



Southeast Exotic Pest Plant Council Invasive Plant Manual

Common Name: Purple Loosestrife

Scientific Name: *Lythrum salicaria* L.

Purple loosestrife (*Lythrum salicaria* L.) is a wetland perennial that forms large, monotypic stands throughout the temperate regions of the U.S. and Canada. This aggressive invader replaces native vegetation, degrades wildlife habitat, and obstructs natural waterways. Also known as Bouquet-violet, it belongs to the Lythraceae (Loosestrife) family.

Height: Purple loosestrife grows 1-3 m (3.0-10.0 ft) tall, with an average height of 1.5 m (5 ft). Established plants have 30 to 50 shoots that form wide-topped crowns and dominate the herbaceous canopy.

Stem: Stems are pubescent and distinctly four-sided. They may appear woody at base of large plants.

Leaves: The entire sessile leaves are primarily opposite or in whorls of three without teeth. Leaves are lanceolate and up to 10 cm (4 in) long and 1.5 cm (0.6 in) wide with an obtuse or cordate leaf base.

Flowers: Purple loosestrife has showy, attractive flowers with 5-7 purple petals (occasionally pink or white) occurring in dense compound, terminal bracted spikes that may be 15-20 cm (6-8 in) high. Three forms of the species are distinguished based on the length of the style (up to 7 mm) in the flowers. Blooms have 8-10 stamens. The calyx tube has hirsute lobes 0.5- 0.8 mm (0.02-0.03 in) long which, along with the bracts, are greenish. The self-incompatible, insect-pollinated flowers bloom from June to September and the flower stalks remain standing through the winter. Each plant may bear as many as 3,000 flowers.

Seeds: The capsules contain an average of 120 orange, minute seeds (0.06 mg). Each plant may contain up to 900 capsules. Seeds are dispersed from late summer through the winter. Seeds are commonly dispersed by wind, but are also dispersed in water and mud adhering to aquatic wildlife, livestock, and people. Seed germination takes 8-10 weeks. Seeds are long-lived and can remain viable even after 20 months of submergence in water.

Life History

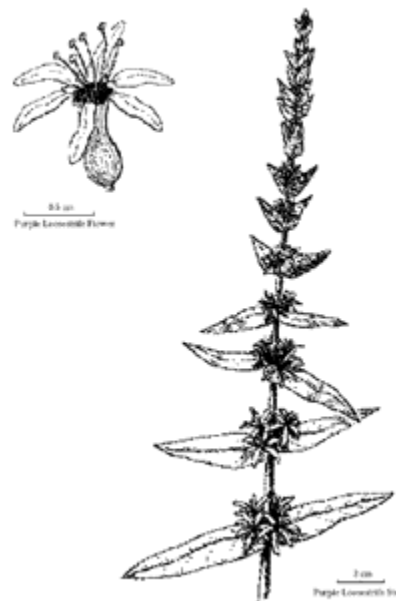


Photo by Eric Coombs

Purple loosestrife has a vigorous rootstock that serves as a storage organ, providing resources for growth in spring and regrowth if the plant has been damaged from cuttings. New stems emerge from the perennial roots allowing the plant to establish dense stands within a few years. Each plant has an average of 30 stems which die in late fall but remain standing through winter. Under natural conditions, seedling densities can approach 10,000-20,000 plants/m² (12,000-24,000 plants/sq. yard) with growth rates exceeding 1 cm/day (0.4 in/day). Plants reproduce primarily by seeds, but also by vegetative cuttings. A single, mature plant can produce more than 2.5 million seeds annually. In addition, plant fragments produced by muskrats and by mechanical clipping can rapidly spread through river and lake systems.



Photo by Norman E. Rees

Origin and Distribution

Purple loosestrife was introduced to North America from Europe and Asia during the early 1800s as a contaminant of European ship ballasts and as a valued medicinal herb for the treatment of diarrhea, dysentery, bleeding, wounds, ulcers, and sores. For nearly a century it occurred as a pioneer species on the northeastern seaboard. The range then expanded further inland in the 1880s as the construction of inland canals and waterways increased. The continued expansion proceeded with the development and use of road systems, with commercial distribution of the plant for horticultural purposes, and with regional propagation of seed for bee forage. Purple loosestrife reached the upper Midwest by the 1930s. The plant now occurs in scattered locations across most of the U.S. with the heaviest concentrations in the glaciated wetlands of the northeast. Numerous populations have been found in the midsouth area.



Photo by Bernd Blosssey



Photo by Eric Coombs

Similar Species

The native winged loosestrife (*Lythrum alatum* Pursh) most closely resembles purple loosestrife. However, winged loosestrife has alternate leaves, more widely spaced flowers, and is smaller in size (an average of 0.6 m or 2 ft tall) than purple loosestrife. Other species that might easily be confused with purple loosestrife on first glance include fireweed (*Epilobium angustifolium* L.), blue vervain (*Verbena hastata* L.), and blazing star (*Liatris spicata* L. Willd.), although their preferred habitats are considerably drier.

Habitat

Purple loosestrife is an aquatic to semiaquatic species occurring in a variety of different shallow water wetlands including marshes, bogs, wet meadows, stream and river banks, shores of lakes and reservoirs, wet pastures, roadside ditches, and disturbed wet soils. Plants thrive under moist soil conditions and in full sun; however, they can survive in up to 50% shade.

Management Recommendations

Mechanical Controls

Hand Pulling: In areas that contain less than 100 plants, younger plants (1-2 years old) can be hand-pulled. Plants more than 2 years old should be dug out with special care to include the entire rootstock. Removal activities should take place before flowering to ensure that seeds are not dispersed during the disturbance. All plant parts should be carefully bagged, removed from the site, and placed in approved landfills or preferably burned. Any plant fragment that escapes proper disposal could spread purple loosestrife on your control site or along your travel route. In addition, all clothing, boots, and equipment should be properly cleaned to ensure that no seeds are transported. If feasible, native plants should be restored to the control area by seeding or planting. This reestablishment of vegetation will deter new loosestrife seedling development through competition. Do not cut or mow purple loosestrife. These methods will simply increase the spread of plants since they can sprout vegetatively.

Biological Controls

Long-term studies on the effectiveness of biological controls are being conducted at the New York Cooperative Wildlife Research Unit at Cornell University. Several phytophagous insects which specifically feed on purple loosestrife in Europe have undergone a series of intensive lab and field testing. Three beetles—two leaf eaters, and one root miner—have been approved for release in the U.S. Experimental importation of these insects has been made in the northeast. Success of these efforts could pave the way for the use of biological controls to manage purple loosestrife in a permanent, cost-effective, and environmentally sound way. There is significant concern about other native species of the genus *Lythrum* that may also be fed upon, although to a lesser degree, by these insects. Since other control measures may harm a variety of non-target plant species, this non-target feeding may occur at a level which is preferable to alternative control techniques.

Herbicidal Controls

Cut Stump Treatment: In areas that contain more than 100 plants, a spot application of a glyphosate herbicide (one that is approved for use in and near water) is recommended. Individual purple loosestrife plants should be cut about 15 cm (6 inches) above the ground. A 20-30% solution of glyphosate and water should be applied directly to the cut surface either by a wick or injection into the stem.

Foliar Spray Method: If purple loosestrife covers a large area, a foliar spray can be applied using a 2% glyphosate solution and water plus 0.5% non-ionic surfactant. To be most effective herbicide should be applied just when plants have begun flowering. Where feasible, flower heads should be cut, bagged, and removed from the site before application to prevent the production of seed. Glyphosate is a non-selective herbicide, and extreme care must be taken to avoid contact with non-target plant species. The restoration of sites depends on these non-target species as they recolonize the area after the purple loosestrife is eliminated.

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