On February 5, 2008, one or more tornadoes roared through the Tallahatchie Experimental Forest (Tallahatchie) on the Holly Springs National Forest near Oxford, MS. The winds blew down, snapped, or damaged trees on about 75 percent of the 3,500-acre forest. The storm track included four of the seven experimental plots Steve Brewer, associate professor of biology at the University of Mississippi, had established in 2000 to measure how different seasons of prescribed fire affect regeneration of native and nonnative plant communities. He had already collected extensive data about herbaceous, understory, and overstory plant species.

The tornadoes created a gradient of damage ranging from hardly affected to nearly all trees either down or topped. Staff at the Holly Springs Ranger District wanted to salvage log the damaged trees. Brewer, with research biologist Mel Warren and research plant pathologist Ted Leininger from the SRS Center for Bottomland Hardwoods Research worked with the district to establish additional plots in the tornado-affected areas. They set up plots where logging would occur and comparison plots that would be allowed to regenerate naturally with no disturbance from salvage logging.

Because so much information had been collected prior to the storm, the stage was set to determine not only what was lost but also how the land would respond to different treatments.

For this study, Brewer, Warren, and Leininger are taking a broader view, examining the entire plant community, including those with nontimber values such as contributing to biodiversity and benefiting wildlife. In the salvage-logged plots, trees and even tree seedlings are doing well, but native plants don’t seem to be recovering as well. According to Brewer, who cautions that it’s too early to make a definitive statement, preliminary
results show native plants adversely affected as invasive species move into the areas that were salvage logged. In the plots allowed to regenerate naturally without salvage logging, native flowering plants are emerging from the seed bank. Brewer explains that these areas were historically open, with savannah species whose growth was suppressed by the closed canopy forest. The natural disturbance of the tornadoes has created more light, allowing herbaceous ground cover species to return. Though effects on wildlife are not within the parameters of Brewer’s study, he reports that legumes—an important food source for quail and turkey—are growing very well.

The Tallahatchie was established in 1950 to study relationships between mixed pine and hardwood forests, flooding, and soil erosion. Three small pine-hardwood watersheds were established in 1959 about one-third mile east of the Tallahatchie and are informally considered part of the experimental forest. Primary research opportunities abound in hydrological studies of these small basins, where data has been collected for over 40 years.

One of the primary projects supported by work on the experimental forest and associated hydrological research was the Yazoo-Little Tallahatchie Project, a large Federal reforestation and soil stabilization effort which was conducted in northern Mississippi from 1949 to 1985. Research on the Tallahatchie has contributed significantly to improving forest management in several areas, providing information on the effects of timber harvest on runoff rates and sediment yields from basins with highly erodible soils, documenting the effects of cool season prescribed fire on plant and bird communities, and increasing recognition that hot season fire in the Upper Coastal Plain may be critical for effective and efficient improvement of forest condition, health, and diversity.

Collaborators:
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Wild turkey eggs. Legumes—an important food source for turkeys—are growing back well in study plots in the Tallahatchie. (Forest Service photo by Ted Leininger, www.Bugwood.org)
Longleaf pine forests, which once dominated an estimated 92 million acres in the Southeastern United States, now occupy only 3 percent of their former range. (Forest Service photo by William Boyer, www.Bugwood.org)