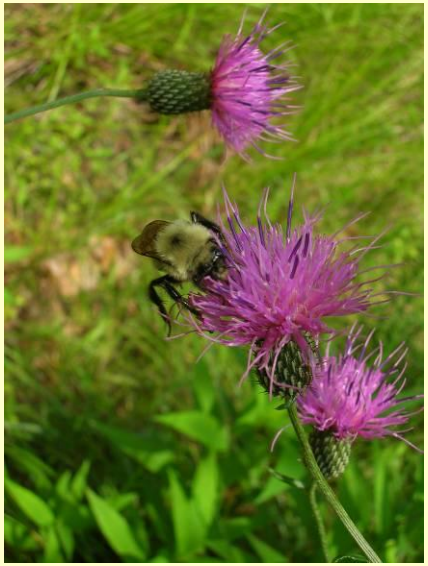
Plant Conservation Program

Conserving North Carolina's imperiled plants in their natural habitats, now and for future generations



N.C. Plant Conservation Act 1979

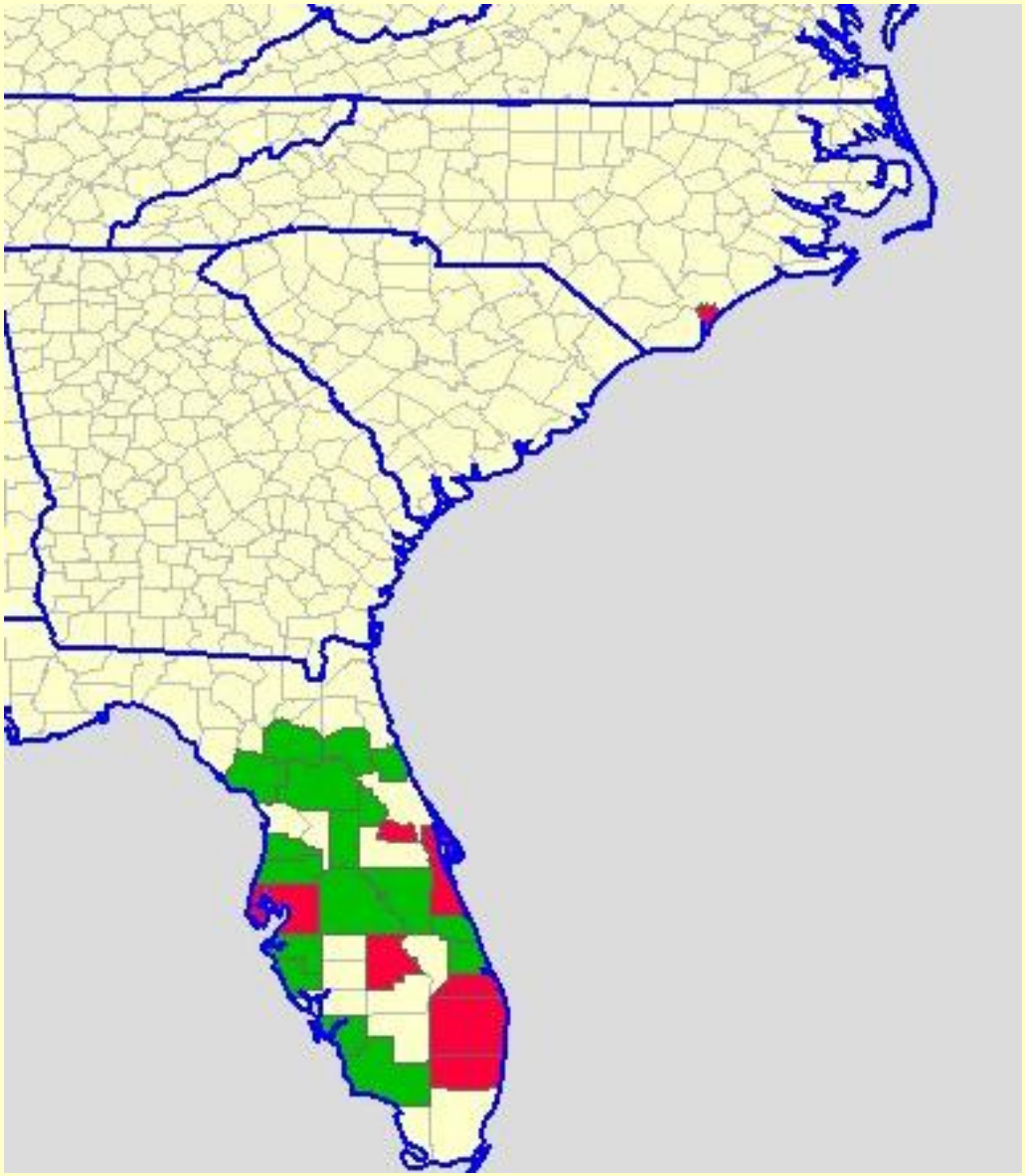
The General Assembly finds that the recreational needs of the people, the interests of science, and the economy of the State require that threatened and endangered species of plants and species of plants of special concern be protected and conserved ….. however, **nothing in this Article shall be construed to limit the rights of a property owner**, without his consent, in the management of his lands for agriculture, forestry, development or any other lawful purpose. (1979, c. 964, s. 1.)

- **Maintain a list of endangered, threatened, and special concern plants**
- Determine if certain species growing in North Carolina, need to have **limits or regulations**, such as forbidding sale or collection of these plants
- **Develop, establish and coordinate conservation programs** for endangered species and threatened species of plants, consistent with the policies of the Endangered Species Act, **including the acquisition of rights to land or aquatic habitats**

PCP background

- Board appointed by Governor and Commissioner
- Scientific Committee (designated positions under law)
- Cooperative Agreement with USFWS for federally listed plants
- Friends of Plant Conservation (non-profit supporting arm)

Florida Sunrose (*Crocanthemum nashii*)



Short term trends

- Historical trend for approximately 30 years
- Ranking system
  - **A** – Severely declining (Decline of >70% in population, range, area occupied, and/or number or condition of occurrences)
  - **B** – Very rapidly declining (decline of 50-70%)
  - **C** – Rapidly declining (decline of 30-50%)
  - **D** – Declining (decline of 10-30%)
  - **E** – Stable
  - **F** – Increasing
  - **U** – Unknown

Threats

- Severity

  High- loss of all populations or destruction of species habitat, irreversible or requiring >100 years for recovery

  Moderate – major reduction, requiring 50-100 years for recovery

  Low – reversible degradation, requiring 10-50 years for recovery

- Scope

  High - > 60 % of all NC populations, occurrences, or area affected

  Moderate – 20-60% of total populations or area affected

  Low – 5-20% of total populations or area affected

- Immediacy

  High – Threat is operational (happening now) or imminent (within a year)

  Moderate – Threat is likely to be operational within 2-5 years

  Low – Threat is likely to be operational within 20 years

MATRIX 3B: 1-5 extant populations

Short-term trend

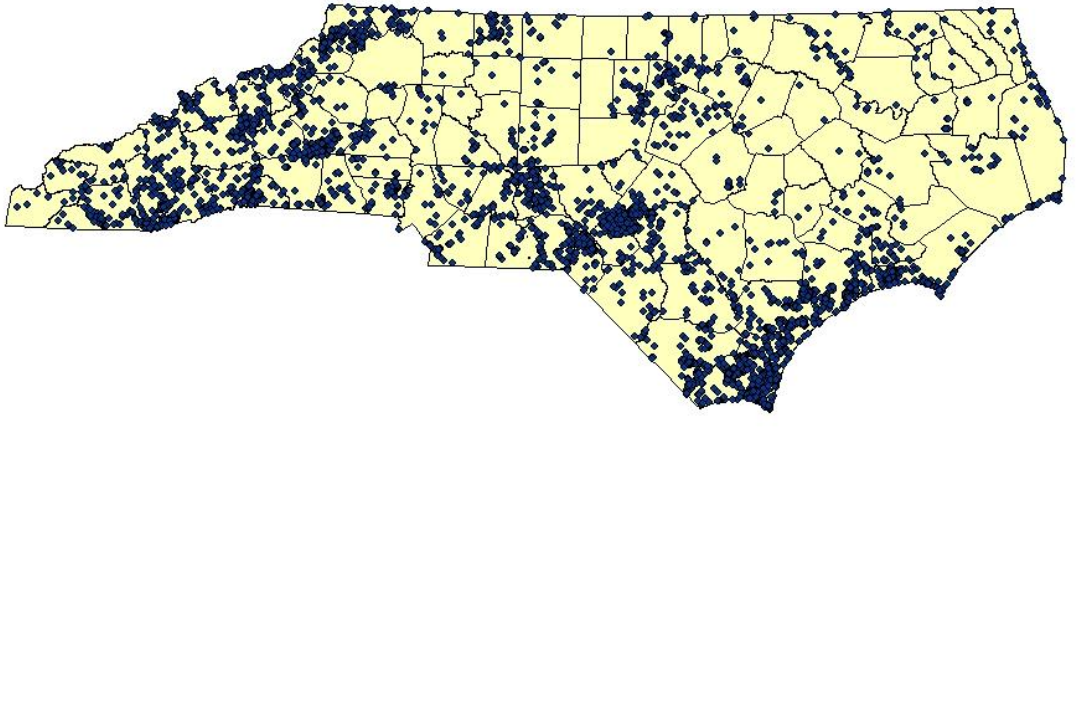
Threat		A	B	C	D	E	U	F	Null
	A	E	E	E	E	E	E	E	E
	B	E	E	E	E	E	T	T	T
	C	E	E	E	T	T	T	T	T
	D	E	E	T	T	T	T	SC-V	SC-V
	E	E	E	T	T	SC-V	SC-V	SC-V	SC-V
	F	E	E	T	SC-V	SC-V	SC-V	SC-V	SC-V
	G	E	E	T	SC-V	SC-V	SC-V	SC-V	SC-V

Selected Results: Short term trends

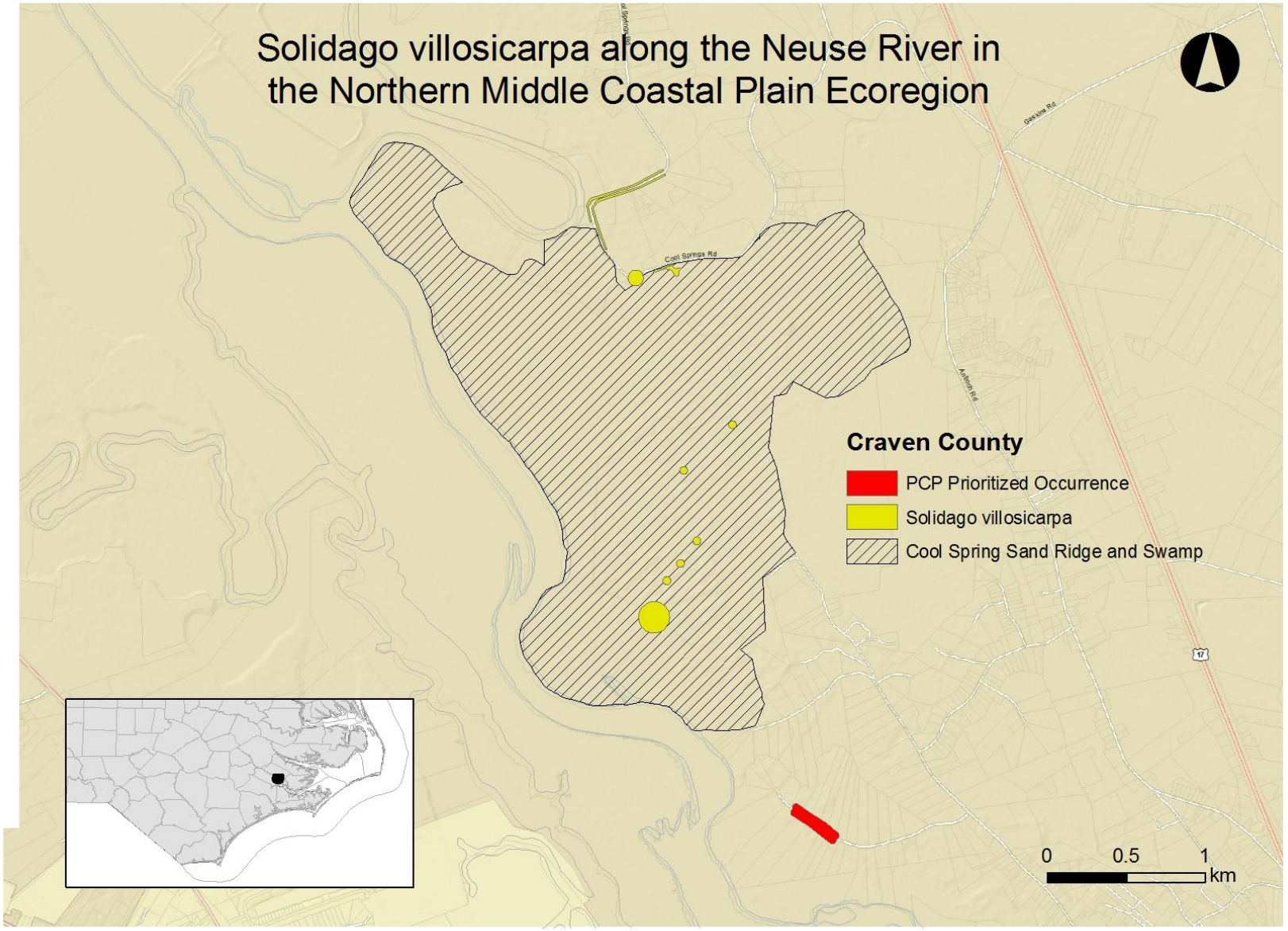
- 7 species with “A” ranking (>70% decline)
  - *Oxypolis canbyi*
  - *Scutellaria nervosa*
  - *Erythrina herbacea*
  - *Balduina atropurpurea*
  - *Polygonum glaucum*
  - *Dichanthelium hirstii*
  - *Helenium brevifolium*
- 6 species with “B” ranking (50-70% decline)
  - *Trillium pusillum var. pusillum*
  - *Anemone caroliniana*
  - *Scutellaria australis*
  - *Crocanthemum carolinianum*
  - *Celastrus scandens*
  - *Ruellia humilis*
- 14 species with “C” ranking (30-50% decline)
- 95 species with “D” ranking (10-30% decline)
- 194 species with “E” ranking (stable)

Scope & Urgency

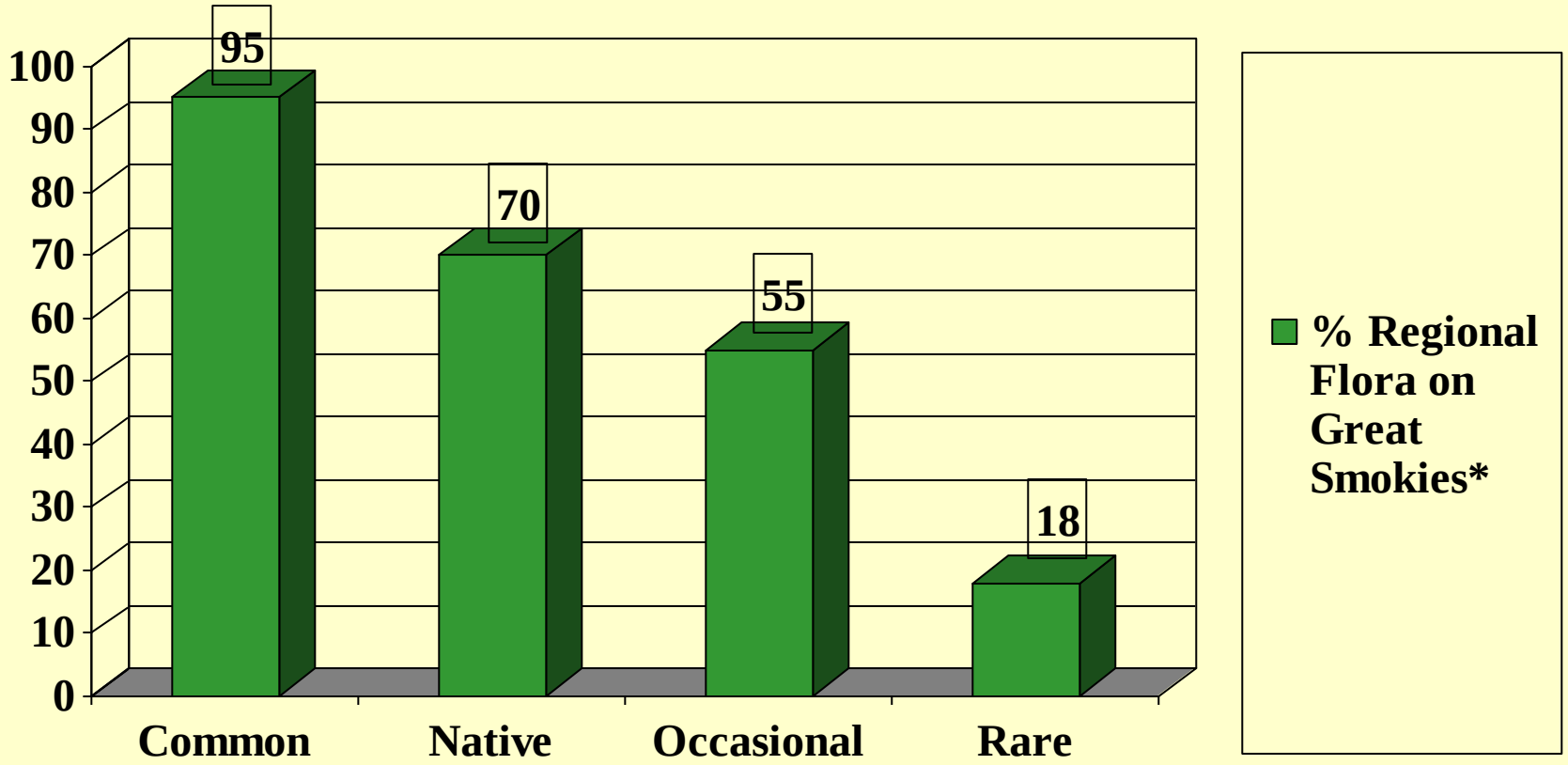
- ~ 5,700 native taxa
  - 19 endemic to N
  - 2 believed extinc
- ~ 680 found in less tha
- ~200 not seen in decade viable
  - 295 imperiled (E o
    - 81 vulnerable
  - 13 in precipitous de
- 129 facing moderate to threat across >60% of k population



Determining the IPCA's



Don’t we already have enough protected land or preserves?



* Great Smoky Mountain National Park data; courtesy of Dr. Peter White, UNC Chapel Hill

Don’t we already have Preserves?

Conservation by chance or by design

A modest proposal

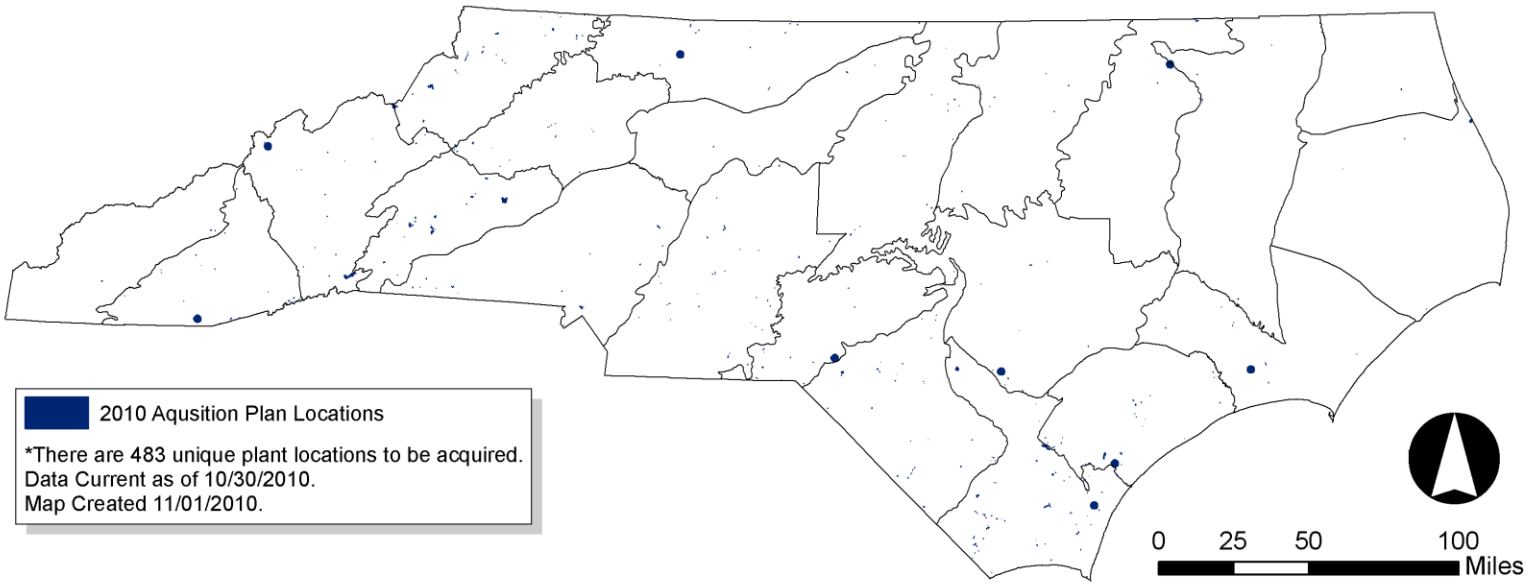
Establish Preserves to protect at least 2 examples of each imperiled species in their natural habitat(s)

("Plant Conservation Preserves")

- Managed for the primary benefit of rare plant species

based on historical precedent!

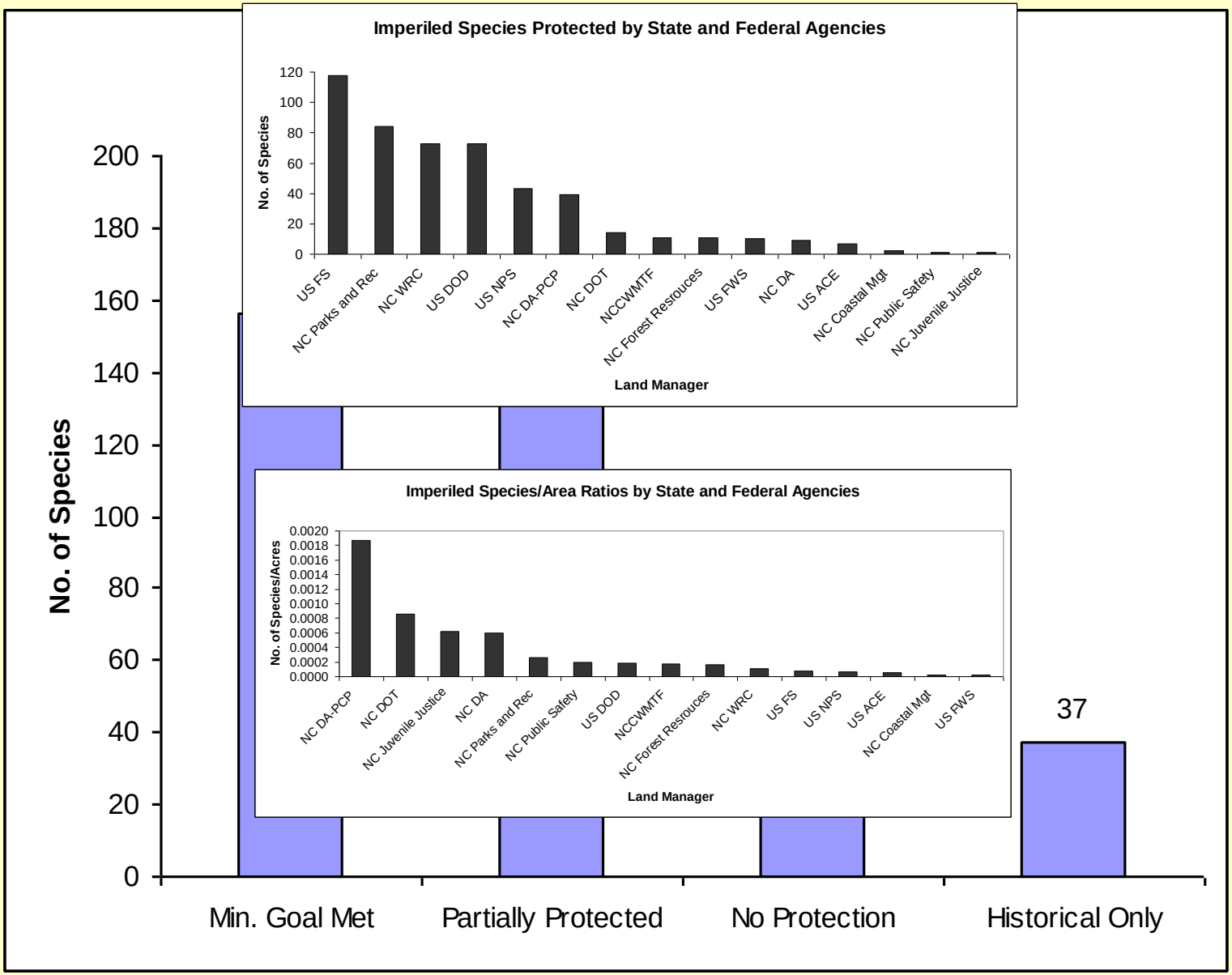
Imperiled Plant Locations in Need of Protection



A few of the 343 sites that STILL need protection

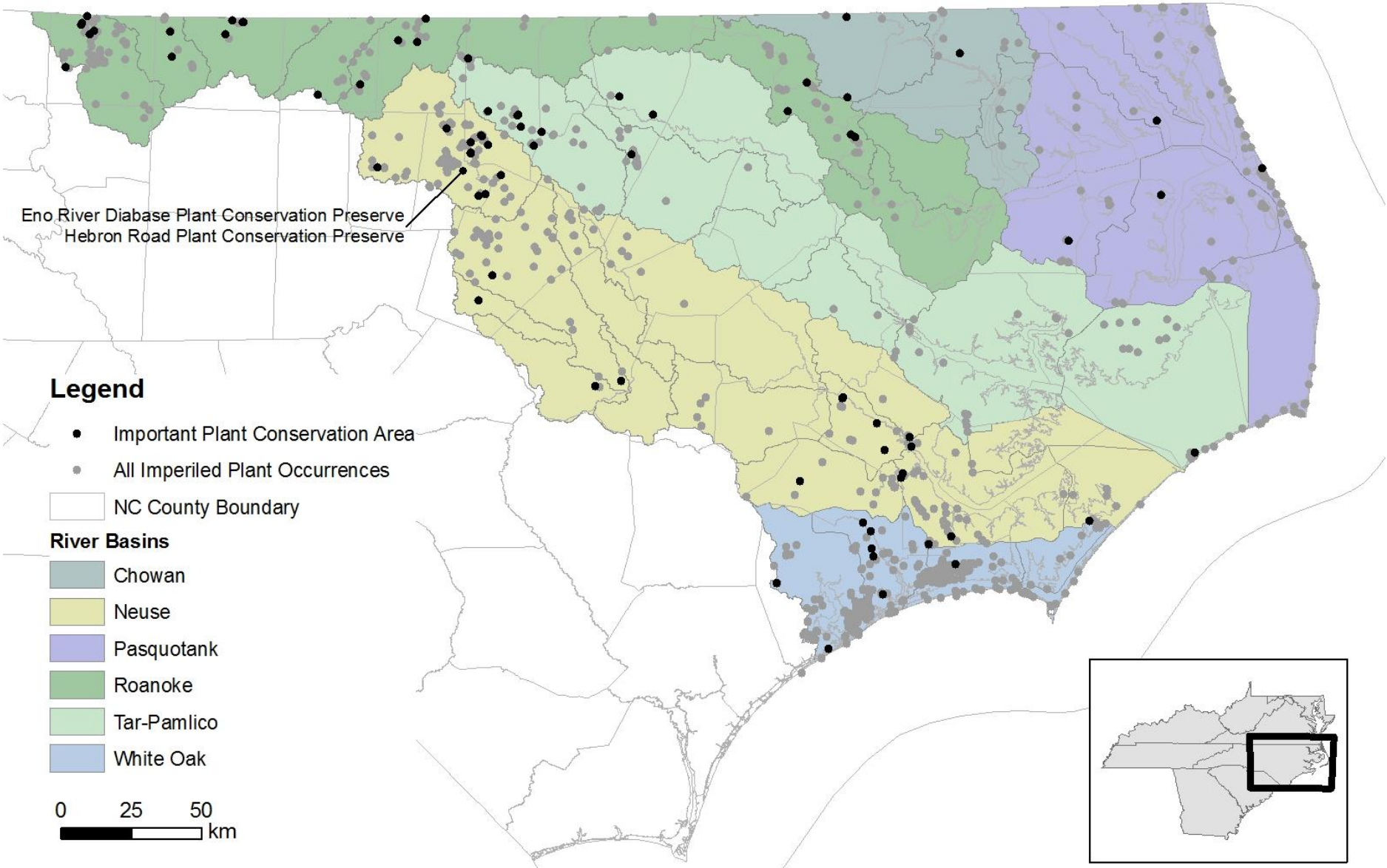
Plant Conservation Preserves

Determining Protection Status of Imperiled Species



Funding Preserves

Imperiled Plant Species Distribution in North Carolina's Albemarle-Pamlico Watershed



Albemarle-Pamlico Imperiled Plants

Imperiled Species = 172
Imperiled spp confined to Albe-Paml watershed = 27
Total known “populations” = 1117
Total known “viable” populations = 450
IPCA in the watershed = 83

Isoetes microvela

Baptisia alba

Albe - Pamlico

173 imperiled plants present (41% of statewide total)

5 federally listed spp. (*Aeschynomene virginica*, *Amaranthus pumilus*, *Cardamine micranthera*, *Echinacea laevigata*, *Rhus michauxii*, *Lysimachia asperulifolia)*

Albe – Pam Watershed

Which “habitats” are most important?

Wet longleaf savanna (18 spp)

Limesinks/open bays (17 spp)

Diabase Glades (16 spp)

“Rich woods” (13 spp)

Piedmont misc (13 spp)

Tidal marshes (12 spp)

Maritime Forest & Grasslands (11 spp)

Bottomland (black or Brown) (11 spp)

Pond & lakeshore (6 spp)

Sandhills (longleaf) (6 spp)

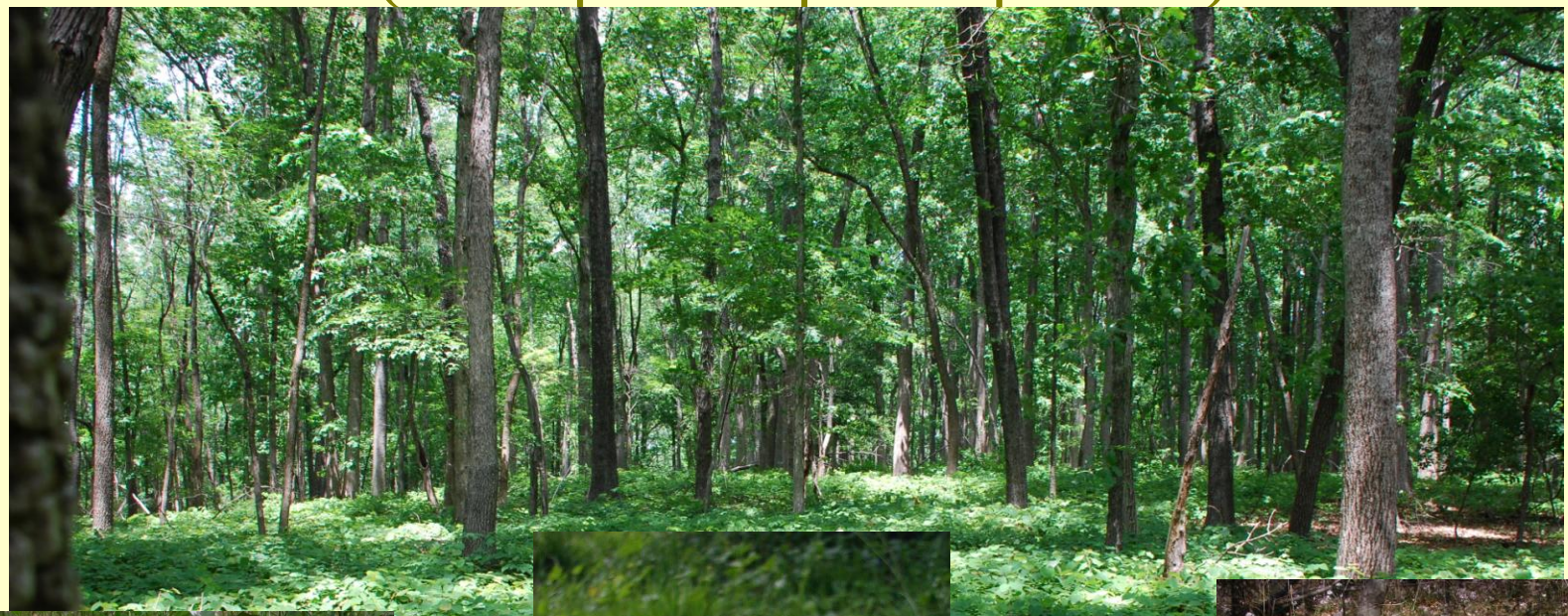
Beach/dunes (3 spp)

Granite flatrock (3 spp)

Marl outcrops (3 spp)

“rich” woods

(13 imperiled plants present)



3 imperiled Cardamine spp.

Beach/foredune

(3 imperiled plants present)

Ipomoea imperati

Amaranthus pumilus

Marl forests & outcrops

(4 imperiled spp)

Asplenium heteroresiliens

Granite flatrocks

(3 imperiled spp)

Isoetes piedmontana

Limesinks/open bays

(17 imperiled spp)

Rhexia aristosa

Litsea aestivalis

Diabase Glades

(16 imperiled plants present)

Lithospermum canescens

Phemeranthus piedmontanus

Mysterious disjunctions

(mostly NC montane with a scattered population in Alb-Pam)

Oenothera perennis

Micranthes pensylvanica

Liparis loeselii

Species “endemic” to Lejeune

(distributed elsewhere in NA outside NC)

Examples include:

Lachno minus, Eleo vivipara, Dich hirstii

PCP actually does “conservation”….

NC Longleaf Savannas

"…appear at a distance like so many pleasure gardens being intermixed with a variety of spontaneous flowers" Brickell 1737

"if the flowers are to be abundant, fire must annually destroy the old season's debris" (Wells 1939)

Fire results =

Increased flowering

More vigorous growth

Competition release

More pollinator activity

Without fire – open stands disappear
(and does the incredible diversity)

Fire suppression has had a cascading effect on habitats statewide

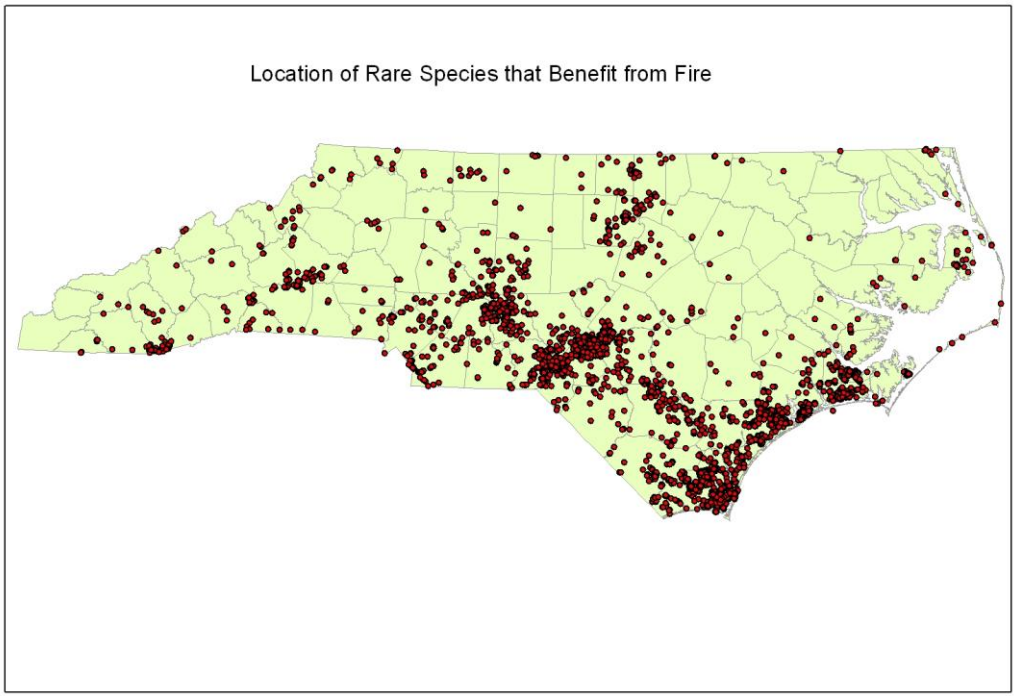
Fire was not confined to the coastal plain or longleaf systems …..

Henderson Co: “at least one third of the timberlands was burned over during the winter of 1893-94 between November and May”- Ashe 1895

Jackson Co: “the outside mountain lands, or wild lands, are yearly burned over…..it is difficult to find in these wild lands a tree that is not defective at the base from this cause” – Ashe 1895

Wake Co: “there is a considerable part of this county burned over every fall and spring” – Ashe 1895

Polk: “one reason the forest floor is so clean is that they are frequently swept by fire. At night cities with their twinkling lights seem to have sprung up as by magic on the slopes, or else lines and curves of fire gird the mountain tops” – Morley 1913



Some fire species in the Piedmont

Experimentation demonstrated case for management

Echinacea flowering

Site	2004	2008
Knap	30	637
Northside	4	246
Harrelson	25	1,196
Infinity	0	11


NCDA

Restoration Plan

Removing overburden

Creation of new stream channel

The Ditch

“Bog” creation

Bunched Arrowhead Counts

1990 – 3 subpopulations, 950 rosettes

Jul 2011 – 2 subpopulations, 33 patches, 125 rosettes

Aug 2011 – 2 subpopulations,46 patches, 1685 rosettes

Join us &
help keep this
a state we
know & love