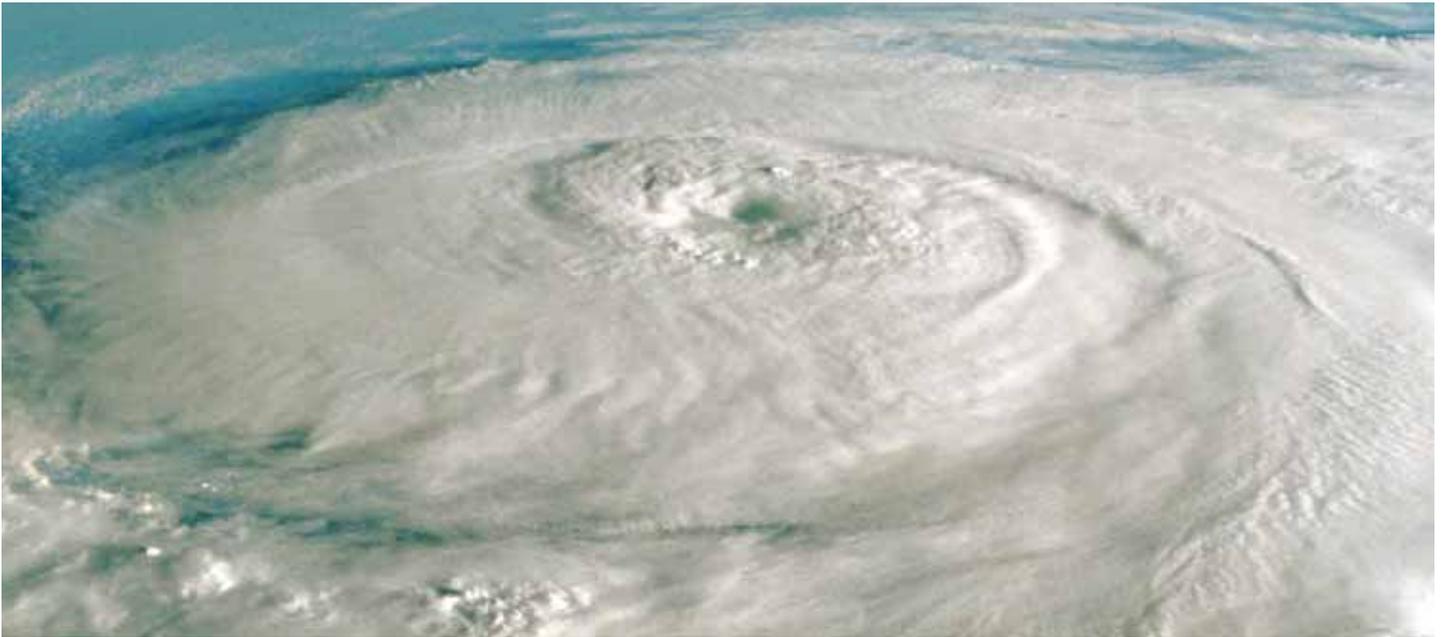


MSEPPC Program: Effects of Hurricanes on Invasive Species

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On June 27, 2006, the Mississippi Exotic Pest Plant Council sponsored a program addressing the effects of hurricanes on invasive species. This topic had particular relevance to Mississippi since Hurricane Katrina brought such widespread destruction when it came ashore at the Mississippi/Louisiana state line on August 29, 2005. One of the most damaging storms on record and a strong Category 3 hurricane, Katrina had hurricane force winds extending 125 miles from the center and a storm surge which extended 3.7 miles inland. However, hurricanes are a regular and natural event within the southeastern United States and many land managers can expect to be impacted. Four speakers (Gary Ervin, Dearl Sanders, Riley Hoggard, and Randy Westbrook) spoke about the potential effects of Katrina and other hurricanes on invasive species spread and establishment. Following are summaries of three of the presentations.



Managing Invasive Species in the Face of Natural Disaster: Obstacles and Opportunities

by Gary N. Ervin

Storms such as hurricanes and tornados provide obstacles for invasive plant control as they provide opportunity for the establishment of new weed populations through wind and water movement of plant propagules, or by transport of propagules in and on vehicles that assist in recovery efforts (e.g., Hodkinson & Thompson 1997). Less immediately obvious, such storms may affect landscape habitat properties (e.g. resource availability and heterogeneity) which may allow for an increase in invasive plant establishment.

Research in forests following hurricanes and experimental canopy destruction provides insight into the potential effects these storms can have on the spread of invasive species. Work in the Harvard Experimental Forest (Harvard University) demonstrated

a significant shift in both resource availability and variation among resources in microhabitats created by experimentally damaged canopy trees. For example, light availability increased three-fold in damaged plots and was twice as variable as in undisturbed forests (Carlton & Bazzaz 1998). After Hurricane Fran struck North Carolina in 1996, Boutet & Weishampel (2003) found the height of forest canopies to be reduced considerably. This reduction would have increased light availability in the understory. They also found significant increases in spatial variability in the canopy. Such increases in resource and microhabitat variability are expected to enhance the ability of colonizing species to establish in disturbed areas, including potentially invasive weeds. Work in herbaceous wetlands where soils had been disturbed by tillage showed exactly such a pattern (Ervin unpublished). Variability in the plant litter layer and soil microtopography both decreased with time after disturbance, as did the number of non-native and invasive plant species. Statistical analyses demonstrated a close positive correlation between microhabitat heterogeneity and exotic species richness, at scales from 25m² to 812m².