Researchers show best methods to help endangered woodpecker

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Emily Brown, then a UA graduate student, measures woodpecker habitat in the Oakmulgee. Credit: Emily Brown

The best methods to help an endangered woodpecker in Alabama thrive are installation of artificial homes and controlled burning in forests, according to research from The University of Alabama.

Working with the United States Forest Service and other interested groups in an area of the Talladega National Forest, UA researchers

created a decision model that can predict the best forest management practices to increase the population of the red-cockaded woodpecker and balance multiple uses of the forest, such as recreation, forest health and beauty. The model ranks potential actions from most to least likely to meet management objectives.

"A lot of times in natural resource management, forest managers don't have the research to tell them the probabilities of getting particular outcomes from potential actions," said Dr. Paige Ferguson, UA assistant professor of biological sciences. "Managers still have to make decisions, so we built this model to best inform them with the information that exists."

Ferguson, along with her former UA graduate student Emily Brown, recently published their findings in the *Journal for Nature Conservation*. Their paper is one of the first published studies on red-cockaded woodpeckers in the Oakmulgee Ranger District of the Talladega National Forest, a 157,000-acre area south of Tuscaloosa and north of Selma. It is home to the largest population of red-cockaded woodpeckers remaining in Alabama.

Once found in longleaf pine forests throughout the Southeast, the red-cockaded woodpecker has declined to an estimated 3 percent of its original abundance. Thought to have numbered between a million and 1.5 million family groups at one point, the number of birds has likely shrunk to close to 10,000 groups living in spots throughout the South, according to the U.S. Fish and Wildlife Service and the National Audubon Society. Historical logging, land development and fire suppression led to the endangered status.

The red-cockaded woodpecker is considered a "keystone" species because they are original builders of tree cavities used by many other animals. Unlike other woodpeckers, the red-cockaded woodpecker only

excavates cavities in living trees, which often survive forest fires.

In the Oakmulgee Ranger District of the Talladega National Forest, the red-cockaded woodpecker population has not increased above 123 groups despite the federal government's goal of at least 394 groups.

"The Forest Service wasn't seeing the results they had hoped for," Ferguson said. "Our project tries to help the Forest Service by building this model that indicates that the number of red-cockaded woodpeckers in the Oakmulgee is most influenced by cavity availability and the survival rate of adult birds."

Through a series of workshops with stakeholders, Ferguson and Brown created a model that shows the probabilities of outcomes from potential management actions and incorporates data provided by stakeholders about how satisfied they would be with particular outcomes. The model then identifies the management practices expected to yield the best results.

The results showed inserting artificial cavities into trees has the greatest probability of boosting the woodpecker's population as the lack of tree cavities holds back reproduction, Ferguson said.

Prescribed burning is most likely to meet a variety of objectives held by different stakeholders, according to the research. Managed forest fires can clear brush and dead trees to create habitat that is suitable for the woodpecker.

"There's a new awareness of the benefit of managers and researchers engaging in participatory research to produce results that are actionable and acknowledge the concerns of stakeholders," Ferguson said. "We all worked together throughout the entire project."

More information: Emily Brown et al. A structured decision making analysis to increase a Red-cockaded Woodpecker population and balance stakeholder objectives for a National Forest, *Journal for Nature Conservation* (2019). DOI: 10.1016/j.jnc.2019.01.010