National Park Service
U.S. Department of the Interior

Old-Growth Bottomland Forest Research and Education Center
Congaree National Park

Hopkins, SC

Feral Hog Research at Congaree National Park

Above: This feral hog was trapped and tranquilized during a research project. It was measured, weighed, and fitted with both an identification tag and radio collar. It was then released to track its movements across Congaree National Park.

Research Summary

Congaree Feral Hogs

The feral hog (*Sus scrofa*), also called the wild pig, is an invasive mammal found at Congaree National Park and throughout much of the United States. Feral hogs impact the floodplain forest ecosystem at Congaree National Park because they are omnivores that compete aggressively with native animals for food, water, and shelter. In addition, their feeding (rooting) and wallowing behaviors disturb the natural soil, destroy native habitats, reduce water quality, and may encourage the spread of invasive plants. Furthermore, feral hogs reproduce quickly, have few natural predators, and can spread disease.

Staff and visitors at Congaree National Park have noticed a sharp increase in feral hog behavior and impacts. To help address the problem, Congaree National Park has partnered with scientists from several government agencies and universities to answer basic questions about feral hog populations, movements, diseases, and impacts on park lands. This summary highlights research results from three studies. Based on these results and similar studies, resource management staff are developing a plan to reduce feral hog impacts across Congaree National Park.

Monitoring Feral Hog Disturbance at Congaree National Park

In 2000, the park partnered with the U.S. Geological Survey's South Carolina Cooperative Fish and Wildlife Research Unit at Clemson University to study feral hog disturbance within the park. This study focused on repeated mapping of visible feral hog disturbance (primarily evidence of rooting and wallowing) in several plots randomly located throughout the park.

A total of 12,000 one-meter^2 plots were established in the park. The condition of every square was systematically categorized and recorded every other month from 2000-2003. The resulting maps showed patterns in feral hog behavior and were compared with vegetation maps in order to determine local habitat preferences. Changes in the maps over time provided information about feral hog movement patterns, as well as how the forest recovered after feral hog disturbance.

The results indicated that approximately ten percent of the floodplain forest floor showed evidence of rooting and other feral hog disturbance at any given time. In some areas, however, feral hog disturbance affected 100 percent of the forest floor. Feral hog disturbance was generally concentrated in the floodplain as opposed to the pine flatwoods above the bluffs.

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This was especially true during droughts and summer months. Disturbance was also greater in the remote, southeastern portions of the park.

There were differences in feral hog disturbance between three habitat types found in the park:

1. ***Seepage forest habitats,*** such as "Muck Swamp" (the low, wet area on the boardwalk by the Harry Hampton Visitor Center), were affected by intense and persistent feral hog disturbance. This disturbance remained visible for several years. This disturbance may be affecting populations of Carolina Bogmint (*Macbridea caroliniana*), a plant species of conservation concern.
2. ***Cypress-tupelo habitats,*** including the edges of Weston Lake, were significantly affected by soil and vegetation damage, especially when water levels were low.
3. ***Bottomland hardwood forest habitats,*** such as areas found along the Kingsnake and Oakridge trails, were also affected. Disturbance was locally less intense and persistent, but because this habitat is very widespread it actually encompasses (in terms of absolute numbers) more total disturbance than the other habitat types. This disturbance may be impacting recruitment (sprouting and survival) of oak and other tree species.

Radio Telemetry and Feral Hog Tracking

In 2005, Congaree National Park partnered with the U.S. Geological Survey's South Carolina Cooperative Fish and Wildlife Research Unit at Clemson University to track feral hog movements. Feral hogs were trapped, tranquilized, given an ear tag for ID, fitted with a radio transmitter collar, and released. Collared feral hogs were regularly relocated over a two year period by researchers using a radio antenna. This approach, called "radio telemetry," is a common tool for monitoring wildlife.

During this study, scientists trapped and collared 23 feral hogs. Relocation data were analyzed to determine local "home range" size (an estimate of the total space individual feral hogs used to survive), habitat preferences, and factors affecting feral hog mortality.

Feral hogs were observed across the park, but seemed to prefer habitats dominated by oak trees (*Quercus sp.*) that presumably provide acorns for food. During droughts, feral hogs were concentrated around water features such as sloughs and guts. The edges of these features are exposed at low water and provide a rich food base.

The "home range" size for individuals varied from 470-540 acres, which was small when compared to other studies. Many home ranges overlapped. Together these data indicated a large, densely concentrated feral hog population within the park.

Only four of the 23 collared feral hogs were confirmed alive at the end of the study. Thirteen of the 23 collared feral hogs moved across the park boundaries during the study. These data suggest that hunting on adjacent lands has a potential impact on feral hog populations but apparently is not, by itself, enough to reduce the total population. No floods were observed during the study, but anecdotal evidence suggests that floods are important in controlling feral hog populations.

Disease Monitoring in Feral Hogs

In 2006, the park partnered with scientists at the U.S. Department of Agriculture (USDA) and the University of Georgia to study the presence of pseudorabies and brucellosis in the park's feral hog population. The goal of this ongoing project is to determine the potential veterinary health risks posed by these diseases, which can be transmitted to domestic livestock including pigs, cattle, and other animals found on local farms. Other wildlife such as deer may also be at increased risk of infection from feral hogs. Furthermore, brucellosis is zoonotic, which means that it can be transmitted to humans in *direct* contact with infected feral hogs or their bodily fluids. The human form is called undulant fever.

A total of 119 feral hogs were trapped in the park from 2006 to 2010. Thirty-six of these feral hogs (30 percent) tested positive for pseudorabies, while thirty-seven (31 percent) tested positive for brucellosis. USDA scientists continue to monitor the prevalence of feral hog diseases at Congaree National Park and across South Carolina.

Future Directions

These research results indicate that active management may be most effective along the bluffs when the park is flooded, or in the cypress-tupelo habitat during dry periods. Working with adjacent land owners is also critical. Based on these results and similar studies, resource management staff are developing a plan to reduce feral hog impacts across Congaree National Park.

For More Information

1. *Find "Wild Boar" information at the USDA National Invasive Species Information Center website:* www.invasivespeciesinfo.gov/animals/wildboar.shtml
2. *See the USDA brochure on "Feral/Wild Pigs: Potential Problems for Farmers and Hunters":* www.aphis.usda.gov/publications/wildlife_damage/content/printable_version/feral%20pigs.pdf