

Section 4

Purple Loosestrife Monitoring Protocol And Control Information

Citizen Lake Monitoring Network



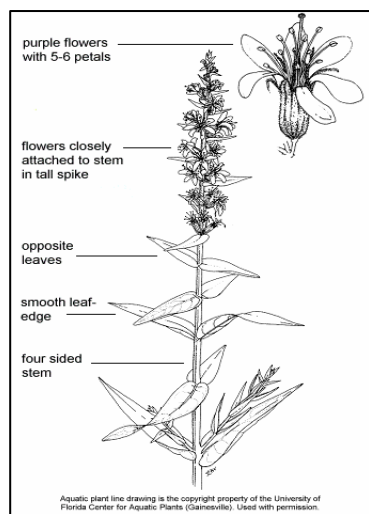
Purple Loosestrife Overview

You may not have paid much attention to the vegetation growing along the shores of your lake in the past. You may have fished the lake or boated for years vaguely remembering the greenery along the shoreline as a pleasing array of grass-like plants, water lilies, or any of a number of common shoreline plants. Have you noticed any changes lately? Are there plants you don't recall seeing in the past? Or maybe you've noticed there is more of one certain type of plant.

If you haven't looked for these changes, you should since they may be signs of invasive plants moving in. Not knowing friend from foe, you should be concerned whenever you see a new face or a dramatic increase in any plant. You should definitely sound the alarm if lake edges that were once green with cattails or other plants have suddenly erupted in massive amounts of pink-purple in mid to late summer; almost a sure sign that purple loosestrife has established. It would be even better to recognize and remove the first of these plants before they bloom...and set seed.

Purple loosestrife (*Lythrum salicaria*; PL) is an attractive wetland perennial plant originating in Europe and Asia that has become a real threat to wetland communities across temperate North America. It was introduced without the specialized insects and diseases that help control it at home. Freed from its natural controls, it grows faster and taller than most of our native wetland plants. Once established on a lake shore or adjacent wetland, it often shades out all but the tallest of its competitors, and can replace large numbers of native plants where it becomes established. This should concern you since it can dramatically change the health of your lake's edge—and how you and wildlife are able to use the lake system. As native plants decline, so do the other species that depend on them!

The plant's habit and vigor also result in large numbers of small seeds that are easily dispersed to wetlands everywhere via moving water, on the feet of migrating birds, or in the cleats of muddy boots or tires. The seeds germinate on open, moist soil, creating first year flowering plants that produce many more thousands of seeds! Thus, loosestrife quickly creates large seed banks that make the plant virtually impossible to eliminate (so remove those young plants before flowering, if you can!) Lots of easily dispersed seeds also virtually ensure its spread.



Purple Loosestrife Identification (please refer to the laminate in the back of your binder for a detailed picture of purple loosestrife).

- Semi-woody, hardy perennial with a dense bushy growth of 1 – 50 stems.
- Square to many sided stems grow 3-9 feet tall. Stems are said to have “edges”.
- Flowers are purple to pink in color; have 5-6 petals; and form on spikes. Flowers bloom from the bottom of the spike to the top of the spike.
- Leaves are usually opposite, but can be found whorled or even alternate.
- Stemless leaves are lance shaped and 3-10 cm long with smooth edges.
- Purple Loosestrife blooms July – September with plants blooming earlier in southern Wisconsin than in northern Wisconsin.

Surveys and Mapping

It's very important to know where purple loosestrife is growing in order to determine the best method(s) to control it. Purple loosestrife is found in wetlands, along the shorelines of lakes and streams, and along roadsides and trails. In order to discover it, especially before blooming, you need to be able to correctly identify it and distinguish it from native plants. Please refer to the drawing, identification card and/or the identification criteria above. (The state loosestrife brochure also has a guide to native look-a-like plants.) The best time of year to identify purple loosestrife and conduct surveys is when it's in bloom from mid July through August.

Surveying for purple loosestrife is most easily done while riding in a car, boat or canoe, or while, biking or hiking. It is best to have a map available to mark locations. County maps are great to use as they have the roads clearly marked. County maps are available at Visitor Information Centers or the Department of Transportation offices. Plat books are another option and may be purchased from your county government or Extension offices. Another option is to report purple loosestrife on the *Purple Loosestrife Watch: Reporting Procedures*, Form 3200-119, located in the back of your binder (appendix 5). Estimate the size of the infestation and/or number of plants and indicate this on the map, a separate piece of paper or on the reporting form itself. A GPS is ideal for correctly identifying locations. Photos are also a wonderful tool. Make sure you mark the location on the back of the photo. Please send all maps to Brock Woods, Purple Loosestrife Control Coordinator (pages vi). To see which sites have reported purple loosestrife, go to www.glifwc-maps.org and click on infested sites for that species. The Information that is provided to the state will be incorporated into a statewide data base maintained by Great Lakes Indian Fish and Wildlife Commission (GLIFWC).

Control

Control methods are included in this chapter since these methods are better defined than control methods for other AIS.

Effective long-term control of purple loosestrife in Wisconsin may require the use of both traditional control methods as well as biological control. Each has advantages and you must carefully decide which to use on any site. The most important thing is to start controlling the purple loosestrife now. Use traditional methods (see below) on all sites on which you need quick and effective control and have adequate resources to be successful. These measures are labor intensive and expensive on large sites, so small or low-density sites are most often controlled this way. These techniques will require additional vigilance. Even if all purple loosestrife is

accessible, missed plants and seeds in the soil that germinate up to a decade later result in more purple loosestrife plants. Thus, you must annually check for and treat these plants. You should also destroy any purple loosestrife in surrounding areas to stop new seed dissemination to your site. In fact, if your site is in an area surrounded by other loosestrife infestations, traditional control methods may not be worth the effort. These methods can also be very disruptive to wetlands and, in addition to cost and possible unwanted chemical effects, suggest a serious consideration of alternative biological control.

Traditional controls and biocontrol may be used together on the same site as long as insects have foliage to eat and are not killed by other methods. One combination is to cut the stems just beneath the flower head to prevent seed production, but leave lower foliage for the beetles. Another is to put beetles in the center of an infestation while using other controls on its edge to prevent the infestation from growing larger or spreading. Integrating control methods may be the best plan because there is some immediate purple loosestrife control while biocontrol insect numbers increase--perhaps eventually replacing the need for any traditional controls!

Traditional Control Methods

- **Preventing purple loosestrife from infesting new sites is the best and easiest way to control it.** In addition to where loosestrife is found in the wild, it may also be found in local gardens or near outlets to local storm sewers. Prior to 1987 purple loosestrife and hybrids of it were sold in nurseries in Wisconsin as a favorite garden plant. It's now illegal to sell or plant purple loosestrife because seeds from these plants often start new wild infestations. Please remove and destroy these--and any new plants--whenever you see them (get the landowner's permission first). At a minimum cut off their blooms. Do all this before they drop seed (which begins before blooming is complete). Dispose of plant parts in garbage bags and take them to the landfill. Purple loosestrife is exempt from yard waste regulations. Composting is not an option since compost piles do not reach temperatures sufficient to destroy the seeds and hardy roots. Also be careful to inspect clothing and equipment to keep them seed-free and prevent further spread. Once you remove purple loosestrife from a site, you need to monitor the site for any new seedlings which may emerge.
- **Mechanical Control** includes cutting, pulling or digging. Cutting is best done just before plants begin flowering. Cutting too early encourages more flowers to grow. If done too late, seed may have already fallen. Since lower pods can drop seed while upper flowers are blooming, check for seed. If none, simply bag and landfill all cuttings. Do not leave the cut plants at the site as fragments will root and establish new plants. If there is seed, cut off each top while holding it upright, then carefully place it into the bag to catch any dropping seeds. Watch for holes in your bags so you don't spread seed while moving the bags. While cutting does not destroy the plant, it can prevent more seeds from entering the environment until you can destroy the plant.
- **Pulling and digging** can be effective, but can also be disruptive by creating disturbed bare spots, which are good sites for purple loosestrife seeds to germinate. They may also leave root fragments behind. These root fragments can grow new plants. Use pulling and digging primarily with small plants in loose soils, since they do not usually leave behind

large soil gaps or root tips. Digging large plants with multiple stems and brittle roots often leaves root tips behind. Dispose of dug plants as listed above.

Chemical Control

This is usually the best way to eliminate purple loosestrife quickly, especially if you have mature plants with extensive root systems. Timing is important: treat before flowering to prevent seed set. Dispose of plant parts as listed above. Always back away from sprayed areas as you go to prevent getting herbicide on your clothes.

The best chemical method is to cut stems and paint the stumps with herbicide. Cut low on the stem (about knee level) and apply the herbicide, while carefully stuffing the plant top into a plastic bag. The herbicide can be applied with a small drip bottle or spray bottle, which can be adjusted to release only a small amount. Cover the entire cut portion of the stem, but don't let the herbicide drip since it may kill other plants it touches. On dryer sites, use non-selective glyphosate herbicides such as Roundup and Glyphosate. For wet areas use Rodeo (a glyphosate formulated for use over water) or equivalent (**WDNR permit is required**). These have a short soil life. Stem applied glyphosate should be mixed to 20 to 40% active ingredient, depending on effects on your specific area's plants (always test). For sites with many native grasses, sedges, cattails, rushes, etc. consider using triclopyr herbicide marketed as Renovate since it does not kill these monocots, though it does breakdown slower. Check Renovate's label for its correct usage. Since you must treat at least some stems of each plant and the plants often grow together in a clump, all stems in a clump should be treated to ensure all plants are killed. Bag cuttings since they can root if they come in contact with water or moist soil. Dispose of as mentioned above.

Another chemical method is using very carefully targeted foliar applications of herbicide (NOT broadcast spraying). This may be acceptable and reduce costs for sites with very high densities of purple loosestrife, since fewer non-loosestrife plants will be hit. Use a glyphosate formulated for use over water and in a weaker solution (around 1% active ingredient; always test first). You may need to wet only 25% of the leaves of each plant to kill it. Triclopyr can be used as a foliar spray, too; check its label for instructions. Wet most of the foliage if using Triclopyr.

You must obtain a permit from WDNR before applying any chemical over or near standing water. The process has been streamlined for control of purple loosestrife and **there is no cost**. The appropriate person to contact is your regional WDNR Aquatic Plant Management Coordinator: <http://dnr.wi.gov/org/water/wm/dsfm/shore/county.htm>. S/he will want to know about your site and plan, may make further suggestions and will issue your permit.

Biocontrol

One of the cheapest, most effective control methods for purple loosestrife is biocontrol - using one organism to control another. One hundred species of insects that feed on purple loosestrife in Europe were tested on North American agricultural, wetland, and loosestrife-related plants to be sure there were little or no cross-over feeding. The selected insect species were then shipped to this continent and tested in quarantine on more species of North American plants before release. Four species passed all safety tests: two flower and root weevil species, and two types of "Cella" foliage beetles. No one has reported any substantive problems with the insects being used, nor has WDNR seen any real problems in over ten years of field monitoring.

A citizen biocontrol program uses the two safe *Galerucella* beetle species in combination with traditional methods. You can acquire these beetles by rearing a small number of starter beetles that you receive from WDNR. You may also be able to collect or buy beetles for rearing or release. Biocontrol is beginning to reduce the purple loosestrife in many areas around the state, and yours should be included. Along with prevention efforts, we still need to put out many more beetles to reduce purple loosestrife statewide. Success in this endeavor depends on YOU!

Please read any of the following items for a better understanding of the purple loosestrife problem and its solutions. All are available on the Internet and at many WDNR and UW Extension offices. Start with the WDNR/UWEX Purple Loosestrife Brochures: in color, WDNR publication # PUB-WT-799 2004 at <http://clean-water.uwex.edu/pubs/purple.pdf>, and in black/white, PUB-WT-829 2006. More details are found in "*Purple Loosestrife: What You Should Know, What You Can Do*," PUB WT-276-2003. Specific biological control information and forms are found in the appendices of "*See Cella Chow!--A Purple Loosestrife Biocontrol Manual for Educators*." Download the Manual or selected activities and appendices mentioned here, on line at http://dnr.wi.gov/org/es/science/publications/ss981_2003.htm, PUB-SS-981 2003). Additional purple loosestrife and biocontrol information is also on the WDNR web site; <http://dnr.wi.gov/invasives/fact/loosestrife.htm>.

Most cooperators initiate biocontrol by rearing large numbers of beetles. This is the best way to ensure successful beetle establishment. WDNR supplies starter beetles for rearing, most needed supplies, and the know-how. The volunteer supplies purple loosestrife roots and a sunny location. Rearing is easy and cheap (\$50 or less for several sites), though it requires a little gardening skill. A small sunny area is needed and the hours of labor required are few. The beetle starter population for rearing is free if picked up at the DNR office in Madison, or they can be mailed to you for a program donation to cover shipping.

You may also be able to collect free beetles in the field yourself for propagation or simple dispersal, or buy ready-to-release beetles (private sellers). Call/write Brock Woods (608-221-6349) for details, including the current year's schedule of free field trips. No special permit is needed if beetles are purchased in-state for release, though you still need to send in Release Site Forms (appendix 5) so WDNR knows when and where you have put your beetles.

Rearing is easy. (Details are on page 40.)

- 1) Send in your signed "Application/Authorization Form" (appendix 5);
- 2) Sew sleeve cages from fabric mailed to you.
- 3) Transplant the 10 biggest purple loosestrife rootstocks (from a local area) into pots. Do this first thing in the spring.
- 4) Immediately place sleeve cages on the pots.
- 5) Place all the pots into kids' wading pools or similar containers.
- 6) Maintain several inches of water in the pools to re-create wetland habitat.
- 7) In May, when plants are 2+ feet tall, put ten starter beetles into each of the cages. Secure the bags at the top so that the beetles do not escape.
- 8) When new beetles start appearing in June or July, simply move the potted plants to local purple loosestrife-infested wetlands and remove the sleeve cages so beetles can disperse.

That's all there is to rearing your own beetles! Plus, if you pick a good local spot for first beetle releases, you can develop your own local insectary site for collecting free future beetles for rearing or immediate release!

After your release(s), report your site details to WDNR with an easy-to-fill-in Release Site Form (appendix 5). Since beetle damage to purple loosestrife flowers is typical after a couple years, an easy way to see the decline in your purple loosestrife is to photograph your site's purple loosestrife blooms annually. You'll see sites change from purple to green by comparing the first year photo with ensuing years.

Try to team up with others to share in the work, costs, fun, and learning. Consider friends, or organizations such as Lake Districts, schools or conservation groups. This can be a great school project, but it usually needs to be finished in summer school or by a non-school tag team partner since a project's typical field time runs from April to July. (Rearing earlier, entirely within the school year, is possible, as well. Inquire if interested.) Also, the first half of "See Cella Chow!" includes 15 curricular activities centered on purple loosestrife and biological control, specifically to encourage use of the project for teaching!

To reserve your beetles from WDNR and get authorization to grow purple loosestrife for beetle production, fill out and send in your signed "Authorization/Application Form" (appendix 5), along with the donation check if you want beetles delivered by mail. (Make your check payable to 'Wisconsin DNR' and note that it's for 'Purple Loosestrife Bio-Control'. To legally cultivate purple loosestrife plants to rear beetles, you must return the authorization form whether or not you need beetles from DNR. Send everything to the addresses below. 100 beetles is a typical starting number, but you can start with fewer or more. If you decide to purchase ready-to-release beetles or collect for immediate distribution you must still send in release site form(s).

If you cannot rear or acquire beetles for local release, the state purple loosestrife brochure lists many other ways you can help! One great way is to report new purple loosestrife sites on our "Watch Form," downloaded at www.dnr.state.wi.us/org/caer/ce/news/on/3200119.pdf. Describe the sites, and send the form to us at the address below. Also, please share this information with interested others--especially teachers.

We hope you can join us in controlling Purple loosestrife in Wisconsin. This will require a long-term effort involving many citizens. WDNR and UWEX will do everything possible to work cooperatively with all interested citizens and organizations in this work. If you have any questions or comments about the program, please contact Brock Woods, Purple Loosestrife Project Coordinator, DNR Science Operation Center, 2801 Progress Road, Madison, WI 53716. Brock can be reached at brock.woods@wisconsin.gov or by calling 608/221-6349.

Materials for Rearing 100 *Galerucella* Beetles

This is an exhaustive list and you may not need, or need to purchase, all items. Some may be available for free from the Wisconsin Purple Loosestrife Biological Control Project (WPLBCP). Those items are followed by an asterisk *. Other items, such as pots, you may be able to get from landscape businesses or buckets [that need holes drilled] from school lunch programs.

Getting Ready and Collecting Roots

1. Wetland plant identification book(s)
2. Map(s) to location of loosestrife roots and beetle release sites – Use a good local map after consulting the Great Lakes Indian Fish and Wildlife Commission’s web site at www.glifwc-maps.org.
3. Colored flagging in a roll or on metal stakes
4. Filled out, signed, copied, and mailed Wisconsin DNR permit letter (see appendix 5)
5. Shovel or fork for digging and cutting roots
6. Plastic tubs (Rubbermaid® type) or plastic bags for hauling roots and waste
7. Pruning shears to cut off old dead stem tops and root tips, if necessary
8. Gloves, eye protection, rubber boots, and old clothes

Potting Roots

9. 12-15 large purple loosestrife roots from a local wetland
10. 12-15 plastic pots, 10-14 in. diameter *
11. About 2.5 cubic feet of high peat content potting soil (Fafard or a similar mix) *
12. 1 lb. fertilizer, slow release type like Osmocote 18-6-12, unless in the soil *
13. Hose and water source for rinsing roots, wetting soil, and filling pools
14. Two 4-foot child’s wading pools, one 5-foot pool, or other suitable containers *

Pool Set-up and Plant Care

15. 24 yd. of 48+ in. wide, no-see-um insect netting, thread, and sewing machine to make 11 net sleeve cages about 78 in. long. Fold each piece of fabric along its short side and sew down the open 78-in. seam, tapering the cage at one end to match the diameter of your pots. *
16. Duct tape (and perhaps bungi type cords) to attach cages firmly to pots *
17. Wire or string to tie cage tops shut and to supports: also for guy wires
18. 4 X 8 foot space in full sun or at south facing windows
19. 7-foot high cage support system for suspending net cages-clotheslines or conduit posts or a design of your own!
20. Dependable watering system

Raising Beetles

21. 100+ over-wintered beetles from the WPLBCP, field collected, or from other suppliers *
22. Aspirator for catching and moving beetles *

Releasing Beetles and Follow-up

23. Heavy-duty transportation for taking potted plants into the field.
24. Site release form (filled out and mailed to the WPLBCP on the day of release)

