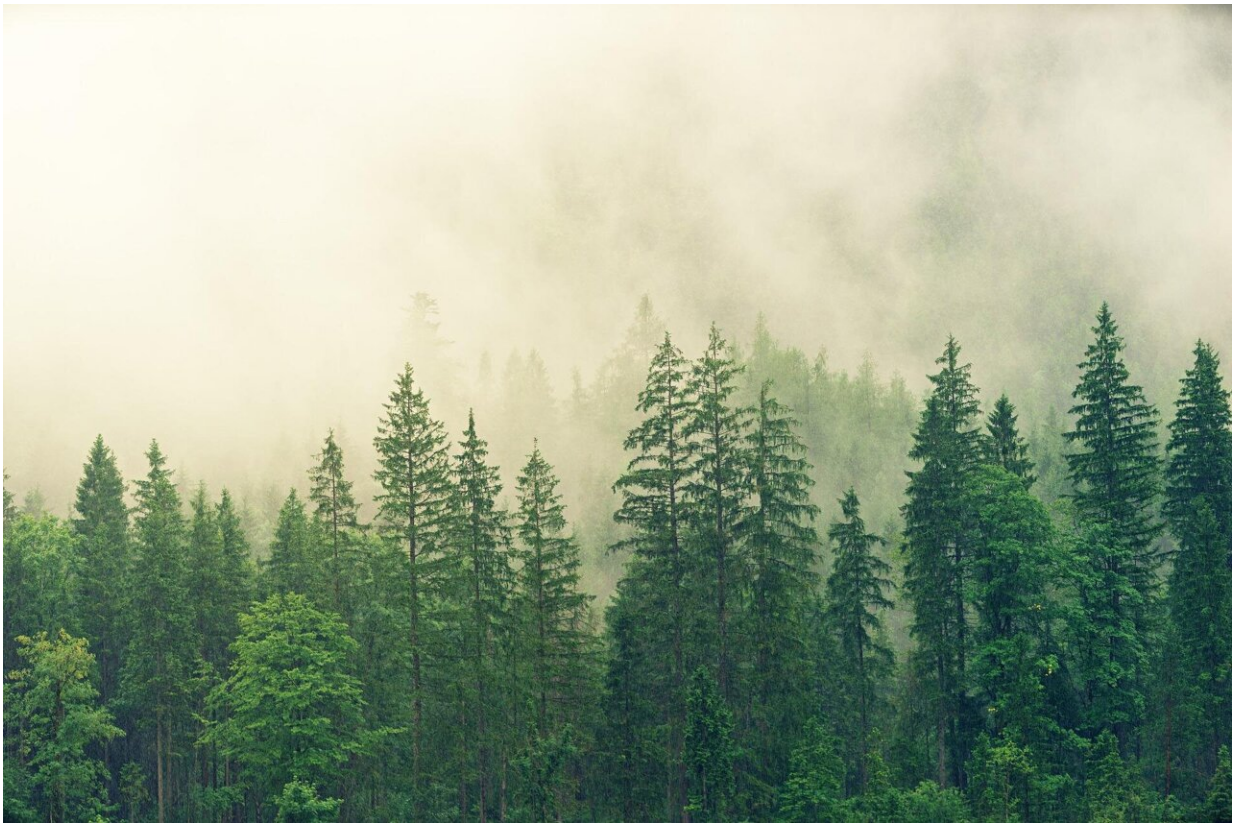


What motivates family forest landowners to manage invasive species?

July 17 2023, by Marianne Stein



Credit: Pixabay/CC0 Public Domain

Over half of forests in the United States are privately owned, especially in the Eastern part of the country. This can make control of invasive species challenging, as efforts need to be coordinated among many

different landowners. A new study from the University of Illinois Urbana-Champaign looks at how family forest landowners in Maine and New Hampshire approach invasive species management and what factors influence their decisions.

"We have mostly public land on the West Coast and privately owned family forestland in the Midwest and the Eastern Seaboard. Private landowners are going to have different preferences, so what will happen when collective action is required to manage [invasive species](#)?" asked Shadi Atallah, associate professor in the Department of Agricultural and Consumer Economics, part of the College of Agricultural, Consumer and Environmental Sciences at Illinois.

There are three main categories of private family [forest](#) landowners, Atallah stated. There are recreational landowners who primarily want to enjoy the land; owners who are looking to get supplemental income from timber; and others who seek to combine recreational and income opportunities. Each group has different priorities and motivations for managing their forests, and this has implications for policy makers.

Atallah is lead author on the study, which focused on control of glossy buckthorn in eastern white pine forests. This is an exotic and invasive species that can cause substantial problems if not managed.

"Glossy buckthorn can grow as high as a person so it can block recreational activities such as hiking, biking, and wildlife watching. It's also going to inhibit the ability of the white pine forest to naturally regenerate, because it will shade juvenile trees and limit their growth. Thus, it is both an [economic problem](#) and a problem for the provision of ecosystem services," Atallah said.

The researchers conducted a [survey](#) with 939 forest landowners in Maine and New Hampshire to gauge preferences, motivations, and willingness

to pay for glossy buckthorn control on their land. Respondents also received an informational brochure about the invader, explaining identification, problems, and control methods.

The survey was designed as a choice experiment, where respondents were presented with a series of different scenarios and asked to make hypothetical choices for management options and outcomes. The options differed in ecosystem service benefits (trail recreation, wildlife, timber), control methods (mechanical or chemical), neighborhood adoption rates, and costs. Each respondent received a random combination of options.

Current conservation cost-share programs in the region reimburse landowners for up to 75% of the cost of controlling invasive species. According to survey results, this is sufficient to encourage mechanical but not chemical control.

"We find that family forest landowners have a very strong preference for mechanical control methods, although they are more expensive and less effective. In fact, owners have a negative willingness to pay for chemical control, which means they actually would have to be paid to use this method," Atallah stated.

On average, landowners prefer control options that increase timber regeneration and wildlife viewing. Owners of large forest lands are also motivated to control invasive species in order to improve trail recreational activities.

The researchers found that owners of smaller forests are strongly influenced by what their neighbors are doing. Neighborhood effects are significant for those owning less than 26 acres, which is 80% of all landowners in the area.

"We show that it's going to increase a landowner's willingness to pay for

control if their neighbor is also doing so. If everybody else is controlling, it becomes more cost effective," Atallah said.

Conservation agencies can capitalize on this finding, he noted.

"Because this problem exists in a region with a lot of privately held land, there is an opportunity to build on that neighborhood effect," he said.

"For example, the Natural Resources Conservation Service (NRCS) or Cooperative Extension could provide information to landowners about the control level in their neighborhood to increase their likelihood of action. Landowners view their control as a complement to their neighbors' efforts, which can benefit the areawide management of invasive species."

Forest landowners' strong preference for mechanical control also has policy implications.

"We have these environmental preferences that could lead to the invasive species spreading because mechanical controls are less effective than chemical methods. An agency concerned with effectiveness at the landscape level might end up subsidizing chemical control more than mechanical," Atallah stated. "The crux of the problem is how to balance the tradeoffs between landowner preferences, available treatment methods, and the forest health as an ecosystem that would benefit from the removal of non-native, invasive plants."

Atallah is currently working on a research project to estimate those tradeoffs, which can provide guidelines for conservation agencies seeking to develop management strategies.

More information: Shady S. Atallah et al, Family forest landowner preferences for managing invasive species: Control methods, ecosystem services, and neighborhood effects, *Journal of the Agricultural and*

Applied Economics Association (2023). [DOI: 10.1002/jaa2.60](https://doi.org/10.1002/jaa2.60)

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