



**For Immediate Release**

**Contact:** Lee Van Wychen  
Science Policy Director  
National & Regional Weed  
Science Societies  
[Lee.VanWychen@wssa.net](mailto:Lee.VanWychen@wssa.net)  
202-746-4686

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## **Finding the Ideal Predator for Garlic Mustard**

*Computer simulation helps scientists select a tiny weevil to control invasive weed that threatens native plants*

(LAWRENCE, Kansas) — When garlic mustard (*Alliaria petiolata*) was brought to North America from Europe more than a century ago, no one predicted it would carpet thousands of acres of forestland, choke out native plants and even disrupt the development of a rare native butterfly, *Pieris napi oleracea*.

But now scientists are using an innovative computer program to find the perfect predator for garlic mustard and regain the upper hand.

“In its native habitat in Europe, garlic mustard has natural predators – small weevils that feed on the plant during several stages of its growth,” said Dr. Adam Davis, an ecologist with the University of Illinois and researcher with the USDA Invasive Weed Management Unit. “One way to control garlic mustard is to introduce a similar predator here in the U.S.”

Why use an insect for weed control? With garlic mustard, there are few other options. Since the invasive plant grows across vast forest regions, it is virtually impossible to manage by hand-pulling or with herbicides. In addition, a single garlic mustard plant can produce nearly 8,000 seeds, which are tracked and spread by deer and are especially long-lived in the soil. That means it can take a decade or more of weed management to do the job, even if an infestation is limited in scope.

Though the use of insects to control weeds is not new, to date it has relied on a degree of trial and error. And in some instances, the insects used have become invasive pests themselves – destroying unintended species.

Davis and fellow researchers at Michigan State, Cornell and the Commonwealth Institute of Biological Control in Switzerland have developed an innovative new computer model that reduces the risk of choosing the wrong insect. The model simulates a weed's growth, records the stresses it encounters in the environment and helps to evaluate the impact of various natural predators.

"By determining in advance which insect will produce the best control, we reduce any risk to our natural ecosystems," Davis said.

His computer simulation shows that a tiny weevil (*Ceutorhynchus scrobicollis*) is the best control agent for garlic mustard since it feeds on the plant at several stages in its lifecycle.

*Ceutorhynchus scrobicollis* weevils are now in quarantine at the University of Minnesota, where a battery of tests has determined they are unlikely to threaten other plants. Pending approval by the USDA, they soon will be bred and released into garlic mustard-infested forests nationwide.

"The computer model developed for garlic mustard is a great example of how weed ecologists can turn the tables on an invasive plant like garlic mustard," said Lee Van Wychen, director of science policy for the Weed Science Society of America.

"Similar techniques may help us predict the perfect predator for other invasive weeds and expand our repertoire of safe and effective weed management options."

### ***About the Weed Science Society of America***

The Weed Science Society of America, a nonprofit professional society, was founded in 1956 to encourage and promote the development of knowledge concerning weeds and their impact on the environment. The Weed Science Society of America promotes research, education and extension outreach activities related to weeds, provides science-based information to the public and policy makers, and fosters awareness of weeds and their impacts on managed and natural ecosystems. For more information, visit [www.wssa.net](http://www.wssa.net).

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Sidebar:

### **Garlic Mustard Control Tips for Home Gardeners**

While *Ceutorhynchus scrobicollis* weevils are perfect for the control of garlic mustard in forestlands, home gardeners with smaller infestations have other options. Try these tips from Dr. Adam Davis, an ecologist with the USDA Agricultural Research Service Invasive Weed Management Unit and assistant professor of crop sciences at the University of Illinois:

- If you have small patches of garlic mustard, try pulling them by hand. But make certain to remove the roots. If you don't, the plants may become more competitive than ever.
- Use a string trimmer to cut back garlic mustard before it goes to seed. That will help you to contain its spread.
- If you have patches of garlic mustard that are too large to manage by hand or by trimmer, spray them with the herbicide 2,4-D just after the seedlings emerge in the spring. Since garlic mustard comes up early, spraying as soon as the weed sprouts makes it less likely that you will damage native plants.
- Regardless of the control measure you use, remember to repeat the process annually until the garlic mustard no longer grows back.

"To keep garlic mustard from taking over, it's important to catch it early," Davis said. "So get acquainted with the native species in your area and ask local extension agents to help you identify new plants you don't know."

#### ***Editors:***

Photos of garlic mustard and the *Ceutorhynchus scrobicollis* weevil are available at: [www.wssa.net](http://www.wssa.net).