



Section 5:

What can volunteers do?



Volunteer Monitoring: Citizens Working for Healthy Watersheds

Volunteer monitoring is a powerful way to involve local citizens and groups while gathering useful information about their home territory. This can foster personal commitments of time, money, and political support for protecting and repairing local aquatic systems and supporting the land use decisions that will ensure long-term success.

Volunteer lake monitors have been an integral part of Wisconsin lakes since 1986 and are the core of the Wisconsin Lakes Partnership which was created by the Wisconsin Department of Natural Resources, UW-Extension, and Wisconsin Association of Lakes. Wisconsin is fortunate to have over 1,000 volunteers monitoring water clarity, water chemistry, aquatic plants, and invasive species. Volunteers are truly the eyes of aquatic biologists and help monitor many of the more than 15,000 Wisconsin lakes.

The “Clean Boats, Clean Waters” program is another opportunity for volunteers to assist lake managers. Through “Clean Boats,

Clean Waters,” volunteers are trained to organize and conduct watercraft inspections that help stop the movement of invasive species across the state. Trained volunteers then educate boaters on how and where invasive species are most likely to hitch a ride into water bodies. By performing boat and trailer checks, distributing informational brochures, and collecting and reporting suspect specimens, **volunteers can make a difference in helping prevent the spread of invasive species.**

These volunteer programs demonstrate that people are willing to go beyond what is required if they understand the needs and benefits, and that they can be applied close to home. For more information on volunteer monitoring, see “Volunteer Lake Monitoring Opportunities” on the following pages.





Citizen Lake Monitoring Network

Volunteer lake monitors have been an integral part of Wisconsin lakes since 1986 and are the core of the Wisconsin Lakes Partnership.

If you would like to...

- learn more about your lake
- collect valuable data
- watch for long-term changes in lake water quality

...then lake monitoring is for you!

You can join over 1,000 volunteers now participating statewide. The Department of Natural Resources provides training and equipment while citizens volunteer their time and energy. The assistance and enthusiasm of local volunteers play an important part in lake monitoring and protection.

Water Clarity Monitoring

Volunteers observe and document lake water quality by measuring water clarity with a Secchi disk. The black-and-white disk, 8-inches in diameter, is lowered into the water on a rope until it can no longer be seen. This depth is then recorded. Volunteers can track their lake's clarity over time, and if problems are detected action can then be taken.



Water Chemistry Monitoring

After a year of water clarity monitoring, some volunteers begin water chemistry monitoring. These citizens monitor water samples four to five times a year for clarity, phosphorus, chlorophyll, and lake temperature. With this information the trophic state (overall health) of a lake can be measured more reliably. Some volunteers also take a dissolved oxygen profile of their lake. Openings for chemistry monitoring are limited and depend on the interest of the volunteers and the needs of the lake.



Photo by Frank Koshere

Aquatic Plant Monitoring

Aquatic plants are another indicator of lake health and are an essential part of a healthy lake ecosystem. Volunteers are trained to collect and press their lake's aquatic plants. Materials are provided to help identify aquatic plants and to help the observer map the location and size of plant beds.



Aquatic Invasive Species Monitoring

Eurasian water-milfoil, zebra mussel, and purple loosestrife are a few of the invasive species that are affecting Wisconsin's lakes. Education and early identification of these non-native aquatic species are the keys to controlling their spread. Volunteers learn to identify these invasives and serve as the eyes for water biologists by monitoring many of Wisconsin's 15,081 lakes.



If you would like additional information about volunteer lake monitoring, contact:

Laura Herman
Citizen Lake Monitoring Network Coordinator
715-365-8998 (DNR)
715-346-3989 (UWEX)
lherman@uwsp.edu

Visit the CLMN Web site at:

<http://www.uwsp.edu/cnr/uwexlakes/clmn/>

Wisconsin Lake Leaders Institute

Enhancing Wisconsin's lake resources through education, leadership, and citizen action

Wisconsin's 15,081 lakes are a unique and treasured legacy. With so many lakes and so few people in service to protect them, it has become clear that no state agency or unit of government can provide the management attention that each deserves. So how can we get this done? It can only happen in our communities. Local lake residents and lake lovers have a long tradition of stepping up when challenges arise and volunteering their talents to ensure stewardship of our lakes.

The *Lake Leaders Institute* assists citizens in developing and enhancing both their technical and people skills, to enrich their communities and the waters within them. Participants learn in an atmosphere of openness, trust, friendship, and camaraderie.

There are three seminars, each lasting two days. They are typically held during May, September, and October at retreat-type centers around the state with the opportunity to take field trips, enjoy natural beauty, exchange ideas, and develop friendships.



Hone your skills and work with fascinating folks that share your concern for the future of our water resources.

Photo by UWEX-Lakes

The future of Wisconsin lakes is in our hands. Please consider joining us or nominating a friend for the next *Lake Leaders Institute*.

To obtain more information, go to <http://www.uwsp.edu/cnr/uwexlakes> or contact UW-Extension Lakes at 715-346-2116 or uwexlakes@uwsp.edu.



Loon Watch

Imagine a northern lake without the haunting calls and awe-inspiring presence of the Common Loon. It's a disturbing thought, but in some places, it's happening. Air and water pollution, shoreline development, and increasing recreational activities on lakes all pose serious threats to loons across North America.

Loon Watch promotes the preservation, understanding, and enjoyment of common loons and their aquatic habitats in the Lake Superior region. Information is distributed to lake residents, users, managers, and the general public about loons, aquatic ecosystems, and environmental threats. Though the primary focus is Wisconsin, education and research activities extend to other areas in the Upper Great Lakes region, such as Michigan and Minnesota.



Photo by Jon Okerstrom

For more information about the program, contact the Sigurd Olson Environmental Institute at Northland College, (715) 682-1220, or via e-mail at loonwatch@northland.edu.

Visit: <http://www.northland.edu/Northland/Soei/Programs/LoonWatch/>

Purple Loosestrife Biological Control

Purple Loosestrife Biological Control is a citizen-based project that emphasizes using two safe, purple loosestrife foliage-feeding beetle species, in combination with traditional methods, for controlling this invasive plant. Citizens of all ages make up the backbone of this cooperative program by rearing and releasing these insects in their local wetlands - and learning about these precious places in the process. Volunteers are trained to raise and release beetles in their local wetlands that have large populations of purple loosestrife.

This project is a huge success story! It is one of our only examples of long-term non-chemical control and offers citizens a great way to get involved.

To learn more about the purple loosestrife beetles and biological control efforts, read on in the following article!



*Loosetrife leaf beetle,
Galerucella californiensis*

Photo by Mark Schwarzlaender,
University of Idaho, Bugwood.org



Beetle Brigades and Weevil Squadrons

Introducing carefully selected predators to rein in invasive plants can work, but human vigilance is still the best defense.

Brock Woods

To control non-native invasive plants established in our state, it seems we've been sentenced to a life of hard labor. The continual digging, chopping, spraying and hauling – all the conventional control methods we find so laborious, expensive or disruptive – are they the only means we have to cope?

We may never be able to completely do away with shovels and herbicides, but we can get some help from nature itself. By introducing the natural predators that keep these plants in check in their own homelands, we can bring some invasives to heel here in Wisconsin.

Biocontrol methods reconnect “old friends” in the hope that the introduced plant predators will do here what they do at home – without attacking any of our native or economically valuable plants. The technique has met with great success against purple loosestrife, and it has slowed the spread of several other invasive species.

In Wisconsin, most organisms introduced to control plants are insects that have evolved to live on just one pest plant. These insects' reproduction is closely tuned to the plant's unique chemical makeup and growth habits, and they do not have the capacity to change their own habits quickly. These traits make host shifting difficult, except over long time periods. Both traits are found in the four insect species chosen to control purple loosestrife. These insects have been specific to their host plant for more than a dozen years since their initial introductions in 1994. It's unlikely we will see these insects shift to eating other plants for a very long time, if ever.

Like the purple loosestrife insects, any new biocontrol organism must be well-researched before it is released to ensure it will not disrupt ecosystems. If follow-up monitoring also shows it to be effective, the biocontrol species should provide more benign and cheaper control in the long run than most conventional methods, including herbicide use. Once established,

a biocontrol insect may be able to control a stand of invasive plants without constant replenishment. It is especially useful if it can disperse itself to new patches of the pest plant.

All four loosestrife control insects have not only passed all safety standards, but have also established well in our temperate climate, and proven effective for over a decade. Some have even traveled as far as 10 miles to new infestations.

Successful and efficient control of many invasive plants will, however, require both biocontrol and conventional control. This is the case for purple loosestrife, though more research is necessary to understand how to best integrate the methods.

The Best Method: Your Eyes and Hands

Conventional prevention efforts, such as pulling, cutting or digging the first plants of an invasive species to appear in a new neighborhood, remain our primary (and cheapest) defense. New, small purple



Purple loosestrife, *Lythrum salicaria*

Photo by Robert Korth



loosestrife plants are easily pulled with all their roots intact, making this simple operation extremely effective at preventing new and larger infestations.

You are your neighborhood's first line of defense against increasing numbers of invasive species. Educate yourself about local native flora, as well as established and new invasive plants, so you can correctly identify an invader and distinguish it from similar native species, ideally even before flowers and seeds are produced. When you can recognize new invaders, you can remove them in time to prevent seed from contaminating a site for years to come.

Sensible prevention efforts should also include careful scrutiny of any plant before it is allowed into the country; all new plant species should be observed in trial horticultural settings and immediately eliminated if determined to be invasive. Such a policy could greatly reduce the need for expensive and laborious control programs.

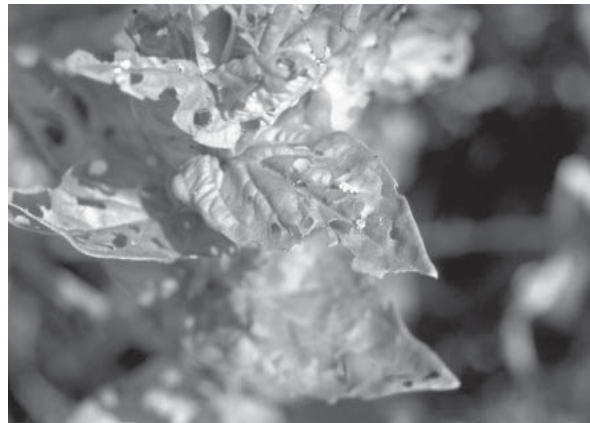
Once a pest plant has established itself on a site, the most efficient conventional control methods, such as herbicide use, are usually only cheap when the infestation is still relatively small. As the invasive plants spread, biocontrol often becomes the only affordable and acceptable control option available.

Beetles Put the Bite on Loosestrife

Almost 16 million new control beetles are at work on purple loosestrife at over 1,200 sites statewide, thanks to more than 500 citizens and citizen groups who took the time to rear and release control insects since 1997. Research at selected release sites has shown a significant reduction in loosestrife flowering, stem heights, number of stems and cover, along with increased mortality. With weakened loosestrife populations, native plants have regained a foothold at some sites. Declines in seed set have also reduced loosestrife's ability to spread to new sites. Ultimately, we hope biocontrol can supplant most conventional controls, but

time will tell.

Understanding some of the reasons for the early success of this program can help us duplicate its results with other invasive plants. First, evolution provided predator insects dependent on purple loosestrife. Then, the Department of Natural Resources helped fund research in Europe and the U.S. that found the most likely control insects; tested them carefully; identified the four safe, effective, and hardy insect species we now use; and created simple, backyard rearing procedures that allow citizens with little ecological experience to easily multiply insect numbers at home or school for release in their local wetlands. The Department of Natural Resources also provided funds and joined with the University of Wisconsin-Extension and other state partners to educate citizens about loosestrife, explain biocontrols and provide rearing materials.



Feeding damage on a purple loosestrife plant from *Galerucella* sp.

Photo by Linda Wilson, University of Idaho

There is still much biocontrol work to be done with purple loosestrife - and you can help! Control beetles have been released on only about 10 percent of Wisconsin's loosestrife-infested acreage, so plenty of opportunities remain for citizens to help rear and release beetles across the state. We also need help with a road survey to find out how widespread loosestrife control has been to date.



Coupled with programs in other states to control plants of mutual concern, Wisconsin could apply the “loosestrife approach” to efficiently check the spread of other established invasive plants. While biocontrol may not work on all of them, prudence and efficiency suggest funding additional studies on those plants that are the most damaging in the state. Until effective biocontrols are found for any particular species, it is very important to continue applying all effective and safe conventional control methods, especially to prevent further spread.

Ultimately, both efforts will likely be needed to keep a species in check. Some other invasive plants infesting Wisconsin and with known control insects include Eurasian water-milfoil, spotted knapweed, leafy spurge, non-native thistles and multiflora rose.

Eurasian water-milfoil is a submersed aquatic plant that under the right growing conditions creates dense mats in lakes, making recreational use difficult and harming wildlife and fish populations. Several Eurasian water-milfoil herbivores have been investigated as possible biocontrols. A native weevil has been shown to reduce the plant in some Wisconsin lakes. Effective biocontrol of this plant will require more funding for research since many factors may influence possible control insects. For example, we know that maintaining or restoring undeveloped shorelines allows larger populations of the native weevil to grow. On the other hand, lakes with large bluegill populations might not improve as much since bluegills feed on these weevils. Developing cheap, long-term biocontrols for milfoil-infested lakes will take time, so funding the work now is critical for the long-term health of our waters.

Leafy spurge, a deep-rooted perennial herb, forms large, dense patches and can dominate mesic pastures, prairies, roadsides and other open areas. It reduces forage, can kill livestock and significantly reduces native plant populations and wildlife. This invader

has increased its spread and density on Wisconsin sites in the last several years. Six species of flightless *Aphthona* beetles have been imported from Europe and show some promise as control agents, though they do not appear to move very far on their own. Two species of *Aphthona* have been available in Wisconsin in late June for the last several years through the United States Fish and Wildlife Service and the DNR. E-mail Kelly Kearns at kelly.kearns@wisconsin.gov for information.

Spotted knapweed, a hardy perennial herb, infests dry roadsides, prairies, pastures and fields, reducing their value for grazing. It suppresses native plants, especially grasses, through allelopathy (producing compounds that inhibit the growth of adjacent plants). Sixteen insect species have been imported into the U.S. to control knapweed. Two species of *Urophora* flies are already established in Wisconsin and at work reducing knapweed seed production. More biocontrol help is needed. It may come from a moth and several weevils being tested in the state. These insects show real promise and may become available for general use within several years. Contact Wade Oehmichen at wade.oehmichen@wisconsin.gov for specifics on knapweed biocontrol.

Canada, musk, bull and other thistles are all common Eurasian weeds that infest a range of habitats, degrade forage, and reduce crop values, as well as compete successfully with native plants. A variety of insect species were imported to control these species with some good results. Unfortunately, one of them, *Rhinocyllus conicus*, established in the state in 1978 before the current research protocols were in place, is now prohibited because it may also attack rare native thistles. A native bacterial disease has shown some promise in decreasing the vigor and flowering of Canada thistle, but further study is needed.

Multiflora rose is another invasive that may be controlled best with a disease, rather than an insect. It is an Asian shrub that used to



be planted to provide wildlife habitat. Years of use reveal that this incredibly thorny hedge rose renders pastures unusable and reduces native plants on over 45 million acres in the U.S. A domestic search revealed a minute wasp, accidentally imported from Japan, and a European stem-girdling beetle may have some effect. A native viral disease, rose rosette disease, and a mite that spreads this virus hold promise as control agents. Although the virus can also affect other rose species, it is fatal primarily to multiflora rose. This disease is present in southwestern Wisconsin and is spreading slowly by the mite and wind. Grafting an infected stem onto an uninfected plant can introduce the disease to new and established rose stands.

Native insects in other countries that naturally feed on garlic mustard, black swallow-wort, buckthorn, common reed grass and Japanese knotweed have been found. A biocontrol program for garlic mustard is in the latter stages of development, but few of the other insects have been tested. We need more funding for research to learn if these potential controls can safely be made available to contain these pest plants.

Garlic mustard, a Eurasian biennial herb, is a serious invader of forested areas in Wisconsin, especially in the southern and eastern parts of the state. Massive stands frequently and drastically crowd out native forest herbs and reduce forest productivity. Five weevils and one flea beetle are being evaluated as potential biocontrols. Two *Ceutorhynchus* weevils are currently being tested in quarantine in Minnesota and may be available for experimental release in 2008 or 2009 at Wisconsin research sites if deemed safe by a federal oversight committee.

It's clear that insects and other natural disease controls hold promise for containing many of the troublesome plants that are establishing themselves here. If we're lucky, some may do their job so well that ongoing human control work will no longer be

necessary. Wisconsin must join other states in supporting the research to identify which control species are available, be sure they are safe and figure out how best to apply them in combination with conventional control methods. Lacking these sensible and cheap approaches, we may well have to expend a lot more time, effort and money in the struggle to check the advance of invasive plants - a struggle likely to last as long as we want to have healthy, functioning native ecosystems.

Brock Woods is a research ecologist who also educates and trains community volunteers willing to undertake biocontrol programs to contain invasive plant species. He has a joint appointment with the Department of Natural Resources and the University of Wisconsin-Extension.

For more information about the Purple Loosestrife Bio-Control Project or to volunteer, contact Brock at 608-221-6349 or brock.woods@wisconsin.gov.