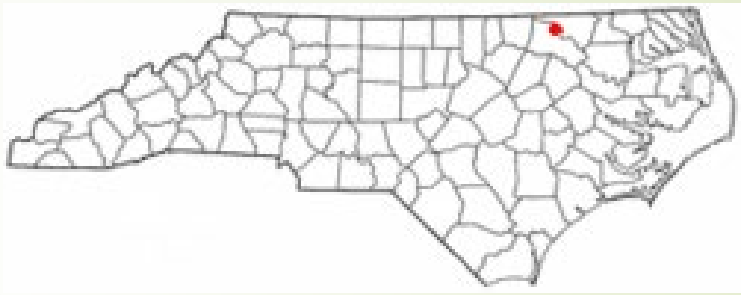
Meet Tom Stokes: Journey from Trees to Seedlings

Southern Forest Nursery Management Cooperative –
Research Towards Increasing Nursery Production

Background

- Born – Roanoke Rapids, NC



- Lived in many southeastern states:
  - Florida
  - Georgia
  - Louisiana
  - Texas
  - Alabama

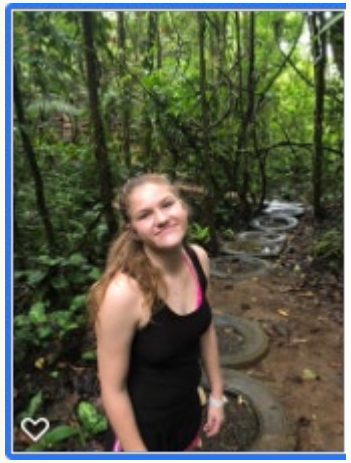
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

AUBURN UNIVERSITY
SCHOOL OF FORESTRY AND WILDLIFE SCIENCES

Hobbies

Scuba Diving

Traveling with my Daughter



Hiking/Exploring

Playing Guitar (attempting!!)

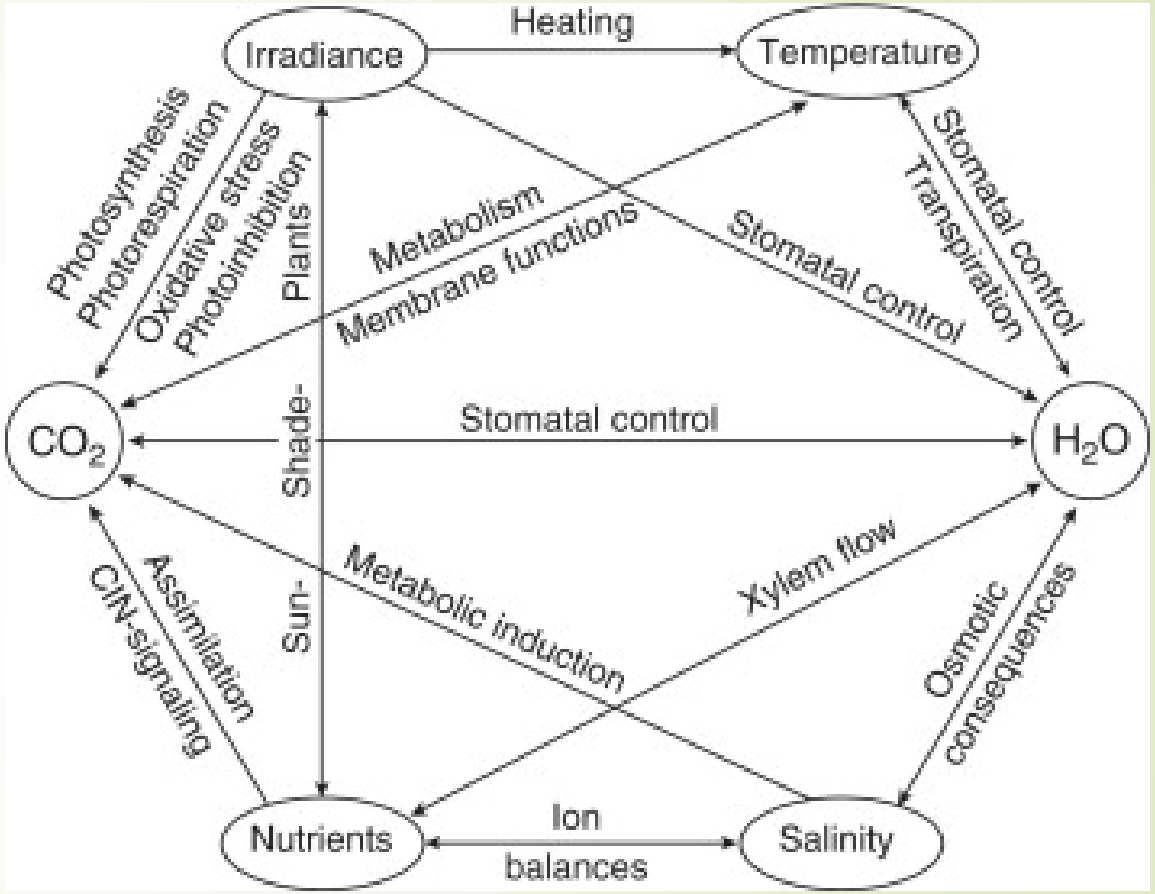
Making Beer

Education

- AAB in Business – Central Alabama Community College - 1994
- B.S. in Forestry Resources – Auburn University – 1996
- M.S. in Tree Physiology – Auburn University – 2004
  - Thesis – Water Relations of an Intensively Managed Five-Year-Old Loblolly Pine Plantation: A One Year Study.

Career

- 23 years as a Research Assistant/Associate in tree physiology at Auburn University School of Forestry and Wildlife Sciences
  - What is tree physiology?
    - Study of the internal processes and conditions in which trees grow
      - One goal of studying physiology of trees is to provide a basis for developing better methods of growing them



Experience

- Some of my early research examined:
  - Ozone effects on forest trees in the Great Smoky Mountain National Park
  - Influence of poultry litter fertilization in mature loblolly pine plantation:
    - We found, based on diameter and foliar nutrient responses, that poultry litter applications of 9 Mg ha^{-1} was an effective fertilizer compared to DAP

Experience

- Physiological Production:
  - Influence of fertilizer and irrigation on growth and physiology of sweetgum and loblolly pine
  - Allocation and stem growth efficiency in loblolly pine
  - Soil CO_2 efflux in intensively managed loblolly pine
  - Utility of ground penetrating radar as a root biomass survey tool in forest systems

Experience

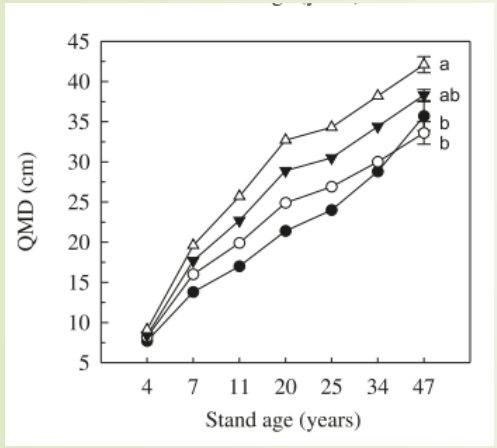
- Water Relations
  - Hydraulic traits in plantation grown loblolly pine
  - Use of forest trees for phytoremediation of groundwater
  - Influence of fertilization and irrigation on transpiration and hydraulic properties of cottonwood

Experience

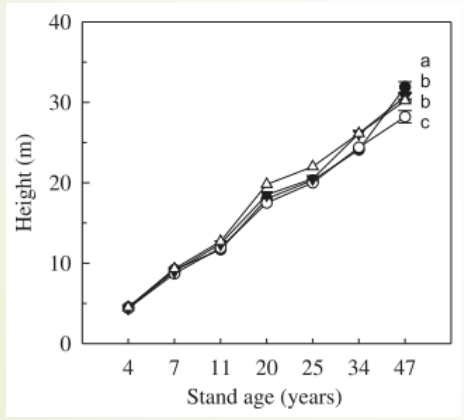
- Structure and diversity of mountain longleaf pine communities
- Physiological and morphological responses to shade in longleaf pine
- Physiological comparisons of 50-year-old loblolly, slash and longleaf pines

Experience

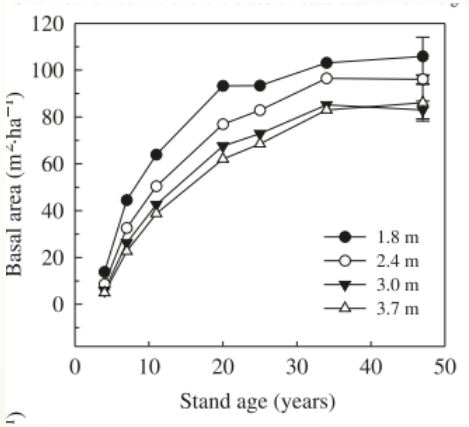
- Maximum growth potential in loblolly pine – Hawaii.
  - At 47-years-old:



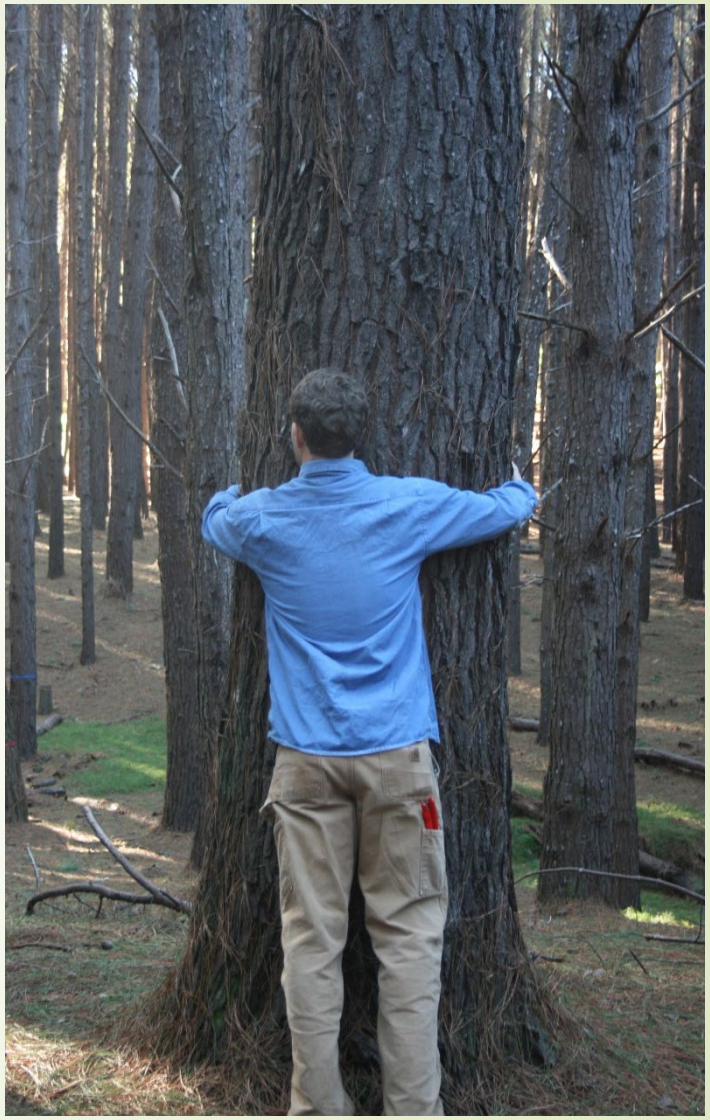
Approx 16 in



Approx 102 ft

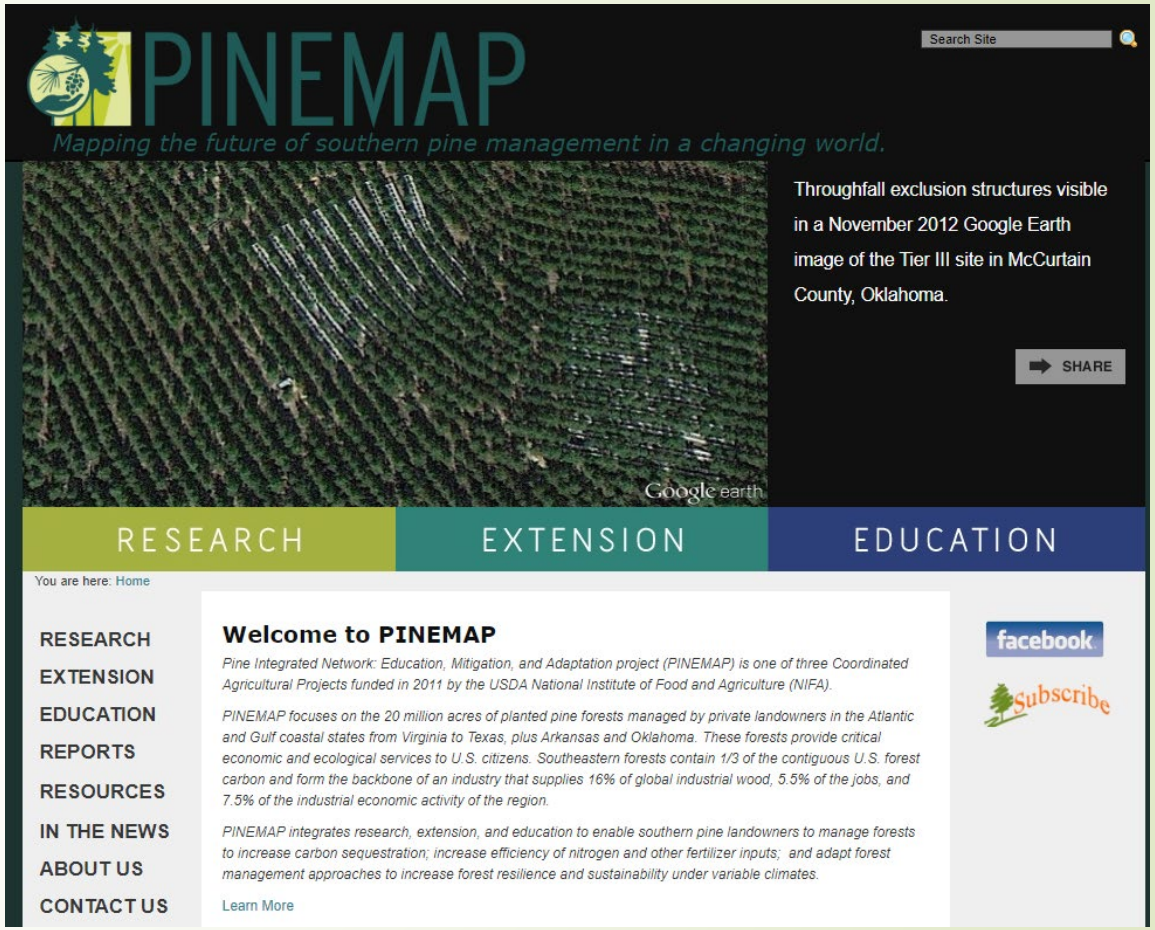


Approx 435 ft^2 ac^{-1}



Experience

- Collaborated in large multi-university/industry/government project – PINEMAP
  - PINEMAP – Pine Integrated Network: Education, Mitigation and Adaption Project



Experience

The project that changed my life:

Ecosystem Carbon Stocks in Longleaf Pine Forest

Southern Forest Nursery Management Cooperative – Research Towards Increasing Nursery Production

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Bobcat
850-862-3406

Before

After

How did it change my life?

Experience

Longleaf Pine Drought Tolerance Project

Southern Forest Nursery Management Cooperative – Research Towards Increasing Nursery Production

Experience Summary

- 23 years of experience in forest ecophysiological research
- >25 authored/co-authored peer reviewed scientific papers
- Presentations at numerous regional/national/international conferences
- Teaching
  - Dendrology
  - Tree Physiology

Move to the SFNMC

- Professor in Tree Physiology retired
- Dr. Scott Enebak
- Dr. Ryan Nadel
- Ready for new challenges

Working with the SFNMC

- Started April 2020
- Visited several nurseries
- Assisted in spraying fusiform rust trials
- Assisted in spraying post emergent herbicide trials
- Sampled seedlings for further analysis on two other trials
- Co-authored paper with SFNMC:
  - **Lifting Dates, Chilling Hours, and Storage Duration on Slash Pine Seedling Root Growth Potential, Growth, and Survival**

Future with the SFNMC

- How can physiology help the forest nursery industry?
  - You have worked with tree genetics for improved seedling
  - We know that environmental stresses can impact seedling growth and quality
  - **Physiology is the mechanisms through which the genetic potential and the environment operate to determine the quantity and quality of growth**
  - Production can fall below genetic potential of seedlings because important physiological processes are often inhibited by environmental, hormonal, and nutritional stresses. Identifying theses physiological processes can help determine the best way to overcome those shortcomings

Future with the SFNMC

- Carbon Budget
  1. Foliage
  2. Roots
  3. Storage
  4. Diameter Growth
  5. Protective Chemicals

- How do trees die?
  1. Hydraulic failure
  2. Carbon starvation
     - Trees can have different strategies

- There are many physiological mechanisms involved in tree growth and survival. **Identifying which mechanisms are inhibited by individual stresses can help determine how to manage those processes to allow seedling to survive and meet their genetic potential.**

Future with the SFNMC

- My goals are
  - Learn more about needs of the forest nursery industry
  - Apply my physiological background to add insight and knowledge to help solve problems and enhance forest nursery production

Questions

Want to know more about me? Go ahead and ask.

Feel free to contact me any time at:

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