



**Georgia's Pearly Eyes:
Local Action Yields
an Extraordinary
Conservation Success**

Open the Garden Gate - January 21, 2017

James W. Porter

**Meigs Professor of Ecology &
Georgia Museum of Natural History, Curator of Invertebrates**

A satellite view of Earth's surface, showing a mix of green landmasses and blue oceans with white clouds. The text is overlaid on this background.

(1) Home !

(2) Biodiversity Patterns

(3) Biodiversity Trends ↓

**(4) Specific Tools to Address
The Biodiversity Crisis**

**(5) An Extraordinary Example
of Conservation Success**

An aerial photograph of a coastline, showing green land on the left and blue water on the right. The water has white foam from waves breaking. The text is overlaid on the image.

7

FIRSTS FOR

GEORGIA

BUTTERFLIES

1) Largest

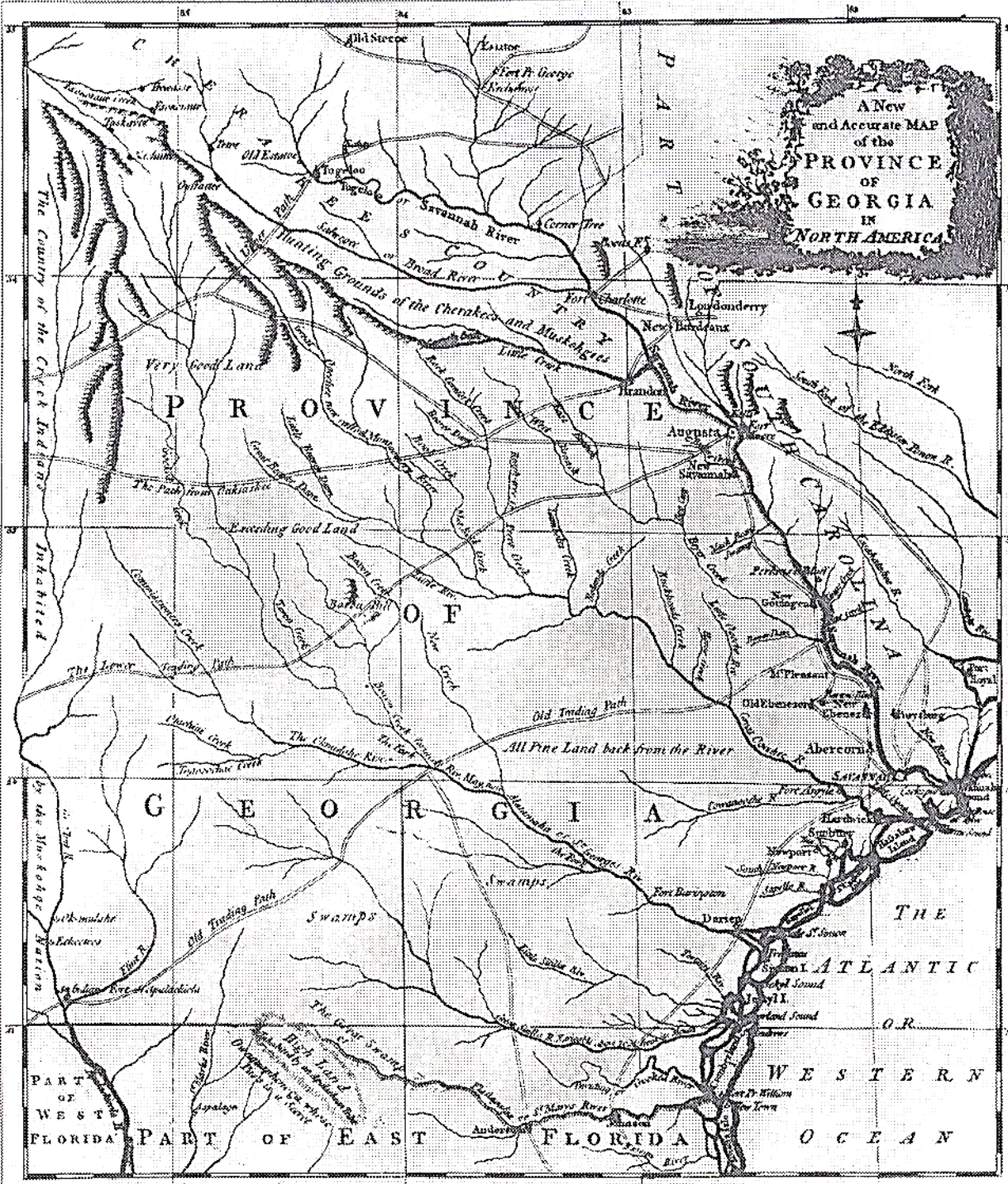


2) Smallest

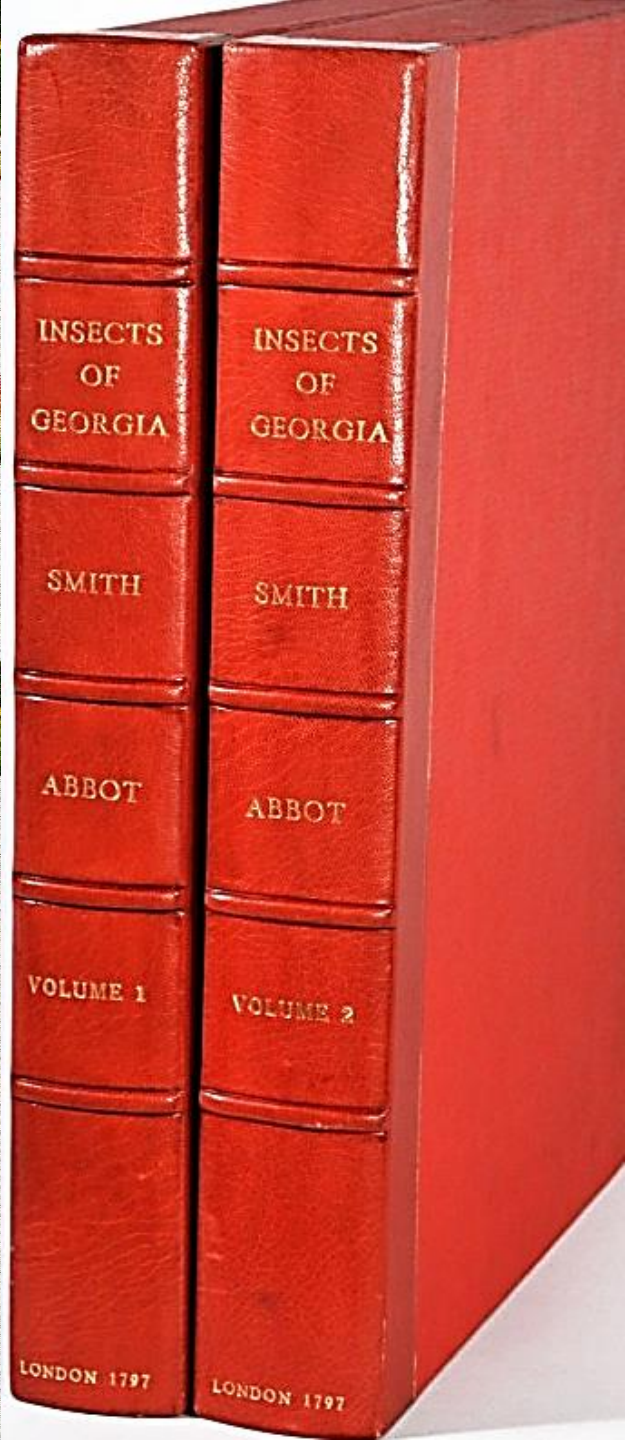
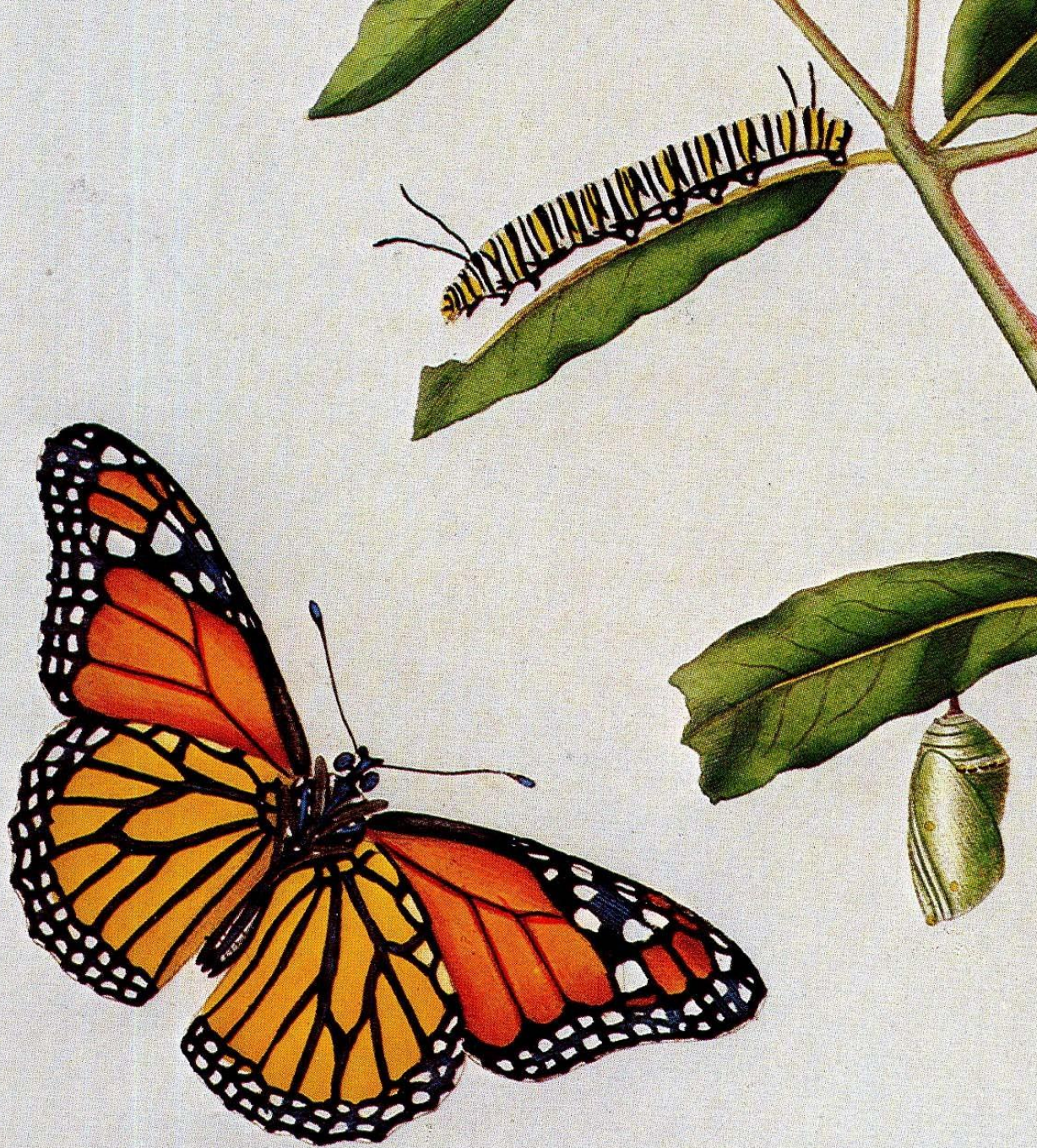


3) *Fastest*





**John Abbot
1751-1840**





JOHN ABBOT 1797

NATURAL HISTORY OF THE RARER LEPIDOPTEROUS
INSECTS OF GEORGIA

(PLATE 27)

Eurytides marcellus (ajax) (Cramer, 1777)

"Frequents blossoms. Flies very swift*. Caterpillar green
marked with black; feeds on Papaw. Changed into chrysalis 24th

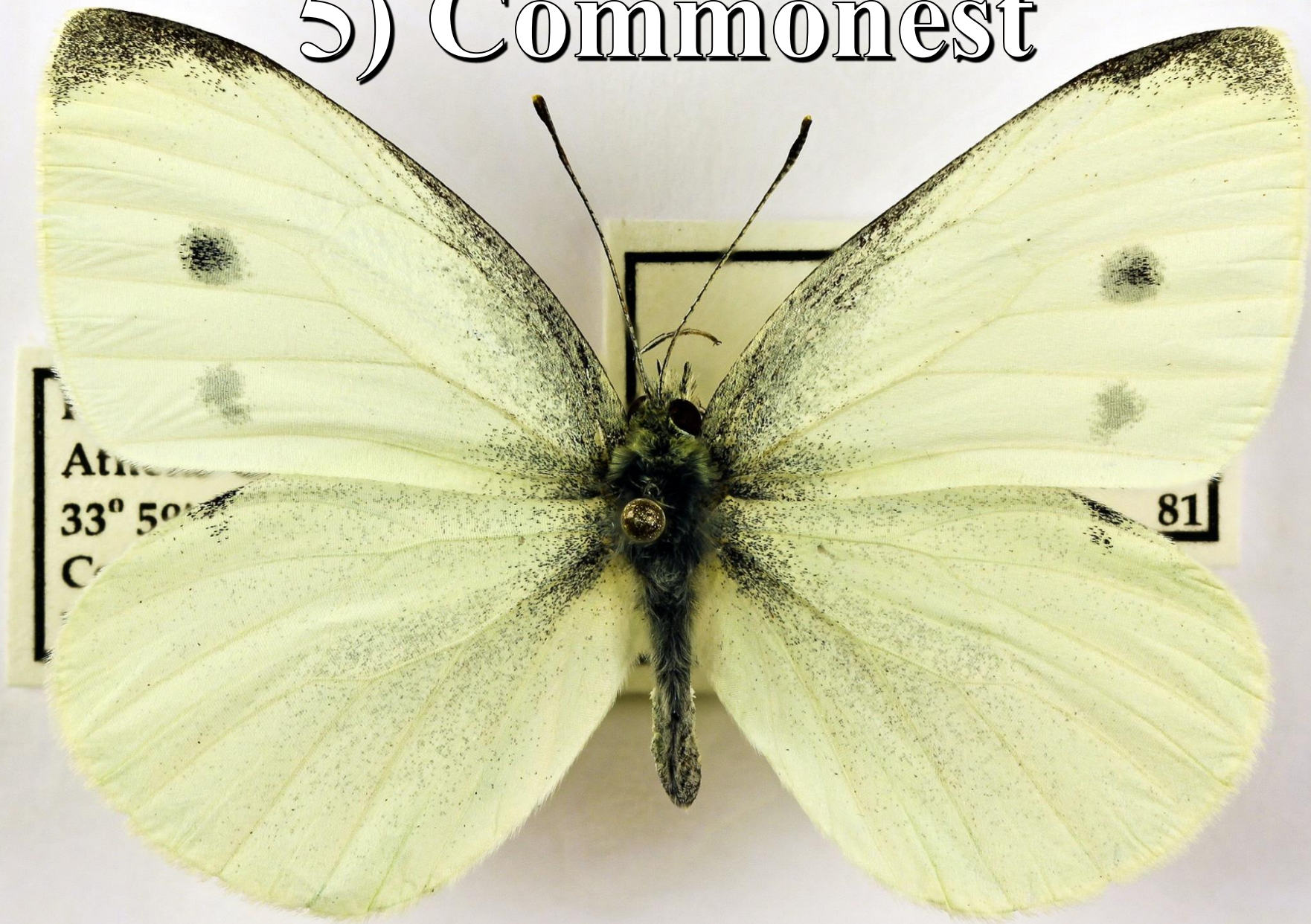
May. One chrysalis that changed in Autumn**
was bred 2nd March. Not very common. In Savannah, it is called
the Black and White Banded Swallow Tailed Butterfly.

Figure 14 Upper-side; Figure 15, Under-side."

4) Oldest



5) Commonest



Konstverkl

målerikonser

senbäck

Konservator förbunda...
vation of history and...



6) Farthest



7) 'Mimicriest'



Largest



Farthest



Oldest



Kenny Ridge Comm.
Athens-Clarke Co., Ga.
33° 59' 27" N, 83° 29'
Coll. J.W. Porter
Date: July 7, 2008

Commonest



Kenny
Athens
33° 59' 27"
Coll.
Date

Smallest

Leptodes cassinus
Cramer, 1775)
Pinyon Blue
Kenny Ridge Comm.
Athens-Clarke Co., Ga.
33° 59' 27" N, 83° 29'
Coll. J.W. Porter
Date: March 3, 2008



Fastest



'Mimicriest'



State





Georgia has the highest percent (10%) of its butterfly fauna described by one person.

**UGA Professor
Joseph E. LeConte
(1823-1901)**

1st-art-gallery.com

This watermark does not appear on the painting





Loc: Tallassee Land (Conte)
Athens-Clark
Coll.: J.W. Porter
Date: April 8, 1837



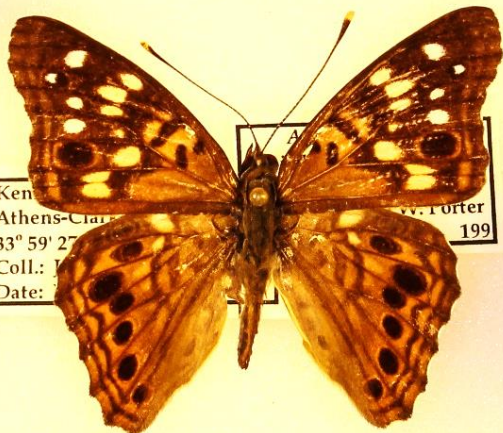
Tallassee Land (Conte)
Athens-Clark
Coll.: J.W. Porter
Date: April 8, 1837



Athens-Clark
Coll.: J.W. Porter
Date: [illegible]



State Botanic Garden
Athens-Clark
Coll.: J. Maunder
Date: July 20, 1833



Kentucky
Athens-Clark
Coll.: J.W. Porter
Date: [illegible]



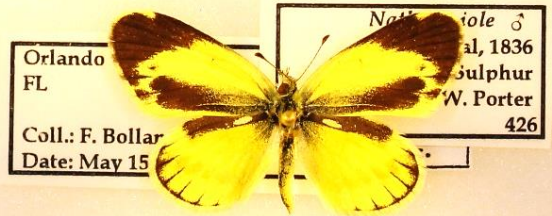
Railroad
Roanoke
Co. Va.
Date: [illegible]



Sappony
McIntosh
Coll.: J.W. Porter
Date: [illegible]



Swain
Aiken
Coll.: J. M.
Date: [illegible]



Orlando
FL
Coll.: F. Bollard
Date: May 15, 1836

T N
N Georgia

What is our biodiversity now?

Dalton
Gainesville
Marietta
Atlanta
Athens
East Point
Newnan
Augusta
Gwin
La Grange
Macon
Werner
Statesboro
Savannah

S O U
C A R O

Columbia



A L A B A M A

G E O R G I A

Savannah



86°

Tallahassee

84°

F L O R I D A

82°

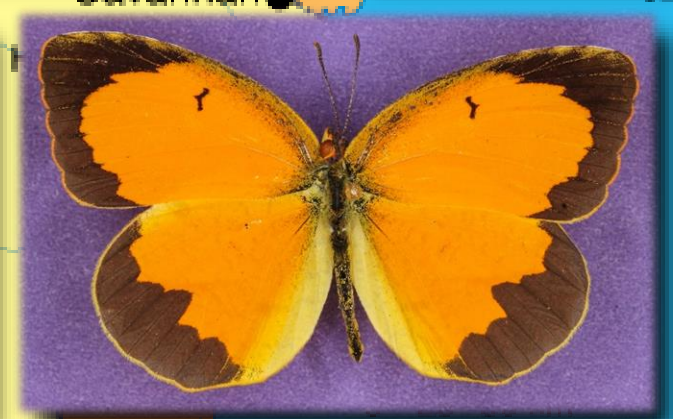
80°

N Georgia

90 spp. of butterflies

90 spp. of skippers

2,500 spp. moths



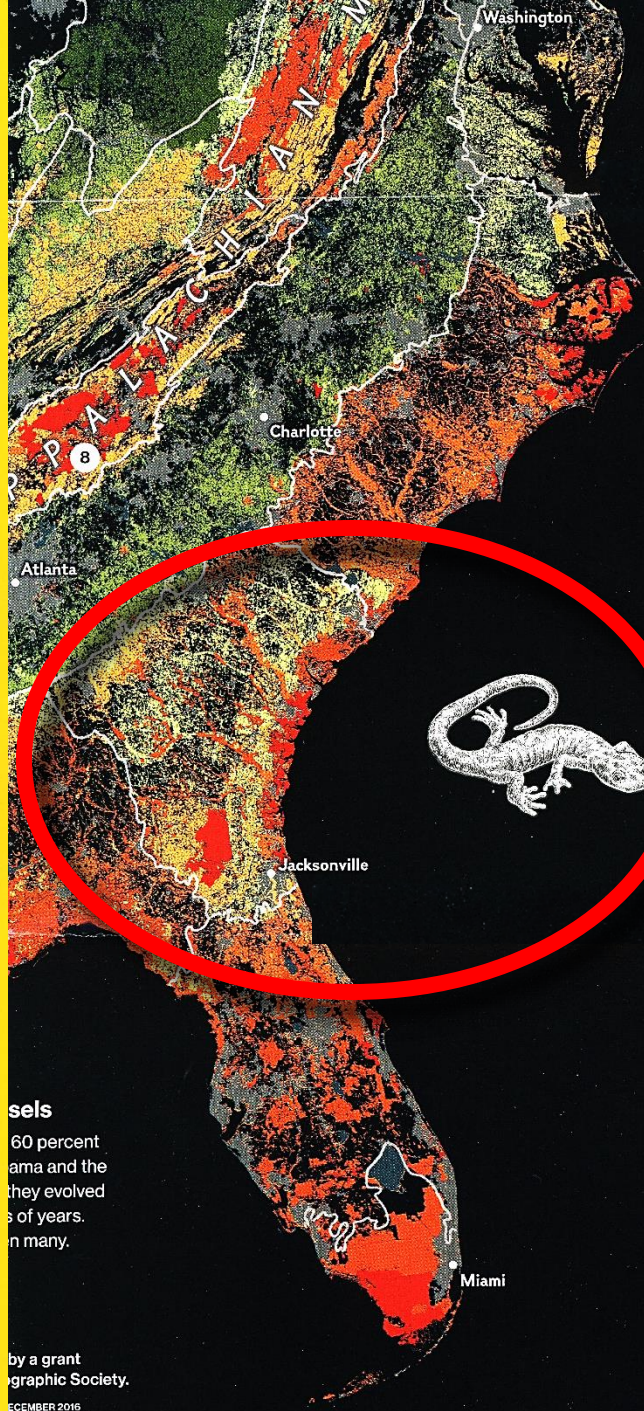
ORANGUTANS | PUTIN GENERATION | FUTURE OF PARKS

NATIONAL GEOGRAPHIC

THE HEALING POWER OF FAITH



DECEMBER 2016



8 Green salamander

It's endangered in North Carolina, where it favors the crevices of rocky outcrops. The eastern U.S. is home to the largest diversity of salamander species in the world.

Models

60 percent of the population in the Amazon and the Andes evolved over thousands of years. In many...

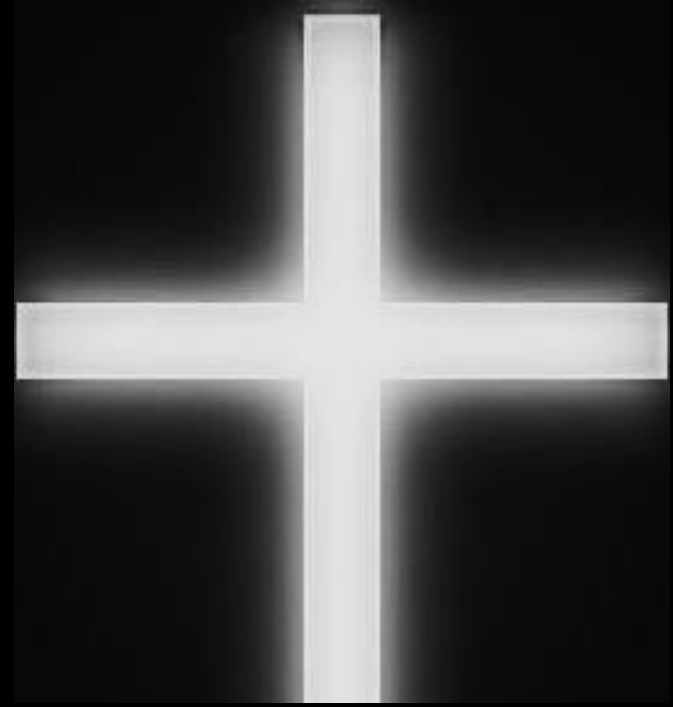
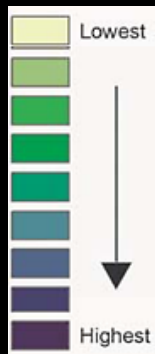
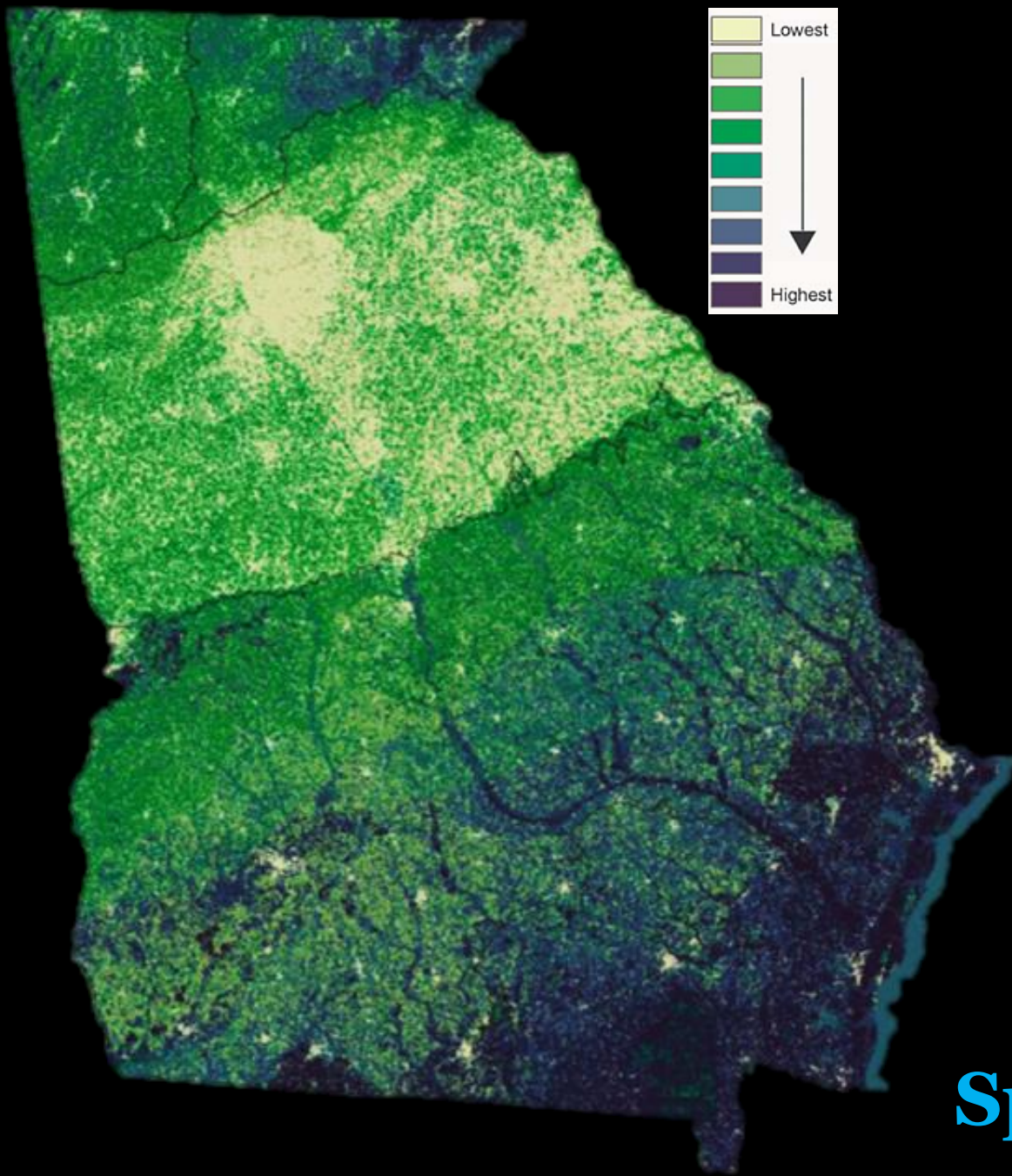
by a grant from the National Geographic Society.

DECEMBER 2016

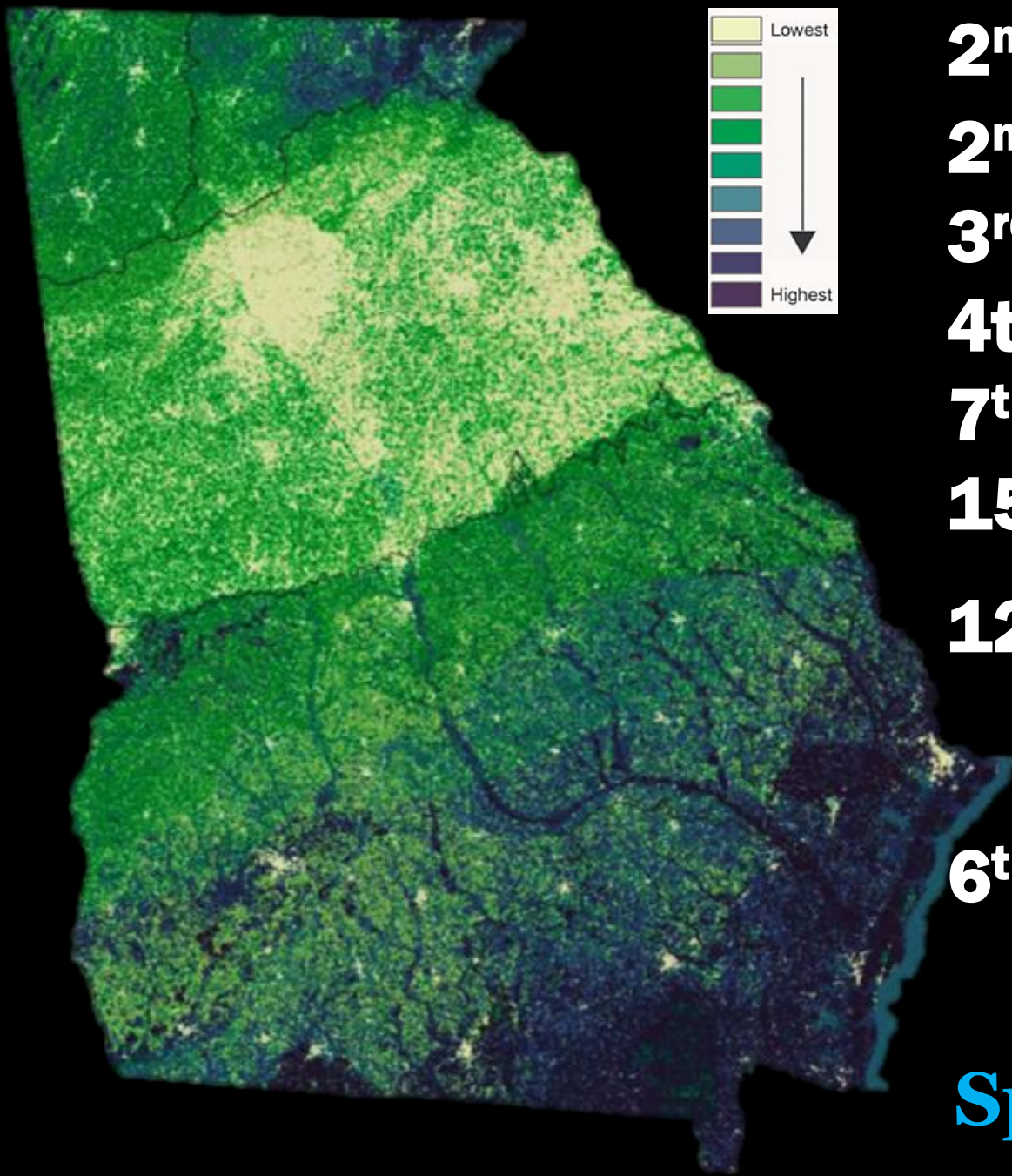
PERRY

Beyond the Map

With the help of a geographic information system (GIS), many kinds of data can be layered on a map and used to guide development and conservation decisions. The habitat data shown here are one kind; other layers might show watersheds, parks, farms, or historic sites. Local communities can choose the layers to fit their priorities. On the reverse side, see how I list...



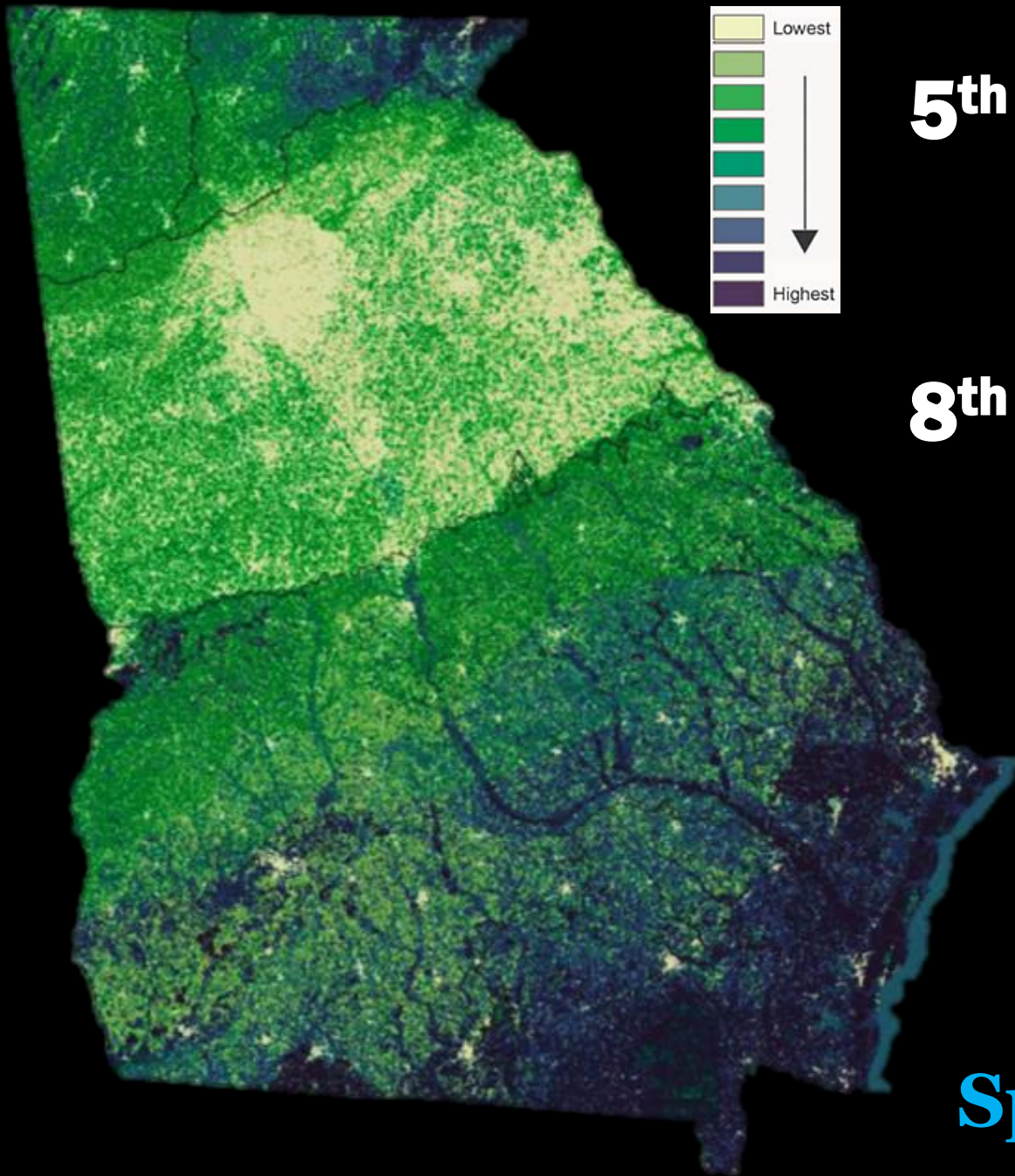
Georgia's Species Richness



2nd in lepidopterans
2nd in amphibians
3rd in freshwater fish
4th in reptile diversity
7th in plant diversity
15th in bird diversity
12th in endemics

6th overall biodiversity

**Georgia's
Species Richness**

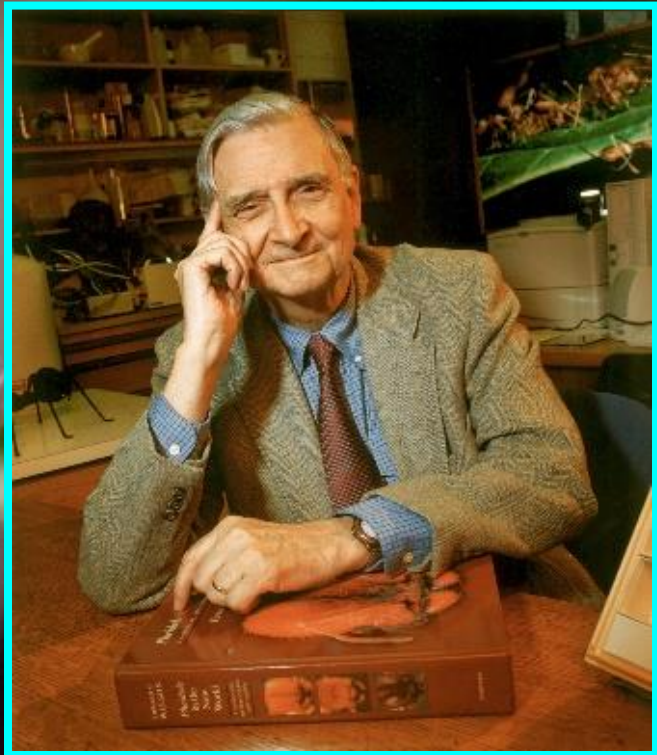


**5th in terms of
extinctions**

**8th in the number
of globally
imperiled spp.**

**Georgia's
Species Richness**

- ✓ 10 yrs, 10% lost **Biodiversity**
- ✓ 25 yrs, 25% lost **Creisiss**
- ✓ 75 yrs, 50% lost



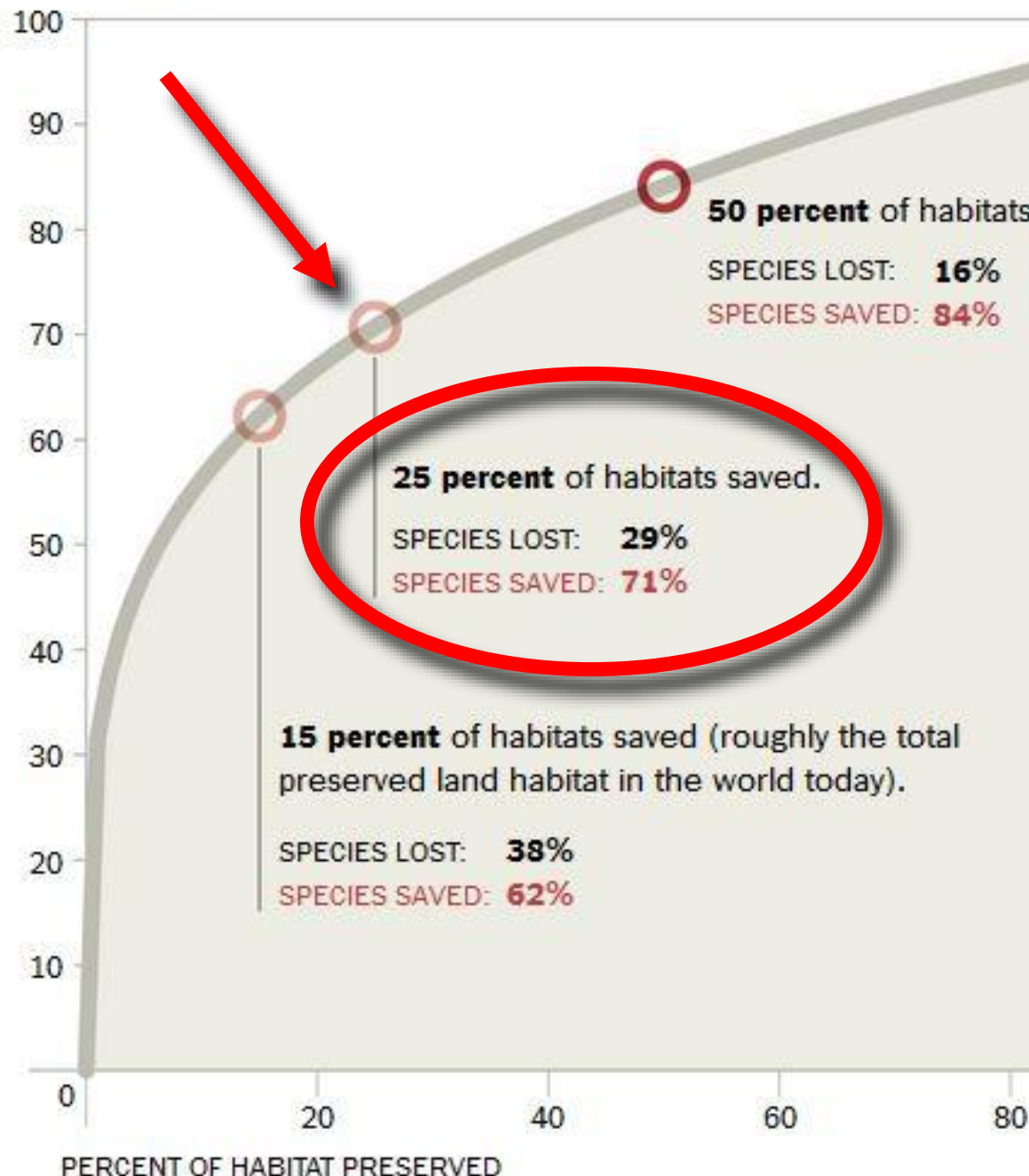
To address the Biodiversity Crisis:

The greatest threat to the diversity
of life on earth is habitat loss.



PERCENT OF SPECIES SAVED

25% land conservation

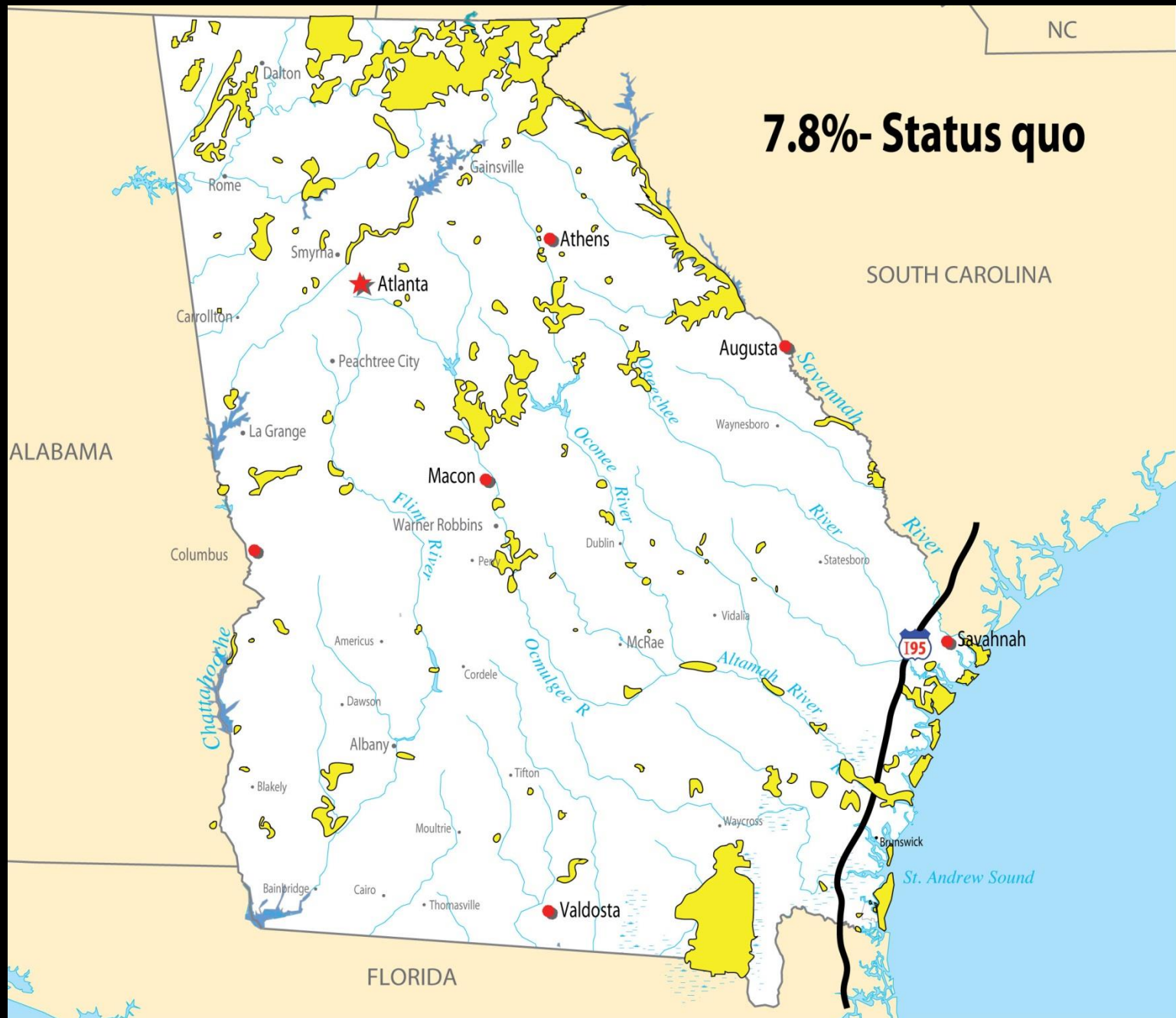


NC

7.8%- Status quo

SOUTH CAROLINA

ALABAMA



Columbus

FLORIDA

195

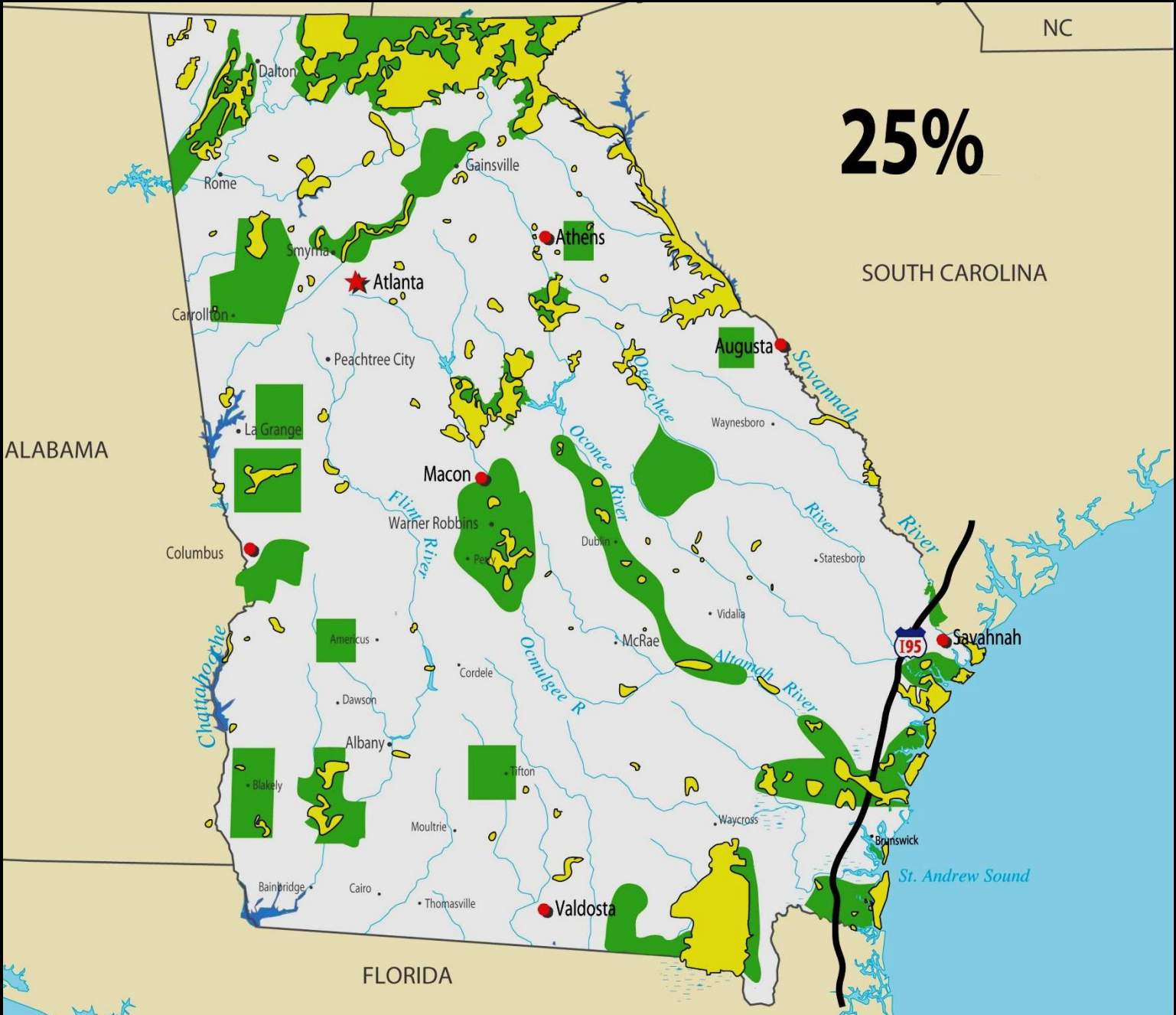
St. Andrew Sound

NC

25%

SOUTH CAROLINA

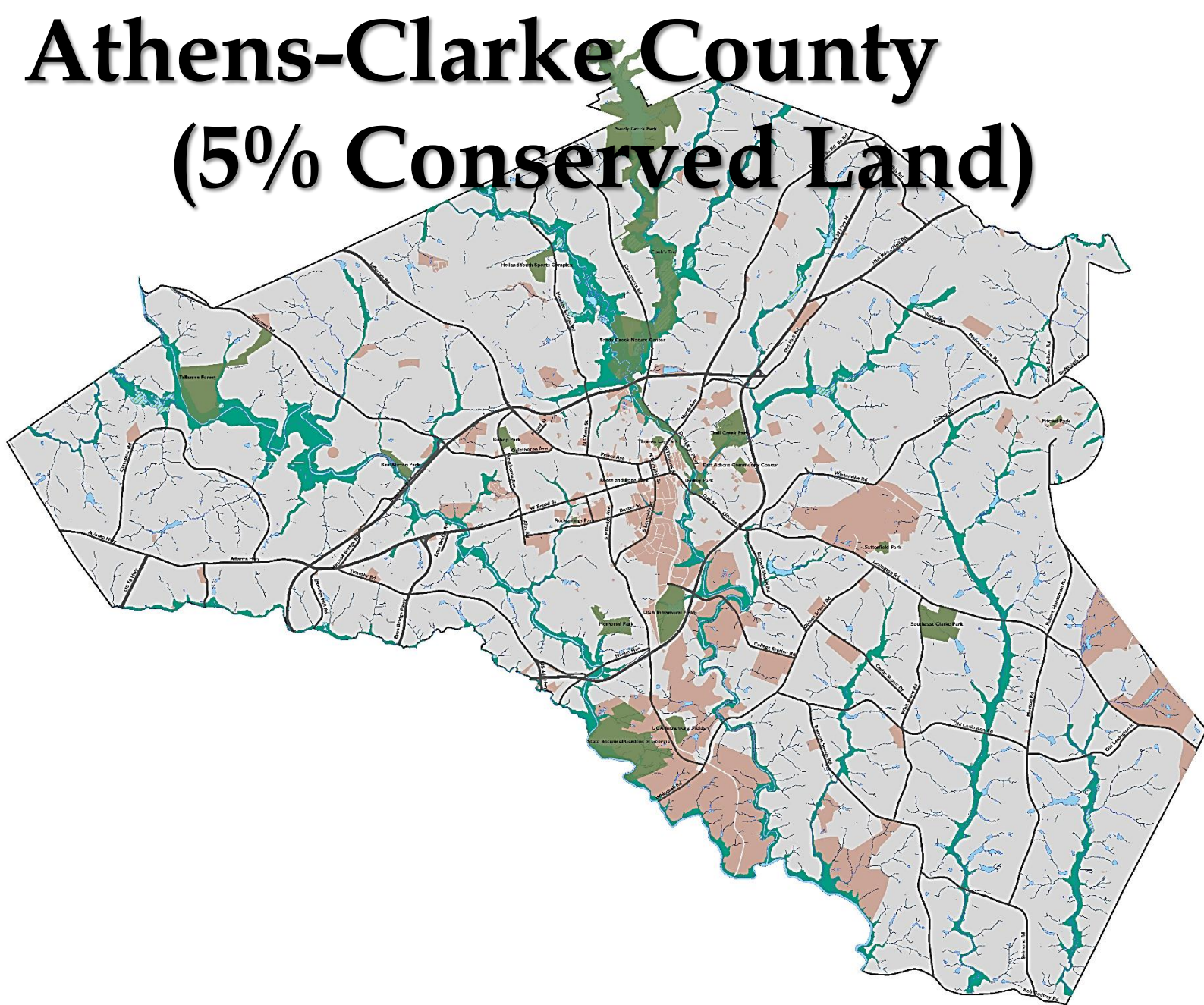
ALABAMA



195

FLORIDA

Athens-Clarke County (5% Conserved Land)



LEGEND

- Parks
- Major Roads
- Dams
- Shoals
- Surface Water
- Wetland
- 100 year Floodplain
- Tributaries
- Government Owned Parcels



ENVIRONMENTAL FEATURES

Athens - Clarke County

August 11, 2016 Sheet 1 of 1

Prepared by
ACC Leisure Services
Office of Park Planning

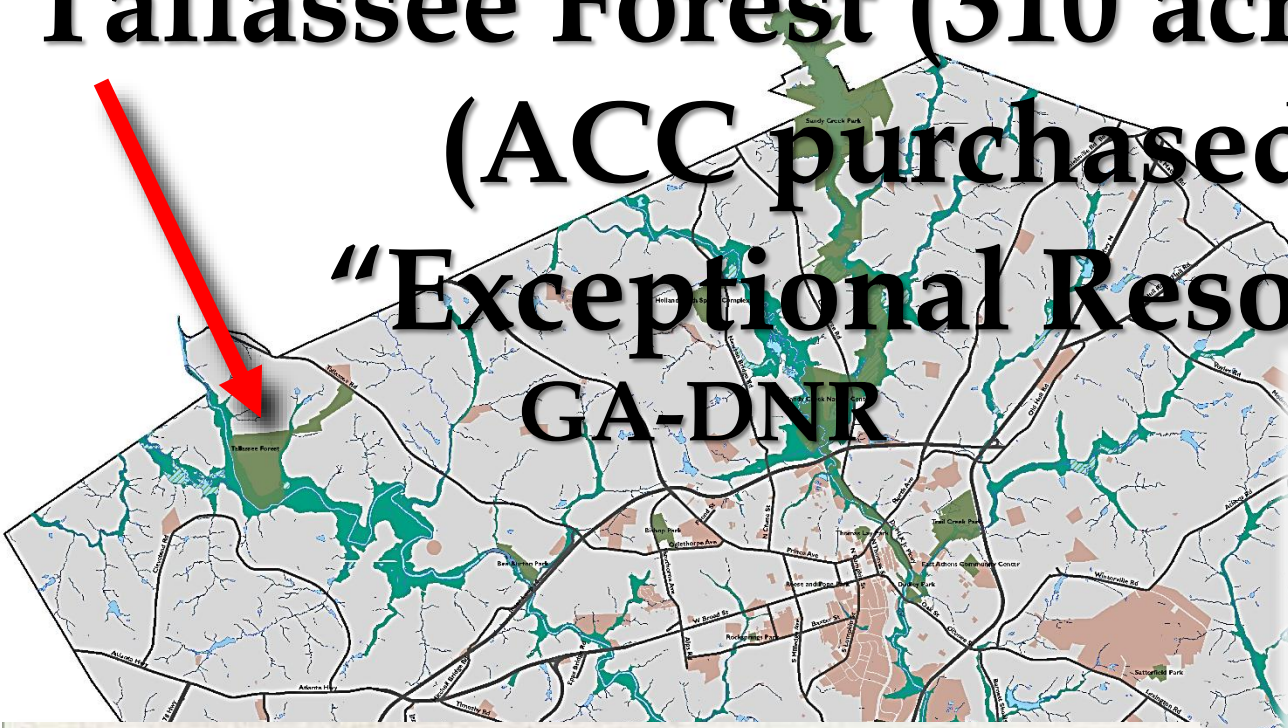
Talvassee Forest (310 acres) (ACC purchased, 2012)



“Exceptional Resource Area”

GA-DNR

This purchase increased ACC conserved land by 25%



ATHENS BANNER-HERALD

SUNDAY, OCTOBER 23, 2011

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Old trees, clear streams — a rare tract

By Lee Steiner
lsteiner@bannherald.com

CONSERVATIONISTS WORKING TO SAVE LAND IN A-C

Local and state conservationists hope to save what they believe may be the largest chunk of undeveloped private land in Athens-Clarke County, or maybe in much of Northeast Georgia — a 570-acre tract slated to go on the real estate market next year.

Partly bounded by Talvassee Road, the Kenney Ridge conservation subdivisions and the Middle Oconee River, the land is remarkable for features such as century-old forests, dozens of butterfly species and clear streams, said retired University of Georgia ecologist Karen Porter, one

of the people working to preserve the acreage.

The oldest available aerial photographs of Athens-Clarke County show the land was forested back in 1926, when much of the county, and the rest of Northeast Georgia, was covered in eroding cotton farms.

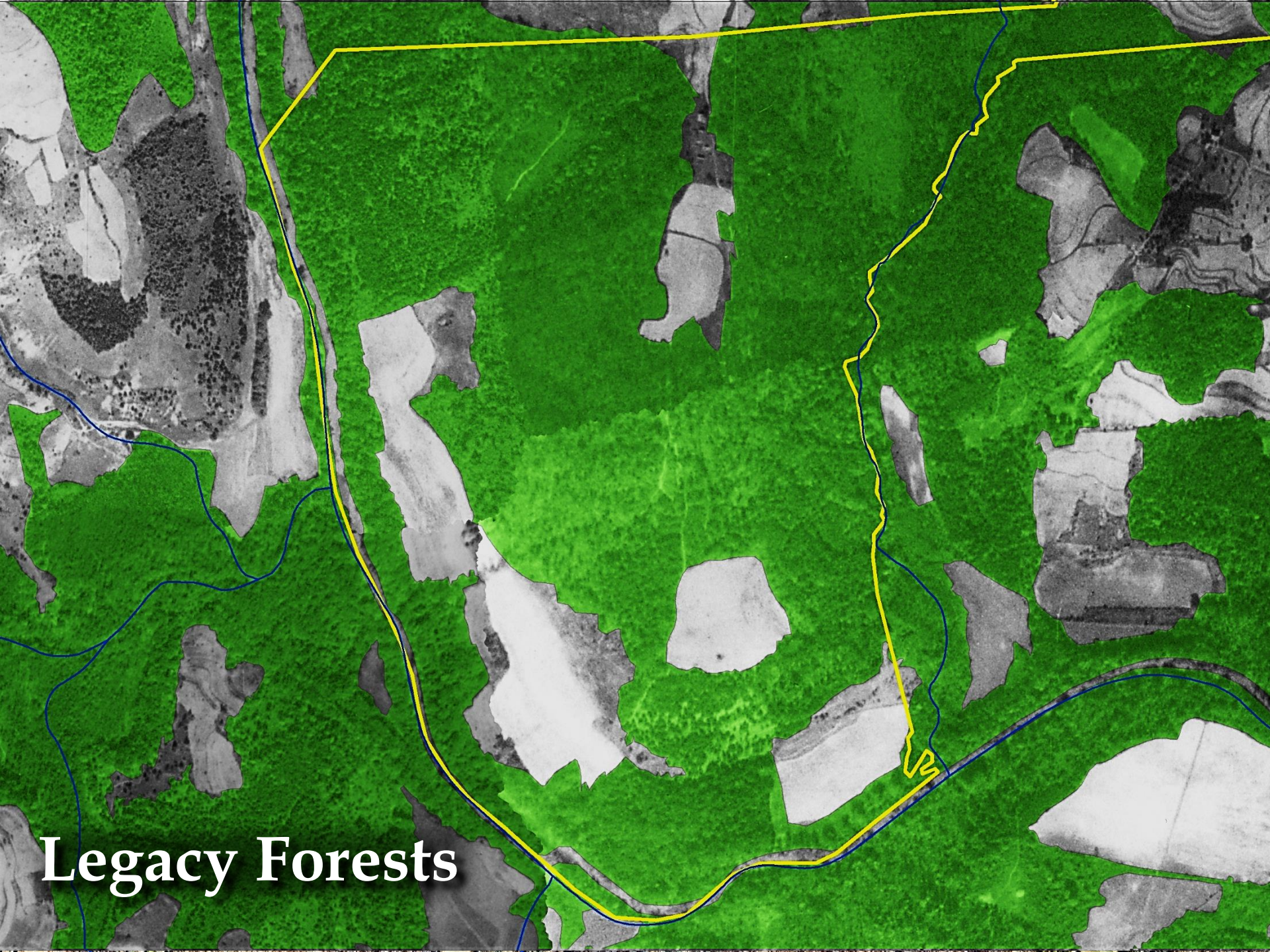
The tract doesn't even have much private, the invasive shrub that plagues river floodplains throughout Northeast Georgia.

And besides its ecological value, the tract was an important — even sacred — spot for the Creek Indians who once lived in the area, according to Athens historian Stephen Scurry,

See CONSERVATIONISTS on A5



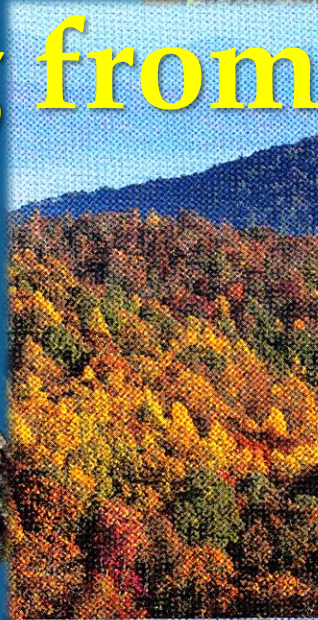
A 570-acre chunk of undeveloped land in Athens-Clarke County features century-old forests and clean-running creeks. • Lee Callaway/Correspondent



Legacy Forests

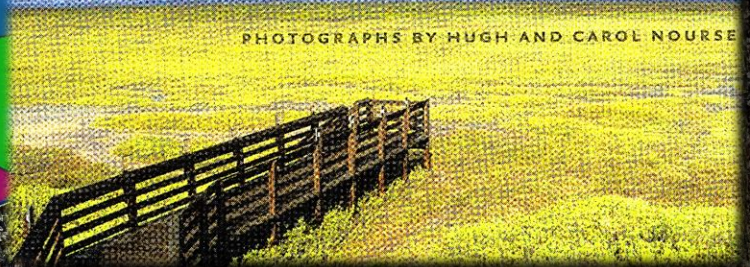
- 
- Legacy forests \geq 50 yrs old.
 - 75% of the Tallassee Tract is covered by Legacy Forests.
 - 50% is covered by Legacy Forests \geq 75 years old.
 - Since many trees imaged in the 1938 survey are \geq 75 years old, some of these forests are \geq 150 yrs. old.
- Legacy Forests

- Tallassee has a large number of what the GA DNR calls High Priority Habitats, which are disappearing from the Piedmont.

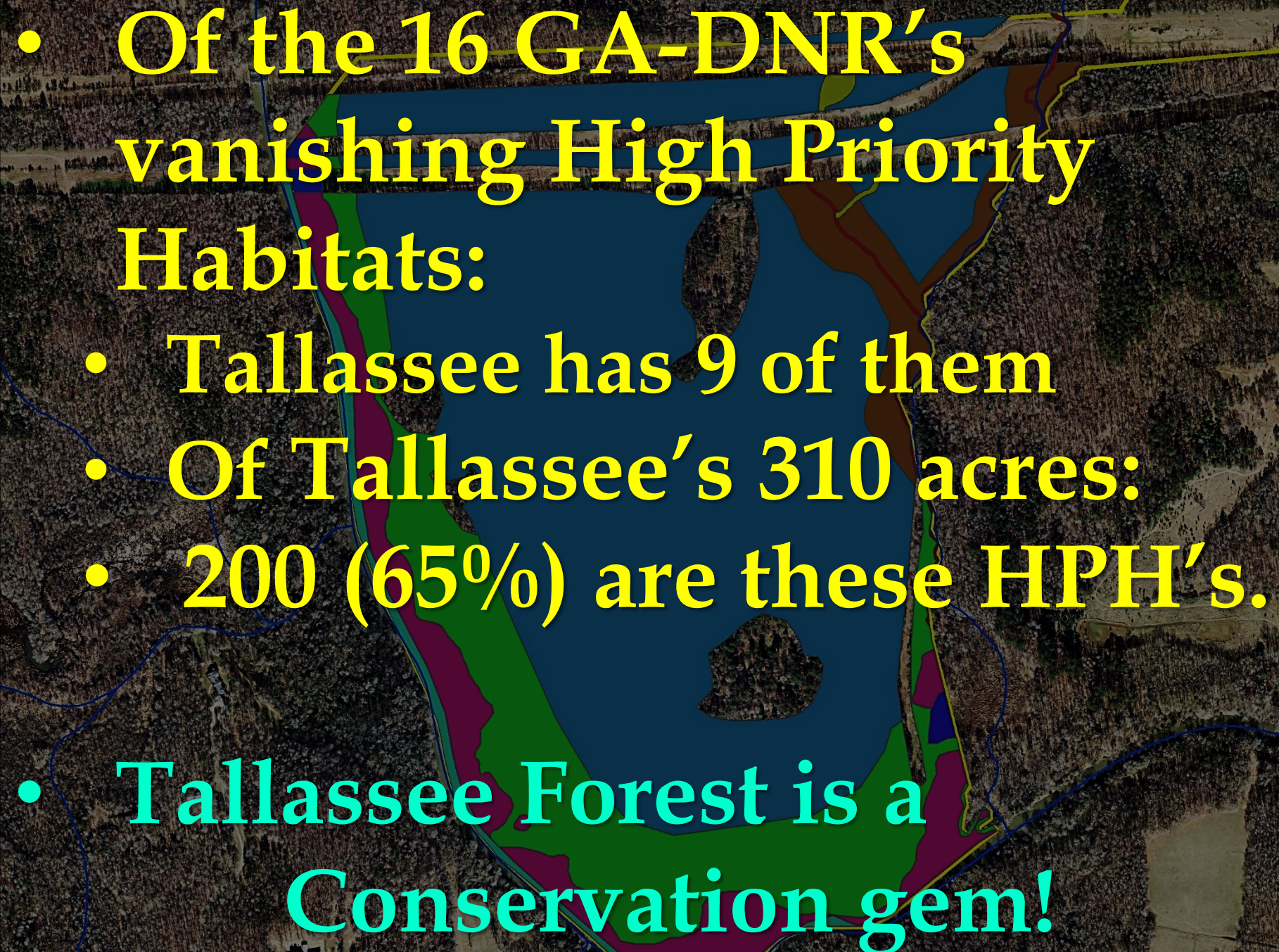


The Natural Communities of Georgia

LESLIE EDWARDS | JONATHAN AMBROSE | L. KATHERINE KIRKMAN



PHOTOGRAPHS BY HUGH AND CAROL NOURSE

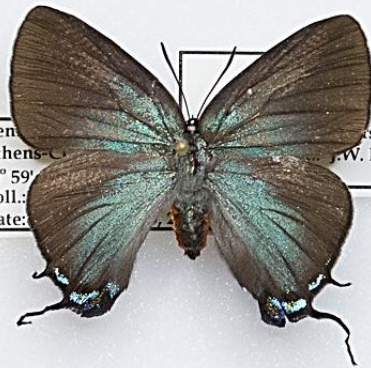
- 
- Of the 16 GA-DNR's vanishing High Priority Habitats:
 - Tallassee has 9 of them
 - Of Tallassee's 310 acres:
 - 200 (65%) are these HPH's.
 - Tallassee Forest is a Conservation gem!





Great Purple Hairstreak

Tallassee Forest



Kenney R. Lycaenidae
Athens-Clarke Co. (1777)
33° 59' 27" N. Hairstreak
Coll.: J.W. Porter
Date: August 124

Henry's Elfin

Tallassee Forest



Lycaenidae
Kenney R. *Allophrys henrici*
Athens-Clarke Co. (Robinson, 1867)
33° 59' 27" N. Henry's Elfin
Coll.: J.W. Porter
Date: April 129

Wood Nymph

♀ (top) ♂ (bottom)

Tallassee Forest



Lycaenidae
Kenney R. *Allophrys henrici*
Athens-Clarke Co. (Robinson, 1867)
33° 59' 27" N. Henry's Elfin
Coll.: J.W. Porter
Date: April 129

Canebrake Skipper

Tallassee Forest



Hesperiidae
Kenney R. *Amblyscirtes ceculapinus*
Athens-Clarke Co. (Clausen, 1793)
33° 59' 27" N. Canebrake Skipper
Coll.: J.W. Porter
Date: September 272



Green Hairstreak

Tallassee Forest



Lycaenidae
Kenney R. *Allophrys gymneus*
Athens-Clarke Co. (Gübner, 1819)
33° 59' 27" N. Green Hairstreak
Coll.: J.W. Porter
Date: August 128

Gemmed Satyr

Under (L) / Upper (R)
Tallassee Forest



Kenney R. Lycaenidae
Athens-Clarke Co. (1777)
33° 59' 27" N. Gemmed Satyr
Coll.: J.W. Porter
Date: April 112



Kenney R. Lycaenidae
Athens-Clarke Co. (1777)
33° 59' 27" N. Gemmed Satyr
Coll.: J.W. Porter
Date: September 113

Latitudinal Gradients



Sexual Dimorphism

Wing shape

Wing Coloration

Sibling spp.













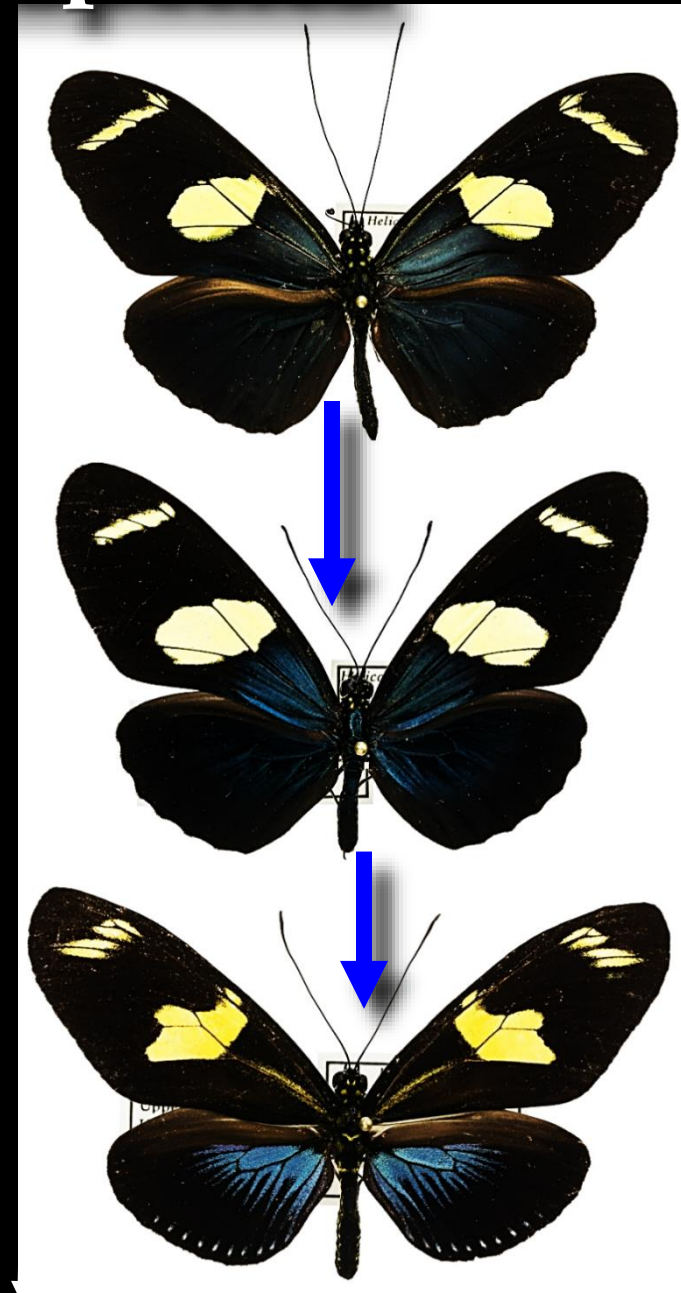
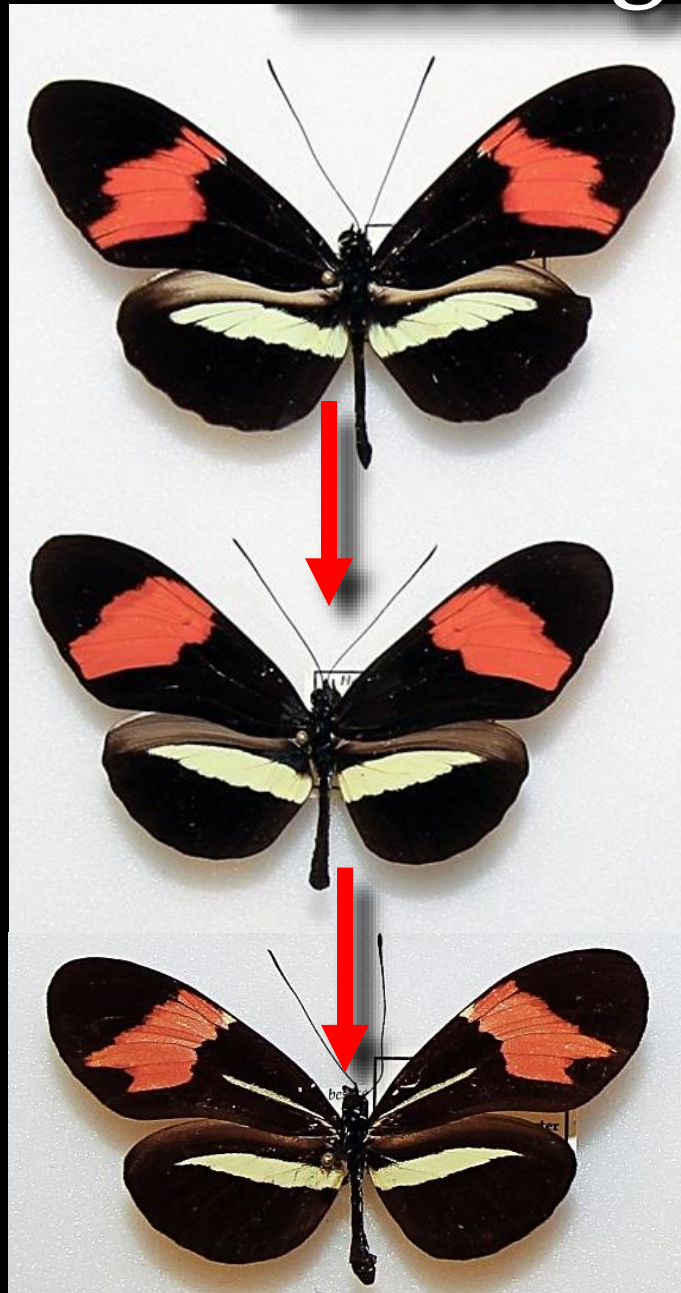
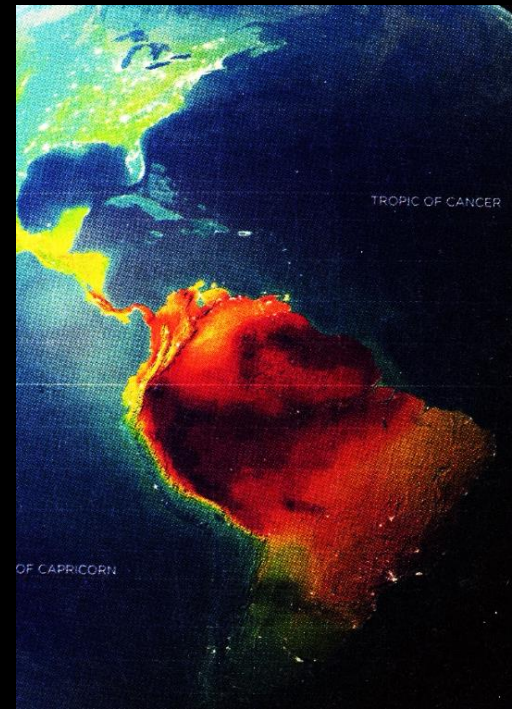


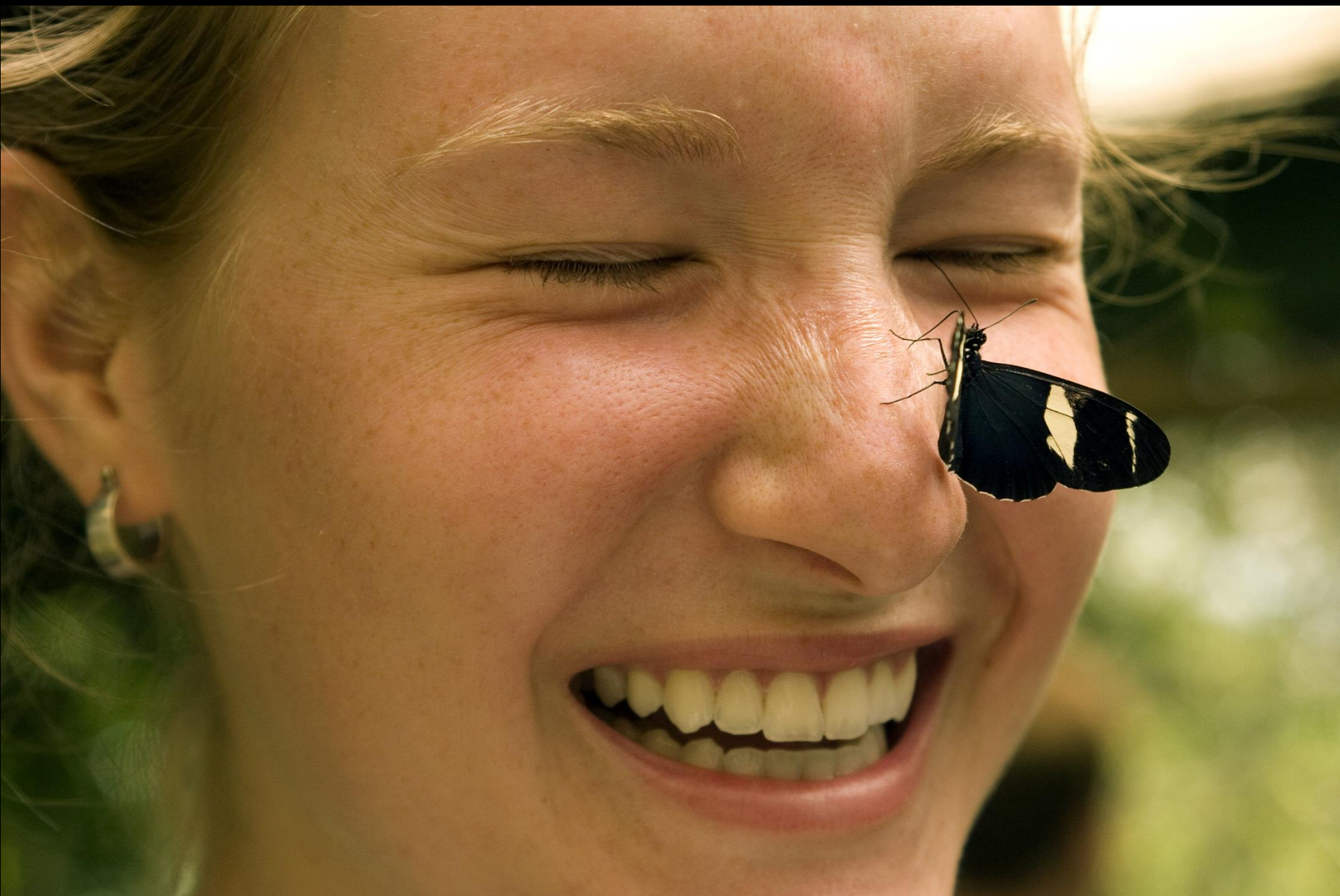






Sibling Species





Enodia anthedon

Northern Pearly Eye

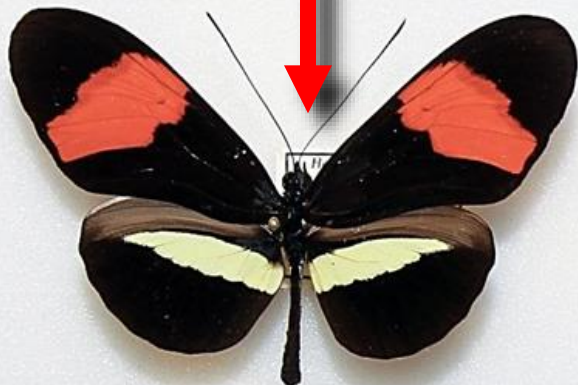
A.H. Clark, 1936



Enodia creola

Creole Pearly Eye

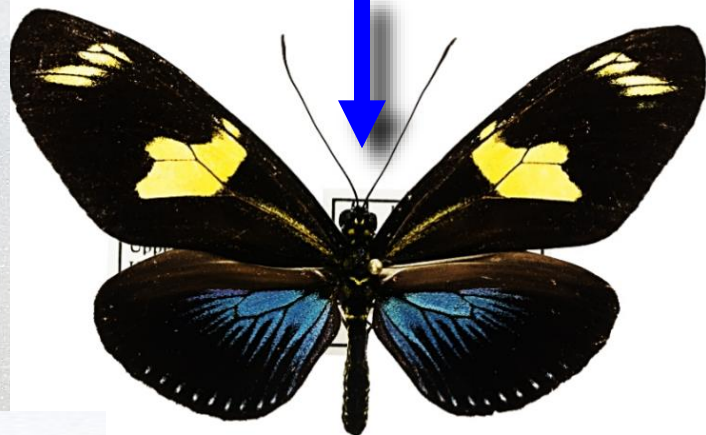
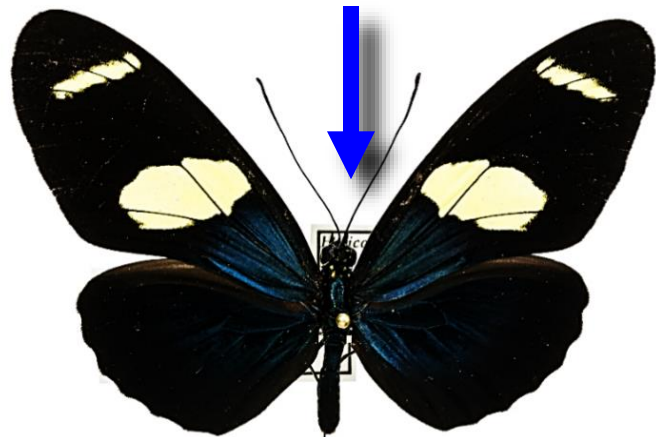
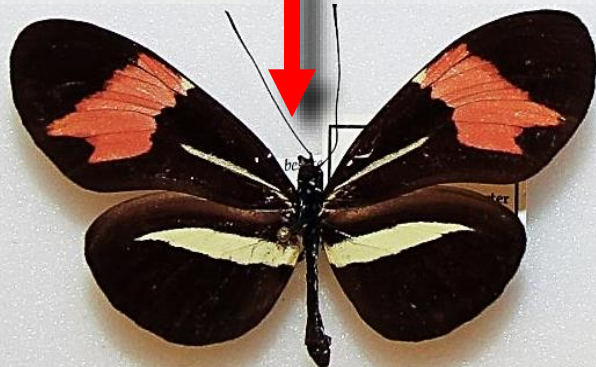
(Skinner, 1897)



Enodia portlandia

Southern Pearly Eye

(Fabricius, 1781)



Enodia anthedon

Northern Pearly Eye

A.H. Clark, 1936



Enodia creola

Creole Pearly Eye

(Skinner, 1897)



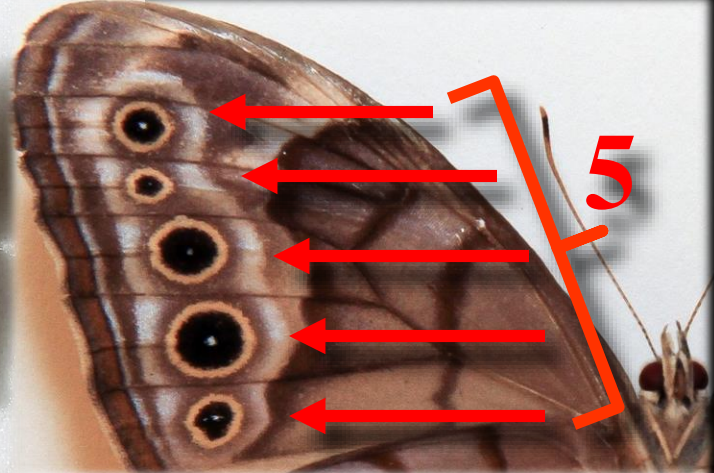
Enodia portlandia

Southern Pearly Eye

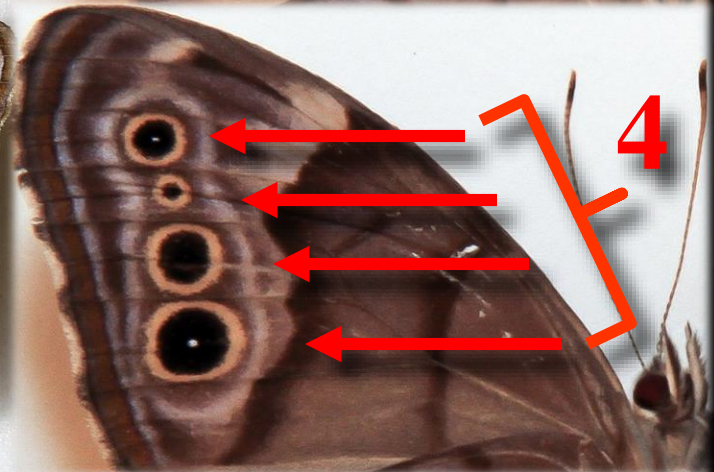
(Fabricius, 1781)



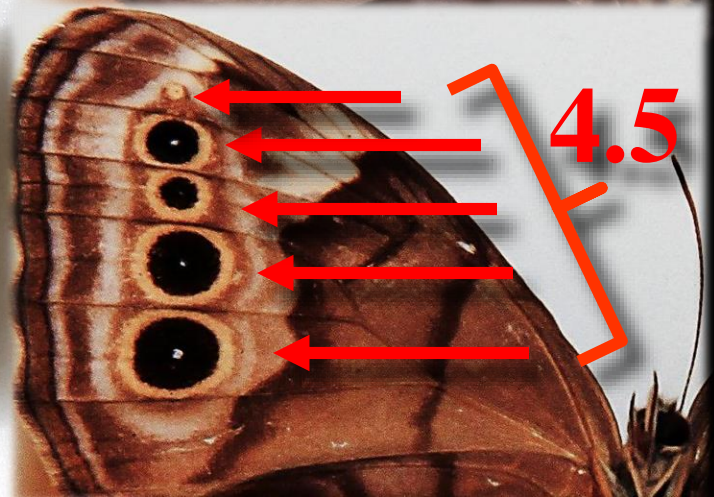
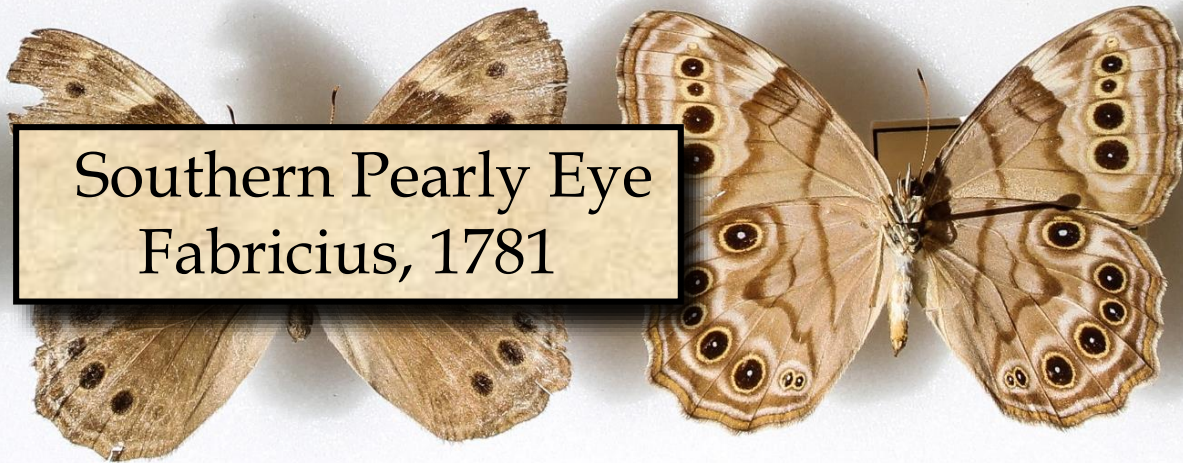
Northern Pearly Eye
A.H. Clarke, 1936



Creole Pearly Eye
Skinner, 1897



Southern Pearly Eye
Fabricius, 1781



GEORGIA, GA
Athens

J. R. M.

July

1888



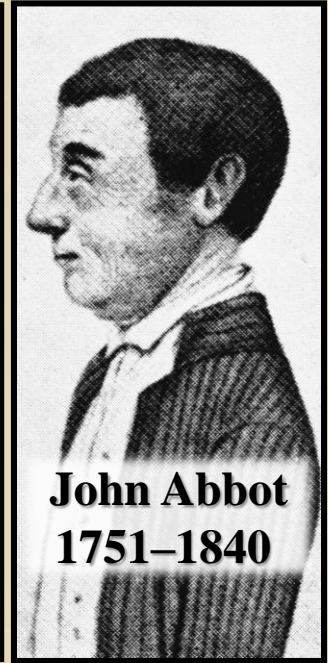
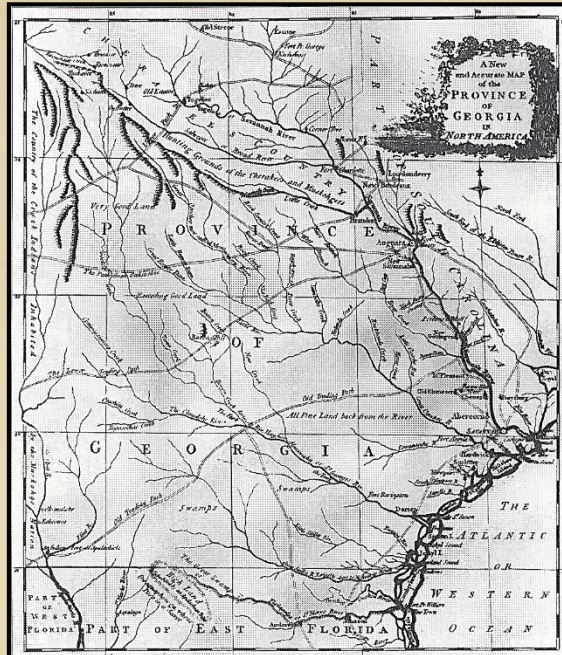
Northern Pearly Eye (Clarke, 1936)



Creole Pearly Eye (Skinner, 1897)

A close-up photograph of a Southern Pearly Eye moth. The image shows a portion of its brown, textured wing with distinct veins. A long, thin, brown antenna is extended from the top right towards the left. The background is a plain, light-colored surface.

Southern Pearly Eye (Fabricius, 1781)

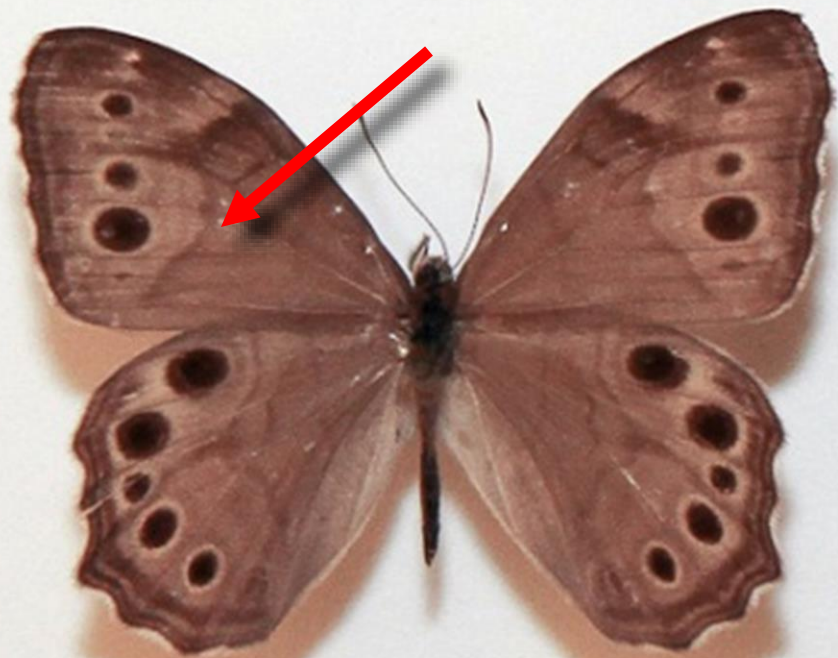
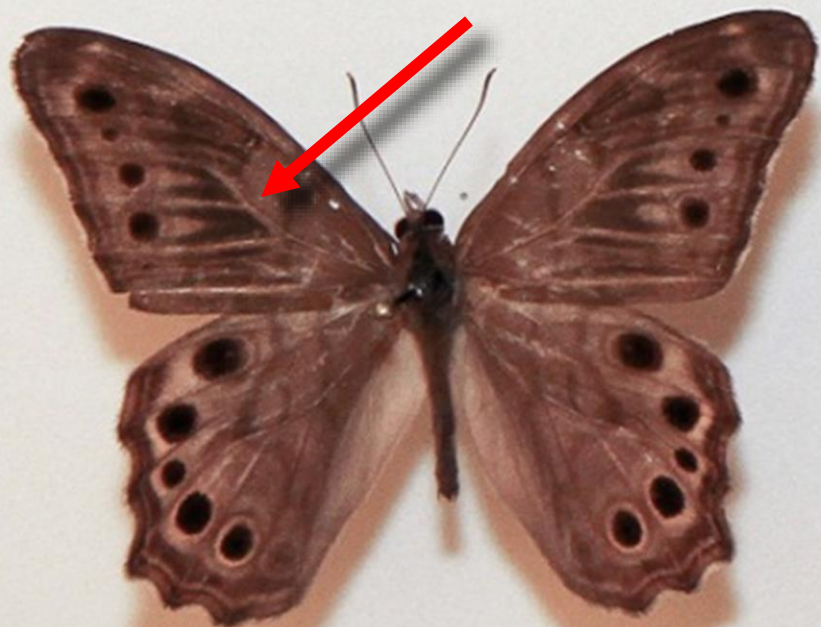


**John Abbot
1751–1840**

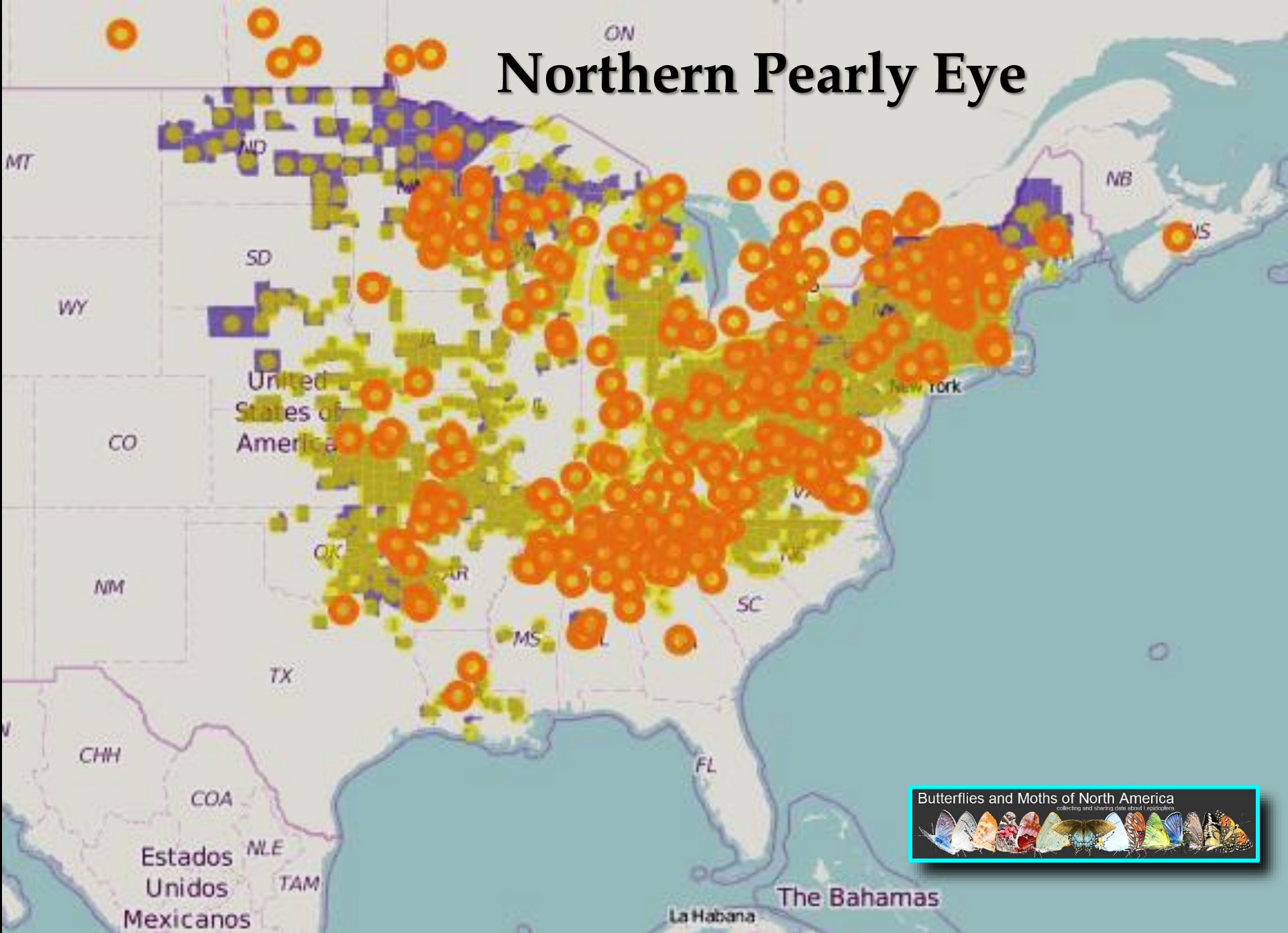


Southern Pearly Eye (Fabricius, 1781)

John Abbot, 1791



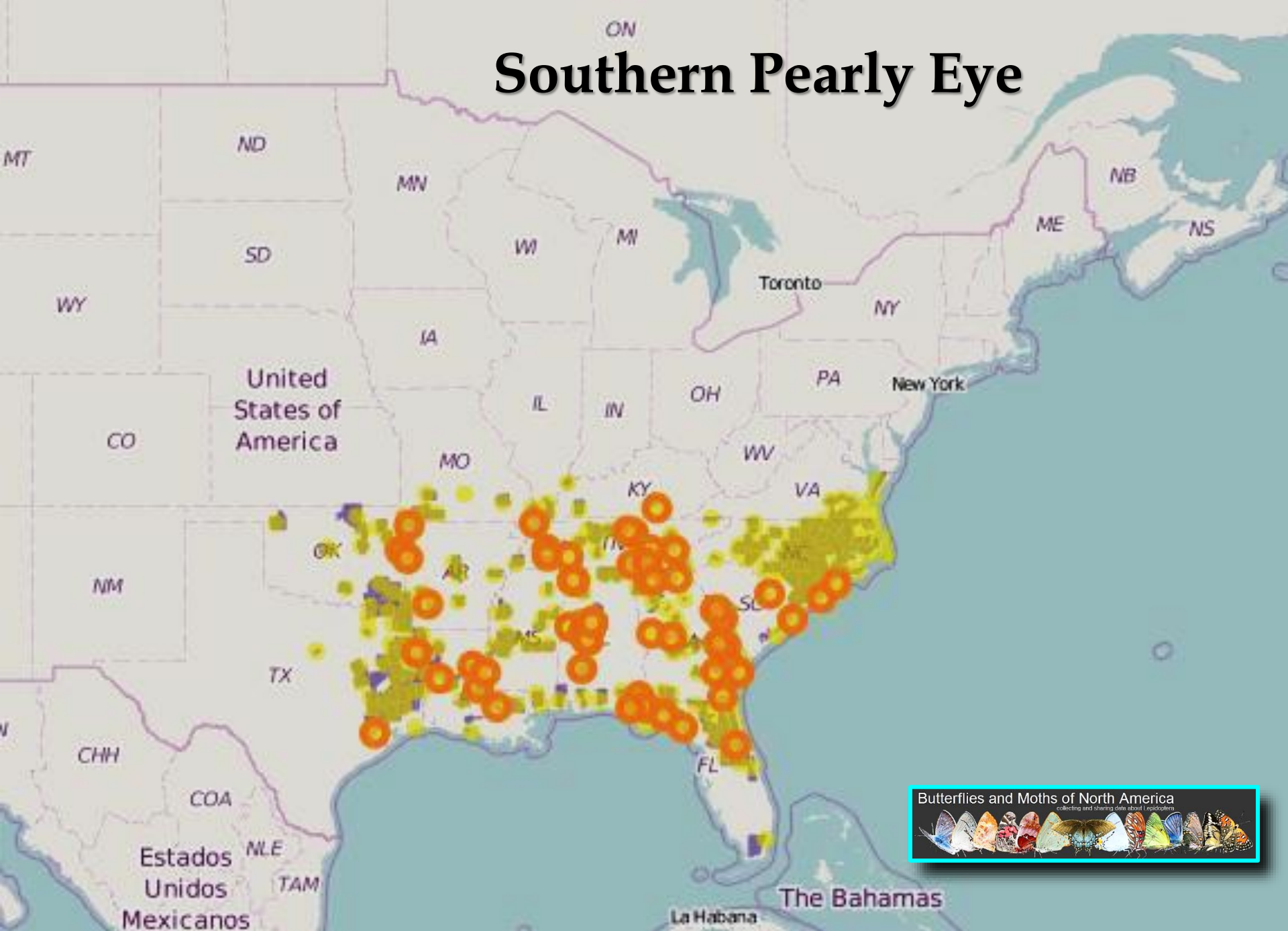
Northern Pearly Eye

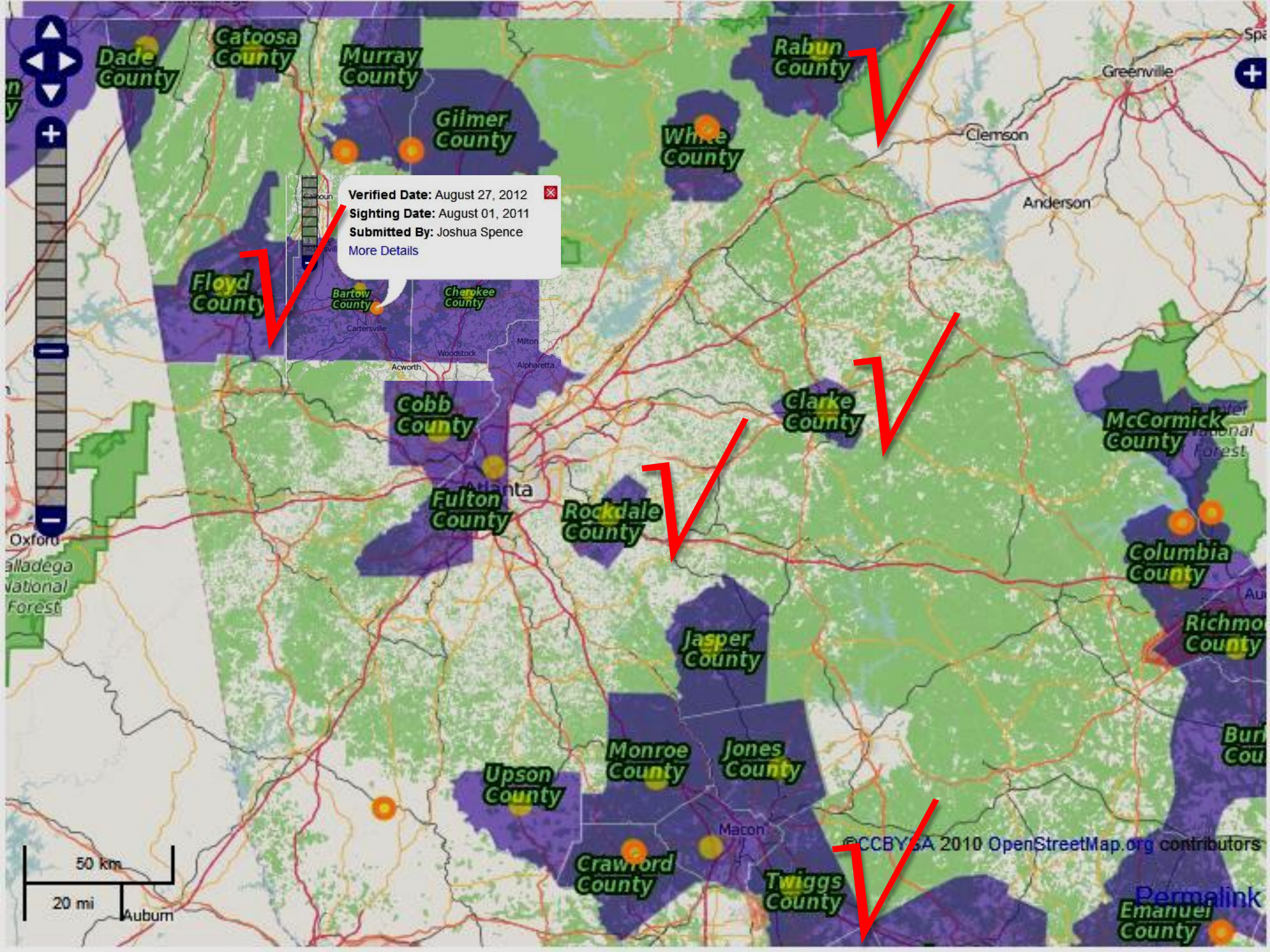


Creole Pearly Eye



Southern Pearly Eye

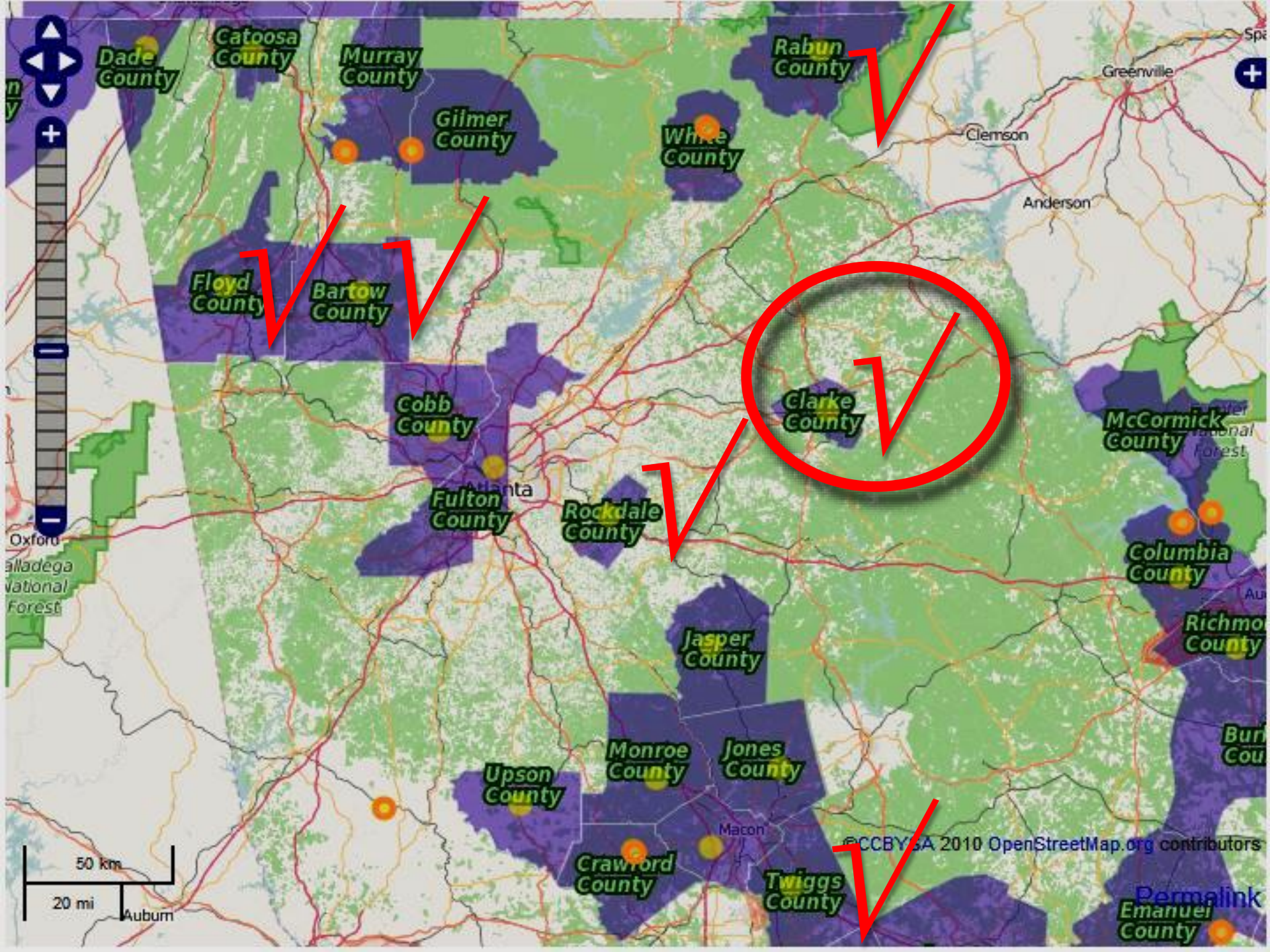




Verified Date: August 27, 2012
Sighting Date: August 01, 2011
Submitted By: Joshua Spence
[More Details](#)

50 km
20 mi
Auburn

©CCBY-SA 2010 OpenStreetMap.org contributors





Official Environmental Areas Map of Athens-Clarke County, Georgia

Tallasee Forest
Athens-Clarke County, Georgia

Inventories, Baseline Data and Recommendations by Contributors

Compiled by Dr. Karen Porter
Odum School of Ecology, University of Georgia
for the Oconee Rivers Greenway Commission
November 12, 2014

NOTE: State waters have a state mandated 25 foot buffer per O.C.G.A. 12-7-3(16).

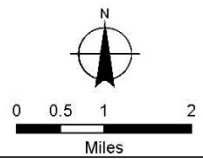
- Legend
- 10'
 - 100'
 - 100'
 - 150' Buffer
 - Industrial
 - University Of
 - Recharge Area
 - Water Supply Watershed
 - Intake Point
 - 7 Mile Radius Line Upstream from Intake Point



***Protected Stream Defined - A stream channel with perennial or intermittent stream flow is one which satisfies any one of the following criteria:**

1. Any stream identified on the most recent edition of the Natural Resource Conservation Service Soil Survey Map; or
2. A channel that originates from a spring, seep, or other groundwater outflow not caused by construction, that sustains water flow during periods of high water tables; or
3. A point within a stream channel with a drainage area of 25 acres or more.

In the event of a disagreement as to whether or not any of the above criteria have been met, or in the event that evidence supporting or negating the existence of a protected stream is inconclusive, then evidence from a physical inspection of the site applying the adopted "Stream Classification Protocol" shall be used to determine the presence of a protected stream.



***H*^o Athens-Clarke Co. is the only place in the world (outside the tropics) with this kind of a sibling species complex (3 indistinguishable species on the wing at the same time and in the same place).**



***T*^o After more than 1,000 hours of careful scholarship, I have been unable to falsify this hypothesis.**

Characteristic

Northern

Creole

Southern

Habitat



Characteristic

Northern

Creole

Southern

Habitat



Behavior



Characteristic

Northern

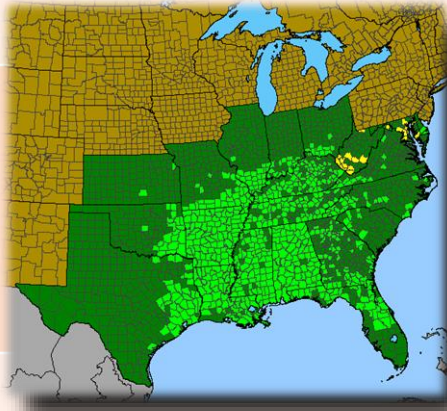
Creole

Southern

Habitat

Behavior

Plant



L. creola
dorsal
Athens, Ga
others reared
to adult.

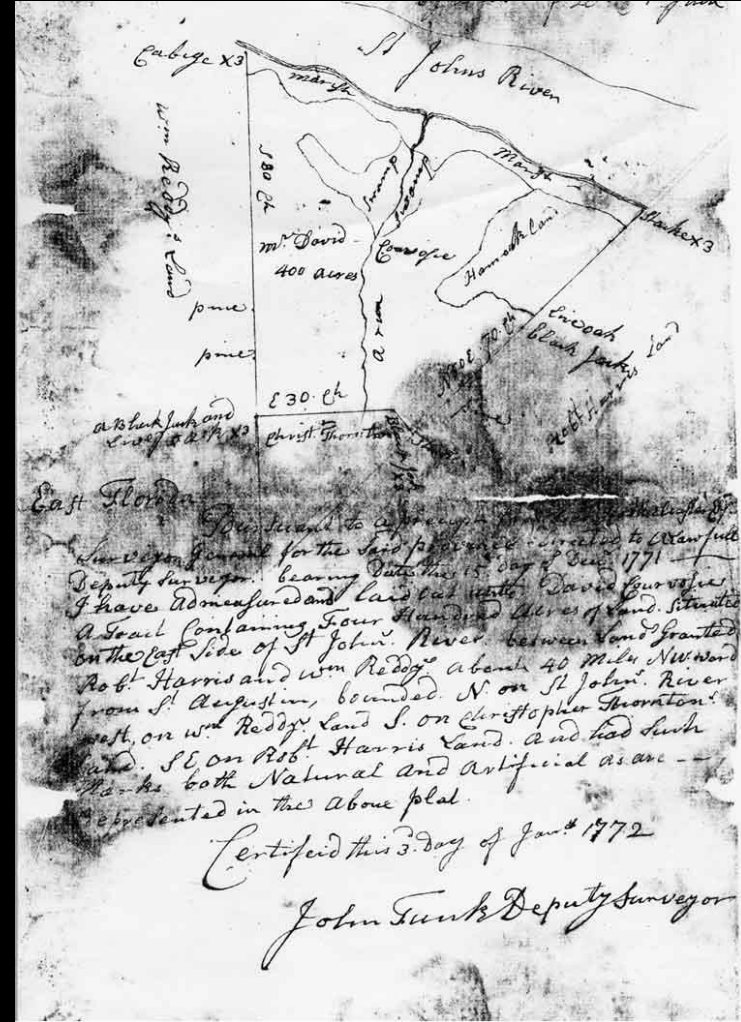


L. c.
A. teg.
Clarke Co. Ga.
adult Oct 173





W. Bartram



“Our route was to the low lands on the Oconee. I accompanied the hunting party to the banks of this beautiful river. The cane swamps, of immense extent, are incredibly fertile.” *W. Bartram 1771*



Cherokee Basketry

WOVEN CULTURE



Characteristic

Northern

Creole

Southern

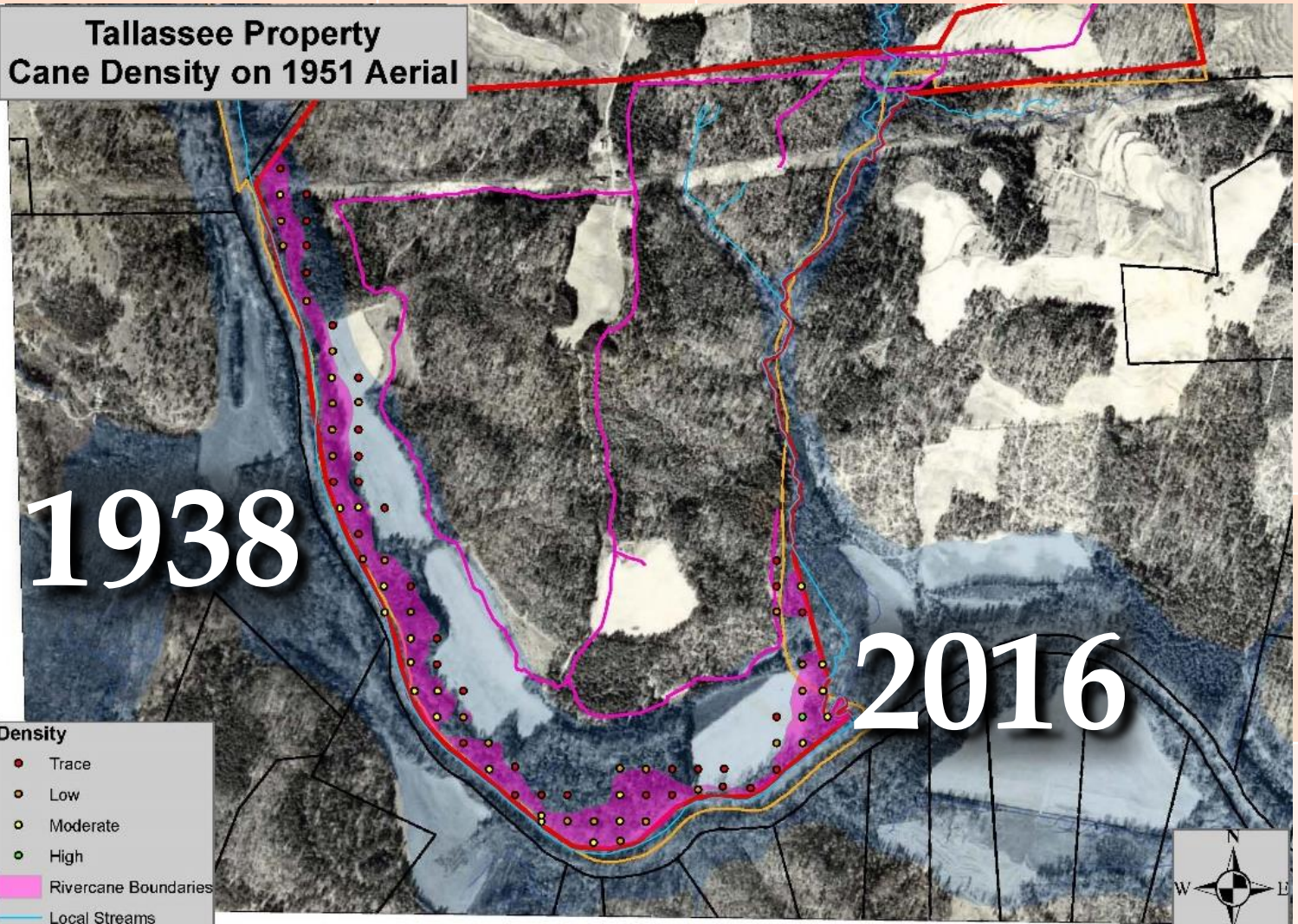
Habitat

Behavior

Plant

Broods

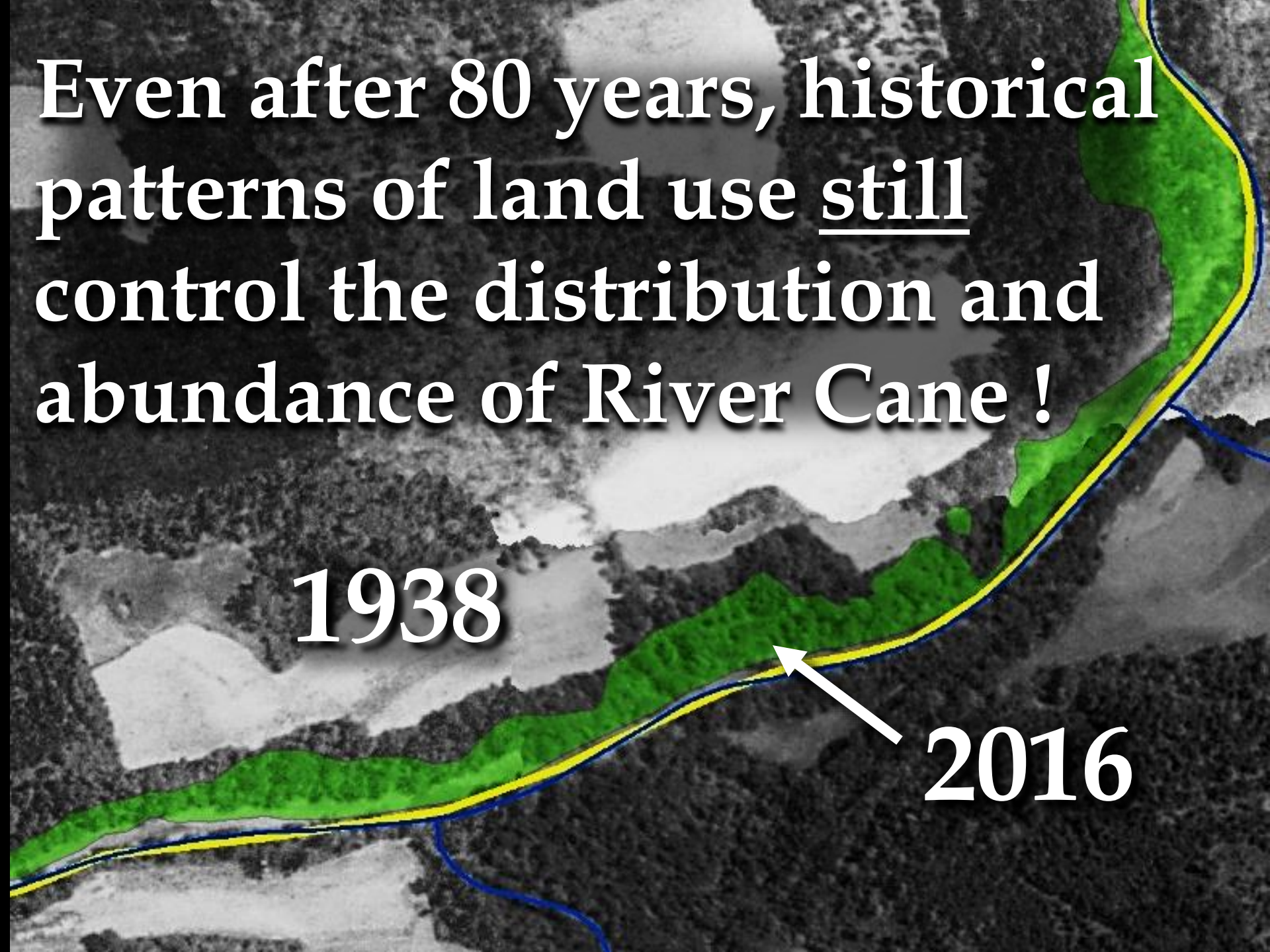
Talassee Property
Cane Density on 1951 Aerial



Even after 80 years, historical patterns of land use still control the distribution and abundance of River Cane !

1938

2016





nidae

Kenny
Athens-Clarke
33° 59' 27" N
Coll: J.W.
Date: Septe

793
Upper
J.W. Porter
272

Characteristic

Northern

Creole

Southern

Habitat



Behavior



Plant



Broods

pare: Southern Pearly Eye (pg. 243) has orange-tipped antennae.

Resident

May June July Aug. Sept.

above 25-35 on antennae eyespots

Ventral (below) straight row of four eyespots; bottom two larger; left, gently curved postmedian line

243

pg. 235) have four ventral forewing eyespots.

Resident

Apr. May June July Aug. Sept.

male

I (above) 1 forewing on; 25-35 on scalloped margin

Ventral (below) bars line bulges near costal margin; straight row of five eyespots; 1-2 dark spots; eyespots same, ridges by white

247

pg. 235) have four ventral forewing eyespots.

Resident

Mar. Apr. May June July Aug. Sept. Oct.

(above) 25-35 on antennae; 25-35 in a circle

Ventral (below) curved; 10-12 of four eyespots; outer eyespots larger; high; 10-12 around eyespots

243

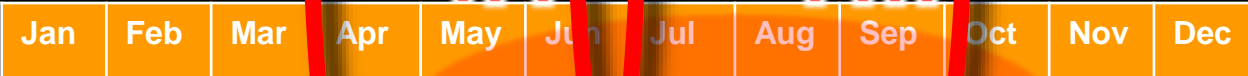
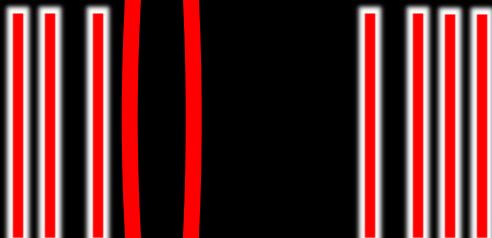
Lethe anthedon (Clarke)



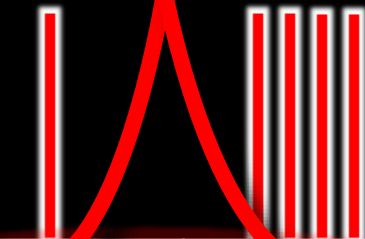
Northern Pearly Eye



Creole Pearly Eye



Southern Pearly Eye







MAN HAS MADE HIS MATCH
...NOW IT'S HIS PROBLEM

HARRISON FORD IS **BLADE RUNNER**

JERRY PERENCHIO AND BUD YORKIN PRESENT
A MICHAEL DEELEY-RIDLEY SCOTT PRODUCTION
STARRING HARRISON FORD
IN **BLADE RUNNER**™ WITH RUTGER HAUER SEAN YOUNG
EDWARD JAMES OLMOSS SCREENPLAY BY HAMPTON FANCHER AND DAVID PEOPLES
EXECUTIVE PRODUCERS BRIAN KELLY AND HAMPTON FANCHER VISUAL EFFECTS BY DOUGLAS TRUMBULL
ORIGINAL MUSIC COMPOSED BY VANGELIS ASSOCIATE PRODUCER IVOR POWELL PRODUCED BY MICHAEL DEELEY DIRECTED BY RIDLEY SCOTT
ORIGINAL SOUND TRACK ALBUM AVAILABLE ON POLYDOR RECORDS PANAVISION® TECHNICOLOUR® DOLBY DIGITAL™ IN SELECTED THEATRES

A LADD COMPANY RELEASE IN ASSOCIATION WITH SIR RUN RUN SHAW
THRU WARNER BROS. & WARNER COMMUNICATIONS COMPANY
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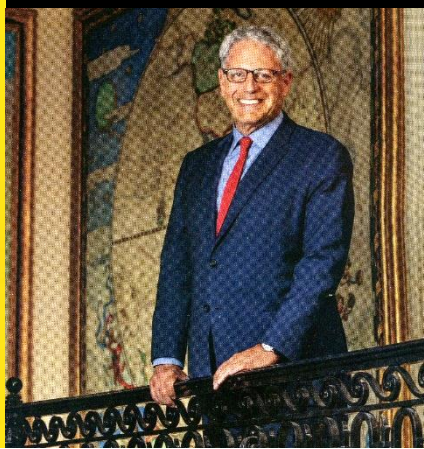
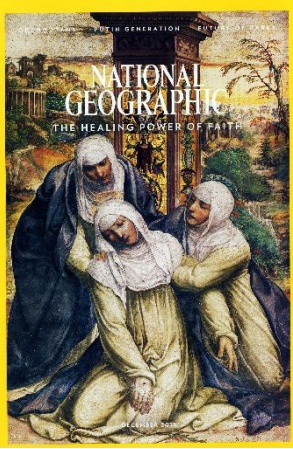


BLADE RUNNER

1982

Georgia Butterfly Brilliance

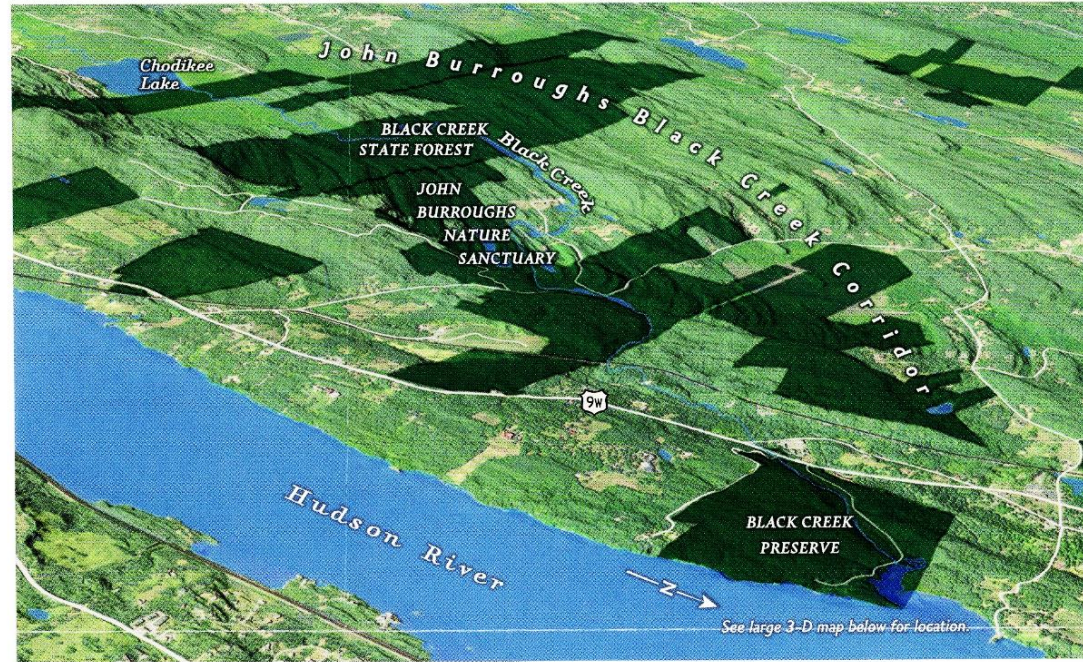




2. SET PRIORITIES

The map helps clarify conservation priorities, which vary from state to state and county to county. It also helps planners target sites where two goals can be accomplished at once – where a new wildlife corridor, for example, can double as a hiking trail.

Connected habitats Preventing the fragmentation of wildlife habitat is a priority in Ulster. In June 2015 the nonprofit group Scenic Hudson preserved a 23-acre mix of forest and hardwood swamp, creating the John Burroughs Black Creek Corridor and filling a gap in a wildlife pathway. Blueback herring can now migrate more safely, and people can hike and paddle along the eight-mile-long corridor.

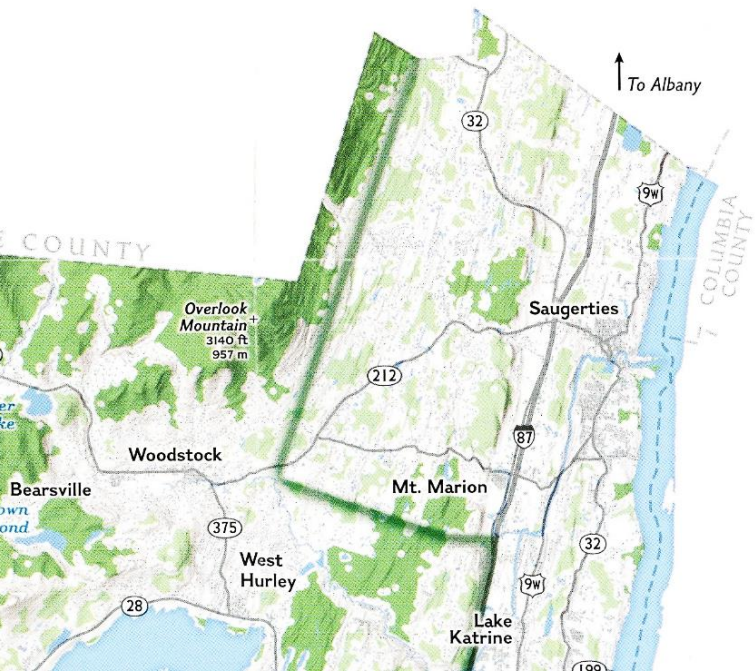


Working landscapes Ulster also wants to protect farmland from development – and land occupied by farms is not necessarily lost to wildlife. The 1,250-acre, nonprofit Hudson Valley Farm Hub is mapping the farm habitats of native organisms, such as pollinators. Staff there also are experimenting with techniques to maintain or increase crop production while improving soils.



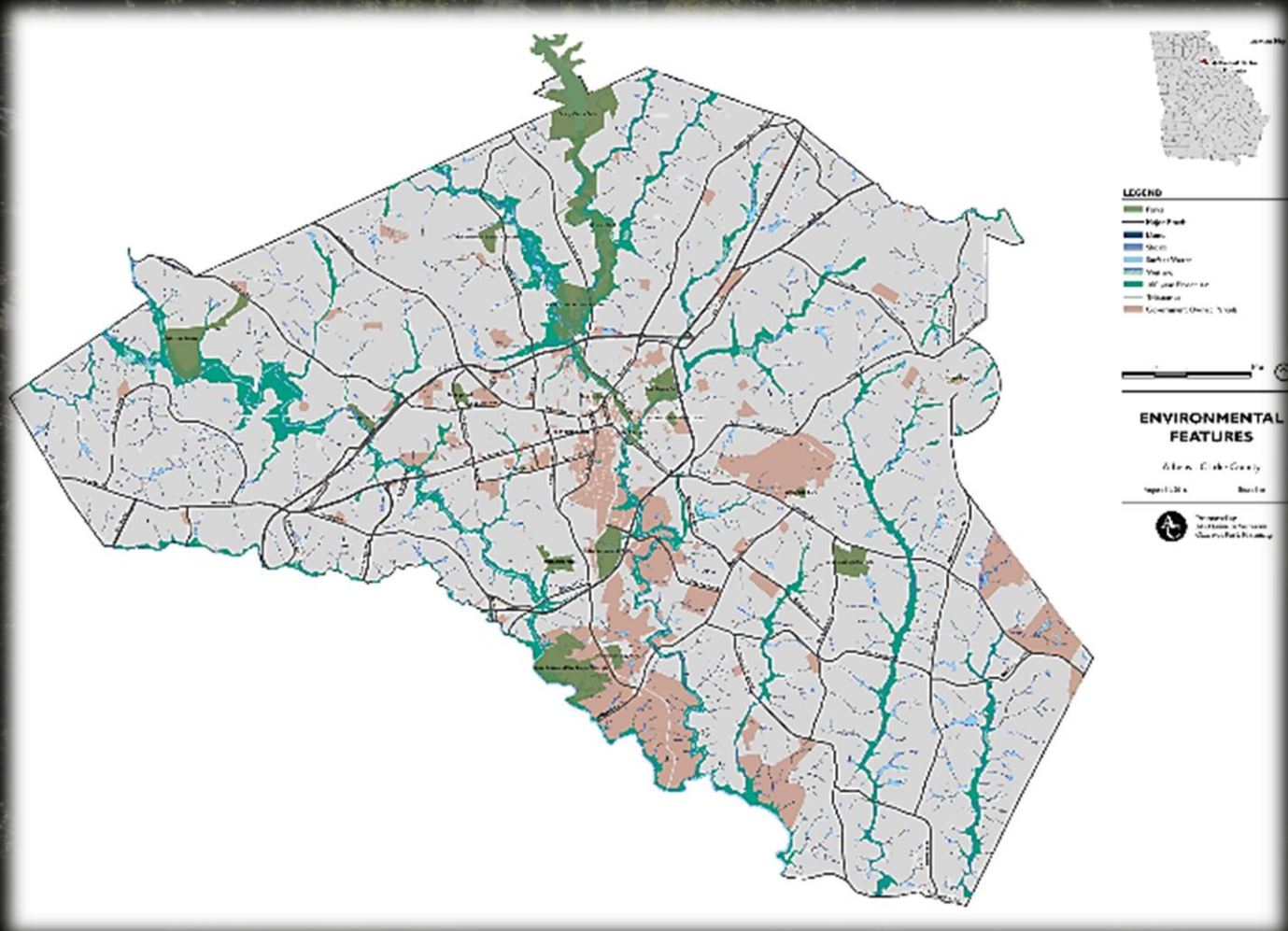
1. MAKE A MAP

Ulster County officials evaluated land according to several criteria – looking first at the ecology of the landscape, then at other factors, including its historical significance and its value as working farmland – to create a map highlighting core areas that might be especially worth conserving.



What to do !

1. Make a map!



What to do !

1. Make a map!
2. Put a SPLOST on your county's ballot
Special-Purpose-Local-Option-Sales-Tax
 - With environmental projects
 - Get out the vote – passage requires good PR



File/Staff

A pedestrian walks across a bridge over the North Oconee River that is part of a greenway network now being planned and constructed in various locations in Athens-Clarke County. The county's Leisure Services Department will be seeking a share of a proposed local sales tax to help fund greenway construction.

Athens-Clarke Leisure Services will seek TSPLOST funding for greenway

What to do !

1. **Make a map!**
2. **Put a SPLOST on your county's ballot**
Special-Purpose-Local-Option-Sales-Tax
 - With environmental projects
 - Get out the vote – passage requires good PR
3. **Create a
Greenway
Network Plan**



File/Staff

A pedestrian walks across a bridge over the North Oconee River that is part of a greenway network now being planned and constructed in various locations in Athens-Clarke County. The county's Leisure Services Department will be seeking a share of a proposed local sales tax to help fund greenway construction.

**Athens-Clarke Leisure Services will
seek TSPLOST funding for greenway**

What to do !



4. **Combat “Last Child in the Woods Syndrome”**
 - **Support environmental education programs**
 - **Support environmental educators**

What to do !



4. **Combat “Last Child in the Woods Syndrome”**
 - Support environmental education programs
 - Support environmental educators

THANK YOU



FOR COMING!

Coastal Wild Videos

1) *Warner Bros.* : “Blade Runner”

Coastal Wild Butterfly Displays

Cornell Drawers

- 1) 6 Cornell drawers of butterflies
- 2) 2 Cornell drawers of moths

9x13 Frames

- 1) GA Firsts
- 2) Abott Zebras
- 3) LeConte species
- 4) GA Beauties
- 5) Tallassee species
- 6) Lady Diana
- 7) Dead Leaf butterflies
- 8) 3 Tropical Sibling Species
- 9) Costa Rica Sibling Species
- 10) ACC Pearly Eyes Sibling Species

Coastal Wild Props

- 1) 8 Cornell drawer stands
- 2) 1 ACC map stand
- 3) 1 ACC map

Coastal Wild Lecture Notes (1)

Sign of the Cross

- North Georgia Mountains
- Okefenokee Swamp
- Warner Robins Airforce Base
- Savannah River Nuclear Site

- Biodiversity desert: Atlanta

Notes

- Lady Diana butterfly described in 1779
- Gainsborough *Daughters Chasing Butterflies*

Coastal Wild Lecture Notes (2)

Notes

Andrew Saunders, ACC Environmental Services Coordinator

- Legacy Forests
- 1938 – 2013 aerial images
- DNR 9 High Priority Habitats
- Flood plain river cane survey map

Carl Jordan bought 270 acres of adjacent land and put it into a conservation easement.

SPLOST = Special-Purpose-Local-Option-Sales-Tax

Joke: Told after the text has appeared on the green 2016 / 1938 river cane distribution slide:

When taking his horticulture class onto the Oconee River flood plain, one of Mike Moore's students noticed River Cane and asked, "What's that?"

Mike replied, "*Arundinaria donax*."

Toward the end of the hike Mike noticed that the student looked dejected and asked, "What's the matter?"

The student replied, "because when I wanted to know the name of the plant, you said, 'I dun know, don't ask!'"