purple loosestrife
Lythrum salicaria L.

European wand loosestrife
Lythrum virgatum L.

Lythrum salicaria Synonyms: *Lythrum anceps* (Koehne) Makino; *L. argyi* H. Léveillé; *L. intermedium* Ledebour ex Colla; *L. salicaria* var. *anceps* Koehne; *L. salicaria* var. *glabrum* Ledebour, *Lythrum salicaria* var. *gracilior* Turcz., *L. salicaria* var. *intermedium* (Ledebour ex Colla) Koehne, *L. salicaria* var. *mairei* H. Léveillé., *L. salicaria* var. *tomentosum* (P. Mill.) DC., and *L. salicaria* var. *vulgare* DC.
Other common names: spiked loosestrife, salicaire, rainbow weed, purple lythrum

Lythrum virgatum Synonyms: None
Other common names: None

Family: Lythraceae

Invasiveness Rank: **84** The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

Description
Purple loosestrife is a perennial plant that grows 183 to 244 cm tall. Stems are erect, four-sided, and covered with soft hairs. Each year the plant enlarges at the base. A single root stock can eventually produce a bush-like clump of 30 to 50 stems. Leaves are simple, entire, opposite or whorled, lance-shaped, and slightly hairy with no stalks. Flowers are rose-purple and are arranged in long, vertical racemes. Each flower has five to seven petals surrounding a small yellow center. European wand loosestrife is a noxious weed that closely resembles purple loosestrife (Whitson et. al. 2000, DiTomaso and Healy 2003).


Lythrum salicaria L. in garden

Similar species: Purple loosestrife can be distinguished from the similar, native fireweed (*Chamerion angustifolium*) by its narrower, more slender spikes, four-edged stems, and opposite or whorled leaves.


Inflorescence of *Lythrum salicaria* L.

Ecological Impact

Impact on community composition, structure, and interactions: Purple loosestrife grows rapidly, closes open water space, and displaces native vegetation. Important wildlife food plants such as cattails and pondweeds are displaced or shaded out by loosestrife. Loosestrife infestations generally become nearly monospecific stands. Infestations degrade nesting and foraging sites for native animals (Bossard et al. 2000). Loosestrife lacks natural enemies in the United States (Blossey 2002). It has been reported as an alternate host for the cucumber mosaic virus (Bender 1987, Royer and Dickinson 1999).

Impact on ecosystem processes: Purple loosestrife clogs streams and canals and slows water flow. It also alters biogeochemical and hydrological processes in wetlands (Bossard et al. 2000). Loosestrife leaves decompose quickly in the fall and cause a nutrient flush in wetland communities, which are adapted to the decomposition of plant tissues in the spring.

Biology and Invasive Potential

Reproductive potential: Purple loosestrife begins to bloom in July and continues until September or October. Flowers are pollinated by several different types of bees and butterflies. Seed production is prolific. A single plant is capable of producing more than two million viable seeds per season (Shamsi and Whitehead 1974, DiTomaso and Healy 2003). High seed viability and prolific seed production build up large seed banks. Seed viability decreased from 99% to 80% after two years of storage in a natural body of water (Bender 1987). Loosestrife can spread vegetatively by resprouting from cut stems and regenerating from root fragments and stem pieces (Bender 1987, Royer and Dickinson 1999, DiTomaso and Healy 2003).

Role of disturbance in establishment: Purple loosestrife flourishes in wetland habitats that have been disturbed or degraded by draining, natural drawdown in dry years, bulldozing, siltation, shore manipulation, cattle trampling, or dredging. It is also able to invade intact wetlands (Bossard et al. 2000.).

Potential for long-distance dispersal: Seeds are small, weighing only 0.06 mg each (Shamsi and Whitehead 1974). They are dispersed mainly by wind, but they can also be transported on the feet of waterfowl or other wetland animals. Seeds and seedlings are buoyant and can be dispersed by the movement of water (DiTomaso and Healy 2003).

Potential to be spread by human activity: Humans can carry seeds inadvertently on clothing and shoes. Bee-keepers have purposely sown loosestrife seeds to provide a source of nectar for their bees. Loosestrife is widely planted in gardens (Royer and Dickinson 1999).

Germination requirements: Seeds establish in late spring or early summer; the germination of seeds in autumn is rare. Seeds require minimal levels of light to germinate (Shamsi and Whitehead 1974). Temperature at the soil surface is a critical factor for germination; the optimal temperature range is from 15°C to 20°C (DiTomaso and Healy 2003). Seeds can germinate in acidic or alkaline soils as well as nutrient rich or nutrient poor soils.

Growth requirements: Purple loosestrife grows best in highly organic soils but tolerates a wide range of soils including clay, sand, muck, and silt. Generally, the plant is found in full sunlight, but it can survive in 50% shade (Bossard et al. 2000).

Congeneric weeds: Hyssop loosestrife (*Lythrum hyssopifolium*), spatulaleaf loosestrife (*L. portula*), thymeleaf loosestrife (*L. thymifolia*), and threebract loosestrife (*L. tribracteatum*) are known to occur as non-native weeds in North America (USDA 2010). All *Lythrum* species are considered noxious weeds in Manitoba, Minnesota, Montana, North Carolina, North Dakota, and Tennessee (Invaders 2010).

Legal Listings for *Lythrum salicaria* L.

- ☐ Has not been declared noxious
- ☐ Listed noxious in Alaska
- ☒ Listed noxious by other states (AL, AR, AZ, CA, CO, CT, FL, IA, ID, IN, MA, MI, MN, MO, MT, NC, ND, NE, NM, NV, OH, OR, PA, SC, SD, TN, TX, UT, VI, VT, WA, WI, WY)
- ☐ Federal noxious weed
- ☒ Listed noxious in Canada or other countries (AB, MB, SK)

Legal Listings for *Lythrum virgatum* L.

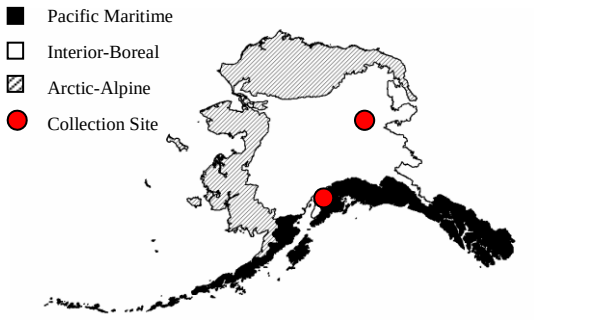
- ☐ Has not been declared noxious
- ☐ Listed noxious in Alaska
- ☒ Listed noxious by other states (IA, MI, MN, MT, NC, ND, NE, NV, SD, TN, VA, WA, WI)
- ☐ Federal noxious weed
- ☒ Listed noxious in Canada or other countries (MB)

Distribution and Abundance

Loosestrife is found in wetlands, such as cattail marshes, sedge meadows, and open bogs. It also grows along stream banks, river banks, and lake shores. Typical associates of loosestrife include *Typha latifolia*, *Scirpus* species, and *Carex* species. The plant can also be found in ditches and other disturbed, wet areas (DiTomaso and Healy 2003).

Native and current distribution: Purple loosestrife can be found all over the world except for in extremely cold and arctic regions. It is native to Eurasia; its native distribution extends from Great Britain across western Europe into central and southern Europe along the Mediterranean Basin. In Asia, Japan is the core of its native range. Outlying populations extend from the Amur River south across the lowlands of Manchuria to

southeast Asia and India (Blossey 2002). Purple loosestrife has been introduced to North Africa, North America, and the temperate zones of southeast Australia. In North America, purple loosestrife was first reported from the northeastern coast in 1814. Further introductions have occurred from contaminated ship ballast and wool. This species has also been purposely planted as an ornamental. Although purple loosestrife grows in nearly all states of the United States (USDA 2010), the heaviest concentrations are in the formerly glaciated wetlands of the northeast and midwest. This species has been documented from the Interior-Boreal ecogeographic region of Alaska (AKEPIC 2010). European wand loosestrife has not been documented from Alaska.



Distribution of purple loosestrife in Alaska

Management

Current methods for the eradication of large, dense populations of loosestrife are not completely effective. Mechanical control methods are ineffective, and most herbicides are non-selective. Follow-up treatments are recommended for three years after plants have been removed. Biological control measures are being developed in the western United States (Bossard et al 2000).

References:

AKEPIC database. Alaska Exotic Plant Information Clearinghouse Database. 2010. Available: http://akweeds.uaa.alaska.edu/

Bender, J. 1987. Element Stewardship Abstract for *Lythrum salicaria* Purple Loosestrife. The Nature Conservancy. Arlington, VA.

Blossey, B. 2002. Purple Loosestrife. In: Driesche, R.V. et. al. 2002. Biological Control of Invasive Plants in the Eastern United States. USDA Forest Service Publication FHTET- 2002-04, 413 pp.

Bossard, C.C., J.M. Randall and M.C. Hoshovsky. 2000. Invasive plants of California's wildlands. Pp. 236-240.

DiTomaso, J.M. and E.A. Healy. 2003. Aquatic and riparian weeds of the West. California: University of California, Agriculture and Natural Resources; Pp. 237-248.

eFloras. 2008. Published on the Internet http://www.efloras.org [accessed 23 September 2010]. Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA.

Invaders Database System. 2010. University of Montana. Missoula, MT. http://invader.dbs.umt.edu/

ITIS. 2010. Integrated Taxonomic Information System. http://www.itis.gov/

Shamsi, S.R.A. and F.H. Whitehead. 1974. Comparative eco-physiology of *Epilobium hirsutum* L. and *Lythrum salicaria* L. I. General biology, distribution, and germination. J. Ecol. 62:279-290.

Royer, F. and R. Dickinson. 1999. Weeds of the Northern U.S. and Canada. The University of Alberta press. 434 pp.

USDA. 2010. The PLANTS Database. National Plant Data Center, Natural Resources Conservation Service, United States Department of Agriculture. Baton Rouge, LA. http://plants.usda.gov

Whitson, T. D., L. C. Burrill, S. A. Dewey, D. W. Cudney, B. E. Nelson, R. D. Lee, R. Parker. 2000. Weeds of the West. The Western Society of Weed Science in cooperation with the Western United States Land Grant Universities, Cooperative Extension Services. University of Wyoming. Laramie, Wyoming. 630 pp.