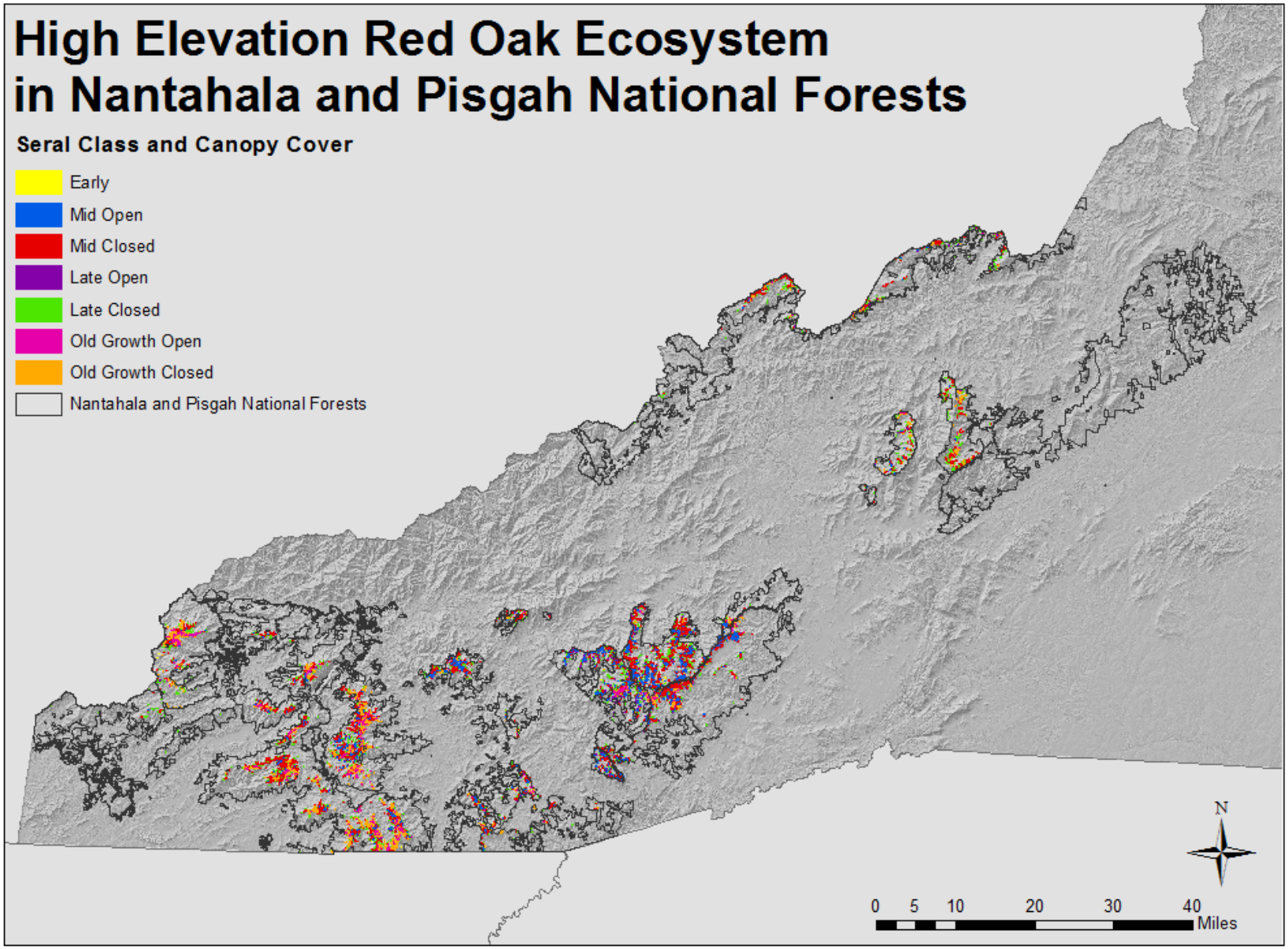


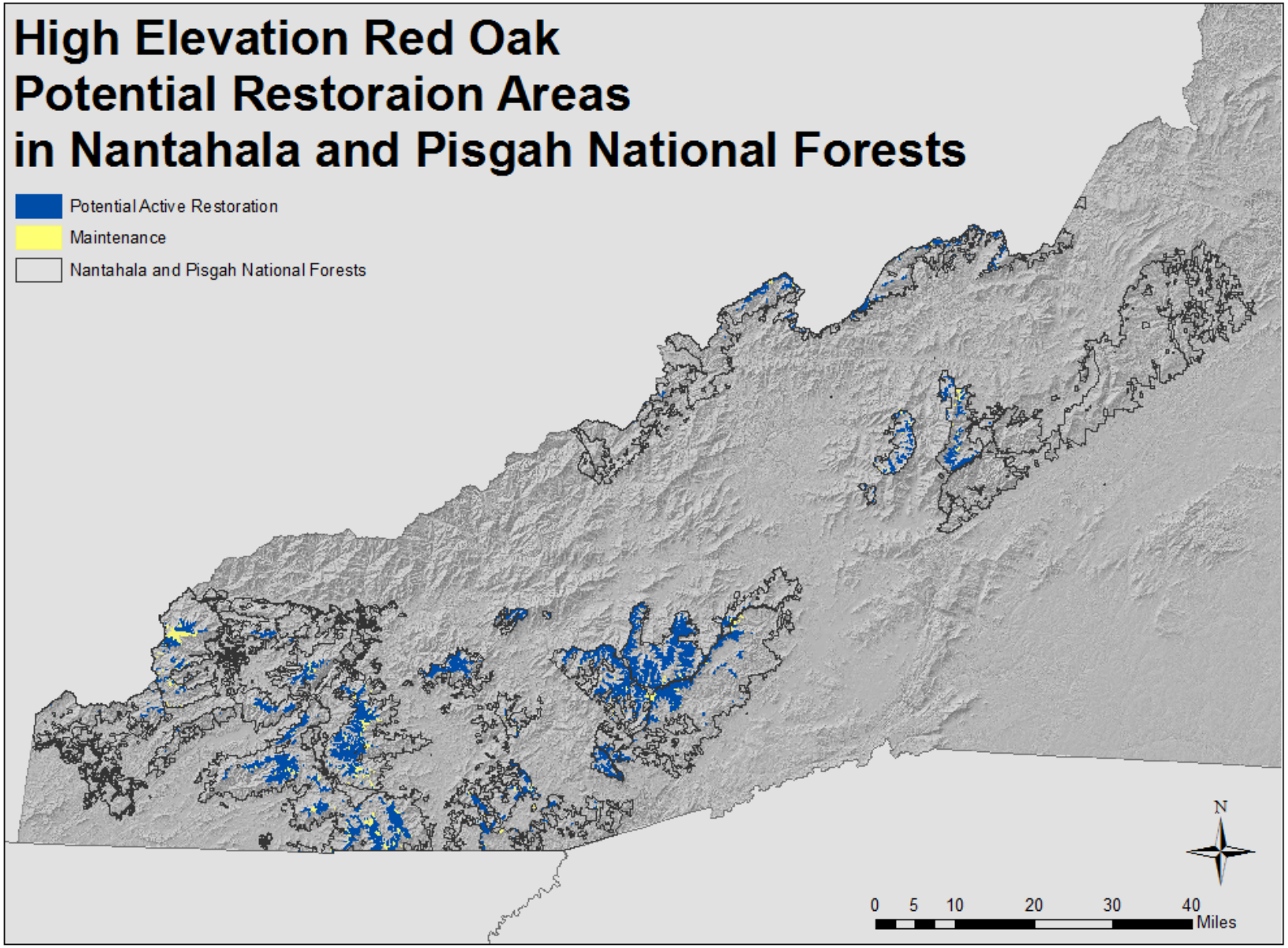

Mesic Oak-Hickory Ecosystem
in Nantahala and Pisgah National Forests
Seral Class and Canopy Cover
Early
Mid Open
Mid Closed
Late Open
Late Closed
Old Growth Open
Old Growth Closed
Nantahala and Pisgah National Forests
N
0 5 10 20 30 40
Miles


Mesic Oak-Hickory
Potential Restoration Areas
in Nantahala and Pisgah National Forests
Potential Active Restoration
Maintenance
Nantahala and Pisgah National Forests
N
0 5 10 20 30 40
Miles

# Mesic Oak Hickory in National Forests




High Elevation Red Oak Ecosystem
in Nantahala and Pisgah National Forests
Seral Class and Canopy Cover
Early
Mid Open
Mid Closed
Late Open
Late Closed
Old Growth Open
Old Growth Closed
Nantahala and Pisgah National Forests
N
0 5 10 20 30 40
Miles


High Elevation Red Oak
Potential Restoraion Areas
in Nantahala and Pisgah National Forests
Potential Active Restoration
Maintenance
Nantahala and Pisgah National Forests
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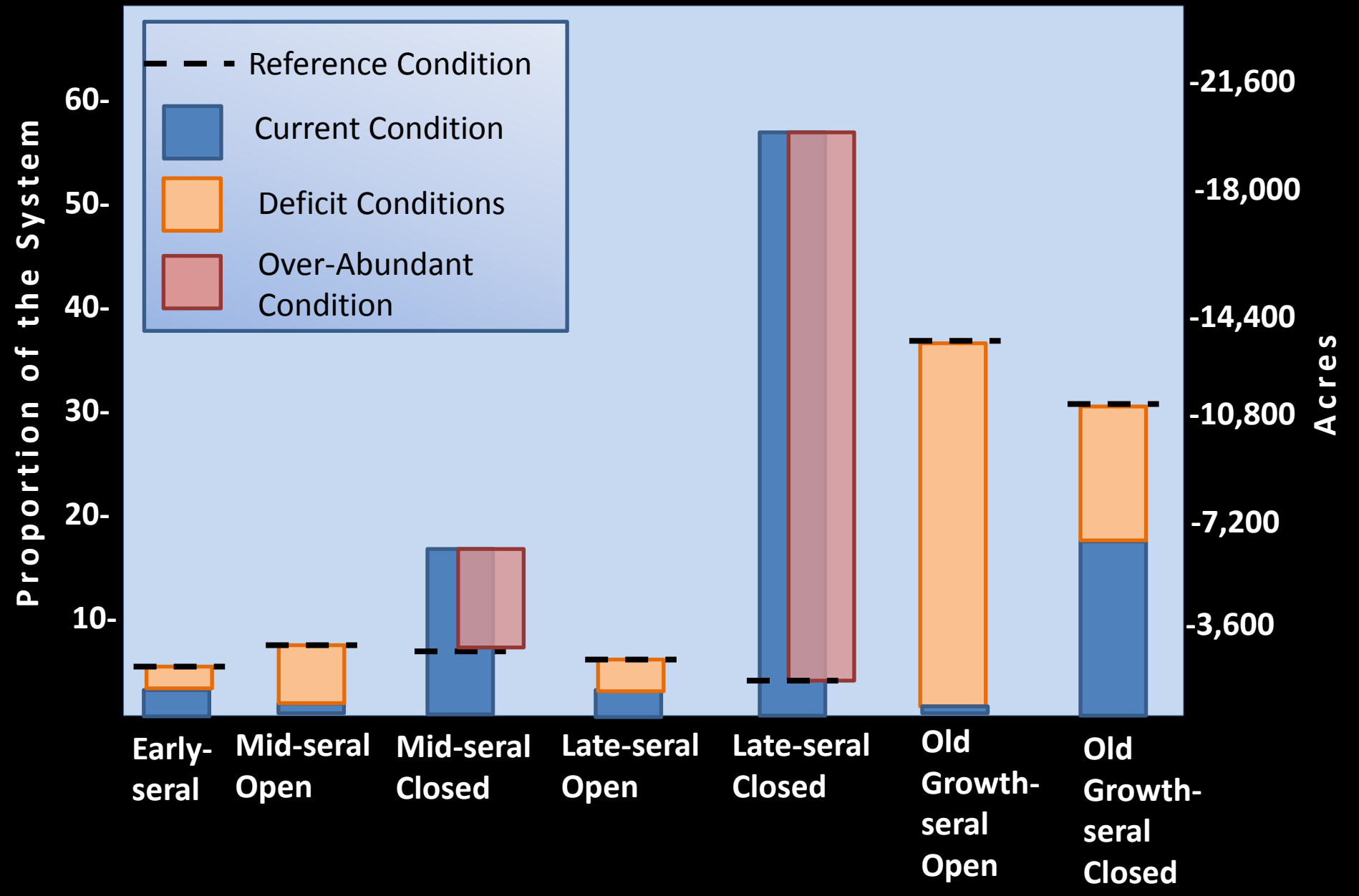
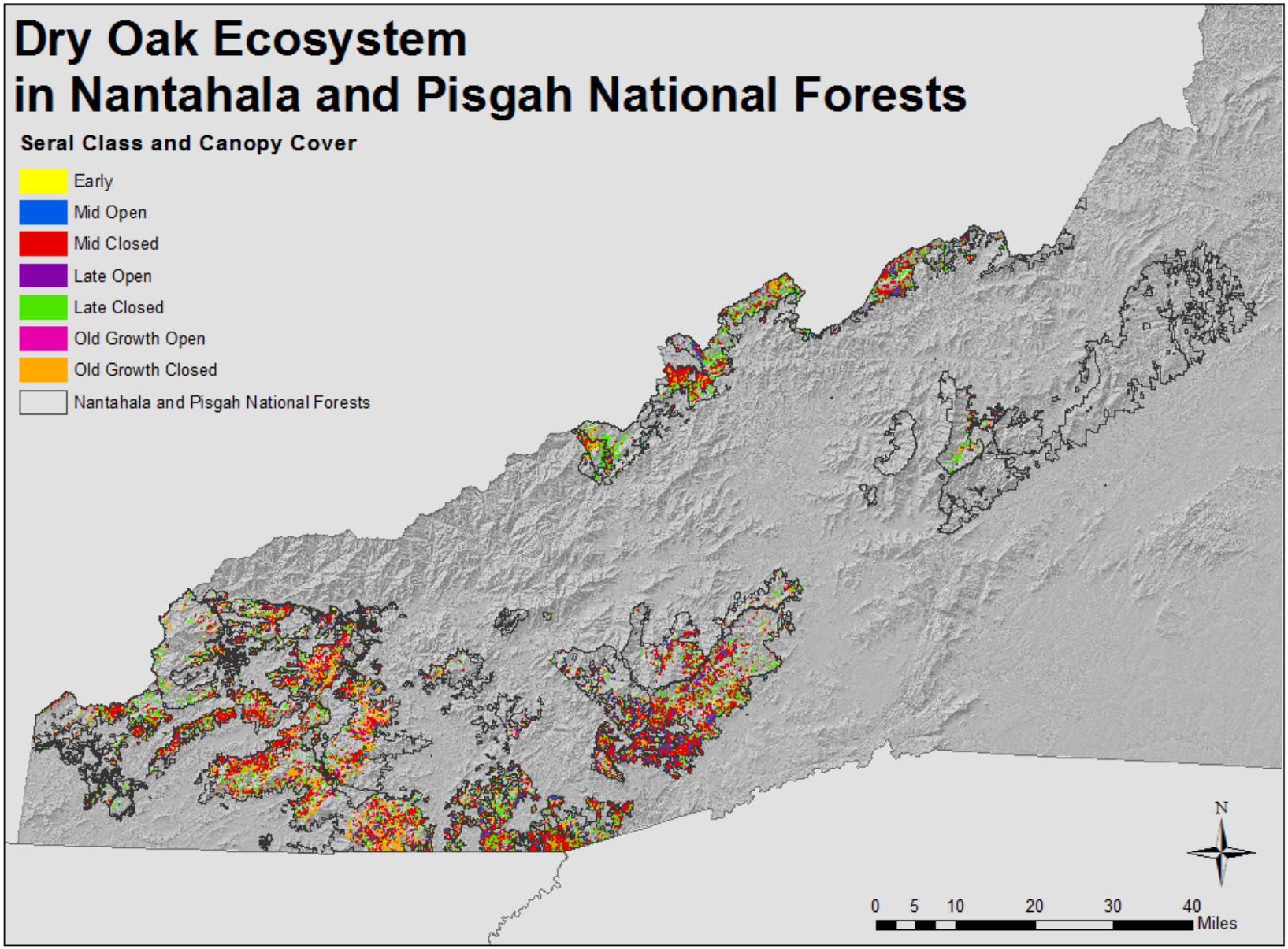
Miles

# High Elevation Red Oaks in National Forests




Dry Oak Ecosystem
in Nantahala and Pisgah National Forests
Seral Class and Canopy Cover
Early
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Old Growth Open
Old Growth Closed
Nantahala and Pisgah National Forests
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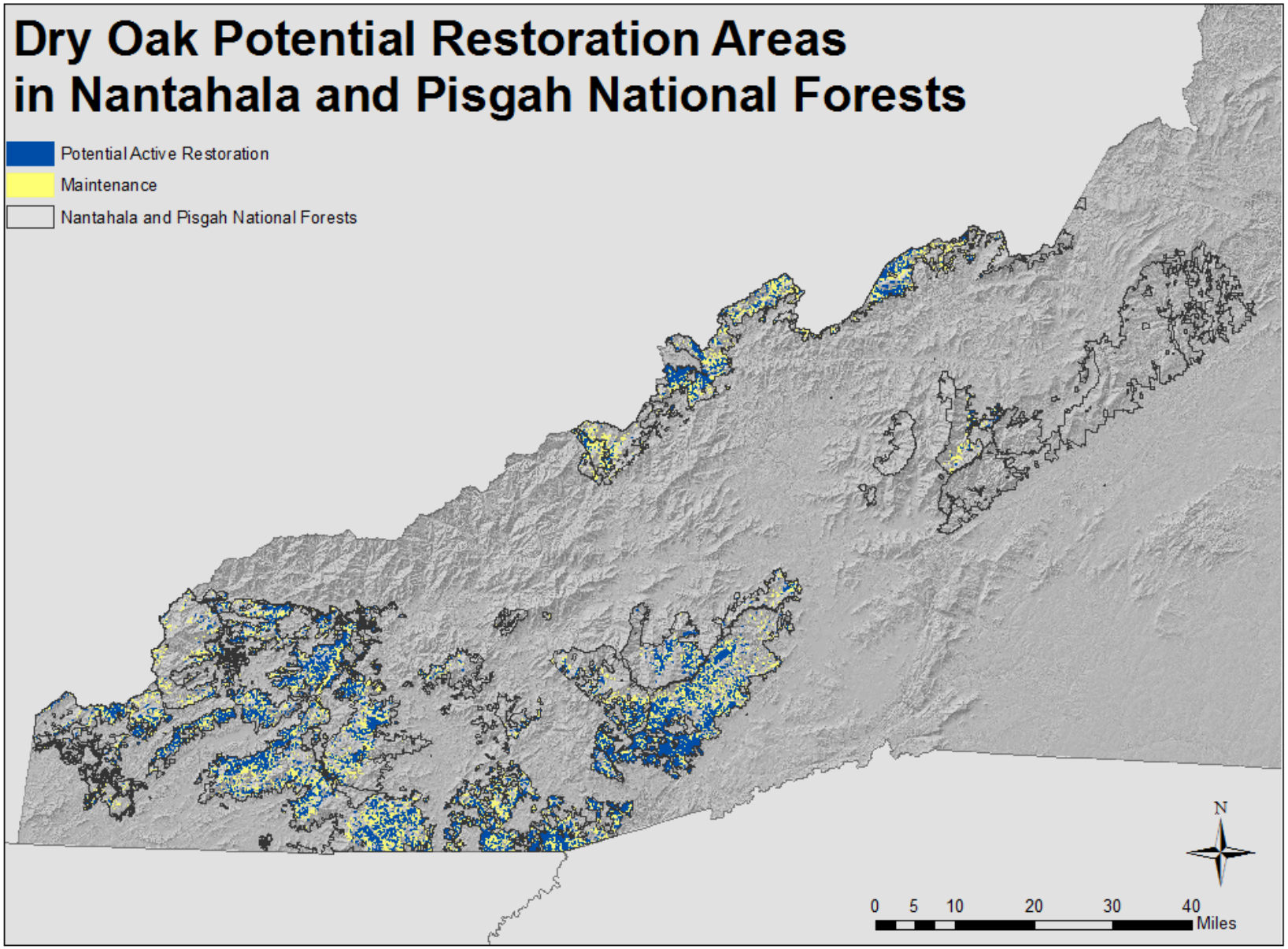
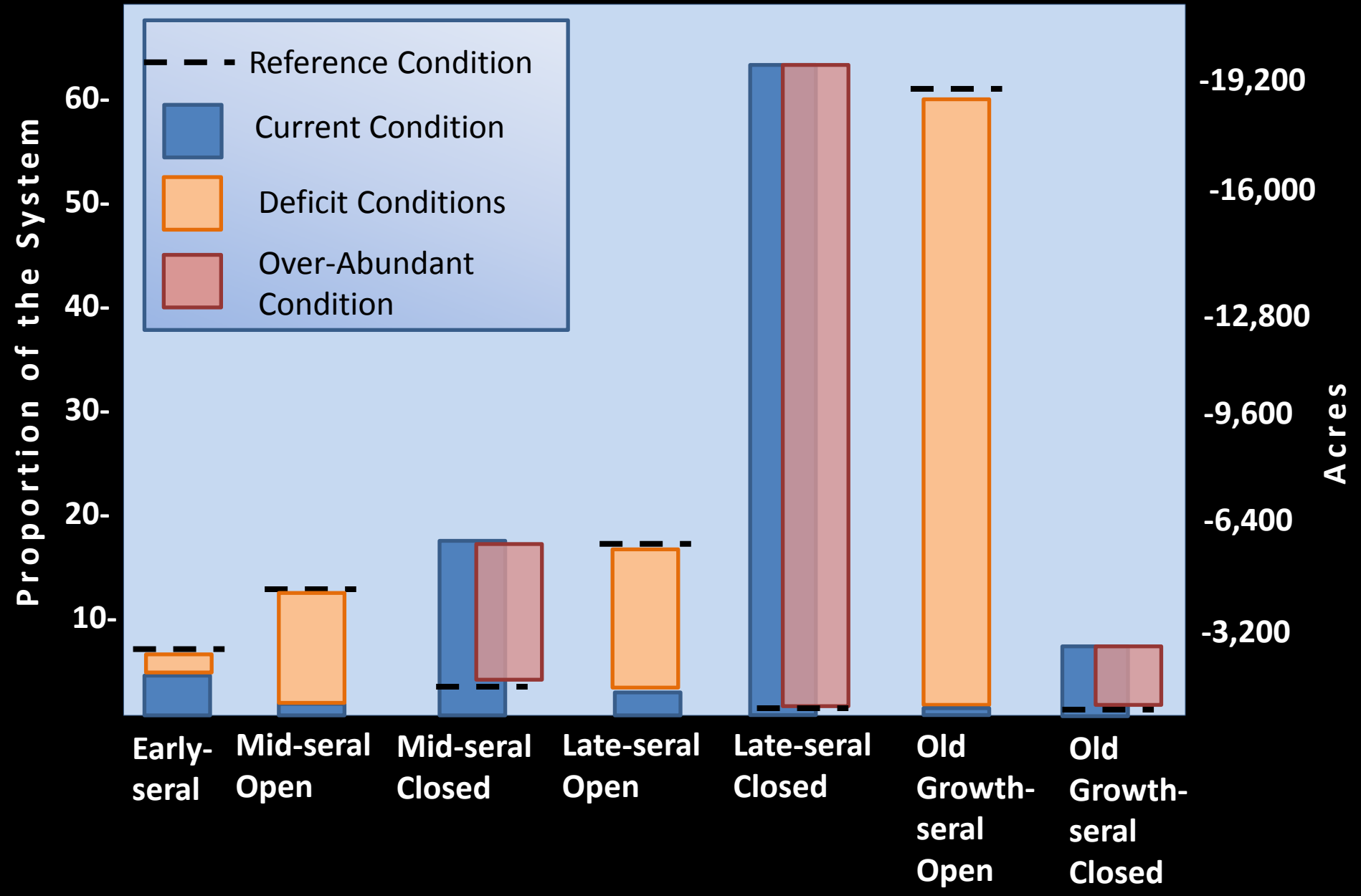
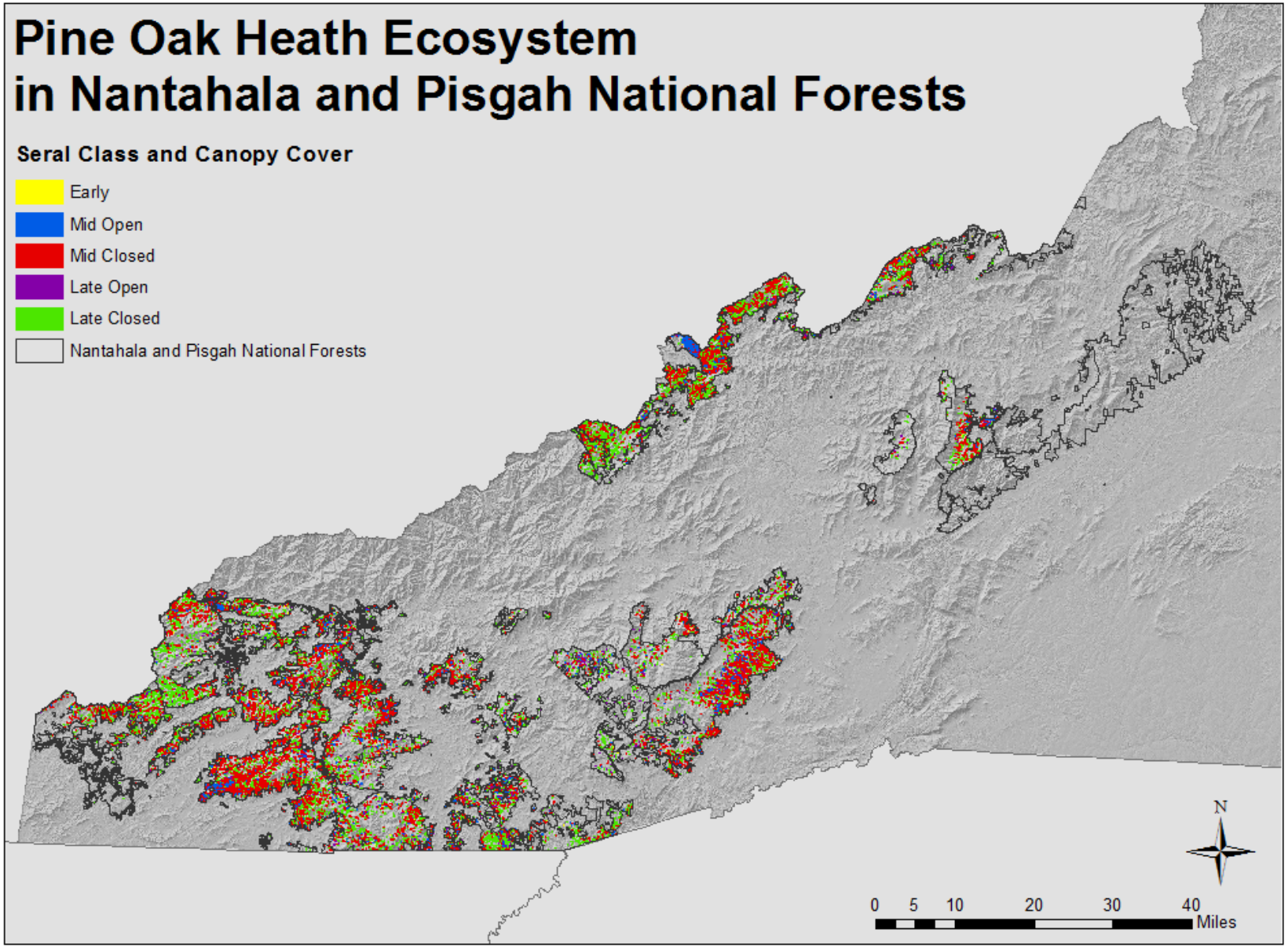
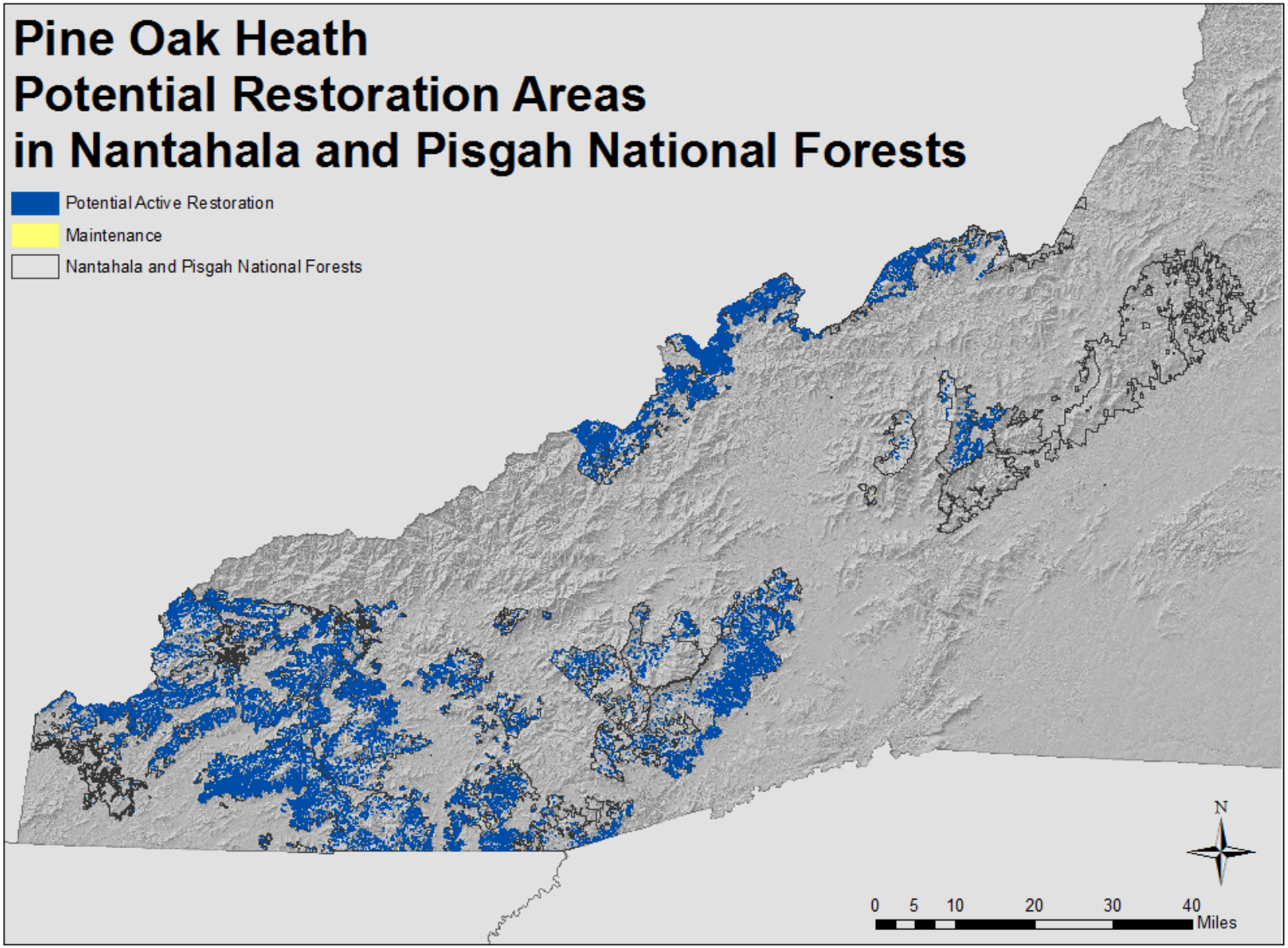

Dry Oak Potential Restoration Areas
in Nantahala and Pisgah National Forests
Potential Active Restoration
Maintenance
Nantahala and Pisgah National Forests
N
0 5 10 20 30 40
Miles

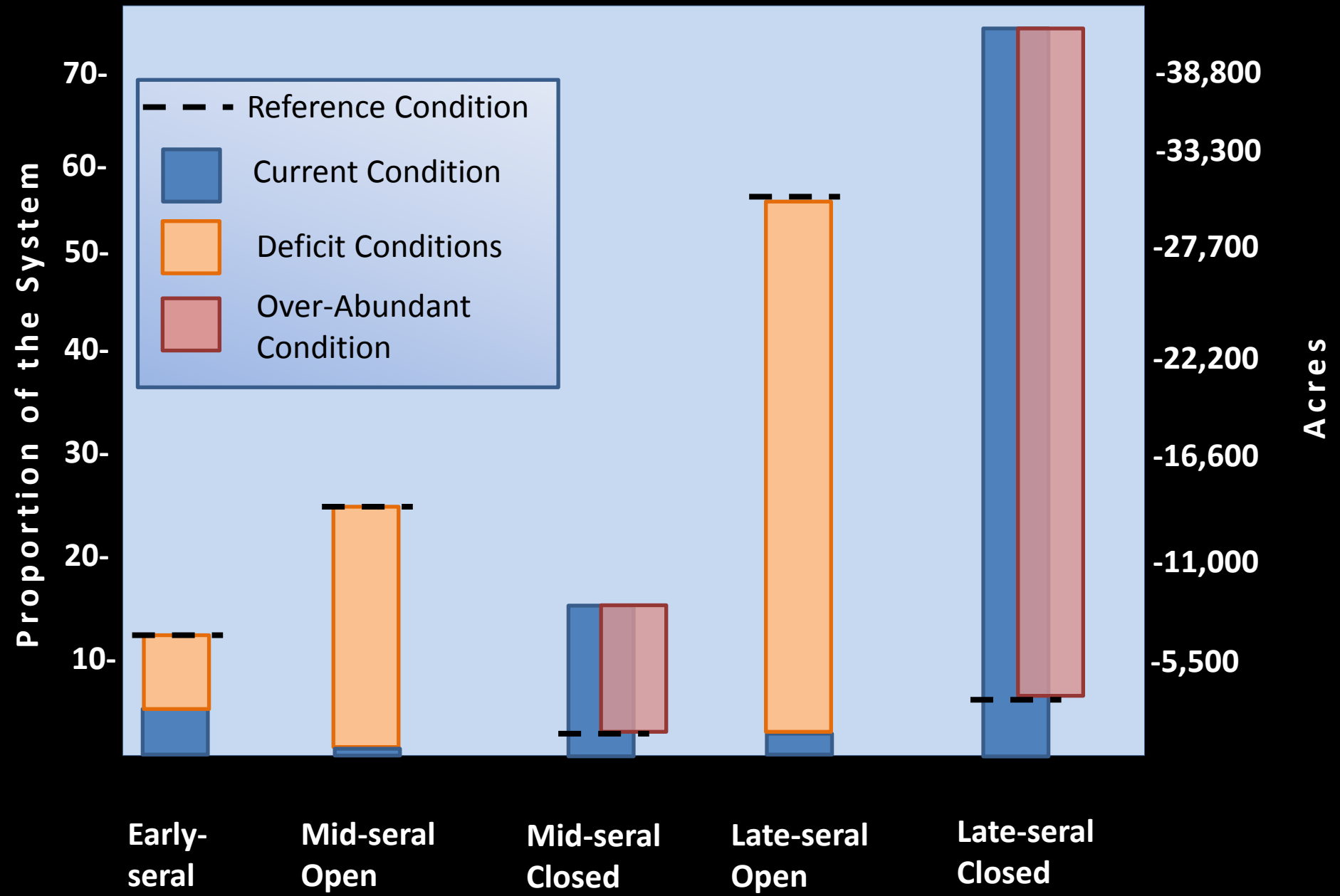
# Dry Oak in National Forests




Pine Oak Heath Ecosystem
in Nantahala and Pisgah National Forests
Seral Class and Canopy Cover
Early
Mid Open
Mid Closed
Late Open
Late Closed
Nantahala and Pisgah National Forests
N
0 5 10 20 30 40
Miles


Pine Oak Heath
Potential Restoration Areas
in Nantahala and Pisgah National Forests
Potential Active Restoration
Maintenance
Nantahala and Pisgah National Forests
N
0 5 10 20 30 40
Miles

# Pine Oak Heath in National Forests




# Acknowledgments

**Megan Sutton, Josh Kelly, Margit Bucher, SBR FLN, TNC, and Chris Zanger**


# Questions?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# Ground Rules for Discussion

- Treat one another with respect and professionalism
- Listen for understanding
- Provide constructive feedback on topic
- Refrain from side conversations
- If there are disagreements, “attack” the problem, not the person
- Work toward collaborative solutions
- Be mindful of the time that we have allotted

# Discussion Questions

- Does the ecological departure analysis appropriately identify major structural needs of this system?
- Are both fire and mechanical treatment appropriate in this system? Are there other specialized treatments that need to be considered?
- Of the deficit conditions for this system which ones are most important to address?
- How many acres are desirable to restore/maintain within this system in the next 20 years? What is a realistic goal?