

Researchers uproot decades of buckthorn management practices

June 26 2023



Buckthorn seedlings on the forest floor. Credit: Michael Schuster

According to new research from the University of Minnesota, buckthorn managers have long overestimated the plant, and in doing so, have given the invasive tree a significant advantage in spreading widely and pushing

native species out of woodlands and forests throughout eastern North America.

In their recently published article in the journal *Biological Invasions*, the research team explains how the often-discussed timeline of buckthorn growing from seed didn't match what they or any of their collaborators across Minnesota saw in nature.

Traditionally, buckthorn management strategies have focused on repeated cutting and herbicide application over five or more years, mostly targeting larger stems as a practical way to approach the often daunting task of controlling the invasive tree. Smaller buckthorn are ignored in part due to a long-held belief that buckthorn seeds in the soil continually replenish the amount of small buckthorn for up to six years. It turns out that this incorrect belief is all based on a game of "telephone."

Although some older scientific publications observed that buckthorn seeds died off quickly, contemporary communications from both public and private entities emphasized that buckthorn seeds lasted in the soil for years, a misperception that has likely stymied [restoration efforts](#). The academic paper trail was scant, but the researchers followed it back to a 1997 newspaper article discussing a different invasive species. That article had been cited by a municipal report, which was referenced by a U.S. Forest Service document, which was echoed time and again—not once supported by data from the species it claimed to represent.

Fortunately, the U of M researchers already had a series of experiments in progress that could answer these questions: How long do buckthorn seeds remain viable in the soil? How long do the seeds threaten [forest](#) restoration efforts?

"Buckthorn forms these extremely dense carpets of seedlings—think of

a massive Chia Pet on the forest floor—but that only happens in the first year after the mature trees have been cut down. So we were confused why we kept seeing this discussed as something that can happen over a six-year window," said lead author Michael Schuster, a researcher in the Department of Forest Resources.

The researchers found:

- Buckthorn seeds only live in the soil for one or two years, not six as commonly thought.
- Of the more than 13,000 buckthorn seeds monitored between 2017 and 2022, 97% of new buckthorn sprouted within the first year. Nearly all additional buckthorn sprouts arose in the second year.
- These observations were corroborated by concurrent surveys of seven active buckthorn management areas in Minnesota where the team observed essentially all new buckthorn showing up within the first two years after fruiting trees had been removed.

These findings suggest that a shorter period of more intense management that targets a broader range of buckthorn sizes may be sufficient to control existing buckthorn invasions. By also targeting small stems, management can be more effective since smaller plants are more vulnerable. This is also likely to lower overall management effort, although managers will need to be vigilant of stems that avoid treatment or seeds that are dispersed by birds, and improve forest health broadly.

"This should be good news for folks looking to remove buckthorn: you can cut down all the fruit-bearing trees and be confident that what remains after a year or two really is the extent of the problem. If we are more aggressive in those [early interventions](#), we will likely have better outcomes compared to more selective approaches," said Schuster.

The team will continue to investigate how establishing [native plants](#) to compete with buckthorn could reduce abundance and size of buckthorn established by [seed](#).

More information: Michael J. Schuster et al, No evidence of a long-lived seedbank in common buckthorn, *Rhamnus cathartica* L., within Minnesota deciduous forests, *Biological Invasions* (2023). DOI: [10.1007/s10530-023-03113-4](https://doi.org/10.1007/s10530-023-03113-4)

Provided by University of Minnesota

Citation: Researchers uproot decades of buckthorn management practices (2023, June 26) retrieved 2 May 2024 from <https://phys.org/news/2023-06-uproot-decades-buckthorn.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.