

AIIS

Aquatic Invasive Species

PURPLE LOOSESTRIFE



COMMON NAME: Purple Loosestrife

This species may also be referred to as purple lythrum, rainbow weed, salicaria, and spiked loosestrife. Purple loosestrife has many garden varieties that are sold under approximately 25 cultivar names.

SCIENTIFIC NAME: *Lythrum salicaria*

Purple loosestrife is in the Lythraceae family, which is the loosestrife family.

DISTRIBUTION: Natively purple loosestrife occurs throughout Great Britain and across central and southern Europe to central Russia, Japan, China, Southeast Asia and northern India. Purple loosestrife has expanded its range to include North America, where it can be found in 47 states and most of Canada. Florida, Hawaii, and Alaska have yet to be invaded.

DESCRIPTION: Purple loosestrife is a perennial that stands erect on a square, woody stem. It grows from a large taproot with rhizomes forming a dense mat. Each rootstock can have 1 to 50 stems emerging from it. Stems can reach a maximum height of 10 feet. Green leaves are whorled or opposite on the stem. They are lance-shaped with smooth edges and are covered in a downy pubescence. This plant puts up many flower spikes and each spike is covered with many individual flowers. Each flower has five to six, pink to purple petals with yellow centers. This plant is a prolific seed producer; annually each plant can produce up to 2.7 million seeds. Each seed is the size of a grain of sand and is stored in a seed capsule that replaces the flower when it falls off. Many other plants may be confused with purple loosestrife; fireweed, swamp loosestrife, winged loosestrife and blue vervain are a few of the plants commonly mistaken for purple loosestrife. Use a field guide for proper identification.

LIFE CYCLE BIOLOGY: Purple loosestrife will grow on the edges of rivers, lakes, sloughs, dams, bogs, swamps, irrigation ditches, streams and all other wet sites. It can tolerate wet soil conditions as well as drier conditions. Seeds usually will germinate in late spring or early summer. Of the millions of seeds that are produced annually per plant

approximately 60% to 70% are viable. Seeds can remain dormant for many years. These seeds, which are the size of a grain of sand, have many modes of dispersal. Water, animals, humans and boats are all vectors of long distance dispersal. All of this aids purple loosestrife in its rapid invasion of new sites. It has the ability to adapt to a variety of environmental conditions, which gives it another competitive advantage over other plants. The plants large woody rootstock enables it to re-grow if its stem is cut or damaged. One rootstock can have up to 50 individual stems emerging from it. Purple loosestrife will flower from June until September and insects are its main source of pollination. The stems will die in the fall but new shoots will emerge from buds at the top of the root crown in the spring.

PATHWAYS/HISTORY: Purple loosestrife was first introduced to the east coast of the United States in the 1800's intentionally for ornamental and medicinal uses and unintentionally by seeds in ship's ballast water and sediments. By 1830, it had become well established all along the New England seaboard. With the creation of new canals connecting the coastal waterways with the inland, purple loosestrife was able to spread into the interior states. Most of the Great Lakes states and the northeastern states had purple loosestrife infestations by 1900. By 1940, most of the Midwest was invaded by this exotic. Purple loosestrife had found its way across the United States to the west coast by 1985.

DISPERSAL/SPREAD: Garden planting is one of the main means the plant entered the United States. Once present in an area, it spreads by vegetative means and by seed dispersal. Long distance spread is by seeds dispersed by water currents, waterfowl, animals, and humans. Some garden shops sell sterile varieties of loosestrife. It has been shown that these garden varieties will cross pollinate with purple loosestrife and produce viable seed, even though they were said to be sterile. Also, some flower seed mixes contain purple loosestrife allowing people to spread this invasive weed. **DO NOT PURCHASE SEED MIX CONTAINING *LYTHRUM*.**

RISKS/IMPACTS: In optimum growing conditions, one small isolated patch of purple loosestrife can spread to cover an aquatic site in only one growing season. It easily adapts to any type of wetland. It crowds out native vegetation, commonly forming monotypic stands. When wetland diversity is reduced, native wildlife is displaced. Purple loosestrife does not provide adequate cover for the animals associated with wetlands, nor does it provide a food source. Songbirds do not eat the seed, muskrats do not utilize the plant for building their homes, and waterfowl avoid areas that have been taken over by purple loosestrife. This plant is capable of choking waterways and almost entirely eliminating open water habitat. Wetlands are the most diverse and productive ecosystem, but if purple loosestrife becomes established the value of the wetland quickly degrades. It is estimated that each year more than one million acres of wetlands in the United States are taken over by purple loosestrife.

MANAGEMENT/PREVENTION: The best time to identify and control purple loosestrife is in late June to early August. This is when the plant is in flower, so it is easily recognized has not gone to seed.

Digging and hand pulling is a viable control option when the plants are young and don't have a large root system yet and when the infestation is still small. When digging or hand pulling try to remove as much of the rootstock as possible since roots left in the ground may sprout new plants. Another method is to cut the flower spikes before they have a chance to seed. Removal of old flower spikes is also a good idea as they may still contain seeds.

Five species of beetles were approved for release in the United States as a biological control for purple loosestrife. *Galurucella pusilla* and *Galurucella californiensis* are leaf eating beetles which affect growth and seed production. *Hylobius transversovittatus*, is a root-boring weevil that lays its eggs in the stem of the plant. The larvae then hatch and feed on the roots, destroying the plants nutrient source. There are also two flower eating beetles, *Nanophyes breves* and *Nanophyes marmoratus*, which reduce the plants seed production. The United States has released *Galurucella pusilla*, *Galurucella californiensis*, *Hylobius transversovittatus* and *Nanophyes marmoratus*. The Indiana Department of Natural Resources has released insects to control purple loosestrife and has had success. At Pleasant Lake in St. Joseph County, purple loosestrife decreased dramatically one year after insects were released. The pictures to the right show the dramatic effect beetles have had on purple loosestrife at Pleasant Lake (upper - July 1998, lower - July 1999).



<http://www.in.gov/dnr/entomolo/programs/purple2.htm>

Chemical application can be an effective control method for purple loosestrife. Chemicals selective for broadleaf plants should be chosen, however one must be careful during chemical application to avoid damage to desirable broadleaf natives. When the plants are growing near water, only approved aquatic herbicides labeled for purple loosestrife must be used. Permits may be necessary when treating around public lakes or streams.

About 24 states have laws prohibiting importation or distribution of purple loosestrife due to its invasive characteristics. The sale of seeds, roots, or plants of any species of *Lythrum* is illegal in Indiana without a permit issued by the Director of Entomology and Plant Pathology (IC 14-24-12-7).

If you have purple loosestrife growing in your garden it could contribute to the loss of wetland habitat. Remove all parts of the plant including the roots, place it in a plastic bag, and dispose in the trash. If you like the showy flowers of the purple loosestrife plant here are some native plants to use instead: blazing star, delphinium, false spirea (astilbe), foxglove, lobelia, lupine, salvia, and Siberian iris.

If you participate in recreational activities where purple loosestrife is present, you should take some precautions to prevent the spread of the invasive plant.

- ✓ Remove all plant fragments from your boat, trailer, and propeller before leaving the launch area. The movement of plant fragments is the main method for spreading aquatic invasive plants.

- ✓ Rinse the mud from all equipment including wading gear before leaving the access area as the tiny seeds can easily be found in the mud and transported to another location.

REFERENCES:

- Alien Profile: Purple Loosestrife. ND. Wisconsin Department of Natural Resources. 23 July 2004.
<http://www.dnr.state.wi.us/org/caer/ce/eeek/veg/plants/purpleloosestrife.htm>
- Blossey, Bernd. Purple Loosestrife. 2002. Cornell University. 23 July 2004.
www.invasiveplants.net/plants/purpleloosestrife.htm
- Bowen, Debbie. Purple Loosestrife: What you should know, what you can do. 18 June 2004. Minnesota Sea Grant. 23 July 2004.
www.seagrant.umn.edu/exotics/purple.html
- Lym, Rodney G. Identification and Control of Purple Loosestrife. June 2004. North Dakota State University. 23 July 2004.
<http://www.ext.nodak.edu/extpubs/plantsci/weeds/w1132w.htm>
- Swearingen, Jil M. Purple Loosestrife: *Lythrum salicaria* L. 8 April 2002. U.S. National Parks Service. 23 July 2004. www.nps.gov/plants/alien/fact/lysa1.htm
- Thompson, Daniel Q., Ronald L. Stuckey, Edith B. Thompson. 1987. Spread, Impact, and Control of Purple Loosestrife (*Lythrum salicaria*) in North American Wetlands. U.S. Fish and Wildlife Service.
www.npwrc.usgs.gov/resource/1999/loosstrf/loosstrf.htm