

Beetles are winning the battle against purple loosestrife

The *Galerucella* beetle was released in Wisconsin starting in 1994 and is showing success in reducing purple loosestrife.

PAUL SKAWINSKI

IT'S A BIOCONTROL SUCCESS STORY THAT NEEDS YOU.

Brock Woods

Beautiful killer! Purple scourge! An attractive, but deadly threat! These are past descriptions of an invasive plant that threatened so many wetlands in Wisconsin by the 1980s that land managers had practically given up on any sort of control. Sure, herbicides could kill purple loosestrife, but no amount of practical control work could keep pace with its spread.



UW-EXTENSION LAKES

Purple loosestrife — pretty but dangerous.

Purple loosestrife (*Lythrum salicaria*) is an herbaceous, perennial plant from Europe that was first reported in Wisconsin in the 1920s. Arriving here without predators or diseases that keep this plant in check at home, these uncontrolled plants can reach 8 feet in height and overtop most native wetland plants.

Purple loosestrife drives out the diverse native plants and animals necessary for healthy wetlands, and reduces the wetland services that help keep our lakes and streams clean, and floodwaters out of our towns and villages.

Each loosestrife plant can have dozens of stems with flower branches several feet long that annually produce over 2 million seeds. The tiny seeds are easily dispersed into new wetlands everywhere by water, careless humans and an-

imals — especially waterfowl on whose feet mud turns out to be a great hitchhiking medium. So many seeds, sent to so many new places, and sprouting so fast into new seed-pumping plants: it's easy to see how purple loosestrife sent chills into every wetland owner and manager.

Fortunately, a consortium of state and federal agencies combined to search for the natural, biological controls that keep purple loosestrife in check in Europe. After finding its natural predators, and doing follow-up research to identify which predator would be the safest and most effective to introduce, four types of beetles were imported into the United States as a management strategy. The imported beetles were expected to devote so much of their feeding on loosestrife that hope fell on these little beetles to do what people could not: stem the "purple tide."

Two types of beetles were released in Wisconsin starting in 1994, and what a success they have been! We now fondly call them "Cella" beetles — short for *Galerucella pusilla* and *Galerucella californiensis*. Cella beetles feed ravenously on the leaves of purple loosestrife, and have

proven so effective at reducing both the size and seed output of the plants, that over 31 million of these two species of beetles have now been released in troubled wetlands across the state. The other two beetle species introduced the following year feed on loosestrife roots and seeds, but their effects are less well known.

Cella beetles overwinter so well that a small population introduced into a wetland usually builds over time into enough insects to reduce even massive infestations of loosestrife. Some even fly to find loosestrife elsewhere, spreading the wealth of control, and making wetland lovers everywhere yearn for biocontrol of other invasive plants.

Cella beetles have indeed changed the plant mix at most release sites. Their young larvae feed so voraciously on stem tips where the flowers normally develop that growing points die, flower buds don't form and stems don't elongate.

With a few hungry beetles, the main stem is killed, and many side branches grow, which form flowers of their own. But as more beetles appear on a site, they produce even more larvae and the side branches suffer the same fate as the first. The older larvae and adult beetles riddle leaves with enough feeding damage that plant vigor is reduced. Controlled sites have candelabra-shaped plants half their normal size — about waist height, with up to 80 percent fewer seeds from shorter flower stalks. Thus, dispersal declines and native plants can begin to recover.

A crucial part of this control story is how all these beetles have found their way to new homes in wetlands across

Wisconsin. In short, hundreds of citizen “cooperators” have run Cella rearing projects by digging a few local loosestrife plants in early spring, and potting them for backyard, school yard or workplace fun. They install fabric cages they’ve sewn onto the plants to keep predators away, and add “starter” beetles they receive in the mail from the Department of Natural Resources in late May.

The protected beetles eventually multiply to a hundred times more than at the start. When the first newly produced adults appear on the plants in mid-summer, hardy cooperators carry two or three beetle-laden plants to each patch of local loosestrife — often where they dug up their initial plants. They pull off the cages and hordes of hungry little hummers fly out to home in on just one plant: the most succulent loosestrife they’ll ever see.

Where conditions in the local wetlands are good, a couple thousand deposited beetles typically grow into ever larger numbers, capable of reducing even the largest loosestrife population.

Who are some of these cooperators who have given their time and energy to help keep our wetlands safe from the “purple scourge?” There have been too many to name who have rescued a local wetland from this lethal loosestrife after rearing beetles for just a couple seasons or for as long as 10 years.

Others have sent beetles to wetlands throughout their local landscapes by recruiting amazing numbers of volunteers to join in the beetle-rearing fun. Local conservation group leaders have been especially good at organizing others to join in — groups like the Friends of the Little Wolf and the 4-H Go Getters in the Sheboygan area whose crews raise beetles in both small scale and mass cage set-ups, and plant native species to replace declining loosestrife.

Local organizers have also come from Master Gardeners groups, private companies, Lions and Rotary clubs, and many other organizations. Teachers are especially valuable for introducing students to

invasive species and biocontrol while raising beetles to save their local wetlands.

Yet many wetlands still need Cella beetles and you can help. Some wetlands have never gotten beetles and the loosestrife still grows over head-high. It’s crucial to start beetle populations on such sites. Other sites may have received beetles in the past, but the insects have disappeared, resulting again in tall plants and many seeds. In fact, all purple loosestrife sites should be checked periodically after beetle releases to be sure there are plenty of beetles to keep doing their job. Adding more beetles usually helps, and never hurts, given their strict diet.

How can you become your area’s latest cooperator? Check local wetlands for need, then search the DNR website for “Purple Loosestrife Biocontrol.” There you’ll find a video detailing the loosestrife problem and how biocontrol can help. You’ll also find a link to a detailed program description and application form. Send in the latter to indicate how many plants you’ll pot up — often from two to 10 the first year, which indicates how many beetles you’ll need (100/plant). Most gear you’ll need is free from the department.

On the same web page, educators

can also download “See Cella Chow,” a biocontrol manual for teachers that has 15 activities to make involving students easy and learning their curricular lessons hands-on and a lot more fun. In fact, raising beetles with students is a valuable education even if local loosestrife seems under control. And raising beetles is always a lot more fun if you do it with your friends and neighbors, students at school or even your workplace mates.

After all the biocontrol work to reduce the invader is done, it’s important that native plants regain control of every wetland. This will occur naturally if native species are still present, but in other wetlands cooperators should pursue the important and satisfying task of restoring them. The web page has guidance for this, as well, and it can be the nurturing side of each biocontrol project: another satisfying way for citizens to be an integral part of keeping their local landscape healthy.

Now is the time to befriend a local wetland beleaguered by this “beautiful killer.” Contact the Department of Natural Resources, get involved and join in the beetle fun!



Brock Woods is the Wisconsin purple loosestrife and wetland invasive plant program coordinator.



A purple loosestrife biocontrol volunteer.

UW-EXTENSION LAKES