

Research and multicultural partnership uncover climate change in trees

Oct. 3, 2016 — A Virginia Tech professor studied the effects of climate change on sugar maples, along with a student and faculty member from the University of West Alabama, thanks to a grant from the U.S. Department of Agriculture's Agriculture and Food Research Initiative on Climate Variability and Change.

[Carolyn Copenheaver](#)^[1], associate professor of forest ecology in the Department of Forest Resources and Environmental Conservation in Virginia Tech's [College of Natural Resources and Environment](#)^[2], and Keita Shumaker, associate professor of biology at the University of West Alabama, who met in 2011 during a plant genomics workshop, developed a working relationship that eventually led to collaborating on a research grant proposal through the U.S. Department of Agriculture.

The two partnered to recruit Brittany Butcher, a senior majoring in biology at the University of West Alabama, for Virginia Tech's Multicultural Academic Opportunities Program [Summer Research Internship](#)^[3], a 10-week program designed to prepare undergraduate students for graduate-level work. The department of agriculture research grant funded Butcher's internship.

Climate Change Study

Their climate change study is part of a larger three-year project involving six U.S. universities, each of which is responsible for researching how a different set of tree species reacts to changing climate conditions.

"Many species are seeing massive mortality, particularly in high-latitude areas like Alaska's boreal forest," Copenheaver said. "Areas that were formerly forested are converting to shrub and grasslands."

To understand the effects of climate change on trees on the East Coast, the researchers visited the Allegheny National Forest in northwestern Pennsylvania. There, they collected tree core samples, a technique that allows them to see the tree's annual rings without cutting down the tree.

"The samples are only about the size of a drinking straw," Copenheaver said, "but they allow us to see the ring width. Wide rings indicate good growth conditions while narrower rings indicate poor conditions."

For Butcher, this type of research was uncharted territory. "Dendroclimatology was totally new to me. I was starting from scratch, but I really like learning new things and I don't like to give up," she said.

The researchers used temperature and precipitation data to analyze the tree rings, but were puzzled to find no real relationship between this data and how fast the trees were growing. A breakthrough came when discussing the project with colleagues at the University of Alaska in Fairbanks, another participant in the department of agriculture study.

"They suggested looking at relationships between tree groups before 1950 and tree groups after 1950," said Copenheaver. "The effects of climate change really began to appear during that later time period." ([continue reading.....](#)^[4])

Links

[1]. <http://frec.vt.edu/people/copenheaver/index.html>

[2]. <http://cnre.vt.edu>

[3]. http://www.maop.vt.edu/Undergraduate_programs/summer_research.html

[4]. <http://vtnews.vt.edu/articles/2016/09/cnre-climatechangetrees.html>