

Pest Management – Invasive Plant Control

Purple Loosestrife – *Lythrum salicaria*

Conservation Practice Job Sheet

NH-595



Purple Loosestrife (*Lythrum salicaria*)

Purple Loosestrife

Lythrum salicaria is native to Eurasia and was first reported from the northeastern coast of North America in the 1800's. Although purple loosestrife occurs in nearly all sections of the United States, the heaviest concentrations are in the glaciated wetlands of the northeast.

Purple loosestrife is found in wetlands such as cattail marshes, sedge meadows, and open bogs. It also occurs along stream and river banks and lake shores. In addition, the plant is found in ditches and other disturbed wet soil areas. *L. salicaria* grows best in high organic soils, but tolerates a wide range of soils including clay, sand, muck, and silt. Generally, the plant is found in full sun, but it can survive in 50% shade.

Purple loosestrife can spread by root fragmentation or seed. A mature plant can produce 2.7 million seeds annually. Infestations of purple loosestrife appear to follow a pattern of establishment, maintenance at low numbers, and then dramatic population increases when conditions are optimal. *L. salicaria* flourishes in wetland habitats that have been disturbed or degraded from draining, natural drawdown in dry years, bulldozing, siltation, shore manipulation, cattle



Purple Loosestrife Invading

trampling, or dredging. Mudflats exposed following drawdowns will be quickly colonized if a loosestrife seed source is present.

Once Purple Loosestrife becomes established in a wetland it displaces endemic vegetation through rapid growth and heavy seed production. *L. salicaria* has a detrimental impact on native wetland vegetation and associated wildlife. Important wildlife food plants such as cattails and pondweed are displaced or shaded out as *L. salicaria* expands across a wetland. If purple loosestrife is left unchecked, the wetland eventually becomes a monoculture of loosestrife. The invasion of *L. salicaria* leads to a loss of plant diversity, which also leads to a loss of wildlife diversity.

Description

L. salicaria is a stout, erect perennial herb with a strongly developed taproot. The plant ranges in height from 0.5 to 2.0 m. The four-angled stem can be glabrous to pubescent. The sessile leaves are opposite or in whorls, lanceolate to narrowly oblong, with cordate bases. The inflorescence is spike-like, 1-4 dm long. Petals 5-7, usually magenta, but white or light pink flowers are also common. The flowers are trimorphic in regard to the relative lengths of the

stamens and style. The fruit is a capsule, with small seeds.

Similar Natives

Winged loosestrife (*Lythrum alatum*) is a rare plant that could be confused for *L. salicaria*. *L. alatum* is usually shorter in stature, being around 40-80 cm (1-2.5 ft.) tall. The leaves of *L. alatum* are alternately arranged, except for the very lowest ones on the plant. The flowers of *L. alatum* are solitary in the upper axils while the flowers of *L. salicaria* are numerous and in a spike-like arrangement. Other similar natives include Fireweed, Swamp Loosestrife, and Blue Vervain. Before control activities begin be sure you are correctly identifying Purple Loosestrife.

Control

Several control methods have been attempted with varying degrees of success. First land managers must determine if it is feasible to control Purple Loosestrife or just contain it. Larger populations extending over acres will be difficult if not impossible to completely eradicate. These large populations should be contained at their present position. Preventing the expansion can be accomplished through hand-pulling new plants along the periphery or spraying herbicide on plants extending beyond the main body of the population.

Smaller populations can be controlled through eradication. Populations up to three acres can be cleared with herbicides or hand-pulled, depending upon the size of the work crew and time available. Biological control of Purple Loosestrife is also a viable option that has been successfully implemented.

Biological Control

While herbicides and hand removal may be useful for controlling individual plants or small populations, biological control is seen as the most likely candidate for effective long term control of large infestations of Purple Loosestrife. As of 1997, three insect species from Europe have been approved by the U.S. Department of Agriculture for use as biological control agents. These plant eating insects include a root-mining weevil (*Hylobius transversovittatus*), and two leaf-feeding beetles (*Galerucella californiensis* and *Galerucella pusilla*).

Mechanical Control

Hand-removal is recommended for small populations and isolated stems. Ideally, the plants should be pulled out before they have set seed. The entire

rootstock must be pulled out since regeneration from root fragments is possible. Be sure to minimize disturbances to the soil and native vegetative cover. Remove uprooted plants and broken stems from the area since the broken stems can resprout.

Mowing: Mowing is not recommended for Purple Loosestrife because it can further spread by distributing plant stems that can sprout vegetatively. If possible, native plants should be restored to the control area by seeding or planting. This will deter new loosestrife seedling development.

Prescribed Burning

Burning is thought to not be an effective control method because purple loosestrife is typically found in a wet soil condition and the rootstock of the plant is well-protected. Further research is needed to determine the effects of prescribed burns for purple loosestrife control.

Chemical Control

The herbicide glyphosate is most commonly used to control *L. salicaria*. Glyphosate is available under the trade names Roundup™ and Rodeo™. Roundup cannot be used over water; Rodeo contains a non-ionic surfactant and has been approved for use over water¹.

The major disadvantage in using Rodeo is that glyphosate is a non-specific systemic. Broadcast spraying of non-selective herbicides kills all of the vegetation and may result in an increase in loosestrife density because of seed germination following the removal of competing perennial vegetation. Spot application of Rodeo directly onto *L. salicaria* would ensure that no large holes would appear in the marsh vegetation and that competition would be unaffected.

Spraying should be done after the period of peak bloom, usually late August. One to two percent solutions of Rodeo have been recommended as sufficient to kill *L. salicaria*².

It is critical that any control effort be followed up the same growing season and for several years afterwards since some plants will be missed, new seedlings may sprout from the extensive seed bank, and a few plants will survive the low-dosage treatment. Higher dosage and careless application, however, inevitably kills more surrounding vegetation and leads to establishment of loosestrife seedlings.

For larger infestations where spot application of glyphosate is not practical, broadleaf herbicides can be used. They have the advantage of not harming monocot species, which are the dominants in most wetland types. Broadleaf herbicides (2,4-D based) can be effective on loosestrife if applied in late May or early June (Henderson 1987). The disadvantage of treating early in the season is that purple loosestrife plants are easily overlooked when not in flower.

Cut Stump Treatments: The safest method of applying glyphosate herbicide is to cut off all stems at about 6 inches and then paint or drip onto the cut surface a 20-30% solution².

Foliar Treatment: It is best to spray no more than 25-50% of a plant's foliage. This will help protect against overspraying which might damage adjacent vegetation.

¹- Balogh, Greg. "Ecology, distribution, and control of purple loosestrife in northwest Ohio." Annual report from October 1984-September 1985. Cooperative Wildlife Research Unit, Ohio State University.

²- Henderson, Richard. 1987. "Status and control of purple loosestrife in Wisconsin." Research management findings, Number 4, Bureau of Research, Wisconsin DNR, Madison.

Important Note

Mention of specific pesticide products in this document does not constitute an endorsement. These products are mentioned specifically in control literature used to create this document.

Disposal

There are a few general rules of thumb that will ensure proper disposal. Be sure the plant is dead before placing in a mulch or compost pile. Either dry it out in the sun, or bag it in a heavy duty black plastic bag. If you have flowers and/or seeds on the plant, put the flowers and seed heads into the bag head first so that there is minimal risk in dispersing seed.

Information and Recommendations compiled from:

- Balogh, Greg. "Ecology, distribution, and control of purple loosestrife in northwest Ohio." Annual report from October 1984-September 1985. Cooperative Wildlife Research Unit, Ohio State University.
- Henderson, Richard. 1987. "Status and control of purple loosestrife in Wisconsin." Research management findings, Number 4, Bureau of Research, Wisconsin DNR, Madison.
- "Invasive Plant Management Guide." Stewardship Subcommittee of the Connecticut Invasive Plant Working Group.
http://www.hort.uconn.edu/cipwg/art_pubs/GUIDE/guideframe.htm
- Invasive Plant Atlas of New England (IPANE)
- The Nature Conservancy - Element Stewardship Abstract (and references therein)
- Plant Conservation Alliance (PCA) Alien Plant Working Group