

ISU News

Indiana State students study tree rings to discover hurricane history

February 15, 2006

ISU
[Watch](#)
[Video](#)

College students in Indiana don't often get the chance to study the effects of hurricanes.

Tornadoes are the heartland's storms. But the path of destruction left by Midwestern cyclones is much different than that of a hurricane. Trees in the path of a tornado are often literally blown to smithereens, making it difficult to do a good post mortem examination of a maple, elm or poplar.

Lacking the churning motion of a twister, the straight-on winds of a hurricane - while no less devastating to life and property - often just blow down the live oaks and cypresses common to the Gulf Coast.

So when students in the dendrochronology lab at Indiana State University were invited to Texas, they jumped at the chance - and it wasn't even spring break or on Padre Island.

Their destinations were the Big Thicket National Preserve and Angelina National Forest near Beaumont. Packing chain saws instead of swimwear, students under the direction of James H. Speer, assistant professor of geography and geology, headed south just before winter break and brought back a few things to work on during the spring semester - cross sections of Texas trees whose lives were cut short by Hurricane Rita.

Dendrochronology is the study of climate changes and past events by comparing the successive annual growth rings of trees or old timber. Speer and his students hoped to document several centuries of climate change along the Texas Gulf Coast, but what they found was surprising.

"Most of the area was actually cut over in the early 1900s from logging, so a lot of the trees are around 100 years old. Some that we are finding are likely to go back to the 1800s and some past studies have actually found some trees as old as the 1700s, but those are kind of unique cases where the trees were left behind by the loggers," Speer said.



One of the biggest surprises was when researchers checked out

Jodi Farrell-Sparks, a master's student in geography at Indiana State University, mounts a core sample from an ash tree. The core is mounted with glue onto a core mount to hold it solid while it is sanded and analyzed.

the fallen Compton Oak, which was believed to be up to 270 years old. It turned out that the Beaumont landmark was only about 80



Indiana State University student Brian Cox sands a cross-section of the Texas state champion birch tree, which was felled by Hurricane Rita. After sanding and dating the section, it will be returned to the state park in Texas where it originally stood.

years old. The tree's massive girth had lent credence to the widely held belief that it had been around since before Jim Bowie and Davy Crockett fought at the Alamo. But its rings didn't lie.

"Live oaks are unique because they keep leaves on throughout the year. It's so warm down there that the trees can grow rather quickly. We have some rings that are about an inch wide so it's an extremely fast rate of growth," Speer said.

"The growth that's put on by the trees in the first 20 years is astounding. I have never seen trees that have put on that much growth in that short a period of time," added Chris Gentry of Jeffersonville, who is pursuing a Ph.D. in geography. "People think that the biggest tree they have is the oldest tree that they have. In reality, environmental factors play a major role in how big the trees can get and how fast they grow."

Still, the area provided a rich variety of trees for students to study, Speer said.

"It is the center for biodiversity in the United States. It is the area where there is the greatest mix for plants. It's a very unique place because of that. There are actually four separate ecosystems that are interacting in that area," he said.

And given the recent increase in major hurricanes, 100 or so years' worth of tree rings just may shed some light on the cycle of hurricanes.

"The intensity of hurricanes now is based on a cycle of 20 to 30 years," said senior geography major Brian Cox of Speedway, who is pursuing a minor in climatology and geology and has previously worked in Indiana State's Climatology Lab. "This study could help indicate just what type of hurricane season we may have coming up. As you know, we had a record number of hurricanes last year and we are predicting the same, or maybe more, next year.

"I had just taken a dendrochronology course and this project gave me a better understanding of dendrochronology. It also gave me an idea of how Hurricane Rita affected the Gulf States."

The study complements another Indiana State student's ongoing master's thesis.

Jodie Farrell-Sparks' thesis focuses on small gaps in the tree canopies of forests in the Wabash River Valley.

"Having the chance to go down to Texas to look at the damage from hurricanes, which cause large-scale disturbances and canopy openings, was an educational experience," said Farrell-Sparks of Marshall, Ill. "It gives me a chance to compare the diversity of the growth there and how many trees had fallen compared with single-tree canopy gaps in Vigo County (Ind.)"

Farrell-Sparks hopes information gathered from the Texas project can be used to help determine how best to manage old growth forests elsewhere, including two sites in the Terre Haute area that she is studying.

Land use has a great effect on how much damage hurricanes and other natural disasters cause, Speer said.

"If you have a rough surface that has a lot of trees on it, the hurricane can lose a lot of energy," he said. "So just clearing trees for agriculture and industry opens up a large area where the wind can pick up a lot of speed and do a lot of damage. That's mainly where we saw a lot of the damage from Hurricane Rita."



James H. Speer, assistant professor of geography at Indiana State University, cross-dates a cross section of a muscledwood tree blown down by Hurricane Rita.

The research is funded by the ISU department of geography, geology and anthropology; and the Center for Urban and Environmental Change.

-30-

Note: Photos for this story are available by contacting the Indiana State University Office of Communications & Marketing at (812) 237-3743 or dave.taylor@indstate.edu

Contact: James H. Speer, assistant professor, geography and geology, Indiana State University, (812) 237-2257 or gespeer@isugw.indstate.edu

Writer: Dave Taylor, media relations director, Indiana State University, (812) 237-3743 or dave.taylor@indstate.edu

Copyright © 2005 Indiana State University
