

Purple Loosestrife (*Lythrum salicaria* L.)

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Fig. 1. Purple loosestrife flowers has six petals. Flowers occur in axillary clusters around the stem. Photo by Ryan Wersal.



Fig. 2. Purple loosestrife grows greater than six feet high. Photo by Victor Maddox.



Fig. 3. A typical purple loosestrife shoot with multiple stems, each topped by an inflorescence. Photo by John D. Madsen.

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Introduction

Problems caused

Purple loosestrife was introduced to North America from Europe and Asia in the early to mid 1800's. The seeds were carried in ship ballast and on livestock that were brought to this country for trade. Purple loosestrife was widely cultivated for its ornamental and pharmacological values. But this species can invade wetland habitats and result in negative impacts on the ecosystem. Such ecosystem effects include altered detritus decomposition and nutrient cycling. Also, purple loosestrife may displace native plant species, forming dense monotypic stands that reduce native plant species richness and diversity. Purple loosestrife has little value for wildlife as few species utilize the plant for a food source or shelter.

Regulations

Purple loosestrife is not listed as a federal noxious weed. It is listed as a state noxious weed in Arkansas and South Carolina, and a Class B noxious weed in Alabama and North Carolina. It is widely recognized as an invasive weed of wetlands.

Description

Vegetative growth

Purple loosestrife is a perennial species that over-winters as a stem base. Plants are composed of numerous angled stems that grow to over 6 feet. The leaves are lance shaped with fine hairs, and are attached directly to the stems without petioles. Leaves can be opposite, whorled, or spiraled around the stem.

Flowering/fruiting

Purple flowers occur in axillary clusters that form a spike inflorescence. Each flower has 5-7 narrow, wrinkled purple petals. Flowering begins in late June and continues through September. It has been suggested that purple loosestrife can draw pollinators away from native plants, which may aid in this plants prolific seed production. A mature multi-stemmed plant, 1.5-6 feet in height, may produce between two and three million seeds that can remain viable in the soil for many years. It takes approximately eight weeks from germination for purple loosestrife to flower.

Dispersal mechanisms

Seed move by drifting in moving water. Long-distance transport occurs when seeds become embedded in mud adhering to wildlife, livestock, humans, and vehicles. The weed spreads vegetatively by detached shoot and rootstock fragments.

Spread by

Natural spread is through seed transport in water or animals. Purple loosestrife is a highly prized ornamental plant, and its spread has largely been through the ornamental trade.

Habitat

Purple loosestrife grows in a variety of moist soil habitats including wet meadows, marshes, floodplains, river margins, and lakeshores. The plant can tolerate shallow water depths, but optimal growth is attained in moist soil habitats. Disturbed sites create excellent opportunities for seed germination and expansion of new purple loosestrife infestations.

Distribution

Purple loosestrife has spread without natural herbivores or human assistance establishing plant communities in native wetlands. Purple loosestrife distribution in North America ranges in the east from New Brunswick to North Carolina and British Columbia to California in the west. Purple loosestrife occupies more than 300,000 acres of North American wetlands. Purple loosestrife has been reported in AR, AL, MS, and TN.

Control Methods

Biological

In recent years three species of insects *Galerucella pusilla* (a leaf-feeding beetle), *Galerucella californiensis* (a leaf-feeding beetle), *Hylobius transversovittatus* (a root-mining weevil) have been used to control infested sites. Of the three species the two leaf-feeding species have the greatest success in controlling purple loosestrife populations. The beetles over winter as adults and lay their eggs on the leaves of purple loosestrife plants in the spring and subsequent larvae feed on the leaves and the flowers of purple loosestrife plants. However, this method tends to take many growing seasons to observe control of infestations.

Chemical

Herbicides offer more efficient control of purple loosestrife populations greater than one acre, as well as spot-treating small colonies. Many formulations of glyphosate and triclopyr have been used extensively to control infestations. Glyphosate and imazapyr are non-selective herbicides; therefore, treatment may affect other plant species such as cattails and rushes. Triclopyr and 2,4-D formulations are selective broadleaf herbicides and may not affect other desirable monocot species nearby. However, only formulations labeled for aquatic use can be applied to plants in or near water. For all of these herbicides, use 0.25% to 1% v/v of a nonionic surfactant for foliar applications.

Chemical	Formulation	Rate
2, 4-D	liquid	2-4 pints/acre
Glyphosate	liquid	4-6 pints/acre
	liquid	4-6 pints/acre
Imazapyr	liquid	1 pint/acre
Triclopyr	liquid	6-8 quarts/acre

Mechanical

Small infestations, less than 100 plants, can be controlled by hand pulling plants, digging up the stem bases, or flower removal. These methods should not be used when seed production is occurring as this will aid in seed dispersal and new infestations of purple loosestrife. Care must be taken to remove all seeds and plant material from clothes and equipment as small plant fragments can result in new infestations. All plant material should be dried and burned to ensure that purple loosestrife plants and fragments are not viable. Techniques such as cutting, mowing, and controlled burns have been used in an attempt to control purple loosestrife populations. The deployment of these techniques has largely been ineffective and can promote new plant growth.

Physical

Flooding or inundation has been reported to control colonies of purple loosestrife. Plants must be inundated by at least 2 ft of water for at least one month. Controlled burns have also been employed, alone or in combination with broadcast herbicide treatments.

References

- Mitich, W.L. 1999. Purple loosestrife, *Lythrum salicaria* L. Weed Technology 13:843-846.
- Mullin, B.G. 1998. The biology and management of purple loosestrife (*Lythrum salicaria*). Weed Technology 12:397-401.
- Thompson, D.Q., Stuckey, R.L., and Thompson, E.B. 1987. Spread, impact, and control of purple loosestrife (*Lythrum salicaria*) in North America wetlands. U.S. Fish and Wildlife Service.
- Thompson, D.Q. 1991. History of purple loosestrife (*Lythrum salicaria*) biological control efforts. Natural Areas Journal 11:148-150.
- Stuckey, R.L. 1980. Distributional history of *Lythrum salicaria* (purple loosestrife) in North America. Bartonica 47:3-20.

