

Tree Rings: From the Laboratory To the Landowner



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Conducting forestry research



Teaching the next generation of natural resource managers



Teaching landowners about forests



Always keep learning






Presentation Overview

The Laboratory

- Dendroecology
- Dendroarchaeology
- Dendroclimatology

The Landowner

- Looking for annual rings
 - Variation in tree-ring width
 - Drought years
- 

The Lab: Dendroecology Stadium Woods in Blacksburg



Collaborator: Dr. John Seiler – Virginia Tech

Gathering tree increment cores





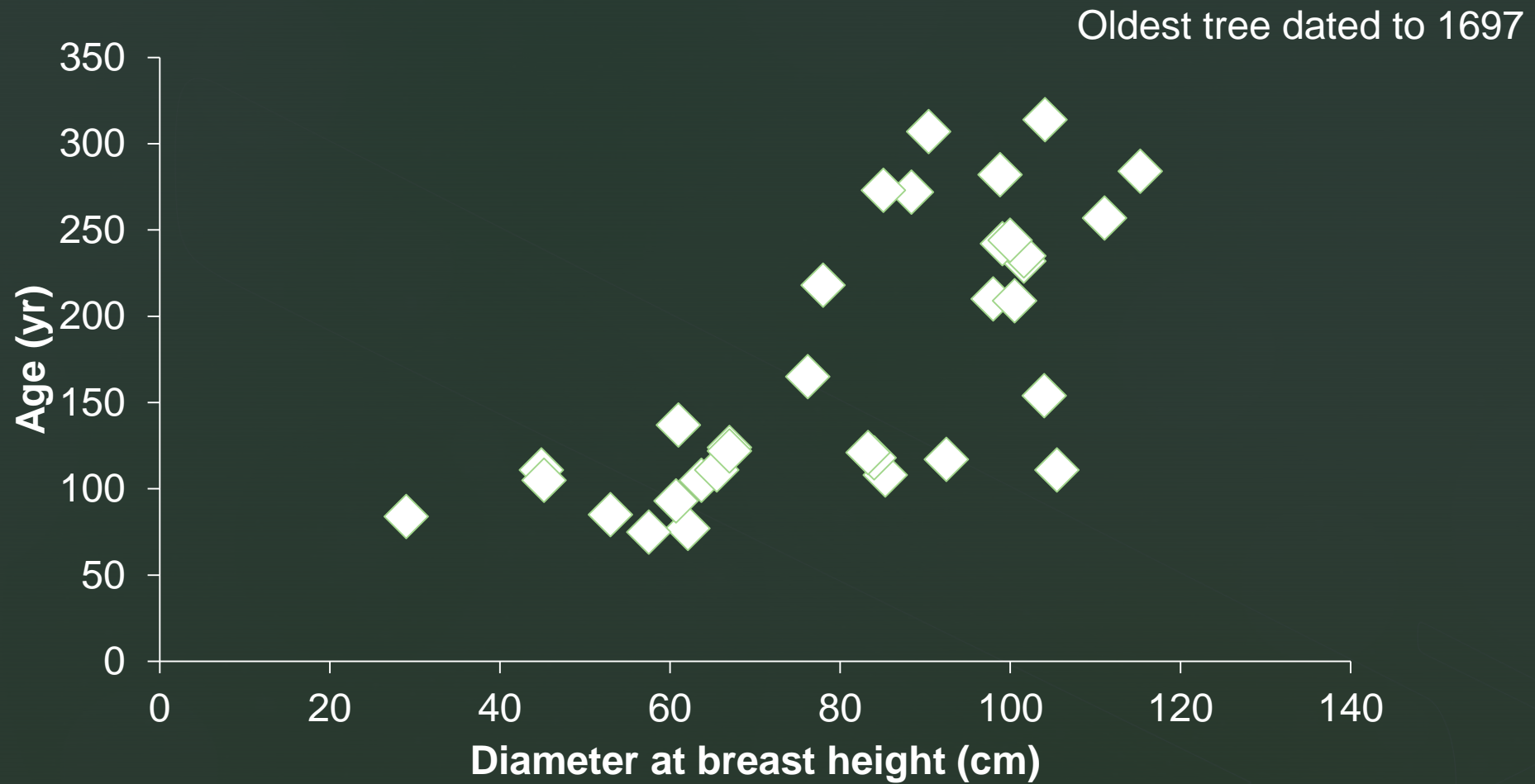
Laboratory work



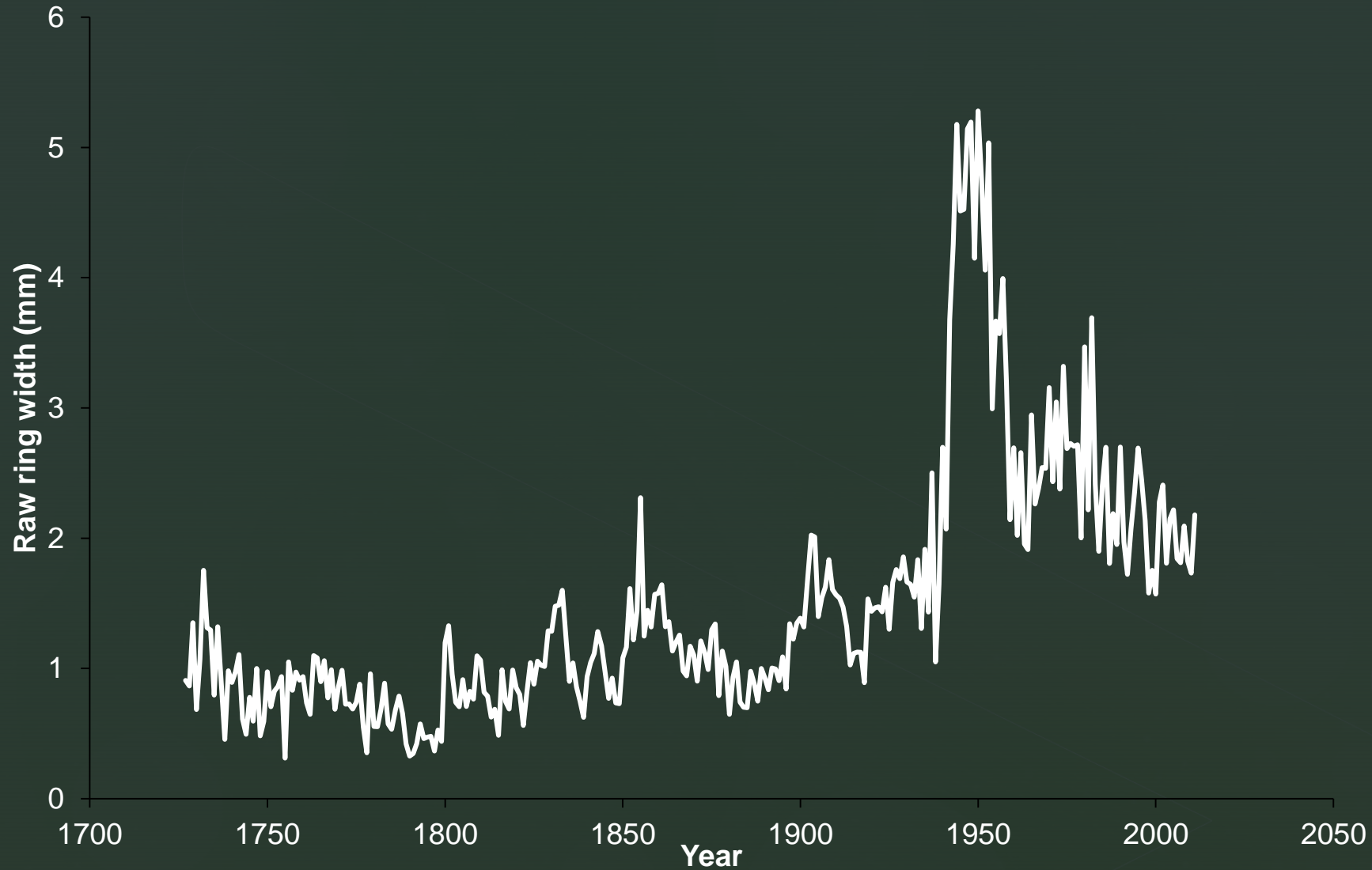
“Before that experience, if you had said to me, research in a lab, I’m picturing somebody with a lab coat with Bunsen burners and beakers and stuff bubbling and different chemicals, and that was my view.... But, I remember going out in the field and laughing with Dr. Copenheaver and with the other students and having fun out there I didn’t know that doing research could be fun, getting together with some friends and going out and laughing and joking a little bit, but still getting the job done.”

- Interview with former student

Tree diameter \neq Tree age



Old trees can grow very fast



The Landowner: Dendroecology

Cross-sections of logs or stumps



Hiking trails are a great source of cut logs



When you have timber harvested on your property
– check the stumps and logs (safely!)

The Lab: Dendroarchaeology Greenfield Plantation, Fincastle



Collaborator: Mr. Mike Pulice – Virginia Department of Historic Resources

What are the construction dates of these two buildings?



Kitchen



Slave quarters

Photos: Francis B. Johnson (c. 1930)



In the field: sample collection



In the laboratory: sample preparation



In the field and the lab: matching ring widths



Logs in buildings



Living trees



Kitchen

- Logs were harvested after the 1845 growing season, but before the start of 1846 growing season
- In 1845-1846, Greenfield Plantation owner: William M. Radford who had purchased it from his brother-in-law in 1834.

Slave quarters

- Logs were harvested after end of 1864 growing season, but before beginning of 1865 growing season
- 1860 Slave Records lists 35 slaves owned by William R. Radford
- 1870 Census lists 41 black or mulatto residents at Greenfield Plantation

The Landowner: Dendroarchaeology Looking at wooden artifacts



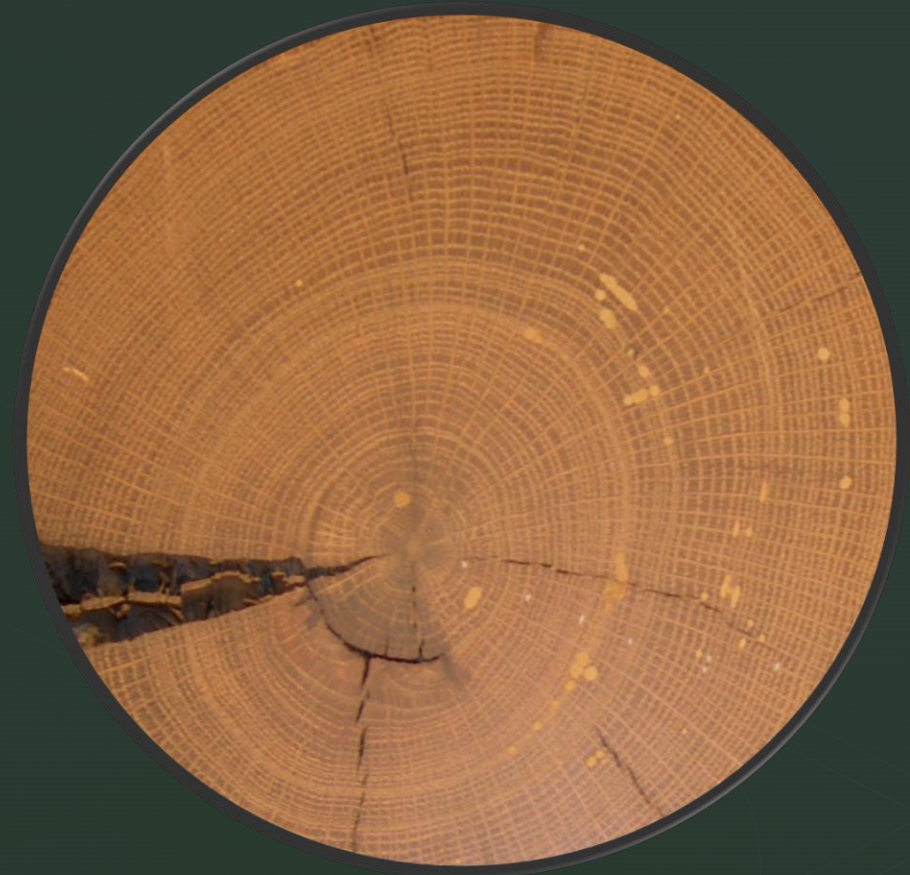
Autoharps built by John Hollandsworth from Christiansburg



Visit historical sites (e.g., Thomas Jefferson's Poplar Forest)
look at floors and wooden furniture

Time to look at your tree cookie

- Can you identify:
 - Bark
 - Annual rings
 - Pith (center)
- Look at your neighbor's cookie – do their rings look the same or different?



The Lab: Dendroclimatology Sugar maple



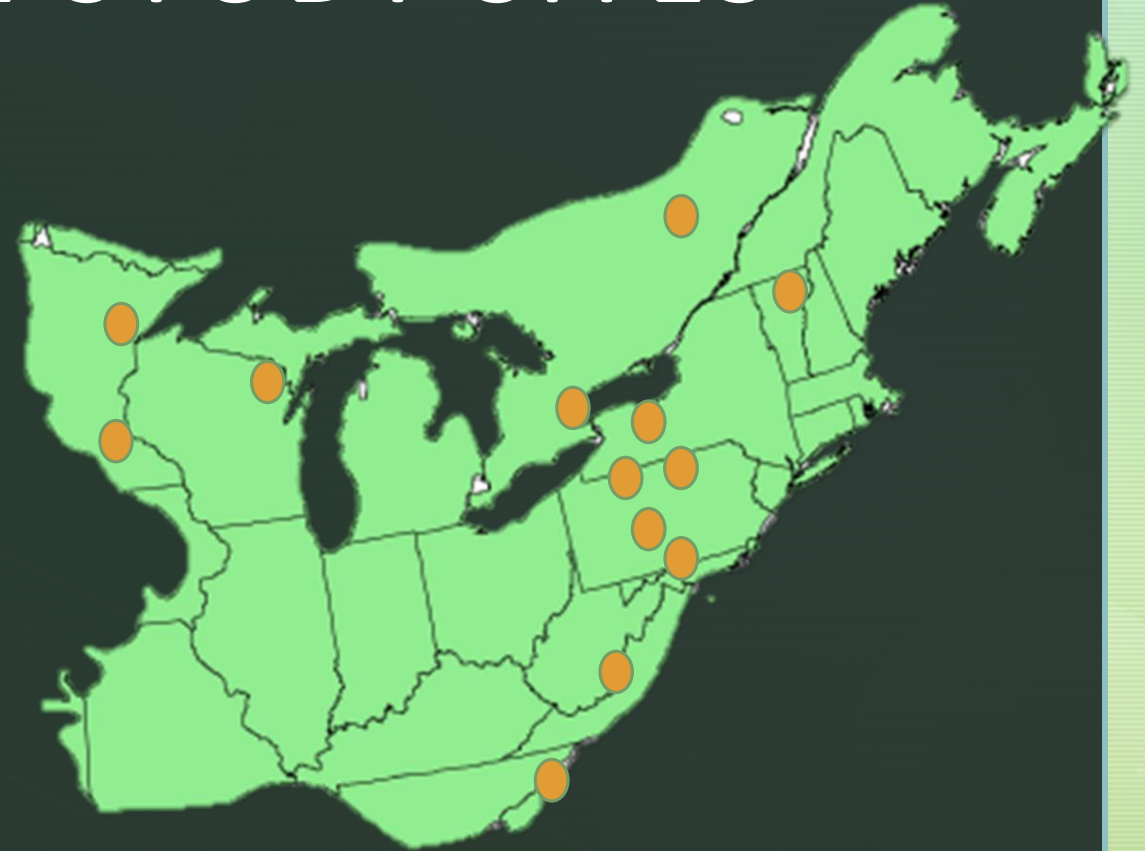
Collaborator: Dr. Ketia Shumaker – The University of West Alabama

How will sugar maple respond to climate change?



THE STUDY SITES

Bolton, VT*
Buchanan, VA
Ceres, NY
Cumberland, MD
Dillingham, NC
Edwards, ON
Entriiken, PA
Kane, PA
Long Lake, WI
McGrath, MN*
Pelham, ON
Plymouth, MN*
Ridgeway, PA



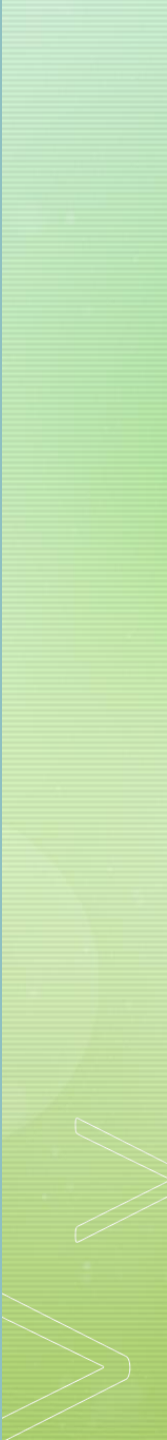
* Tree-ring data from the International Tree-Ring Databank



Dr. Shumaker's philosophy:
Hard work yields....



ADVENTURE!!!



Temperature & stem growth	Prior Summer	Prior Fall	Winter	Spring	Summer
Bolton, VT	negative				positive
Plymouth, MN	negative	positive			
Entriiken, PA	positive		negative		
Ceres, NY					
Pelham, ON					negative
Long Lake, WI				negative	
Dillingham, NC				positive	
McGrath, MN	negative	positive	positive		positive

▶ The Landowner:
Dendroclimatology – narrow rings





Thanks to
collaborators

