PNW0380

Purple Loosestrife

(Lythrum salicaria L.)

Purple loosestrife (*Lythrum salicaria* L.), sometimes known as purple lythrum, is an emergent aquatic plant of Eurasian origin. An erect, herbaceous perennial, it became established in the estuaries of northeastern North America by the early 1800s. It has since spread across mid-latitude North American wetlands. Several modes of colonization or escape are probable, including ships' ballast, livestock bedding and forage, wool, and purposeful import as seeds or rootstocks for gardens and herb beds. Purple loosestrife was first found in 1929 in the Puget Sound area of Washington. Now widespread east of the Cascades, in Idaho, Oregon, and Washington, it is less prevalent west of the Cascade Range.

IDENTIFICATION

The name *loosestrife* has been associated with several members of the loosestrife family (Lythraceae), also with the genus *Lysimachia* in the primrose family (Primulaceae). Although *L. salicaria* has more than 10 common names in America and Great Britain, the most established name is purple loosestrife. Purple loosestrife is identified most easily during its long season of bloom (late June to early September in most areas). At this time, people can recognize the characteristic purple-magenta floral mass easily at 100 yards. It may be confused with fireweed (*Epilobium angustifolium*), blue vervain (*Verbena hastata*), and spirea (*Spiraea douglasii*). Upon closer examination, subtle differences in color and floral structure among these plants make positive field identification easy. Differences in site preference also help to separate purple loosestrife from superficially similar species. Usually loosestrife grows on moist or saturated soils. Also, it is the only purple-magenta flowered plant to

Purple loosestrife infesting a wetland.

Purple loosestrife flower.

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Purple loosestrife growing in a typical habitat.

Purple loosestrife flowers and opposite leaves on the flowering spike.

develop massive monospecific blocks of showy floral displays over large wetland tracts. In early autumn, a distinctive but temporary color change usually occurs after the growing season when leaves dry and turn bright red. The red color may persist for 10 days. Dead stalks remain standing through winter and have a characteristic brown tone that, in combination with spire-shaped capsule clusters, readily identifies the species.

Usually purple loosestrife leaves grow opposite each other on the four-sided (sometimes six-sided) stem. Leaves are linear with smooth edges and do not have a petiole or leaf stem. The leaves are more or less covered with fine hairs.

The purple-magenta colored, five- to six-petalled flowers grow on long spikes. Seeds develop in capsules that dehisce when mature, releasing the seed. Purple loosestrife seed production depends on plant age, size, and vigor. A 4- to 5-year-old plant with 30 stems reportedly can contain about 1,000 capsules per stem and 90 seeds per capsule, producing an estimated 2,700,000 seeds. Each seed is about the size of a grain of sand.

A mature, well established purple loosestrife plant often grows up to 10 feet tall and 5 feet wide. Thirty to 50 herbaceous stems arise from a common rootstock to make the graceful, wide-topped crown characteristic of the older clumps. Although lateral root crown growth offers new sites of origin for peripheral stems, purple loosestrife does not spread far by its roots. The roots are not the creeping type found in Canada thistle or field bindweed.

BIOLOGY

Purple loosestrife is a prolific seed producer and spreads primarily by floating seeds. The type of watershed strongly influences the rate and ease of expansion of a local infestation. Slow-moving streams with broad alluvial deposits offer many sites for wetland plants to colonize. These areas

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are highly susceptible to purple loosestrife infestation and spread. Streams and wetlands having shade-covered banks are less susceptible to invasion. Spread into other areas may have occurred from seed transported by highway and recreational vehicles, birds and other animals, including people. Seed maintains viability of more than 80% for at least 3 years.

Flower spikes of purple loosestrife.

Purple loosestrife plants.

Judge habitat vulnerability to invasion by purple loosestrife by existing plant associates. Presence of cattails, reed canarygrass, sedges, or rushes in marshy areas or along riparian wetlands identify an invasion prone habitat. Impacts on native vegetation have been disastrous; purple loosestrife is a vigorous competitor and can crowd out native vegetation, completely dominating a site. Although it can invade somewhat undisturbed habitats, the spread and dominance of this weed accelerates greatly in disturbed habitats. Impacts on wildlife have not been well studied; however, purple loosestrife appears to reduce waterfowl and aquatic fur bearer activity severely.

CONTROL

The shallow woody root system forms a dense mat, making it difficult to pull established plants. The plant will resprout if you do not remove the entire root. Plants less than 1 year old are easier to control by pulling.

If you mow plants, cut stem pieces can send out roots and establish new plants. Frequent mowing may be effective if the cut stems dry rapidly. Purple loosestrife is not a threat to most cultivated crops. Large perennial rootstocks lie mostly within 12 inches of the soil surface and are susceptible to any form of crop culture that includes annual tillage. However, cranberry beds, wild rice beds, and riparian meadows in the Pacific Northwest may be highly susceptible to invasion.

Biological control of purple loosestrife appears to be a sound management option. No native herbivores or pathogens are known to suppress infestations in North America. Research conducted during the last decade has focused on importing and releasing host-specific insects from the native range of purple loosestrife in Eurasia. The insects introduced into the Pacific Northwest include a root mining weevil (*Hylobius transversovittatus*), two bud and leaf feeding beetles (*Galerucella calmariensis* and *G. pusilla*), and a flower bud weevil (*Nanophyes marmoratus*).

- **Root weevil** *adults* feed on newly formed purple loosestrife foliage. These weevils deposit their eggs in the soil or in the lower stem. Root weevil larvae penetrate and feed within the root, where they deplete important sugar reserves and diminish plant survival.

- **Leaf feeding beetles** affect purple loosestrife in two ways. *Adults* consume newly formed buds and leaves, while *larvae* feed on buds, leaves, and stems. Severely infested stands appear as though treated by a foliar desiccant.

- **Flower bud weevil** *adults* initially feed on developing leaves near shoot tips and later on closed flower buds. Flower bud *larvae* develop within closed flower buds and consume the developing petals, stamens, and ovaries, thereby inhibiting seed production.

Of these biological control organisms, the two leaf feeding beetles have been the most effective thus far in the Pacific Northwest. Plant biomass and stand density have been reduced by more than 90% at some infestations. The biocontrol agents are being widely redistributed throughout the Pacific Northwest.

Livestock graze early foliage but utilize the mature plant less, giving plants a growth advantage over more palatable species.

For chemical control, refer to the *Pacific Northwest Weed Management Handbook*, an annually revised extension publication available from the extension offices of Oregon State University, Washington State University, and the University of Idaho.

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