



Weed Common Name

Purple loosestrife

Weed Botanical Name

Lythrum salicaria L.

Points to Consider

- Long-lived perennial typically found in moist habitats.
- Plants have multiple stems, smooth lance-shaped leaves, and spikes of showy pinkish-purple flowers.
- Large infestations can displace native species, interfere with water flow and some ecosystem processes, and degrade habitats.
- Can be treated with biological control, hand-pulling or digging, and herbicides.
- Declared a noxious weed in the state of Idaho.

Integrated Pest Management of Purple Loosestrife

Importance

PURPLE LOOSESTRIFE CAN OUTCOMPETE and displace native plant species, including cattails, wild rice, and several other herbaceous plants that are important for waterfowl habitat and food. Large infestations (Figure 1) harm waterfowl nesting habitat, have negative impacts on some amphibians and algal communities, reduce water flow and quality, and degrade hunting and fishing areas.



Figure 1. Purple loosestrife infestation, Horseshoe Lake, Idaho (<https://www.invasive.org/browse/image/5435862>). Courtesy of Eric Coombs, Oregon Department of Agriculture, Bugwood.org.
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Description, Biology, and Ecology

Purple loosestrife is a perennial wetland weed (Figure 2) that spreads largely by seed. Native to Europe, Asia, and northern Africa, it was introduced to North America in the 1800s as a contaminant in ship ballasts and animal wool. It was also intentionally brought to North America for ornamental and medicinal purposes. Purple loosestrife invades natural and

disturbed wetlands, such as lakeshores, marshes, wet meadows, stream banks, drainage ditches, and irrigated pastures. Established plants also tolerate drier sites.

Seedlings (Figure 3) germinate in late spring or early summer and develop a strong, branching root system. Plants can grow over three feet tall in their first year and may even flower. In subsequent years, stems typically

grow 4–5 feet tall with multiple branched stems. Each stem is squarish in cross section with 4–6 sides (Figure 4). Leaves have smooth margins and are lance-shaped, stalk-less, and 2–5 inches long. Leaf arrangement may appear alternate, opposite, or whorled. Flowers occur in spiked clusters from early summer to early fall. Each flower (Figure 5) is less than 1 inch across with 5–7 pinkish-purple, crumpled petals. Each flower produces a capsule fruit that can contain more than one hundred



Figure 2. Purple loosestrife flowering plant (<https://www.inaturalist.org/observations/86124892>). Courtesy of emilyscherer (via iNaturalist), [CC BY-NC 4.0](#), no modification from original.



Figure 3. Purple loosestrife seedlings. Courtesy of Travis McMahon, MIA Consulting, [CC BY-NC 4.0](#), no modification from original.



Figure 4. Purple loosestrife leaves and stem. Courtesy of Travis McMahon, MIA Consulting, [CC BY-NC 4.0](#), no modification from original.

small, light-colored seeds (Figure 6). A single plant may produce more than one hundred thousand seeds annually. Seeds are easily carried by water, people, and animals. Seeds may remain viable for more than three years, but potentially much longer. Aboveground plant parts die



Figure 5. Purple loosestrife flower (<https://www.inaturalist.org/observations/281222505>). Courtesy of Douglas Goldman (via iNaturalist), [CC BY-NC 4.0](#), no modification from original.

back with fall frosts. Dead stems persist through the winter and often decay slowly, creating a mat that may persist for several years. Plants resprout each spring from their large root systems.

For a visual-based description of the history and identification of purple loosestrife, along with suggestions for differentiating it from look-alike species, see the University of Idaho purple loosestrife identification video corresponding to this article (https://www.youtube.com/watch?v=P_FBoUyv_w).



Figure 6. Purple loosestrife fruit capsule and seeds (<https://www.invasive.org/browse/image/1291006>). Courtesy of Gary L. Piper, Washington State University, Bugwood.org. [CC BY-NC 3.0](#).

Weed Management

Primary Management Tactics

Successful purple loosestrife management includes routine monitoring throughout the growing season and accurate identification of other weeds present. Base management decisions on other weed species located at the site, the level of purple loosestrife infestation, and the availability of labor, resources, and management options. Generally, a combination of management tactics produces the best results. For purple loosestrife, the primary management tactics in Idaho include chemically treating small infestations or applying biological control to larger infestations.

Prevention

- Avoid transporting weed seeds on clothing, equipment, and animals.
- Use certified weed-free seed, hay, soil, soil amendments, and other landscaping materials.
- Regularly monitor and rapidly control any new plants before they firmly establish.
- Keep ditch banks and roadsides free of seed-producing weeds.

Mechanical

- Remove small infestations from ponds, ditch banks, and irrigated pastures by hand-pulling or cutting the taproot at least 2–3 inches below the plant crown before seeds develop.

- Mowing is largely ineffective against purple loosestrife and is infeasible in water-logged habitats where purple loosestrife typically occurs.

Cultural

- In a landscape or irrigated pasture setting, use plant selection and adequate fertilization and irrigation to establish healthy, competitive plant communities.
- Targeted grazing may be effective if applied prior to seed production. Avoid overgrazing, which leaves bare ground along water body margins where purple loosestrife may germinate and establish.

Biological

- Biological control agents for purple loosestrife include the beetles *Galerucella californiensis* and *G. pusilla*, which defoliate plants, reduce seed production, and stunt plant growth. Root-feeding by the weevil *Hylobius transversovittatus* can result in plant death. The flower-feeding *Nanophyes marmoratus* reduces loosestrife seed output, which reduces spread. The *Galerucella* species are generally considered more effective and available than the other two biocontrol agents, but contact your state or county weed biocontrol specialist for recommendations of biocontrol agents specific to your area.

URLs for biocontrol agent species include the following: *Galerucella californiensis* (<https://ibiocontrol.org/bio/galerucella-californiensis/>), *G. pusilla* (<https://ibiocontrol.org/bio/galerucella-pusilla/>), *Hylobius transversovittatus* (<https://ibiocontrol.org/bio/hylobius-transversovittatus/>), and *Nanophyes marmoratus* (<https://ibiocontrol.org/bio/nanophyes-marmoratus/>).

Chemical

Recommendations for herbicides to use in the management of purple loosestrife can be found on the [PNW Pest Management Handbook](#) website and are summarized in Table 1. Refer to the label on your product of choice for proper application rates. In many cases, adding a surfactant to the herbicide mixture helps the product penetrate rather than bead up and roll off leaves. As with all herbicide usage, take several precautions:

- Ensure that both purple loosestrife and your intended use are listed on your chosen product's label.
- Follow herbicide label restrictions concerning weather conditions to ensure treatment success and to avoid volatilization and off-target drift.
- Because many herbicides have significant soil activity, take care when applying herbicides in or near the root zones of nontarget plants such as trees, shrubs, and garden plants.
- When possible, rotate the use of herbicides from different chemical families to prevent the development of herbicide resistance.

Further Reading

- Blossey, B., V. Nuzzo, and S. B. Endriss. 2024. "From Ecological Menace to Roadside Attraction: 28 Years of Evidence Support Successful Biocontrol of Purple Loosestrife." *Ecosphere* 15(12): e70089. <https://doi.org/10.1002/ecs2.70089>.
- Endriss, S. B., V. Nuzzo, and B. Blossey. 2025. "Return of Diversity: Wetland Plant Community Recovery Following Purple Loosestrife Biocontrol." *Ecological Applications* 35(4): e70064. <https://esajournals.onlinelibrary.wiley.com/doi/10.1002/eap.70064>.
- Mitich, L. W. 1999. "Purple Loosestrife, *Lythrum salicaria* L." *Weed Technology* 13(4): 843–46.
- Thompson, D. Q., R. L. Stuckey, and E. B. Thompson. 1987. "Spread, Impact, and Control of Purple Loosestrife (*Lythrum salicaria*) in North American Wetlands." US Fish and Wildlife Service, Fish and Wildlife Research Report No. 2. Washington DC.

Additional Resources

- Blossey, B. 2023. "[NAISMA] Purple Loosestrife: History and Ecology in North America" [fact sheet], NAISMA-BCW-2023-28-Purple Loosestrife-P (<https://bugwoodcloud.org/resource/files/27700.pdf>) 5 p.

Blossey, B., and S. B. Endriss. 2023. "[NAISMA] Purple Loosestrife Biocontrol Agents: History and Ecology in North America" [fact sheet], NAISMA-BCW-2023-28-Purple Loosestrife-A (<https://bugwoodcloud.org/resource/files/27701.pdf>) 9 p.

Invasive Species of Idaho. n.d. "Purple Loosestrife (Containment)." (<https://invasivespecies.idaho.gov/purple-loosestrife-factsheet>).

Munger, G. T. 2002. "Lythrum salicaria." Fire Effects Information System. Rocky Mountain Research Station (Fort Collins, CO): United States Department of Agriculture and US Forest Service (<https://www.fs.usda.gov/database/feis/plants/forb/lytsal/all.html>).

Pasiecznik, N. 2007. "Lythrum salicaria (Purple Loosestrife)." CABI Digital Library Data Sheet. (<https://www.cabidigitallibrary.org/doi/10.1079/cabicompendium.31890>).

Caution: Read Pesticide Labels

Pesticide labels override other recommendations.

ALWAYS read and follow the instructions printed on the pesticide label. The pesticide recommendations in this UI webpage do not substitute for instructions on the label. Pesticide laws and labels change frequently and may have changed since this publication was written. Some pesticides may have been withdrawn or had certain uses prohibited. Use pesticides with care. Do not use a pesticide unless the specific plant, animal, or other application site is specifically listed on the label. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

Trade Names — To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

Groundwater — To protect groundwater, when there is a choice of pesticides, the applicator should use the product least likely to leach.

Table 1. Herbicides recommended for control of purple loosestrife. Note that not all herbicides are appropriate for all infestations.

Active Ingredient	Trade Names	Family	Timing	Notes
glyphosate	Several names	None generally accepted	Spring to summer on seedlings or blooming plants prior to seed production	Nonselective; kills other vegetation in treated areas. In dry ditches or after drawdown, allow seven days after treatment before reintroducing water. Only provides control during year of application. Has no soil activity and does not kill seeds or inhibit germination the following season. Do not apply within 0.5 miles upstream of potable water intakes. Use 0.5% v/v nonionic surfactant. Thoroughly wet foliage but avoid runoff.
imazapyr	Habitat	Imidazolinone	Actively growing plants until killing frost	Nonselective; kills many other plant species. Has long soil residual activity. Before using, note crop rotation restrictions. Do not apply to root zone of desirable trees. Along waterways do not apply within 0.5 miles of an active irrigation water intake. Add a surfactant and one approved for aquatic sites, if applicable.
metsulfuron	Escort and others	Sulfonylurea	Actively growing plants	Generally safe on grasses. Tolerance increases as flowering stage progresses. Apply only to pasture, rangeland, and noncrop sites; consult labels. Not registered for use in all states. Use a nonionic or silicone surfactant.
triclopyr	Garlon 4, Garlon 3A	Pyridine	Spring to summer on seedlings or blooming plants prior to seed production	Labeled for use on nonirrigation ditch banks and seasonally dry wetlands. Broadleaf-selective and safe on established grasses.