



Purple Loosestrife

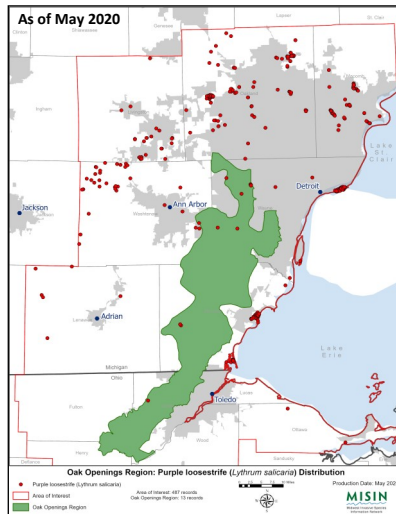
Lythrum salicaria



This Best Management Practice (BMP) document provides guidance for managing **purple loosestrife** in the Oak Openings Region of Northwest Ohio and Southeast Michigan. This BMP was developed by the Green Ribbon Initiative and its partners and uses available research and local experience to recommend environmentally safe control practices.

INTRODUCTION AND IMPACTS Purple loosestrife (*Lythrum salicaria*), native to Europe and Asia, was first brought to North America in the early 1800s for use as a medicinal herb, and gained popularity for its ornamental qualities. Today, purple loosestrife (p. loosestrife) has made its way across North America, especially in the Northeast, the Pacific Northwest and the upper Midwest (corresponding closely with the geographic extent of the Wisconsin glaciation). In Michigan, according to EDDMapS, p. loosestrife has been recorded in every county. In Ohio, counties with documented cases (about two-thirds) lie mostly within eastern and northern areas of the state. However, in southern OH, reported infestations follow continuously along the Ohio River.

The Midwest Invasive Species Information Network (MISIN) has 13 reports of p. loosestrife (see map: red points) within the Oak Openings Region (OOR). It is currently documented in 5 of 7 OOR counties (see map: green polygon), with 474 additional records surrounding the region.



Purple loosestrife has demonstrated the ability to establish and spread in open, sunny wetlands in the OOR, including those of low disturbance. Wet prairies and meadows, marshes, fens, stream and river lowlands and banks, lake shores and ditches represent the wetland communities it often invades. It may survive in drier conditions, but it will not usually thrive.

Purple loosestrife has many characteristics that contribute to its classification as an invasive, pest species. It produces copious amounts of seed which are spread by wind and water; an individual plant may grow up to 30 flowering stems capable of producing two to three million seeds per year. So-called "sterile" cultivars have been found to cross-pollinate with wild populations. P. loosestrife also spreads by cut-stem resprouting and regenerating from pieces of root.

Purple loosestrife can quickly form dense stands that completely dominate an area excluding native vegetation and severely degrading the quality of the habitats in which it becomes established.

SIMILAR SPECIES (two natives)

The closely-related *Lythrum alatum* (winged loosestrife) can be mistaken for p. loosestrife, as its form and flower characters are similar. They differ as follows: the **upper** stem of *L. alatum* is alternate-leaved, not opposite. The flowers are more loosely arranged (more space btw flowers, i.e. solitary in axils), and have smaller petals

(4-6.5 mm long) and less stamens (4-6). Overall, the plant is smaller than *L. salicaria*. Fireweed (*Chamerion angustifolium* ssp. *ang.*) is also similar in flowers and plant form. See flower comparisons below:



HABITAT In the OOR, p. loosestrife occurs in wetland communities including wet prairies and meadows, marshes, fens, stream and river lowlands (banks), lake shores and also in disturbed wet areas like ditches and other wet open areas.

IDENTIFICATION Habit: Herbaceous perennial, often 1.5 - 6 (max ~10) ft. tall (0.5 to 2.0 m); numerous, showy purple flowers per stalk; often densely pubescent (hairy), especially the upper half.



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Leaves: Dark-green and lanceolate to almost linear-shaped; opposite or whorled; sessile and somewhat clasping; 1 - 4 in. (3 - 10 cm); plants have largest leaves at the bottom, reducing in size from bottom to top.

Stems: Four-angled; glabrous to pubescent. Plants are multi-stemmed, up to 50 stems per plant.

Flowers: Blooms July through October; terminal spike-like inflorescences in axillary clusters of two to several, 4 - 16 in. long (10 - 40 cm); flowers numerous (dense); purple (can vary, white to pink); each with 5 - 7 petals & 12 stamens. Petals are 7-11 mm long.



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Fruits & Seeds: Capsules enclosed by hairy sepals & contain several reddish-brown seeds; burst at maturity. Prolific seed production.

Roots: Slender, white taproot. Characteristic "crook" or "s-shape" just below the base of the stem; becomes woody with age.

Purple Loosestrife Timeline	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Life History	dormant		germination (late April)	vegetative growth	flowering (starts mid June)			flowering/ fruiting; seed dispersal			dormant; seed dispersal	
Hand Pull (small populations)					make sure to remove the root crown; target smaller plants/seedlings			late treatment; seeds may drop when pulling				
Cutting Flowers *best w herbicide							remove only top 1/3 of the plant;; option: 30% glyphosate		late cut, seeds may drop & spread			
Herbicide (foliar or hand wick)					treat prior to flowering: 2,4-D only		1. leave heads for accurate treatment; spray, let dry; 2. return same day/week to cut/remove flowers					
Biological	Galerucella spp., leaf-eating beetles, affect growth and seed production											
Cut only	cut frequently & repeat for several yrs											

REPRODUCTION AND DISPERSAL: Purple loosestrife produces prolific amounts of seed which are spread by wind and water. An individual plant may grow up to 30 flowering stems capable of producing two to three million seeds per year. Purple loosestrife will hybridize with European wand loosestrife (*Lythrum virgatum*) and native winged loosestrife (*Lythrum alatum*). So-called "sterile" cultivars have been found to cross-pollinate with wild populations. P. loosestrife also spreads by cut-stem resprouting and regeneration from pieces of root. **Thoroughly cleaning equipment, footwear, etc. is a critical prevention measure for P. loosestrife in the OOR. Managers should incorporate pre- and post-project equipment cleaning into contracts.**

REPORTING: As a target species, reporting p. loosestrife is essential to keep populations under control. Populations found in high-quality natural areas are the most critical to report. P. loosestrife is easiest to identify when it is flowering, so mapping is best from July to late August (peak bloom). Report p. loosestrife by contacting [MISIN](#), the local (OO-CWMA), or county CWMA or CISMA in your area.

CONTROL:

The best control is integrated control. Management plans should focus on removing p. loosestrife before it can contribute further to



the seed bank. Exhausting the seed bank may be part of the control plan. Annual follow-up treatments are essential for p. loosestrife. Control efforts should focus on high quality natural areas and areas adjacent.

Chemical: The following recommendations have been compiled from select herbicide labels. However, it is the responsibility of the applicator to ensure compliance with labels and regulations when planning chemical treatment.

Herbicide	Trade Names	Concentration
Glyphosate	Glypho®*, Rodeo®**, AquaNeat®**	*foliar: 2% by volume (3 oz/gal)
		**foliar: 1-1.5% by volume (1.4 - 2 oz /gal)
		cut stem: 20-30% by volume (26-38 oz/gal)
Triclopyr	Garlon 3A®*, Tahoe 3A®*, Vastlan®	*foliar: 1-1.5% by volume (5 - 7.6 oz/ 4 gal)
Imazapyr	Arsenal® (use near water is restricted)	foliar: 1-5% by volume (1.3 oz - 6.7 oz/gal)
2, 4-D Amine	Agri Star® (cannot be used near water)	foliar: 0.4% - 1.2% by volume (1.5 oz/ 1 to 3 gal) (needs field testing)

(foliar = backpack sprayer)

Foliar Spraying: Best for small to medium-size populations. Plants should be treated during flowering period with glyphosate, triclopyr or imazapyr, with a non-ionic surfactant. Spray coverage variable.

Cut Stump Treatment: In areas with 100+ plants: plants should be cut about 6 in. (15 cm) above ground. A 20-30% solution of glyphosate and water should either be applied directly to the cut surface by a wick or injected into the stem.

Mechanical: Hand Pulling: In areas with less than 100 plants: small plants and seedlings should be targeted. P. loosestrife regenerates from root and may resprout from stem fragments, so all parts should be



bagged and removed from site. Ideal time is prior to seeding (May thru August).

Digging: Focus on larger, mature plants; remove the root system (all roots)

from the ground. Discard all parts of the plant in black garbage bags. Limit soil disturbance and seed dispersal.

Mowing: Not recommended. Promotes soil disturbance, soil exposure and stem resprouting (which produces more flower heads).

Biological: In areas of severe p. loosestrife infestation, manual and chemical control efforts are often ineffective. According to the Invasive Species Specialist Group (ISSG), state and federal agencies as well as private citizens and schools now participate in rearing, release and monitoring of *Galerucella* beetles which have been released in 33 states and >1500 wetlands nationwide to control p. loosestrife. According to several studies, *Galerucella* spp. have been the most effective biocontrol agents used against p. loosestrife in North America.

Prescribed Fire: Rx burning is not an effective management tool. The root crown is 2 cm below soil surface, so fires inflict limited damage.

Native Plantings/Replacement: In general, local native wetland seeds or plugs provide good competition in control efforts. Also dense blazing star, a native, is similar in flower color and growth pattern and offers a great alternative to planting p. loosestrife.

DISPOSAL: Flower heads should be cut, bagged, and removed from the site to prevent the production of seed. If pulling or digging, all parts should be removed. Do Not Compost; seeds & rootstock are difficult to destroy.