

Managing Wildland Fire in Rapidly Changing Times

Johnny Stowe

South Carolina Department of Natural Resources

The Climate Connection Workshop Series: Climate Variability and Impacts to South Carolina's Natural Resources

Greenville, SC

5 DEC 2012

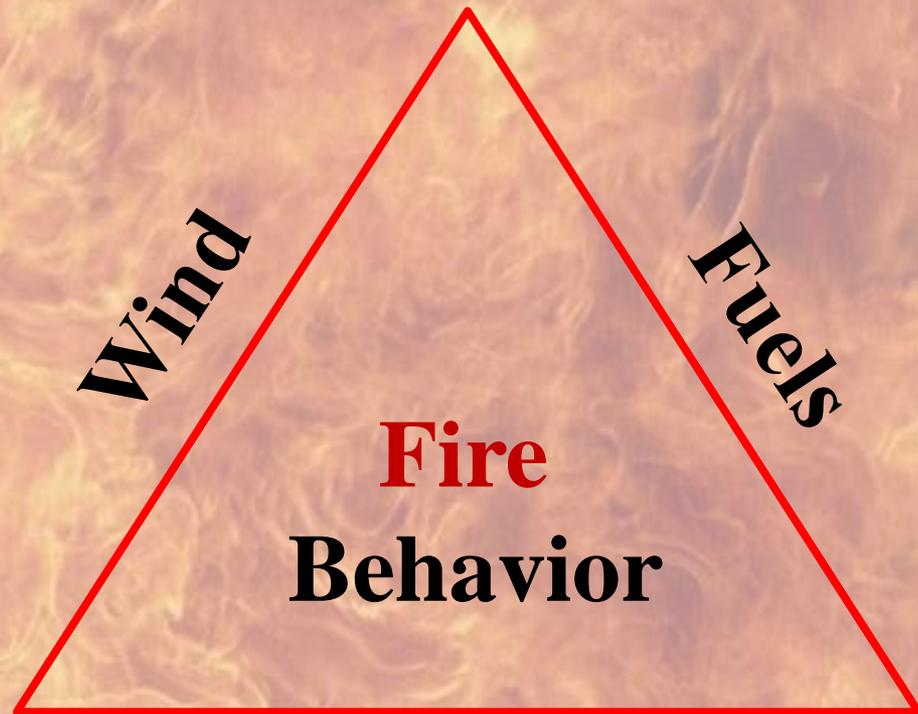
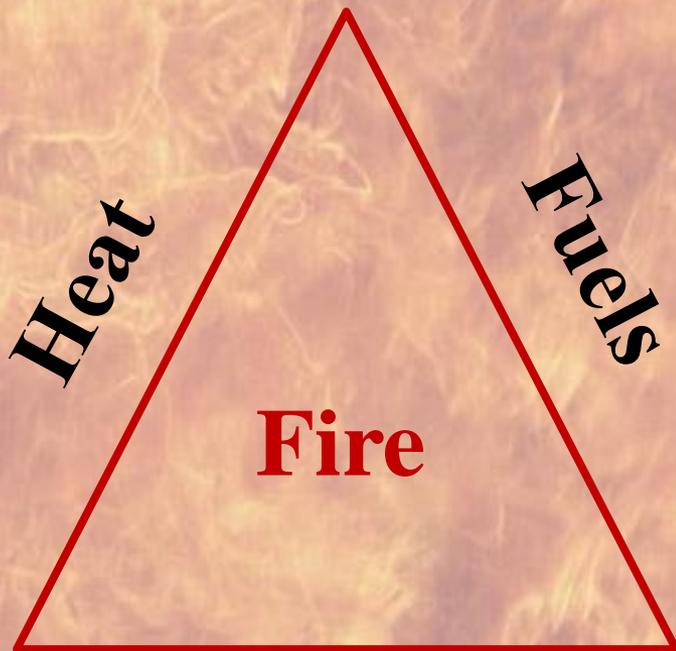


DNR

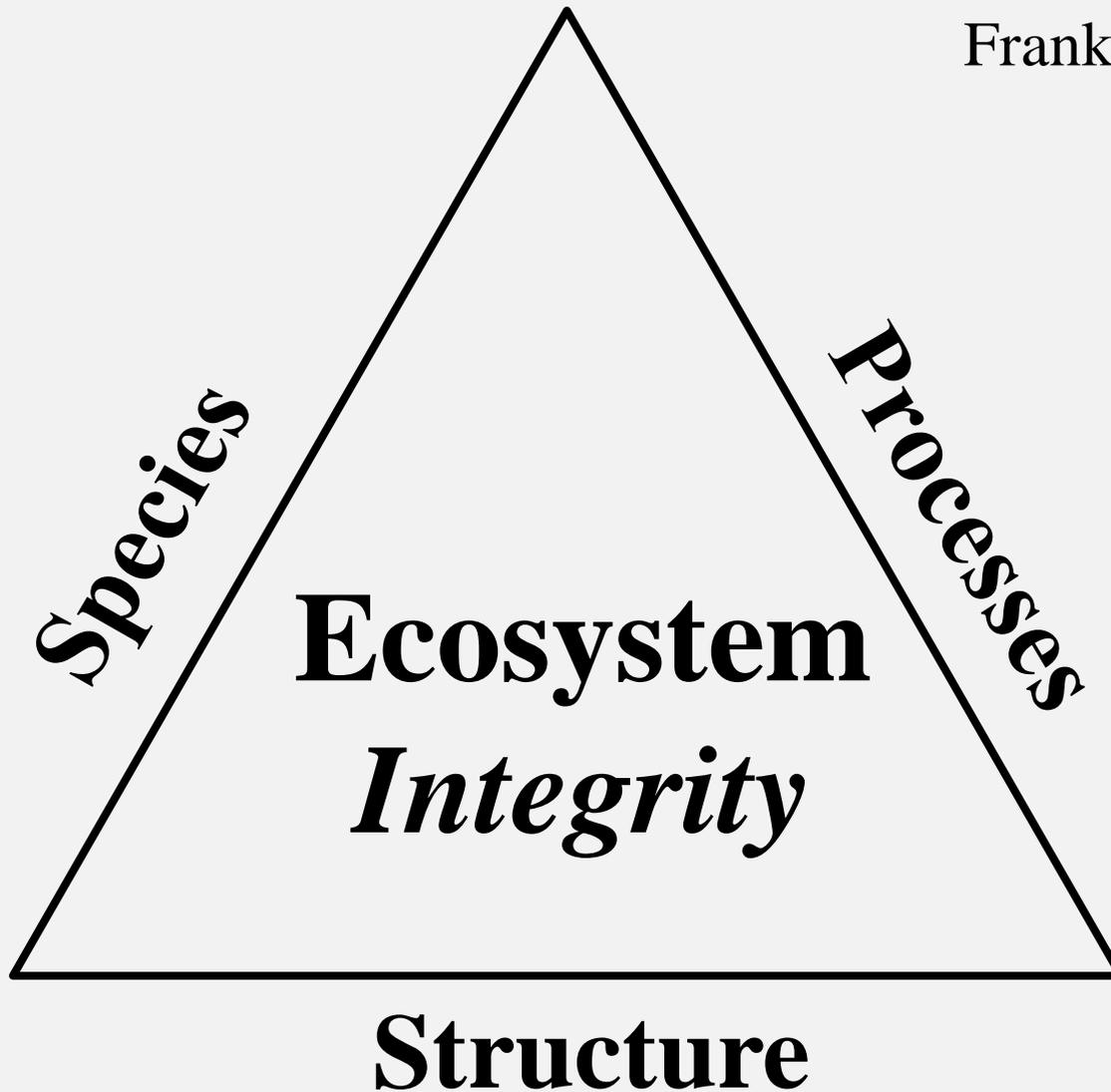
Life's Better OUTDOORS

dnr.sc.gov

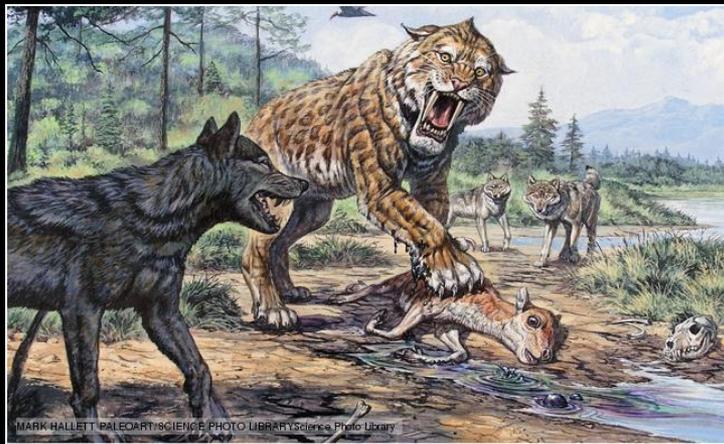




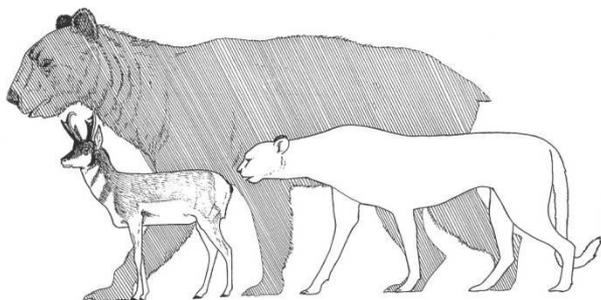
Fire ... a Triangular Affair



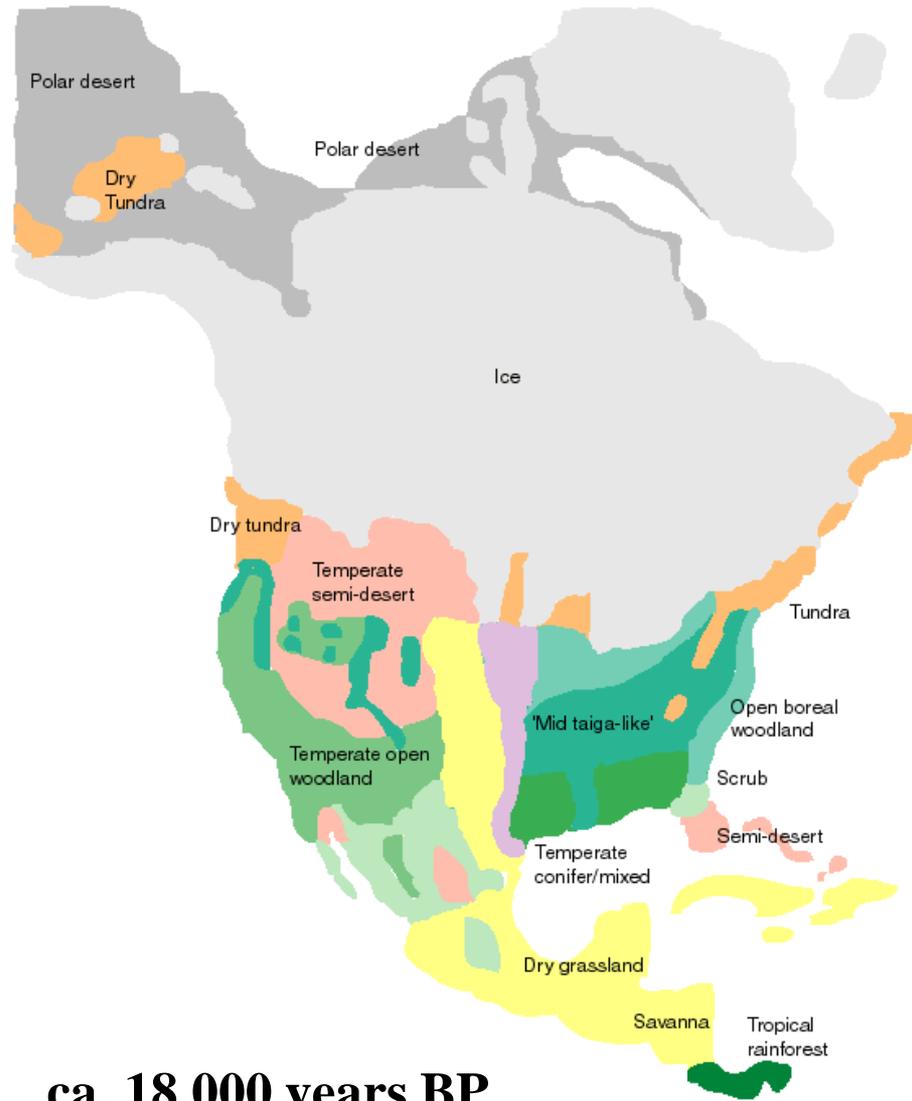
Simple truths require little defense; A purpose of science models is to say very much with very little.



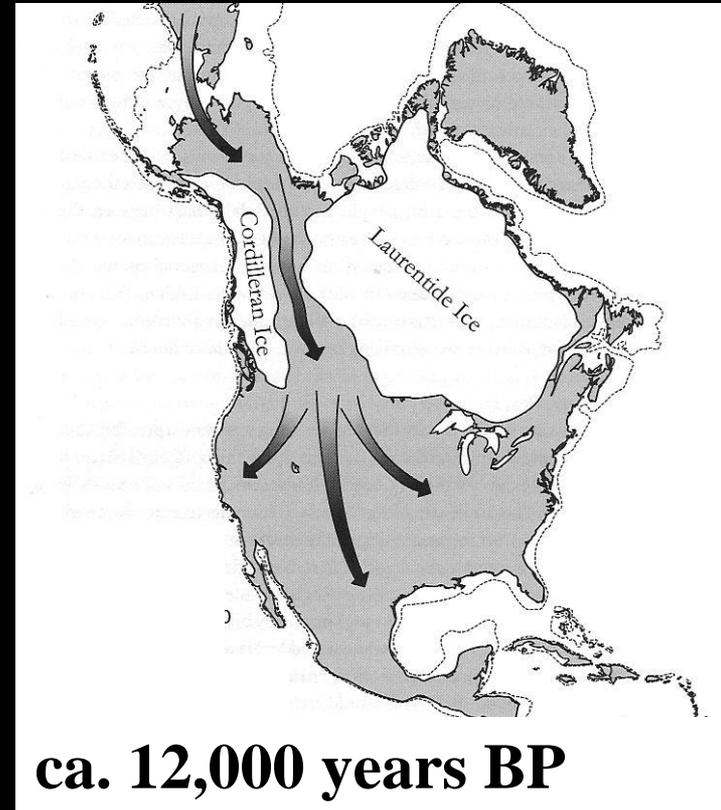
MARK HALLETT PALEOART/SCIENCE PHOTO LIBRARY/Science Photo Library



Val Geist



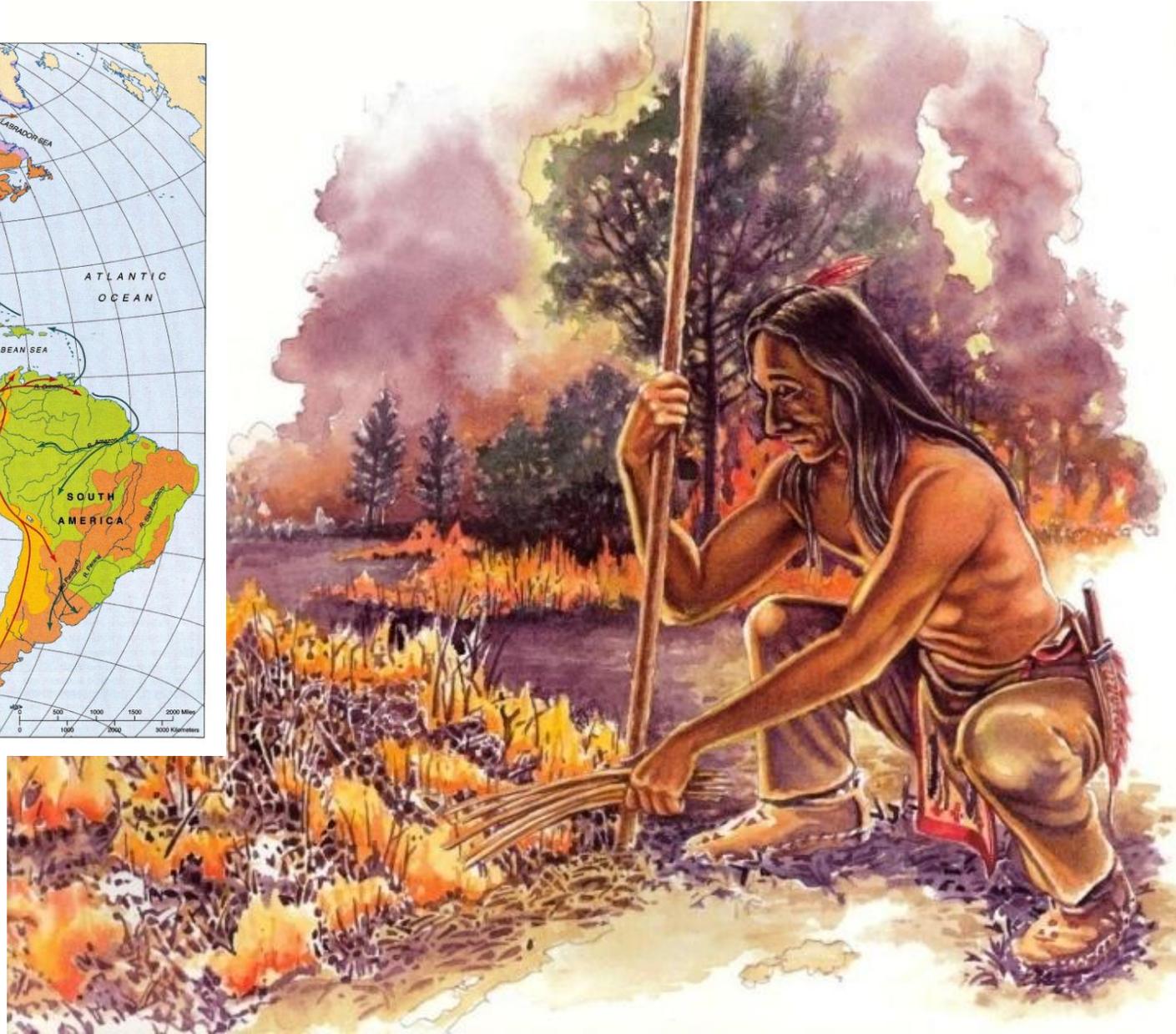
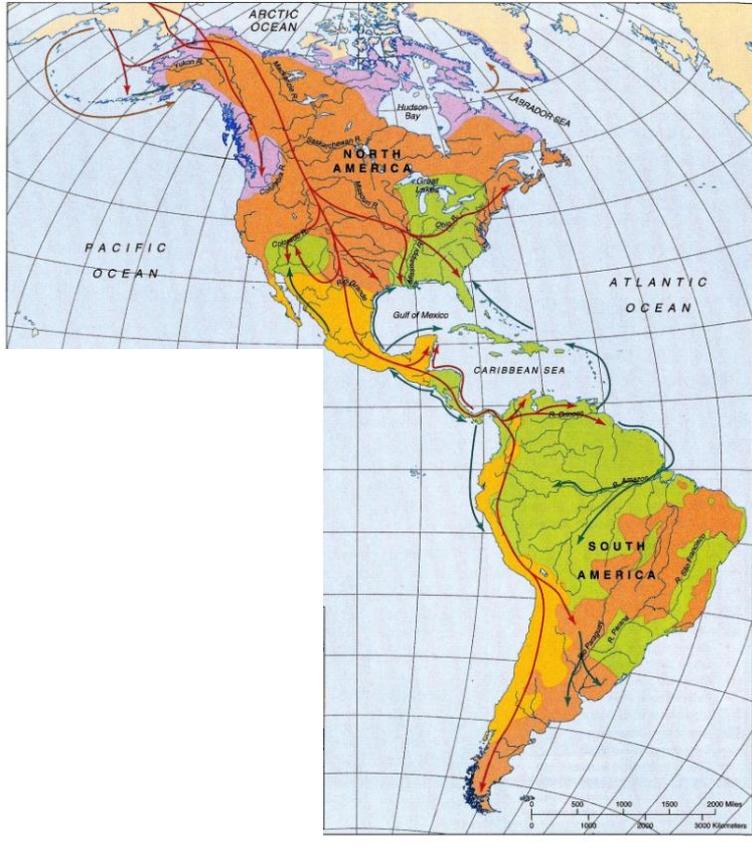
ca. 18,000 years BP



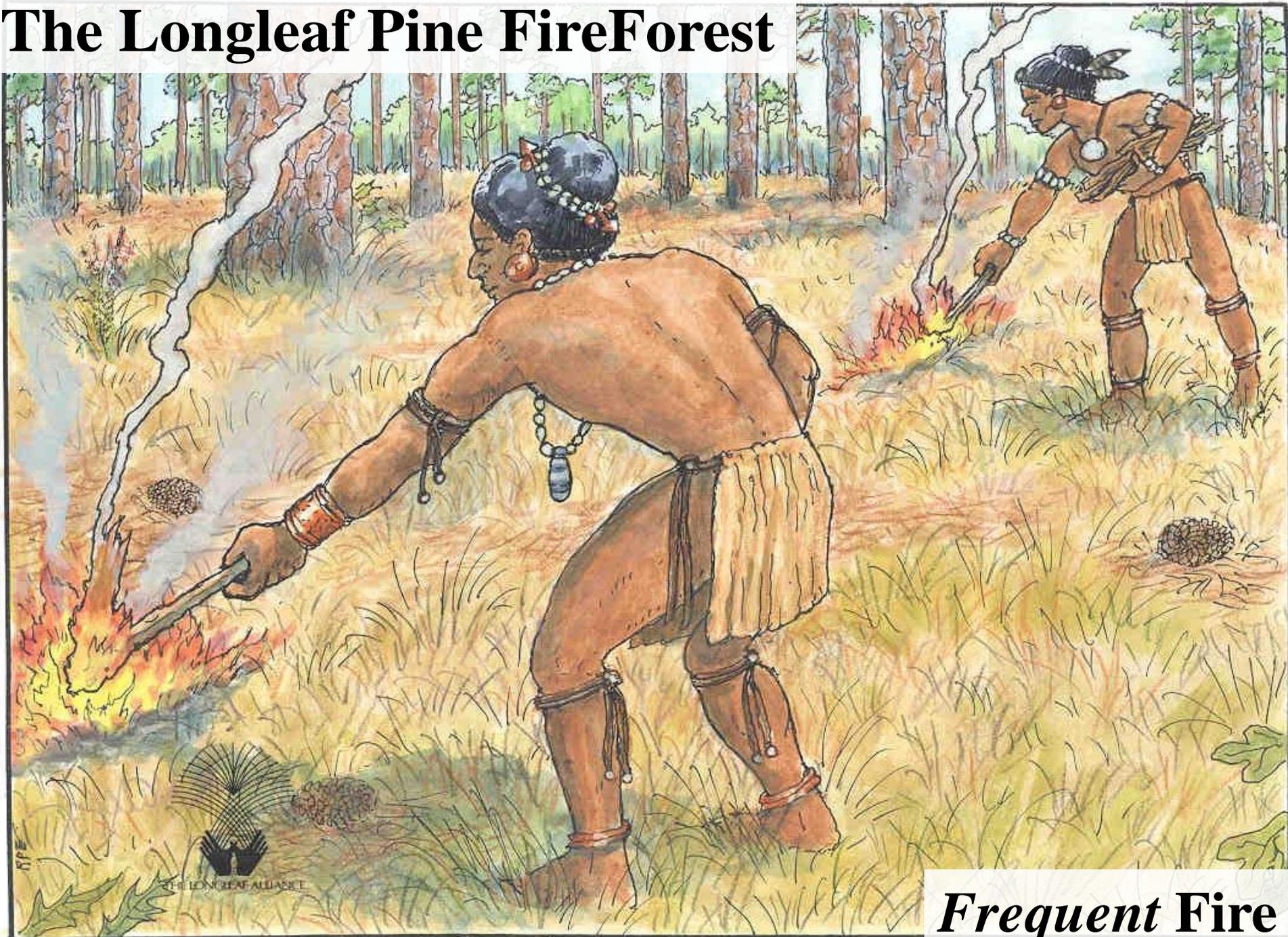
The First Nations

Toting the Firestick

From Berengia to *Tierra Del Fuegeo*, the Land of **Fire**



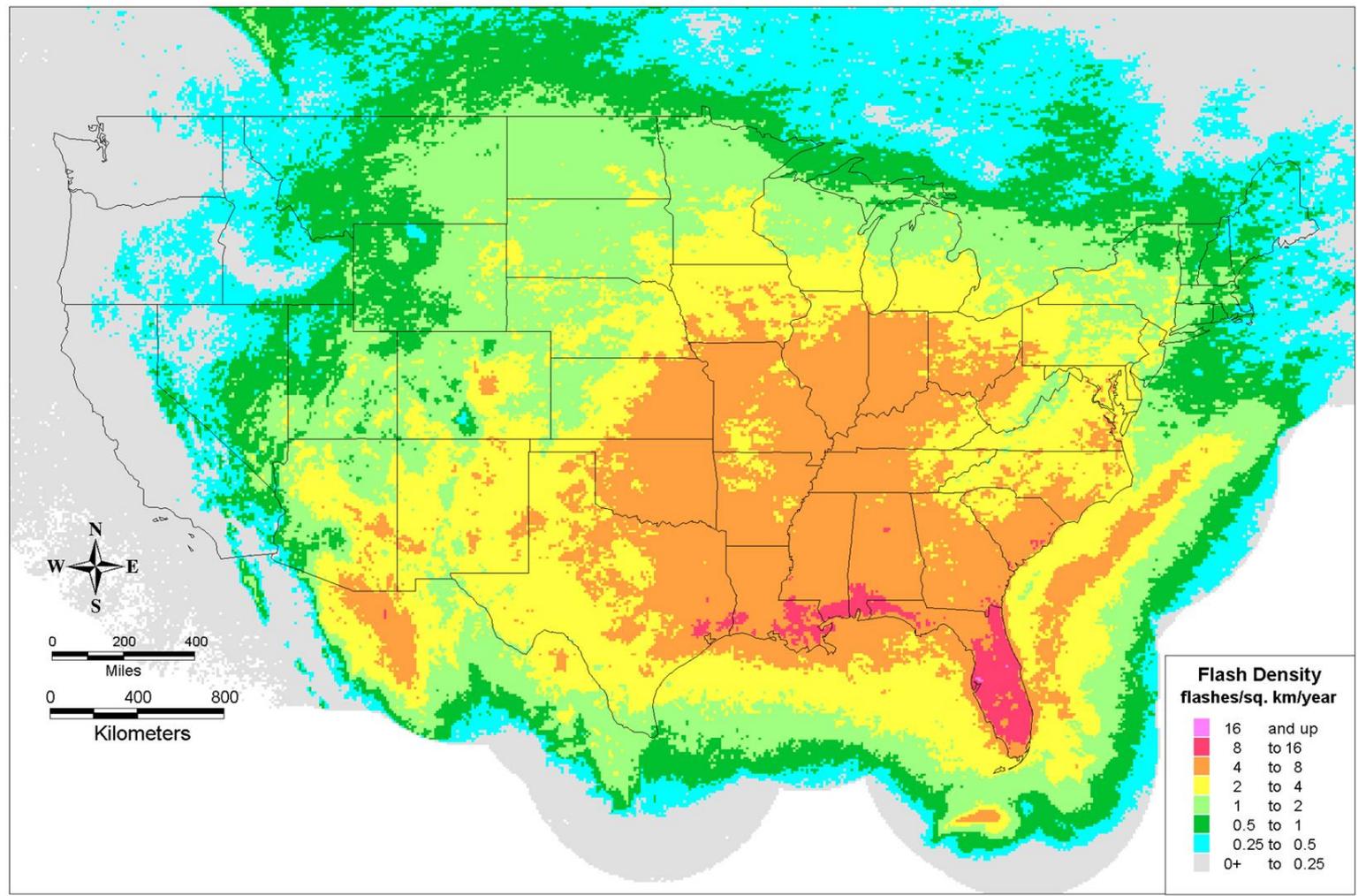
The Longleaf Pine FireForest



Frequent Fire



**Tampa,
Florida**



Flash Density
flashes/sq. km/year

16 and up
8 to 16
4 to 8
2 to 4
1 to 2
0.5 to 1
0.25 to 0.5
0+ to 0.25



0 200 400
Miles

0 400 800
Kilometers



1996 - 2005 Flash Density Map
10 kilometer grid

Jan 1, 1996 00:00:00 UTC
To
Dec 31, 2005 23:59:59 UTC



Hurricane Ivan
GOES-12 Colorized IR
September 16, 2004 @ 0645 UTC

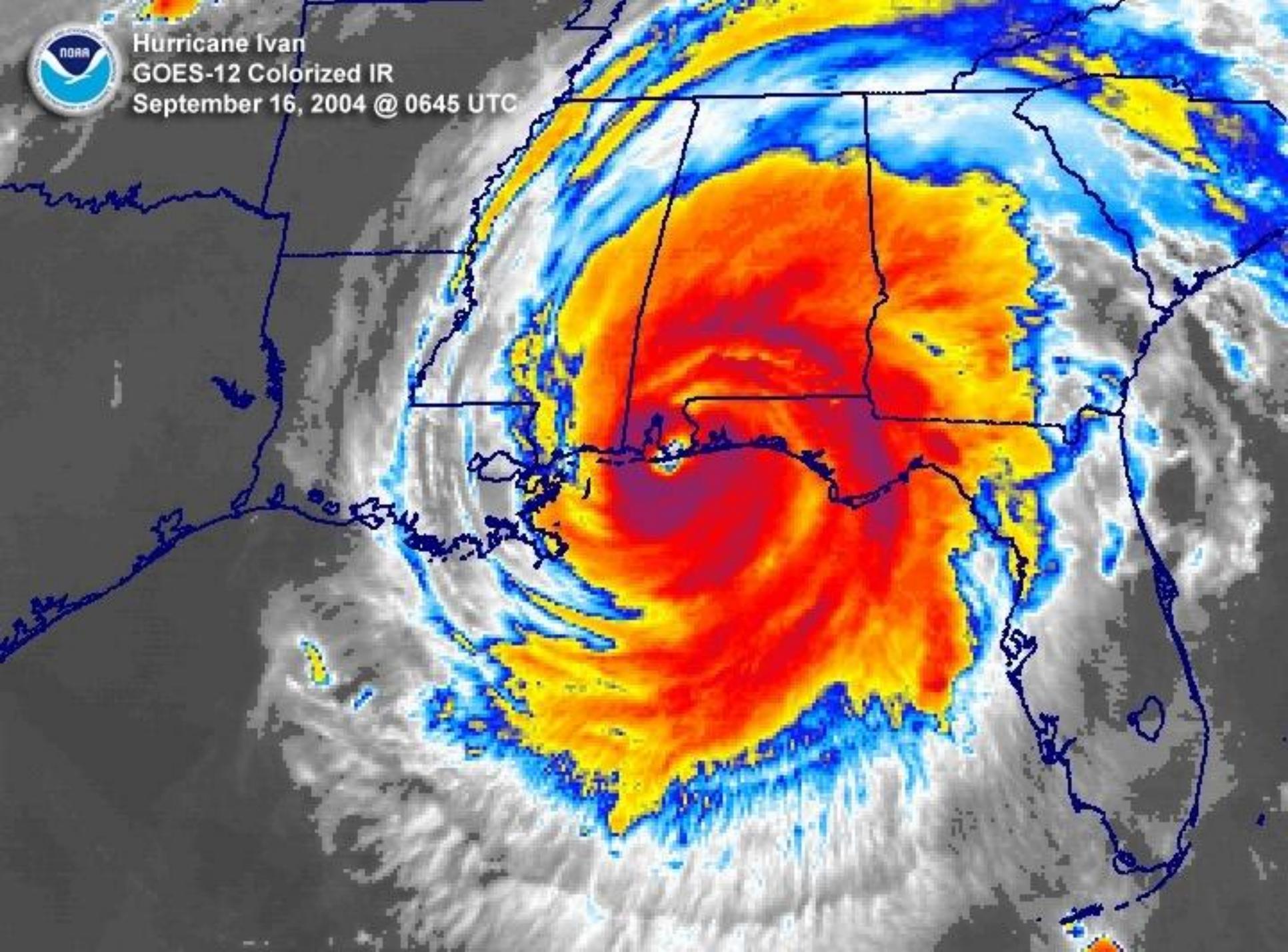
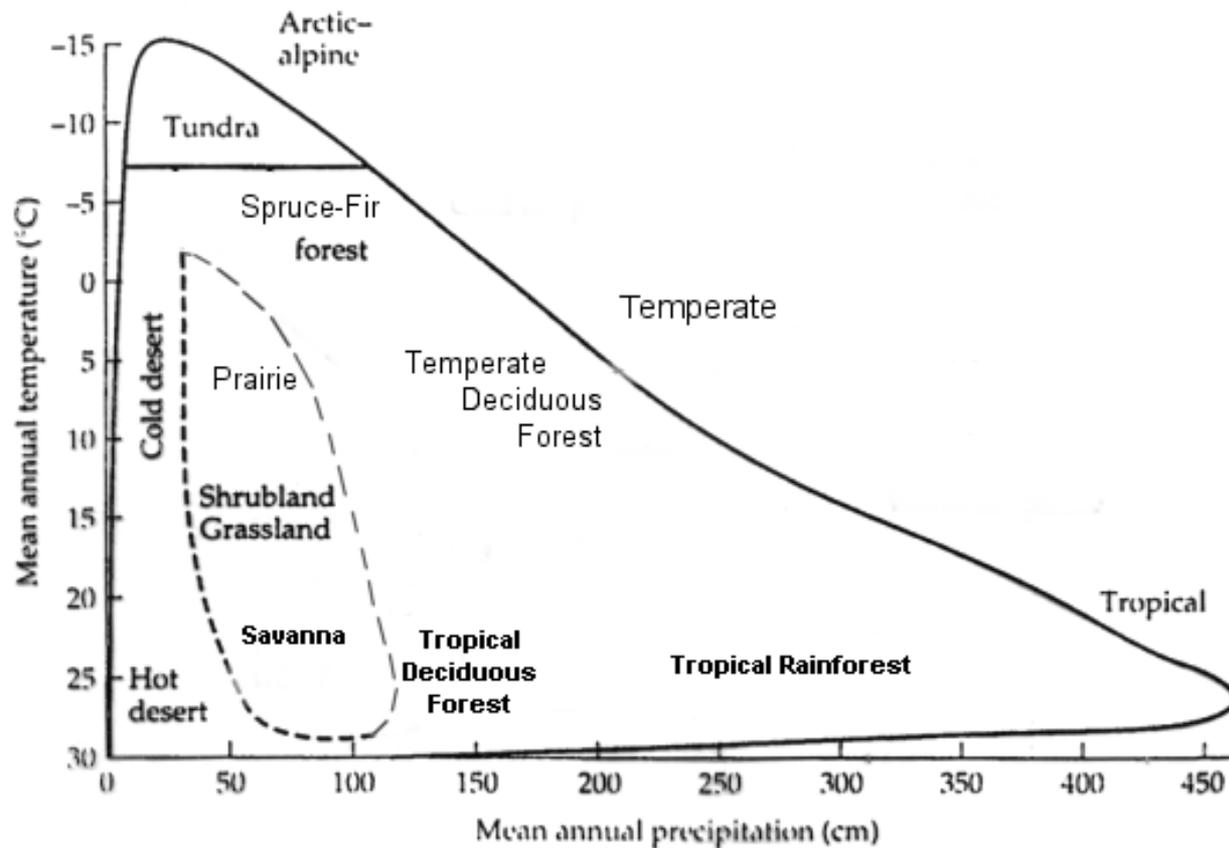
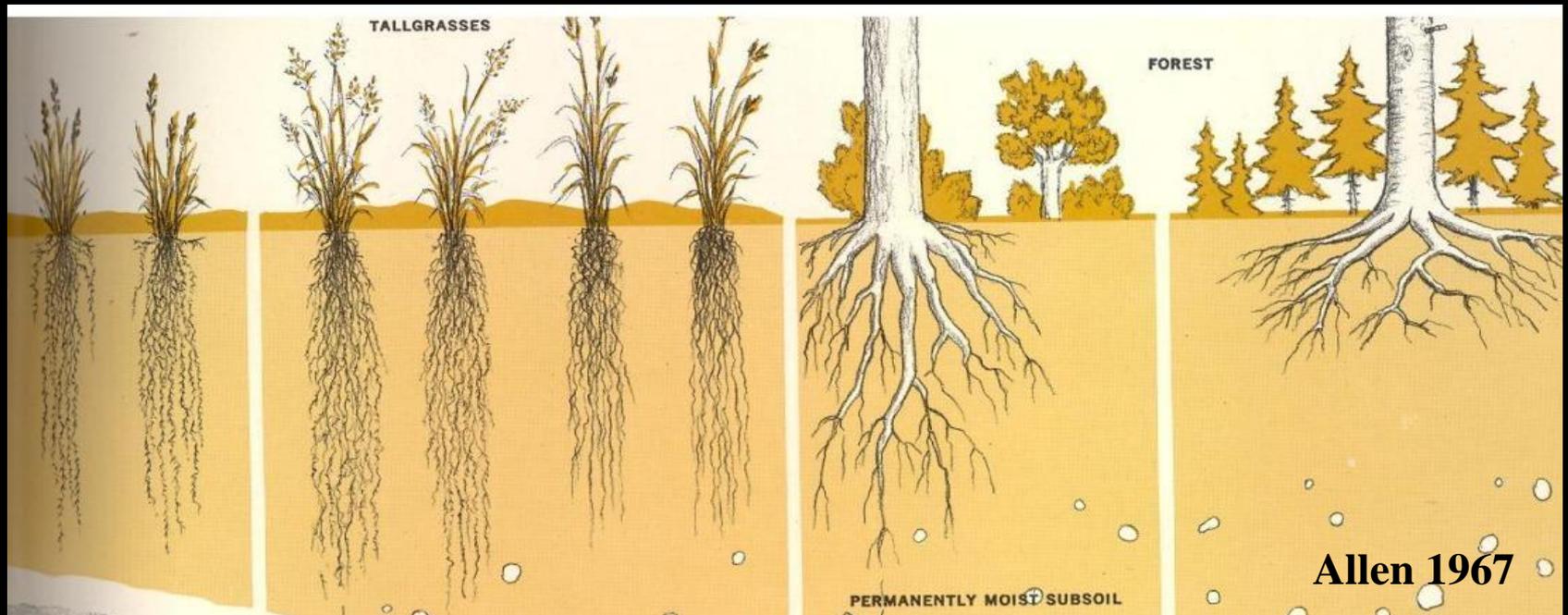
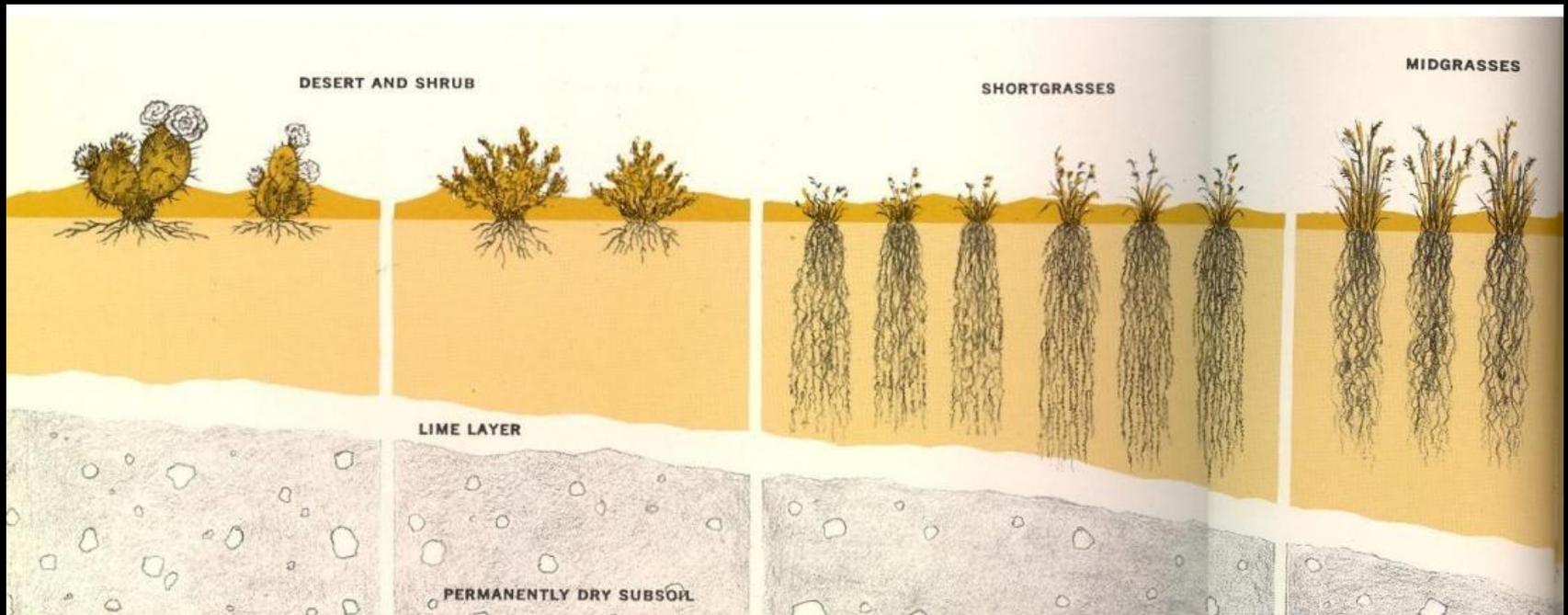


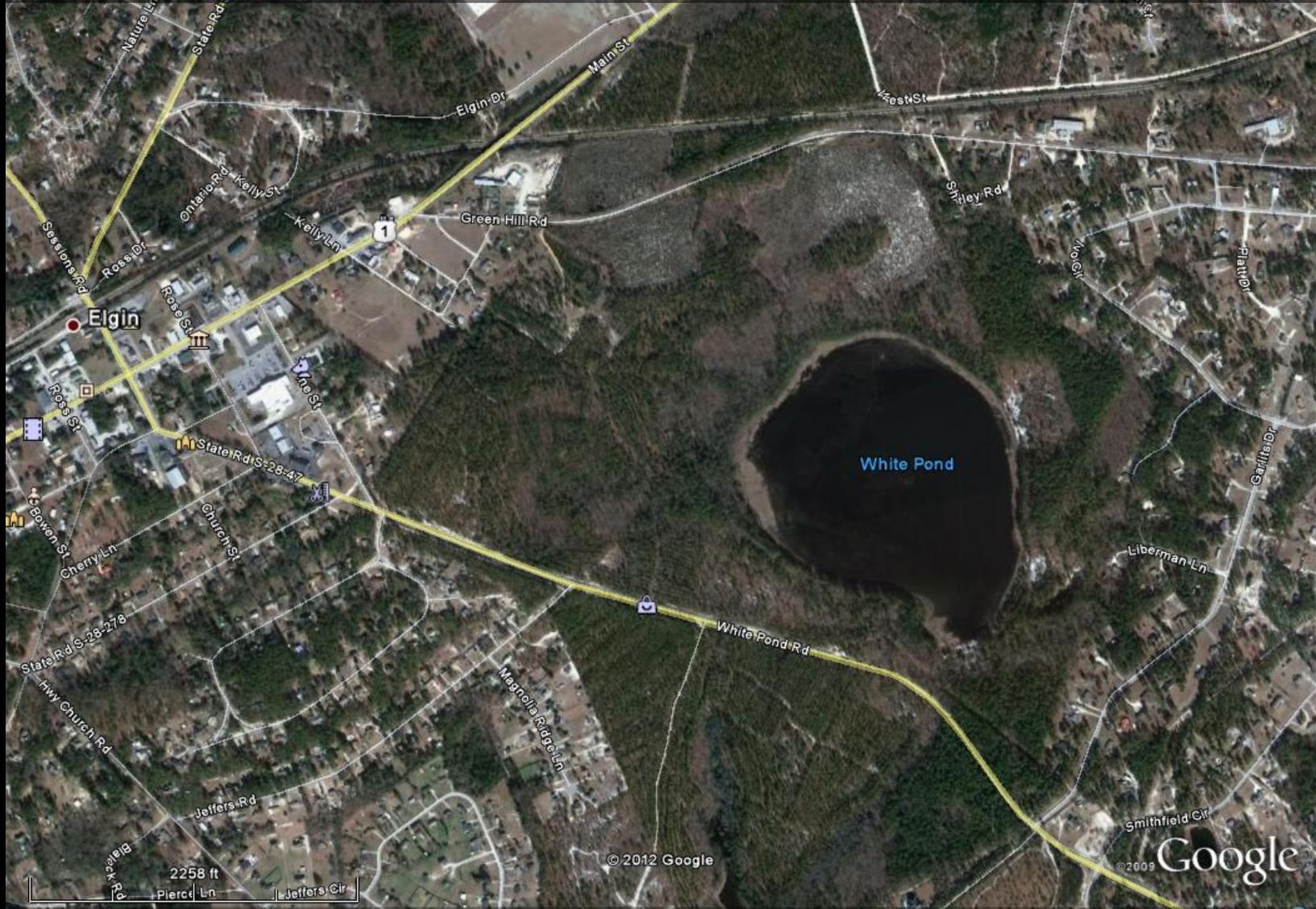
Figure 4.1 Biomes and climate. Distributions of the major biomes are plotted on axes of mean annual temperature and mean annual precipitation. Within the region bounded by the dashed line, factors such as seasonality of drought, fire, and grazing strongly affect which type of vegetation is present. (Modified from Whittaker 1970.)





Allen 1967

Watts, W.A. 1980. Late-Quaternary Vegetation History at White Pond on the Inner Coastal Plain of SC. Quaternary Research. 13: 187-199.

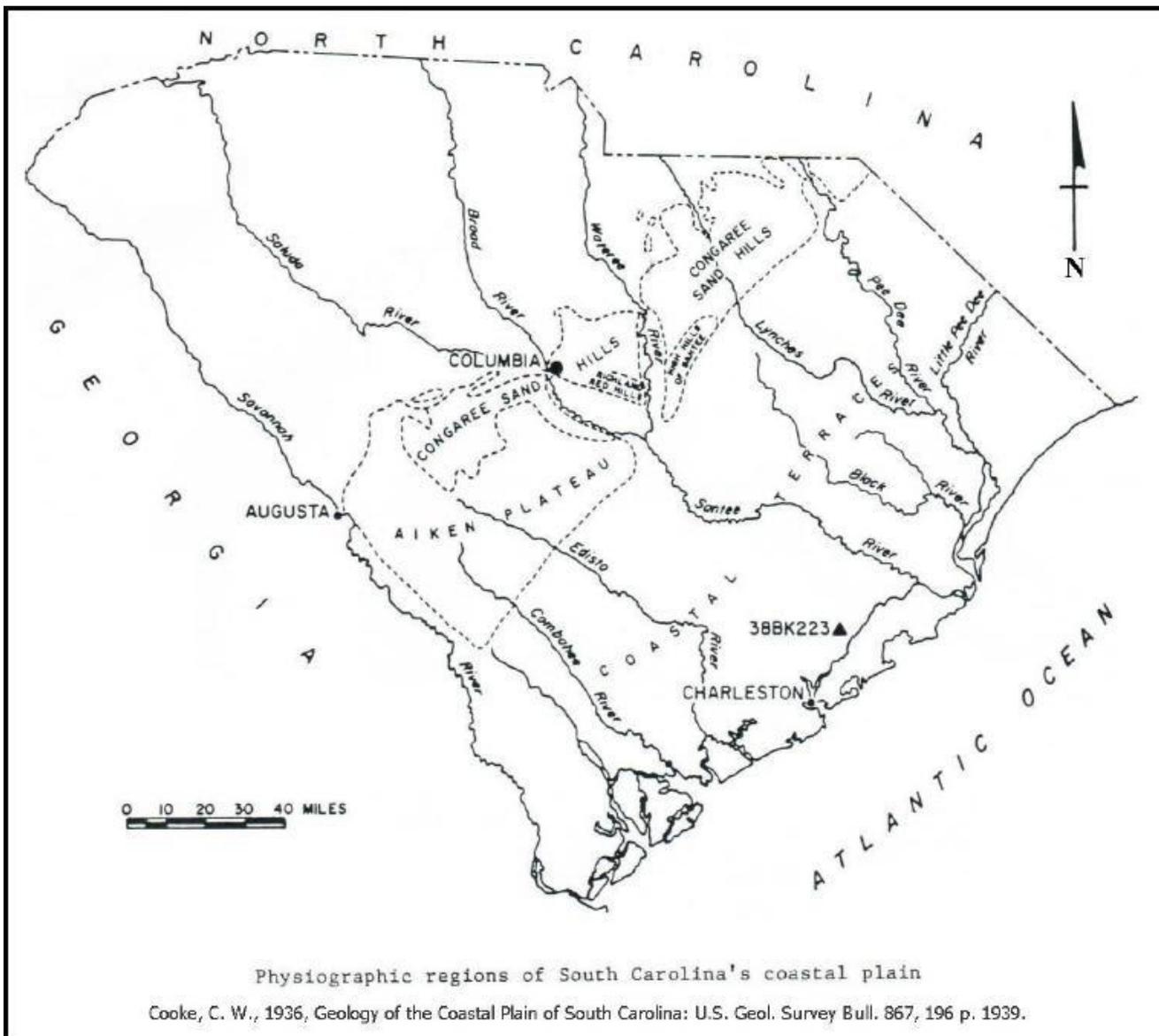






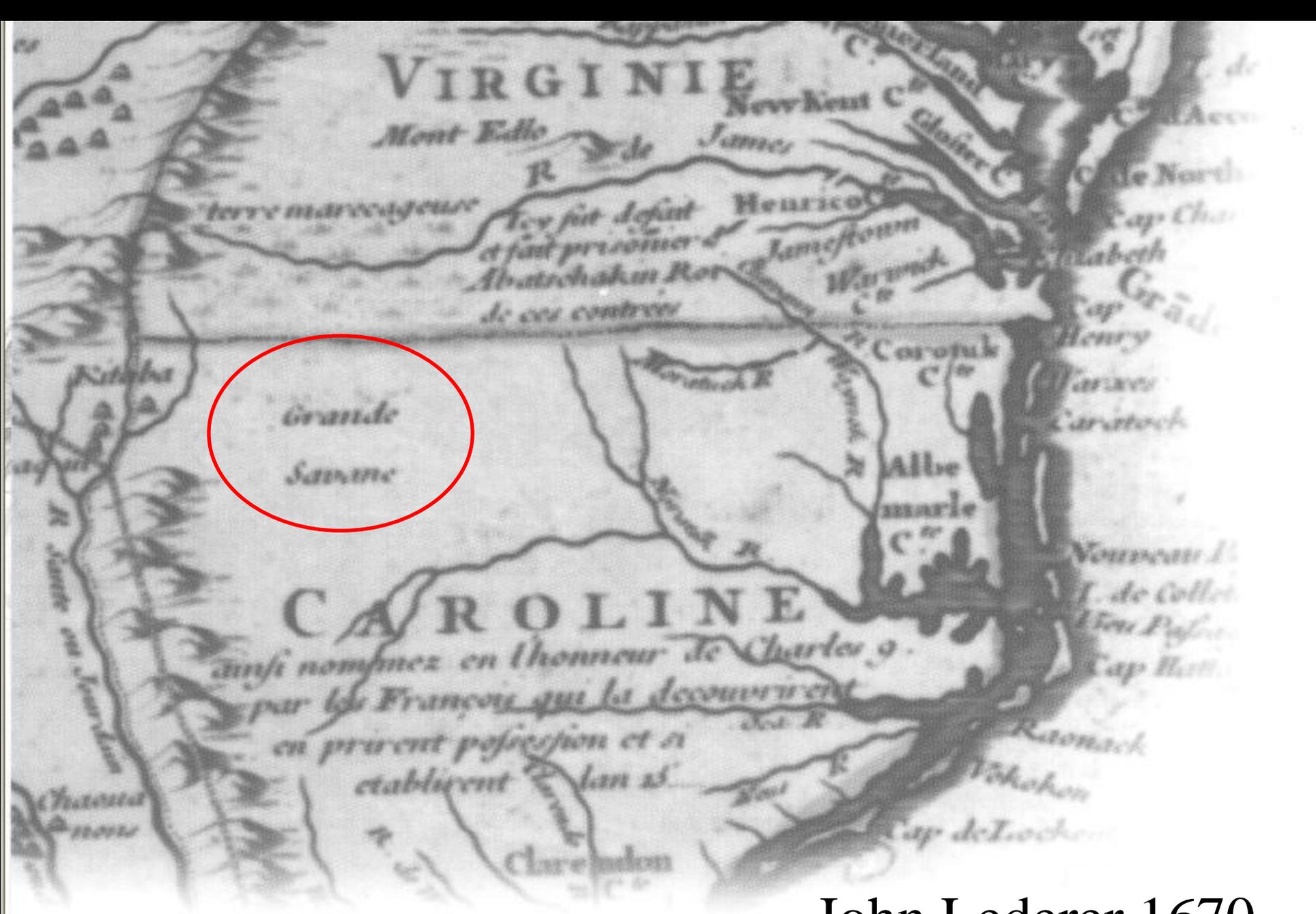
De Soto 1540





Physiographic regions of South Carolina's coastal plain

Cooke, C. W., 1936, Geology of the Coastal Plain of South Carolina: U.S. Geol. Survey Bull. 867, 196 p. 1939.



VIRGINIE

Mont Edle

New Kent C^{te}

R de James

terre marécageuse

*Icy fut defait
et fait prisonier
Abatachakin Roi
de ces contrées*

Henrico

Jamestown

Warwick C^{te}

Cap de North

Cap Charles

Elizabeth

Cap Grande

Henry

Warwick

Caratoock

Coronuk C^{te}

Albe
marle
C^{te}

Nouveau D.

I. de Collet

Vieu Pas

Cap Matt

CAROLINE

ainsi nommez en l'honneur de Charles 9.

par les François qui la decouvrirent

*en prurent possession et si
etablirent lan 15*

Clarendon C^{te}

Ratonaek

Wokehon

Cap de Loche

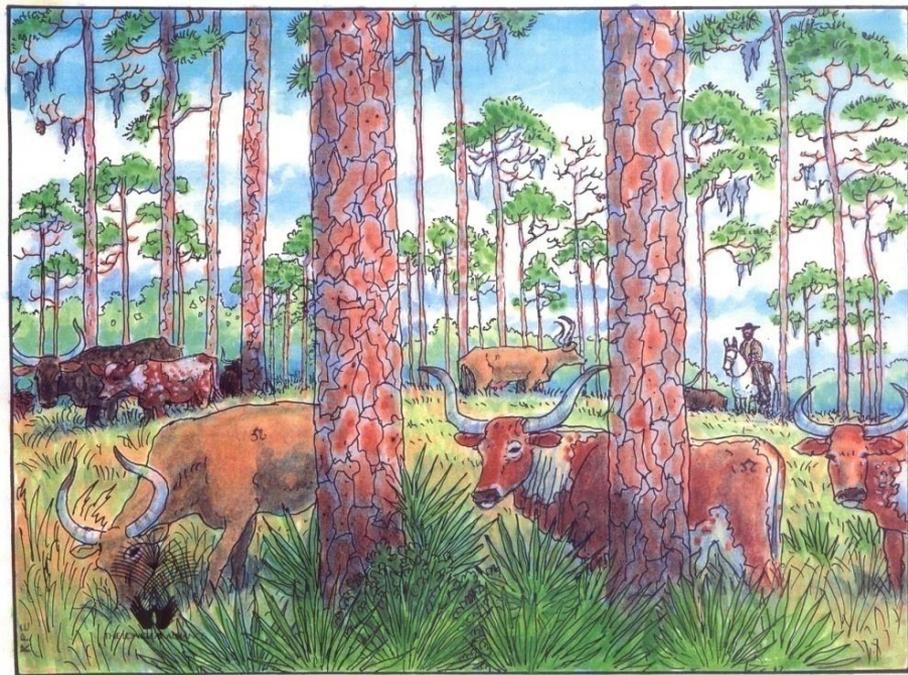
Grande
Savane

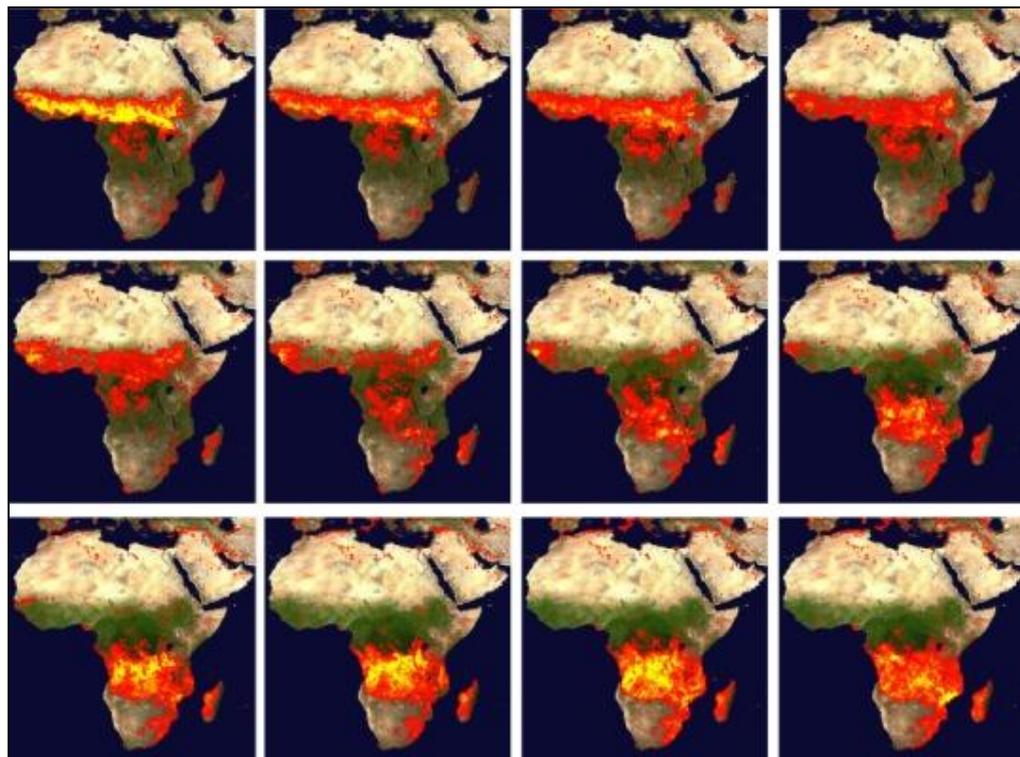
In the year 1750, when the settlement of the upper country [South Carolina piedmont] began, there were so many buffaloes, which have long disappeared, that three or four men with their dogs could kill from ten to twenty in a day.



Cracker Culture: Celtic Ways in the Old South

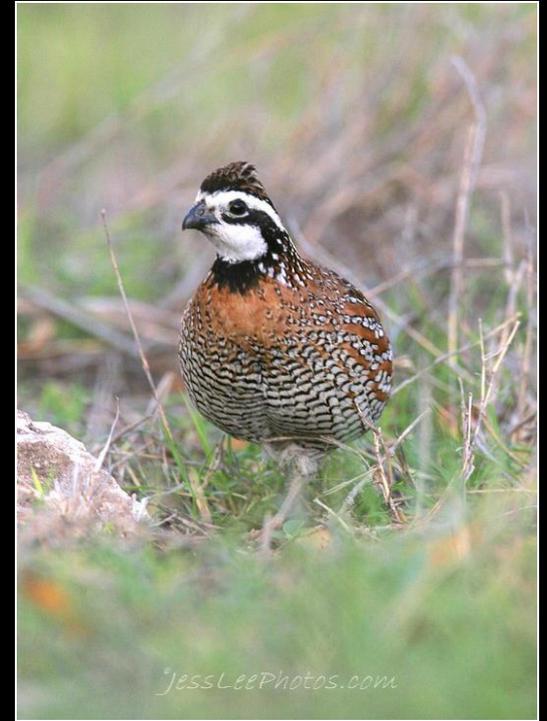
McWhiney 19xx





The Bobwhite Quail & Tall Timbers

Fire Science



The Dixie Crusaders



The Southern Forestry Education Project



Fire Ecology:
Key Ecological Attributes of Fire



South Carolina Forestry Commission Underfunded & Understaffed: Doing a Lot with a Little





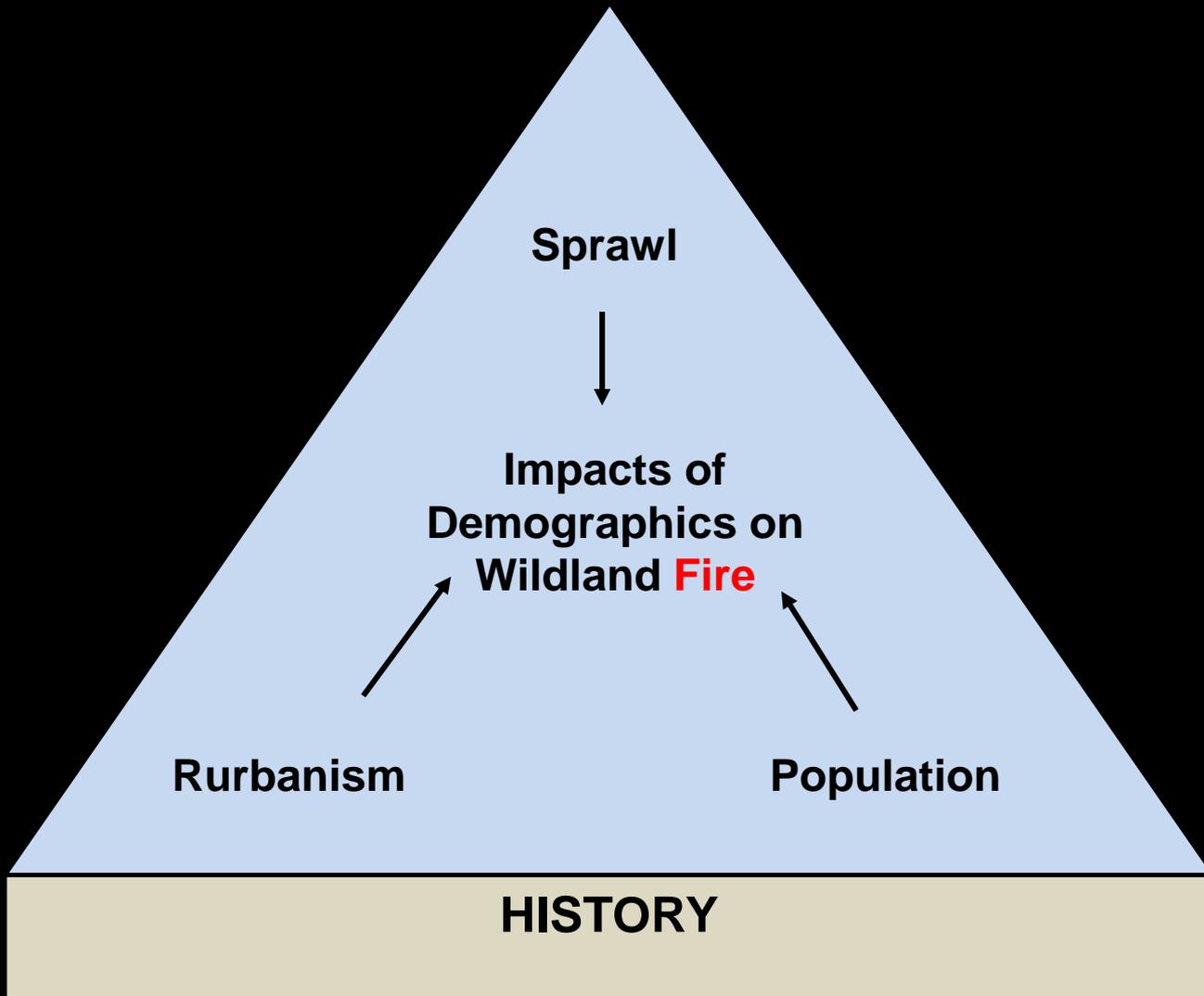
Challenges to Rx Fire in the SE US: Now and in the Future

**Air quality: NO_x, SO₂, Ozone, Particulate Matter, PB, CO
Co₂, Methane, Benzene, Formaldehyde**

Liability: Negligence v Gross Negligence

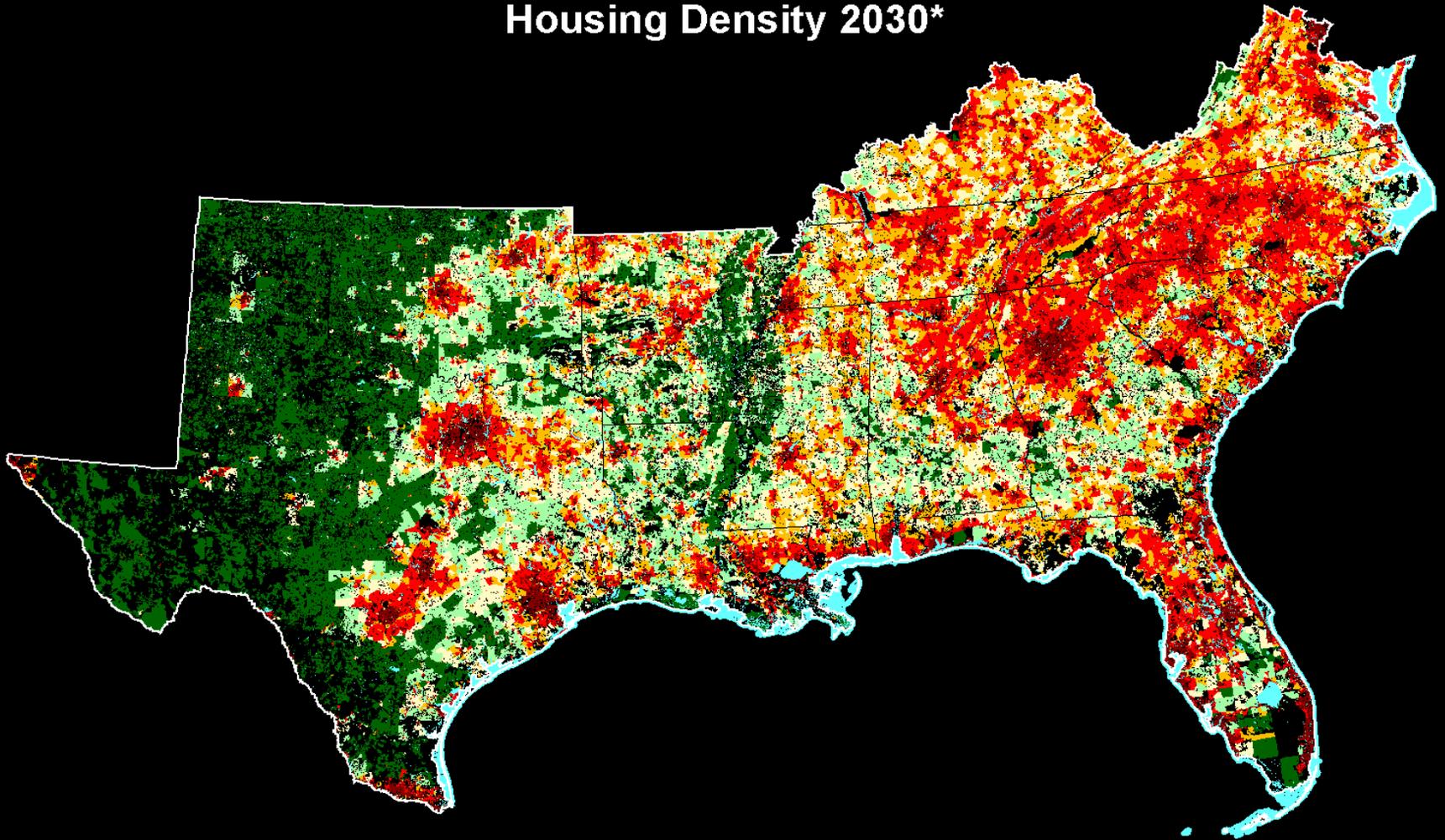
**“Progress” ... “Development” & Land Fragmentation,
Invasive Exotic Species**

**Culture: Schism, Loss of Appreciation for and On-the-Ground
Implementation of Multicultural Heritage**



Southern Region

Housing Density 2030*



Housing Units per Km²

*Linear projection of 1990s growth





“Progress”

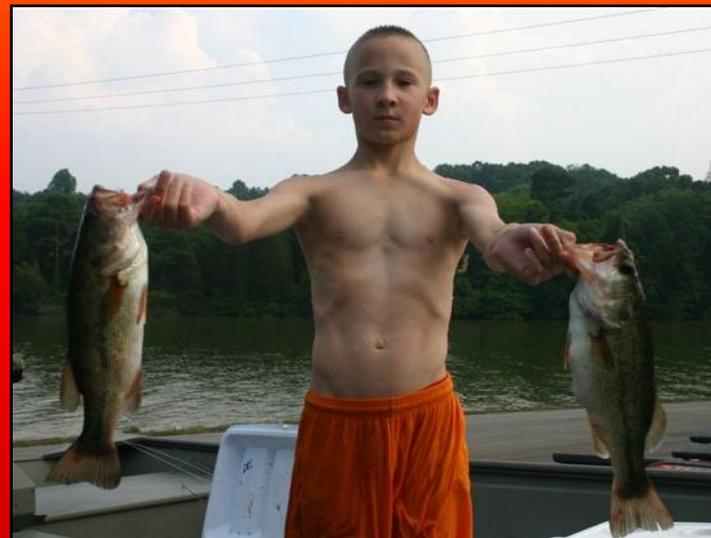
&

“Development”



Lewis Ocean Bay: Smoke Inversion into Myrtle Beach

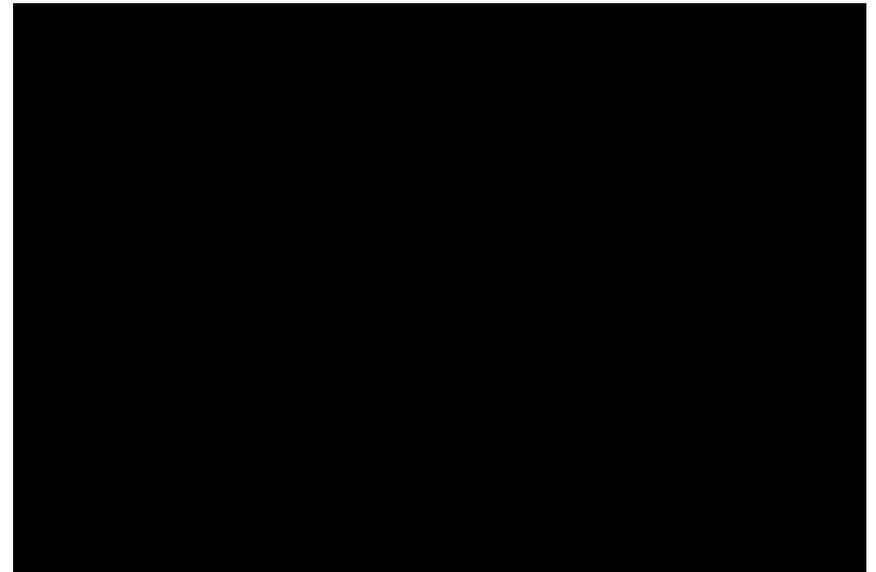


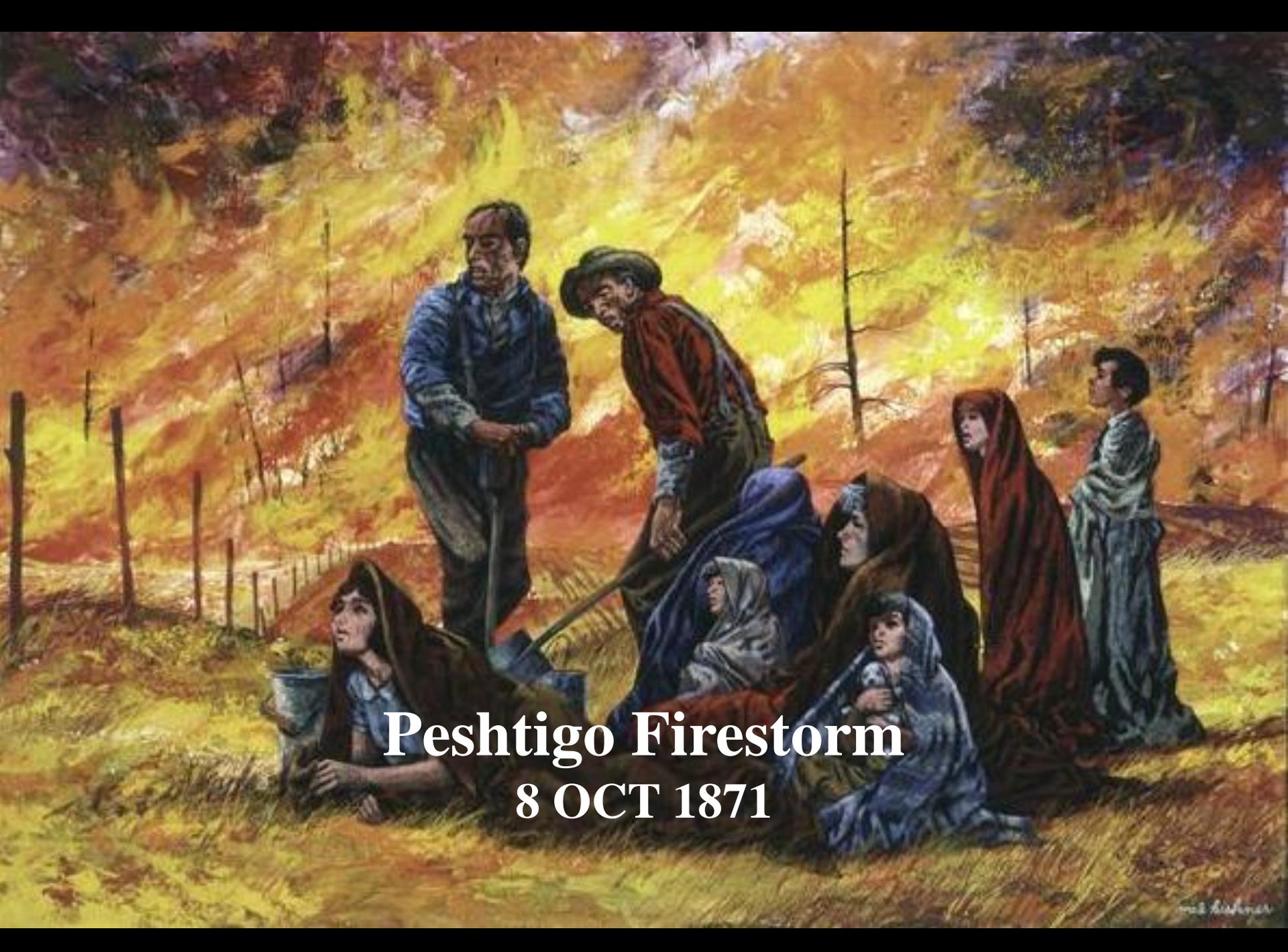


Perspective Matters



Allen & Starr 1982





Peshtigo Firestorm
8 OCT 1871

W.E. Kilmer

Along The Southland's Roadsides Today



North Carolina
Department of Environment and Natural Resources
Division of Air Quality
www.ncair.org

**Breathe ...
Don't Burn!**

*Smoke from Outdoor Fires
is Unhealthy to Breathe
and Pollutes the Air*



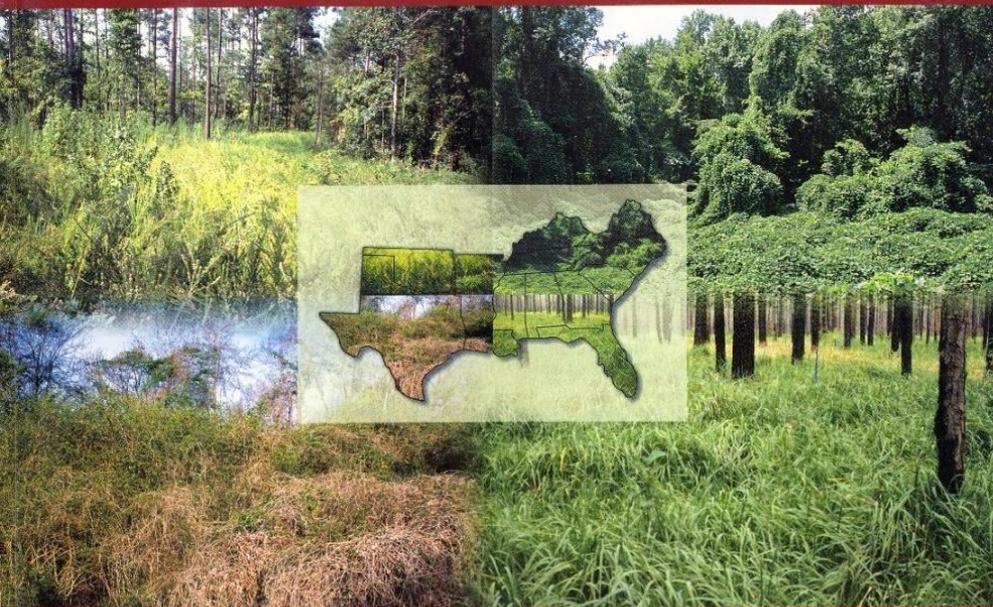
**PRESCRIBED
BURNING**

...For A Healthy Forest.

GEORGIA FORESTRY COMMISSION



Invasive Plants in Southern Forests



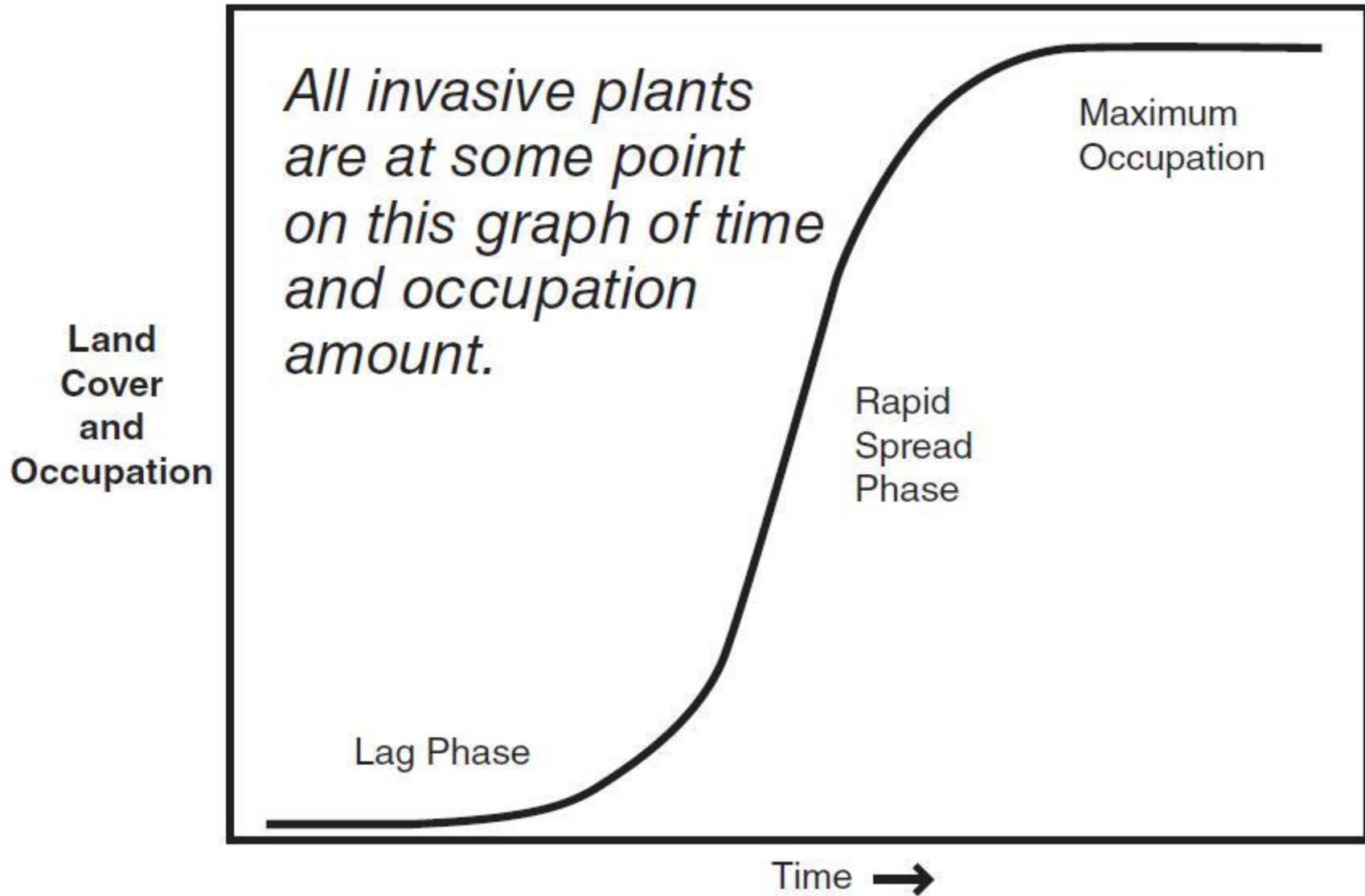
**tree-of-heaven, princess
tree, lovegrass, Chinese
silvergrass, interstate
lespedeza, **bicolor
lespedeza, cogongrass****



Invasive Exotic Plant Species: Cogongrass



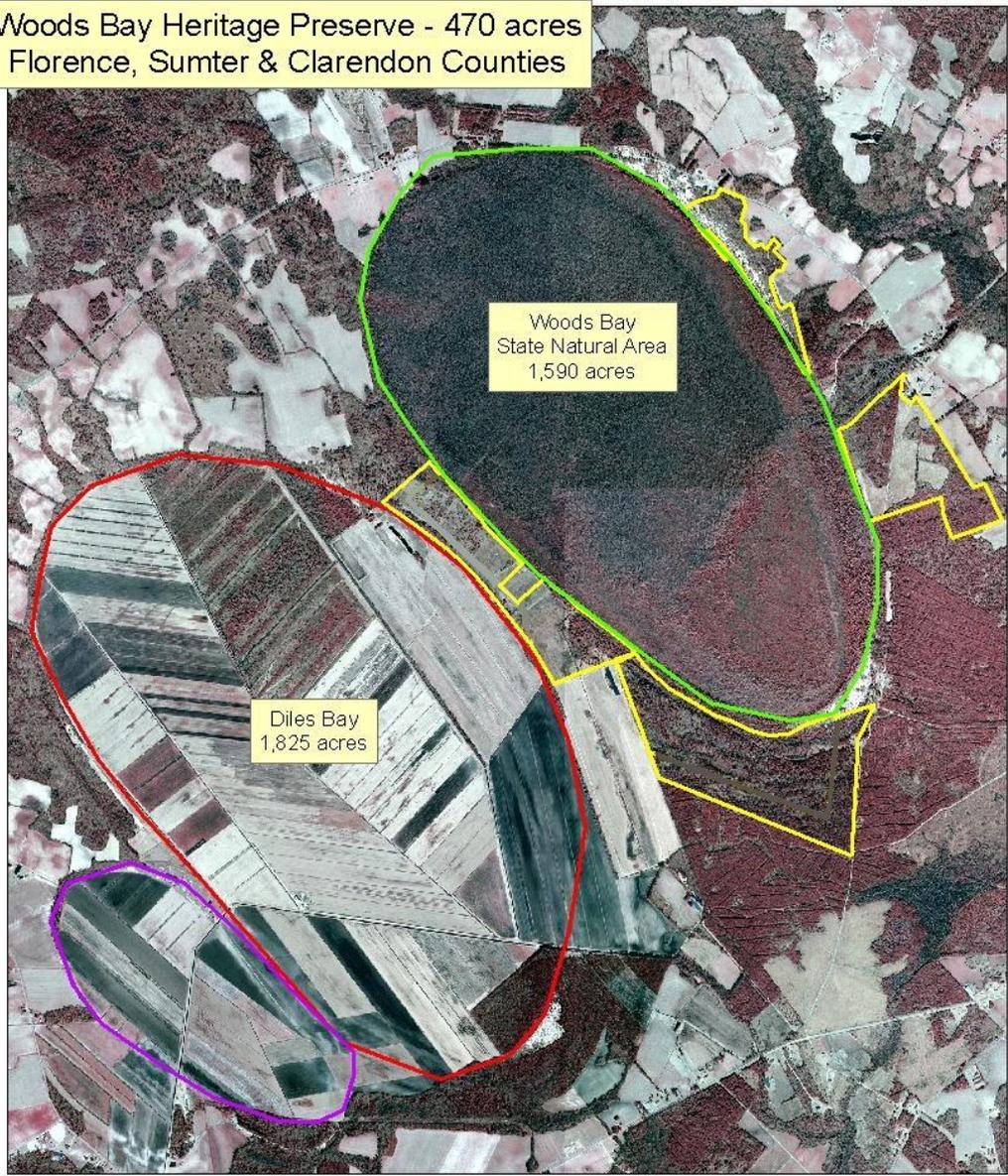
The first thing you do when you find yourself in a hole
is to stop digging. Abraham Lincoln



Miller et al. 2010



Woods Bay Heritage Preserve - 470 acres
Florence, Sumter & Clarendon Counties



- DNR Land
- PRT Land
- Private Land
- Private Land

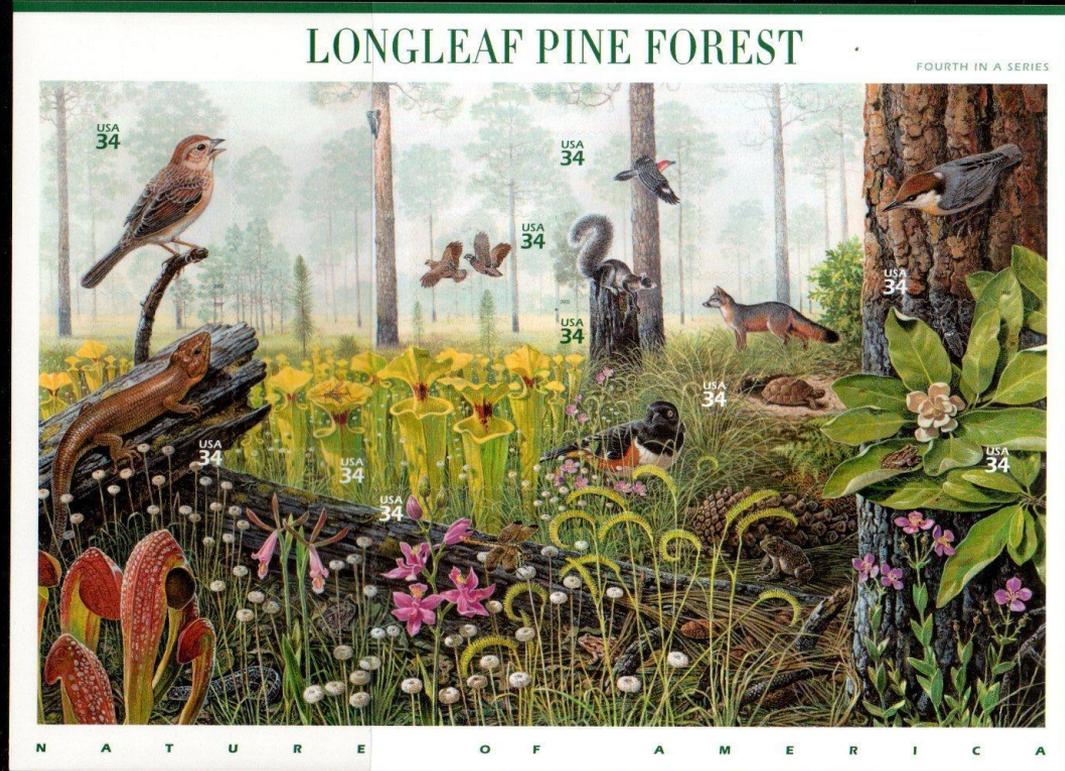
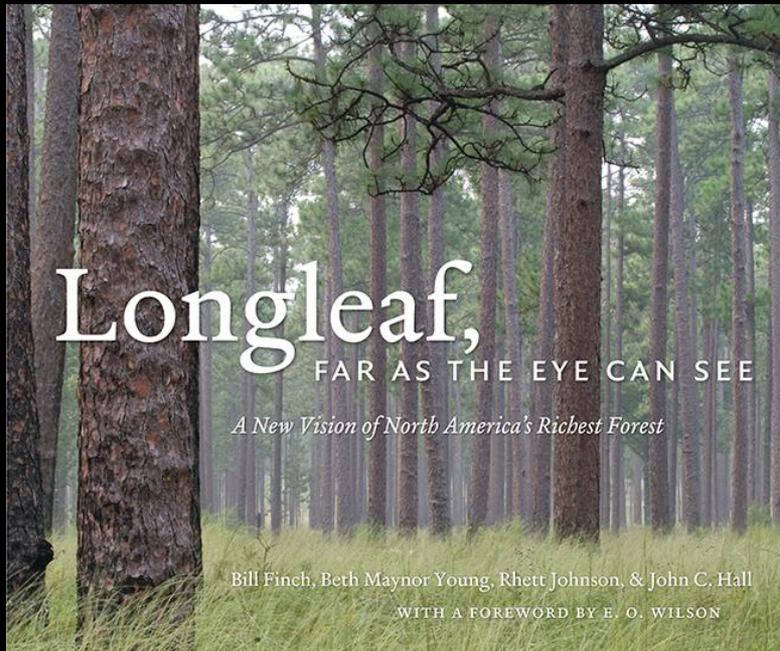




<http://www.bethyoung.net/>

The Longleaf Pine *Fireforest*

A Paragon



Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has.

Margaret Mead



**Restoring Appreciation for and On-the-Ground
Implementation of Multicultural Heritage**

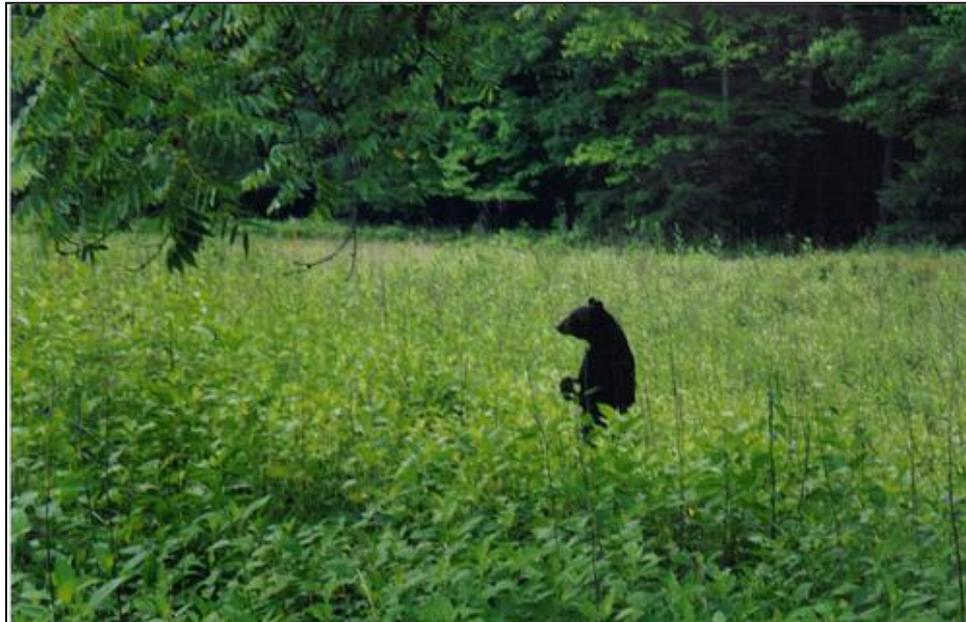
150 thousand days old







Which do we need more of ...?



A society is ultimately measured not by what it develops or consumes, but rather by what it has nurtured and preserved.

Jim Posewitz

**Orion: The Hunter's Institute
Helena, Montana**

**Preliminary Review of
Adaptation Options for
Climate-Sensitive Ecosystems
And the Subcommittee on
Global Change Research**

Final Report, Synthesis and Assessment

June 2008

U.S. Climate Change Science Program