Hunting gives deer-damaged forests in state parks a shot at recovery

9 July 2014, by Natalie Van Hoose

White-tailed deer browse in West Lafayette, Ind. Credit: Tom Campbell

Regulated deer hunts in Indiana state parks have helped restore the health of forests suffering from decades of damage caused by overabundant populations of white-tailed deer, a Purdue study shows.

A research team led by Michael Jenkins, associate professor of forest ecology, found that a 17-year-long Indiana Department of Natural Resources policy of organizing hunts in state parks has successfully spurred the regrowth of native tree seedlings, herbs and wildflowers rendered scarce by browsing deer.

Jenkins said that while hunting may be unpopular with some, it is an effective means of promoting the growth and richness of Indiana's natural areas.

"We can't put nature in a glass dome and think it's going to regulate itself," he said. "Because our actions have made the natural world the way it is, we have an obligation to practice stewardship to maintain ecological balance."

Indiana state parks historically did not allow hunting. But by the 1990s, white-tailed deer populations in parks had swelled to such size that many species of native wildflowers such as trillium and lilies largely disappeared, replaced by wild ginger and exotic species such as garlic mustard and Japanese stiltgrass, plants not favored by deer. Oak and ash tree seedlings gave way to highly deer-resistant or unpalatable trees such as pawpaw.

The health of deer in state parks also dwindled as their food sources shrank.

To check the overabundant deer populations, the DNR introduced controlled hunts in state parks in 1993, with most parks adopting the strategy by 1996.

"Hunting in natural areas is controversial," Jenkins said. "But when deer are overabundant, they start to have undeniable negative impacts on the ecosystem."

Working with Christopher Webster, a Michigan Tech University professor and Purdue alumnus, Jenkins and then-master's student Lindsay Jenkins (no relation) tested the effectiveness of the hunting program by comparing the amount of plant cover in 108 plots in state parks and historically hunted areas with 1996-97 levels. They found that total plant cover in state parks more than doubled from 1996-97 to 2010. Herbs such as asters, violets and goldenrods increased from about 20 percent to 32 percent cover, and percent cover of grasses rose from 1 to 3 percent. Tree seedlings jumped from about 2 percent to about 13 percent of total plant cover, a finding that suggests when older trees die out, there will be younger trees to replace them, Jenkins said.

"With heavy populations of deer, tree seedlings

often don't have a chance to survive," he said. "In those situations, the forest could lose its ability to reproduce itself and eventually cease to be healthy."

The study also showed that the hunting program led to the recovery of native species and discouraged the spread of invasive and exotic species, said Lindsay Jenkins.

"We saw a striking improvement in the quality and diversity of the forest understory in state parks compared with conditions before the hunting program," she said. "The deer management program is having a clear, beneficial impact on Indiana parks and could serve as a good example for nature preserves with overabundant deer in other states."

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