



# SOUTH ATLANTIC

LANDSCAPE CONSERVATION COOPERATIVE

## Integrating Future Change into Conservation Planning in the South Atlantic (February 2012)

Rua Mordecai, Science Coordinator

# Quick intro to the SALCC



89 million acres

92% private land

120% increase in urban  
area by 2050

# Quick intro to the SALCC



Part of a seamless  
North American  
network...

# Quick intro to the SALCC



Part of a seamless  
North American  
network...

Led by a diverse  
steering committee...

# Steering Committee

VA Dept. of Game & Inland Fisheries

NOAA

NC Wildlife Resources Commission

National Park Service

SC Dept. of Natural Resources

GA Dept. of Natural Resources

FL Fish & Wildlife Cons. Commission

The Nature Conservancy

South Atlantic Fishery Management Council

U.S. Geological Survey

Environmental Protection Agency

U.S. Forest Service

Department of Defense

U.S. Fish & Wildlife Service

# Partnership committee

Albemarle-Pamlico Natural Estuary Program

Southeast Aquatic Resource Partnership

Atlantic Coast Joint Venture

Atlantic Coast Fish Habitat Partnership

Southeast Partners in Amphibian and Reptile Conservation

Southeast Partners in Flight

Eastern NC / SE Virginia Strategic Habitat Cons. team

Longleaf Alliance

# Your staff

Coordinator (FWS) – Ken McDermond

Science coordinator (FWS) – Rua Mordecai

Socioeconomic adaptation coordinator (NPS) – Janet Cakir

Information transfer (USFS/FWS) – Kat Mordecai

Gulf Coast Coordinator (NOAA/FWS) – Laurie Rounds

GIS coordinator (FWS) – Amy Keister

# What is the South Atlantic LCC?

Forum in which the conservation community:

- Develops a shared vision of landscape sustainability
- Cooperates in its implementation,
- Collaborates in its refinement



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## Assess vulnerability

- Climate change
- Urban growth

## Take action

- Best places to act
- Restore longleaf
- Protect riparian buffers

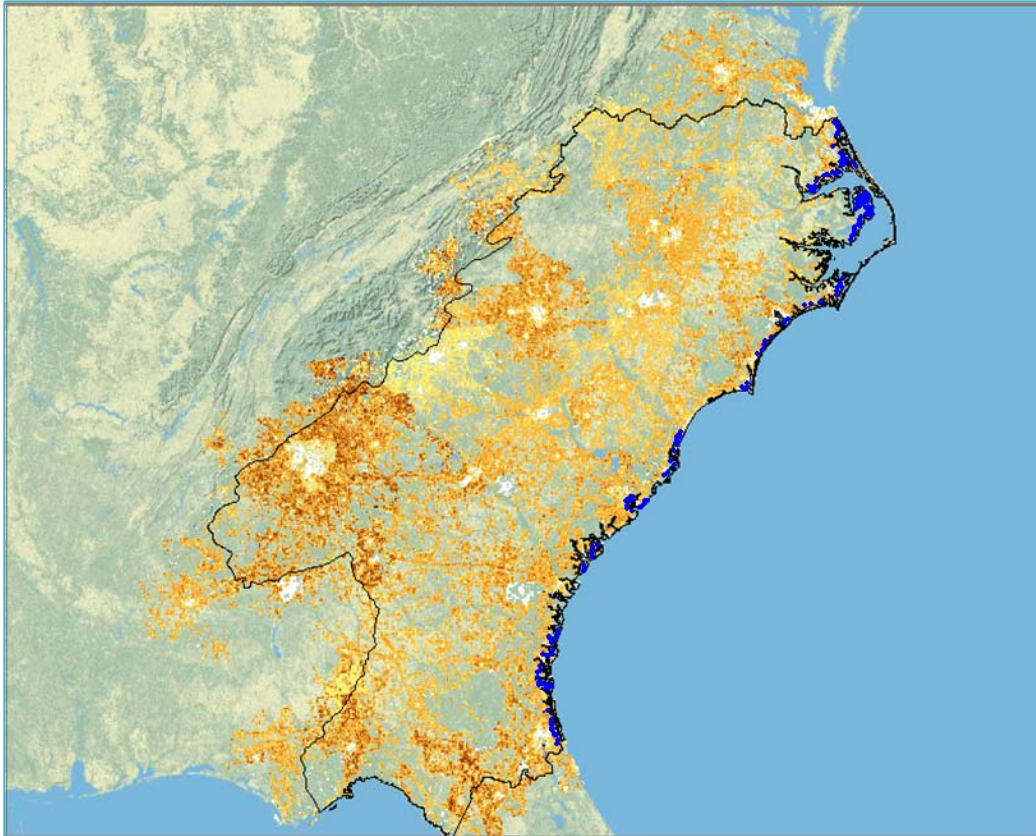
## View results



2010

2050

2100



2010

2050

2100

## Assess vulnerability

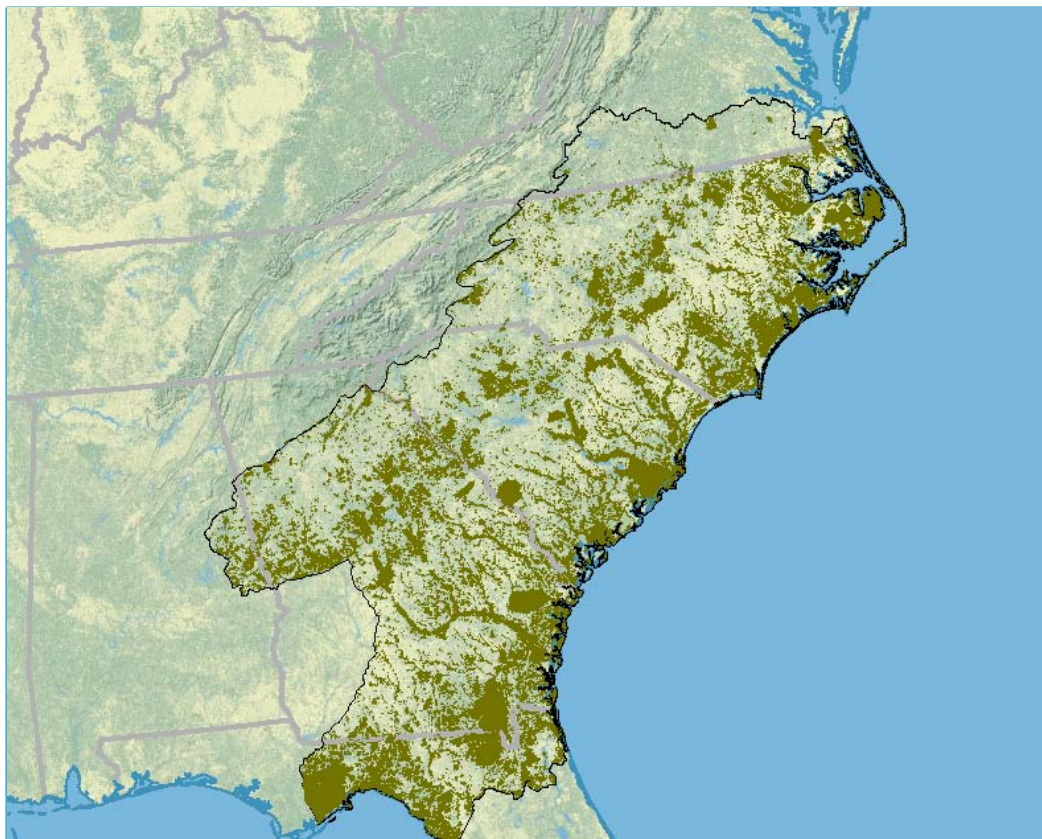
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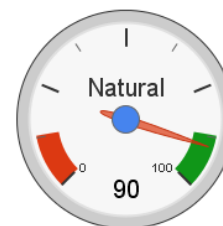
### Assess vulnerability

- Climate change
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### Take action

- Best places to act
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### View results



# Conservation Impact Assessment South Atlantic LCC - 2050

SOUTH ATLANTIC ASSESSMENTS  
www.southatlanticlcc.org

## Impact on Natural Resources

These resources are based on the integrity of ecological systems that characterize natural areas and managed landscapes that people care about. Fish and wildlife populations are both products and indicators of the integrity of systems. Integrity is measured as the degree to which the structure and composition of fish, wildlife, and plant populations meet historical levels, and in some cases (TES) the longterm viability of populations.

Based on [Optimal Conservation Strategy](#).

### Natural Resource Condition No Action



### Natural Resource Condition Habitat Network Implemented



## Impact on Cultural Resources

These resources are ethnographic; that is, they have a relationship to what people do on the landscape. Examples include huntable and fishable populations of animals, access to public lands, archeological sites and objects. The measurable attributes of these resources are the number, representation of cultures, and value as defined by NPS and other stakeholders.

Based on [Optimal Conservation Strategy](#).

### Cultural Resource Condition No Action



### Cultural Resource Condition Habitat Network Implemented



# South Atlantic LCC – 2050 (No Action)

## *Natural Resource Condition*

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<u>Ecosystem</u>	<u>Integrity</u>	<u>Confidence</u>
Beaches and Dunes		
Estuarine and Marine		
Forested Wetlands (mineral soils)		
Forested Wetlands (organic soils)		
Freshwater aquatic		
Freshwater marshes		
Grassland – Prairie – Savannah		
Southern Pine		
Scrub-shrub		
Upland Hardwood		
Xeric and Maritime Scrub		

# South Atlantic LCC – 2050 (No Action)

## *Natural Resource Condition*

<u>Ecosystem</u>	<u>Integrity</u>	<u>Confidence</u>
Beaches and Dunes		
Estuarine and Marine		
Forested Wetlands (mineral soils)		
Forested Wetlands (organic soils)		
Freshwater aquatic		
Wood duck		
Spotted turtle		
Banded watersnake		
Disturbance intolerant fish (Stripped bass, Shortnose sturgeon, Robust Redhorse..)		
Lithophilic reproducing fish		
Carnivorous fish		
Xeric and Maritime Scrub		

# South Atlantic LCC – 2050 (Habitat Network)

## *Natural Resource Condition*

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### Ecosystem

### Integrity

### Confidence

Beaches and Dunes

Estuarine and Marine

Forested Wetlands (mineral soils)

Forested Wetlands (organic soils)

Freshwater aquatic

Wood duck



Spotted turtle



Banded watersnake



Disturbance intolerant fish

(Stripped bass, Shortnose sturgeon, Robust Redhorse..)



Lithophilic reproducing fish



Carnivorous fish



Xeric and Maritime Scrub



# Prototyping Optimal Conservation Strategies

Decision Tool  
for the  
South Atlantic LCC



alabama  
**cooperative**  
fish and wildlife  
research unit

original graphic art by:  
Griffin Shreves III

# Questions for the tool

What would a network of habitat capable of supporting wildlife populations into the future look like?

Where are the best places for riparian buffers?

Where are the best places for restoring key habitats (longleaf, poccosin)?

Where are the best and most cost effective places for acquisition/easements in the face of sea level rise, climate change and urban growth?

Where are the next likely places that dams will be built?

What would be the effect of increasing prescribed fire on private land on both natural resources and \$ saved from a reduction in catastrophic wildfire?

How will agricultural change affect aquatic systems?

# Questions part 2

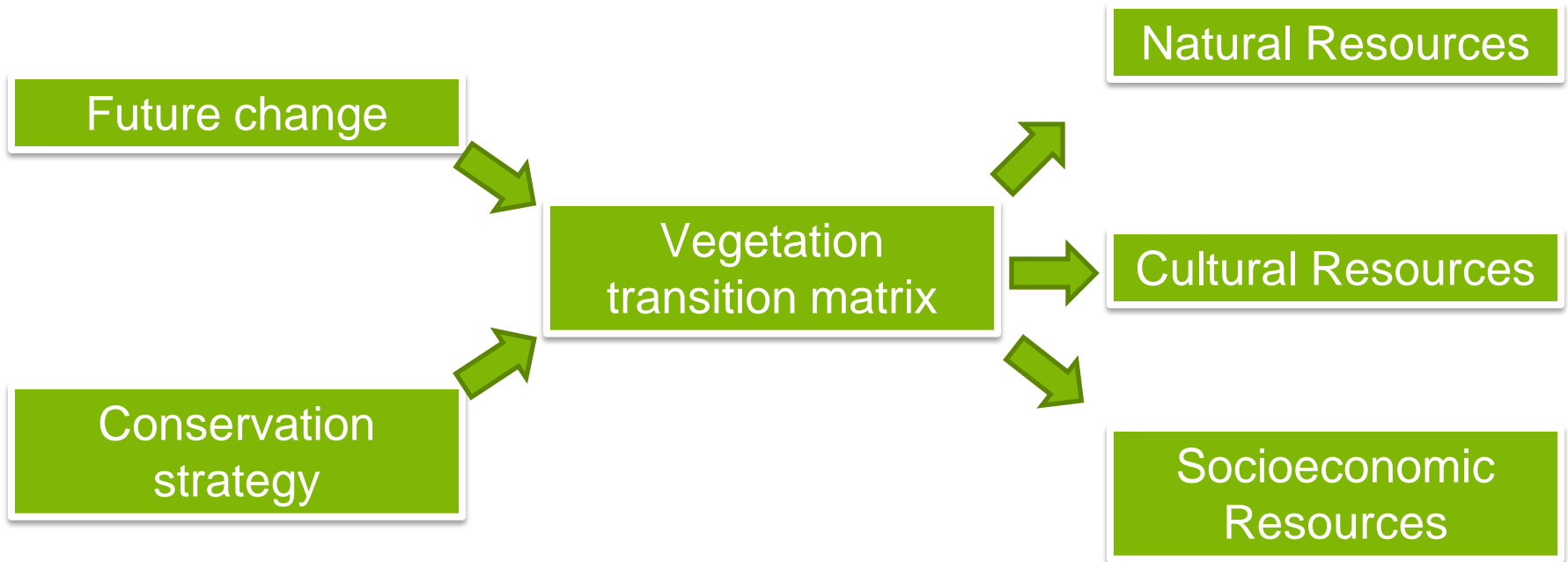
How will humans react to climate change and how will that impact natural resources?

Where are the best places to put infrastructure?

Where are the best places for biofuels?

How will climate change affect the missions of specific protected areas (e.g., will Francis Marion still be important for RCWs in the future)?

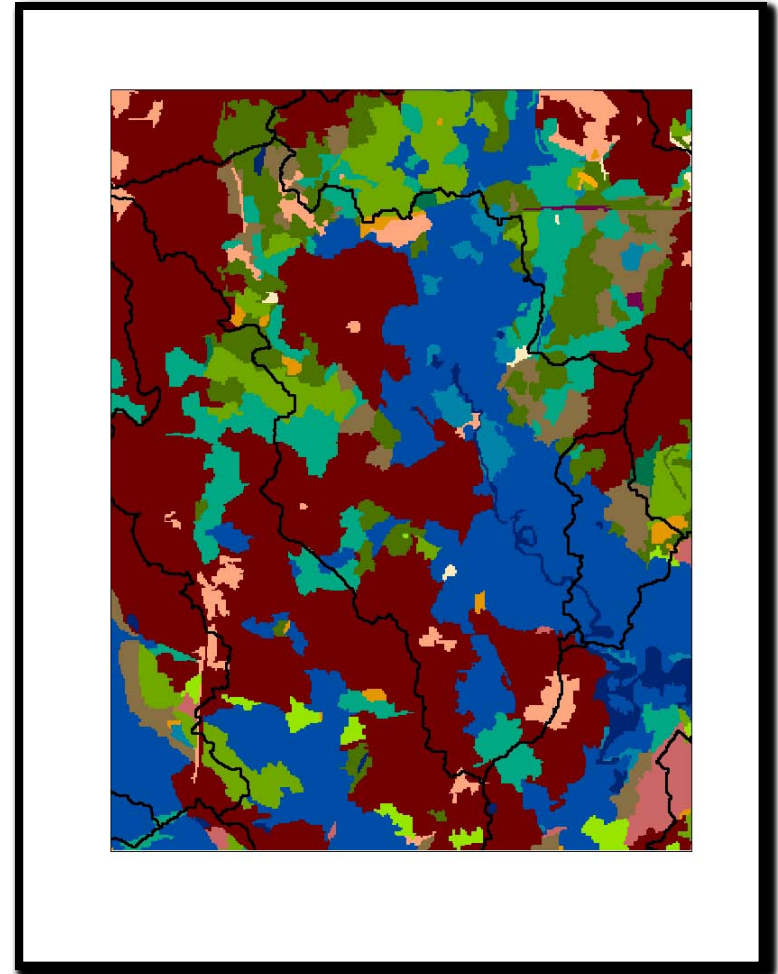
# General framework





# Modeling Consequences

- Predicting outcomes based on objectives
  - Ecosystem integrity
  - Socio-economic
  - Cultural value
- Scope
  - South Atlantic Coastal Plain
- Scale
  - NHD catchment (n ~ 115,500)
- Dynamics
  - Urban growth
  - Sea level rise
  - Vegetative succession

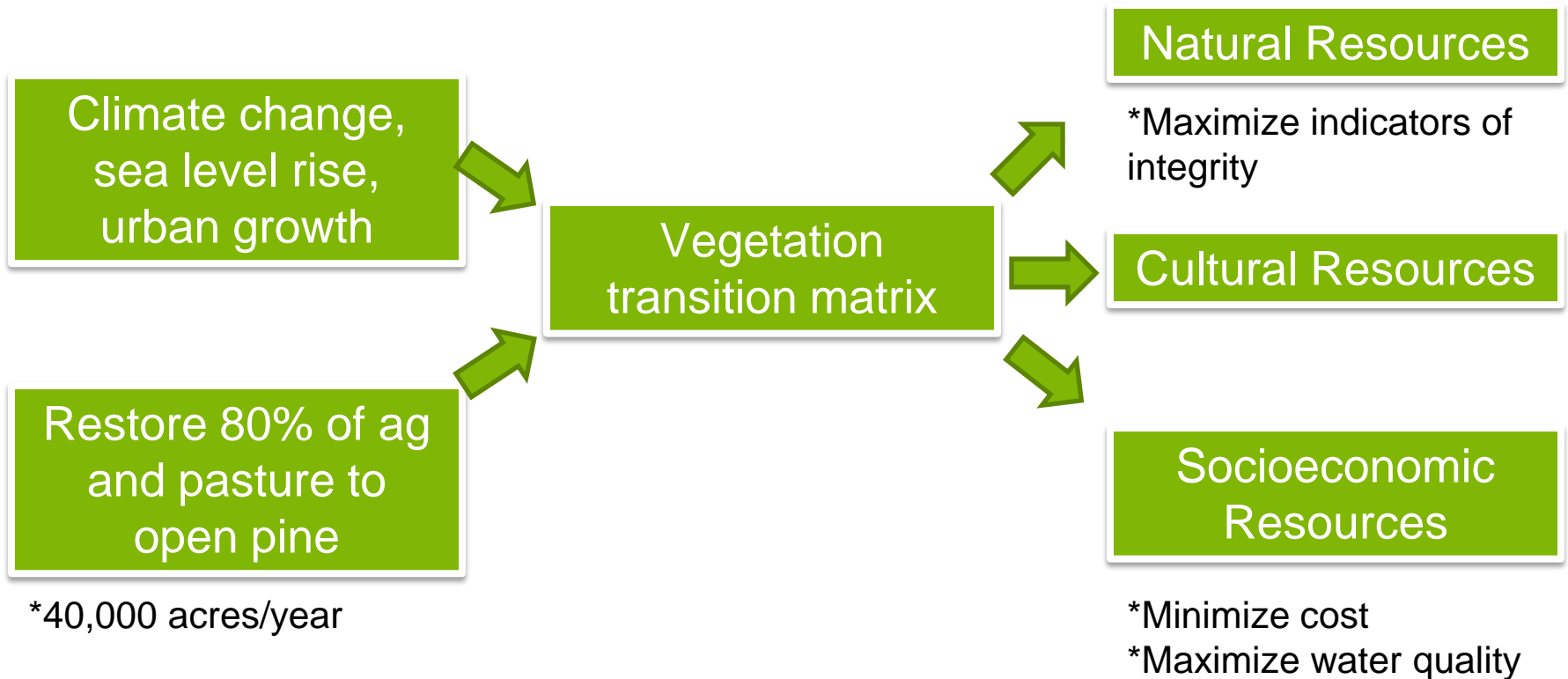




# Prototype Alternatives

- Alternative 1 – status quo, business as usual.
- Alternative 2
  - Strategy – select ‘best’ sites each year
    - Provide the greatest marginal value based on objectives
  - Tactic – restore open pine ecosystems
    - Ag → Early successional → Even-aged → Open pine
    - 50-80 year lag & possibility of failure

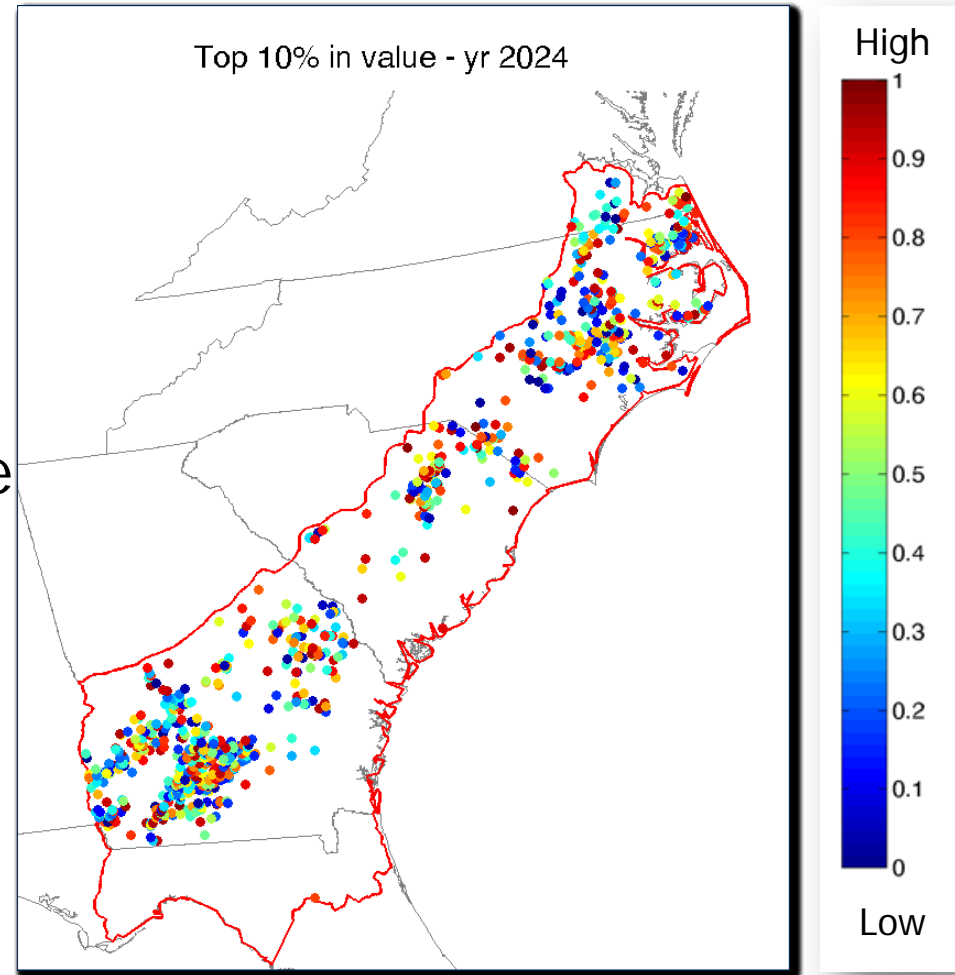
# Open pine restoration example





# Including costs - budget limitation

- Simple approach
- Cost  $\propto$  acres restored
- Highest marginal value
  - Dynamic
- Start with highest value and spend to annual budget limit



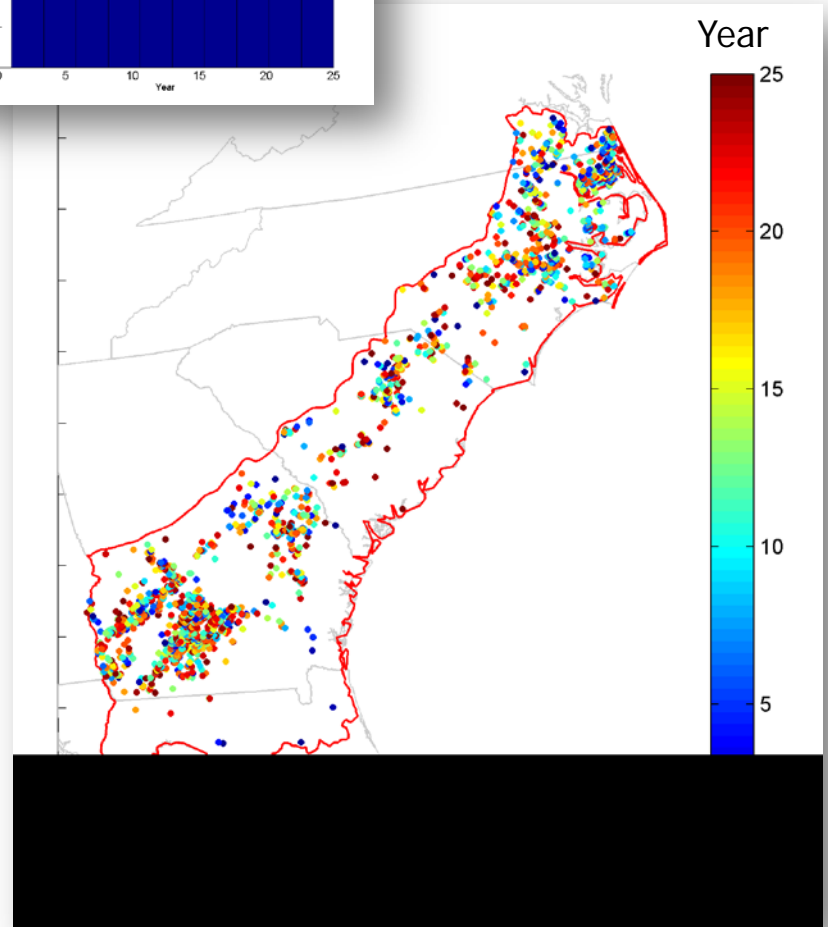
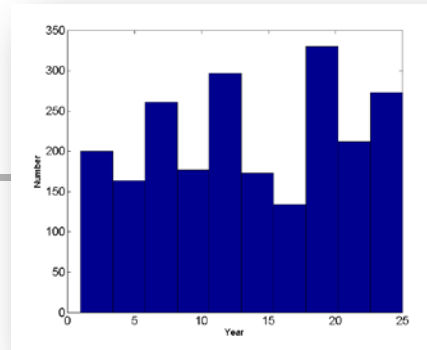




# Result

- Prioritized list of sites

- Why?
  - Return on conservation
- What?
  - Restore open pine
- Where?
  - Indicated locations
- When?
  - Based on landscape dynamics
- How much?
  - As much as budget allows





# Future directions

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- Modeling/data needs
  - Species responses & other objectives
    - Range dynamics or climate envelope
    - Stream flows
  - Water and air quality models
  - Socio economic models
  - Estimates of uncertainty
  - Sensitivity of decision

- LCC input
  - Technical expertise on objectives
  - Additional strategies & tactics
  - Budget constraints (How much question)
  - Relative importance of objectives (Tradeoffs)

## South Atlantic LCC

Setting a course for a sustainable landscape

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Members of the website will receive a monthly electronic newsletter

Taking action [Edit](#)

How to get engaged in the LCC

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### Conservation happy hour

August 9, 2011 from 5pm to 7pm - Sammy's Tap and Grill

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### Science Capacity Update

Posted by Ken McDermond on August 5, 2011 at 10:30am  
[★ Stop Featuring](#)



### Virginia LiDAR Data Available

Posted by John Scrivani on June 27, 2011 at 8:31am [★ Stop Featuring](#)



### SALCC funded projects 2011

Posted by me on June 24, 2011 at 2:30pm [★ Stop Featuring](#)

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## 2011 Partner Projects Overview

The mission of the South Atlantic Landscape Conservation Cooperative (LCC) is to "foster landscape scale conservation to sustain natural and cultural resources for future generations". To support that mission, the cooperative is now working on integrating existing science, the resource objectives, and decisions of conservation managers to develop a spatially-explicit plan for how to sustain natural and cultural resources in the face of future change. The Partnership Committee and Steering Committee have identified five projects that fill high priority information gaps needed for conservation planning at the scale of the LCC.

[Assess projects](#) **2011 projects**

Read an overview of 2011 projects to support conservation planning...read more

Welcome [Edit](#)



The South Atlantic Landscape Conservation Cooperative (SALCC) is part of a national network of [Landscape Conservation Cooperatives \(LCCs\)](#). LCCs are applied conservation science partnerships among federal agencies, regional organizations, states, tribes, NGOs, universities and other entities within a geographic area. They are designed to inform resource management decisions in an integrated fashion...

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### Science Capacity Update

Rua Mordecai

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