

VEGETATION MANAGEMENT GUIDELINE

Purple Loosestrife (*Lythrum salicaria* L.)



SPECIES CHARACTER

Description

The most notable characteristic of purple loosestrife is the showy spike of rose-purple flowers it displays in mid to late summer. There are, however, several native species which also produce purple spikes of flowers that superficially resemble those of purple loosestrife. Purple loosestrife can be differentiated from these species by a combination of other characteristics. Purple loosestrife has flowers with 5 to 7 purple petals; the leaves are opposite or in whorls of 3, all lacking teeth; and it has a stiff 4-sided stem that may appear woody at the base of large plants. Purple loosestrife is an herbaceous perennial that may be from 3 to 10 feet tall, with an average height of 5 feet, and it flowers from early July to early September.

Similar Species

Purple loosestrife may be distinguished from the native winged loosestrife (*Lythrum alatum*), which it most closely resembles, by its generally larger size (native loosestrife has an average height of only 2 feet) and its opposite leaves (native loosestrife's upper leaves are usually alternate). The flowers of native loosestrife are also more widely spaced than those of purple loosestrife. Purple loosestrife should be accurately identified before attempting any control measures. If identification of the species is in

doubt, the plant's identity should be confirmed by a knowledgeable individual and/or by consulting appropriate books.

Distribution

Purple loosestrife is endemic to the Old World, it was introduced to North America in the 1800's and for nearly a century it occurred as a pioneering species on the northeastern seaboard. About 60 years ago the range of purple loosestrife began rapidly expanding, reaching the upper midwest in the 1930's. The species appears to go through a period of acclimation after each range expansion during which the invasive character of the species is not expressed. It has only been within the last 10 years that purple loosestrife has been recognized as a serious threat to Illinois' wetlands. Purple loosestrife occurs most extensively in northern Illinois, though it is a threat throughout the state.

Habitat

Purple loosestrife occurs widely in wet habitats, such as marshes, bogs, pannes, fens, sedge meadows, and wet prairies, but it also occurs in roadside ditches, on river banks, and at the edges of reservoirs.

Life History

The reproductive capacity of purple loosestrife is one of the most significant and relevant life history characteristics of this herbaceous perennial plant. A single stalk can produce 300,000 seeds, and densities as high as 80,000 stalks/acre have been recorded, with the potential of producing as many as 24 billion seeds/acre. The seeds can remain viable even after 20 months of submergence in water. Seed set begins in mid to late July and continues through late summer. Seeds may be dispersed by water, wind and in mud attached to animals. Purple loosestrife also spreads vegetatively. Root or stem segments can form new flowering stems. Muskrat cuttings and mechanical clipping can also contribute to rapid spread by floating in riverine and lacustrine systems. Purple loosestrife lacks natural enemies in the United States.

Effects Upon Natural Areas

Purple loosestrife quickly crowds out most native vegetation in marsh, fen, sedge meadow, wet prairie, bog, and panne communities, creating a monoculture that provides little food or shelter for native wildlife. The natural character of several Illinois nature preserves is threatened by this exotic species.

Current Status

Purple loosestrife is categorized as an exotic weed under the Illinois Exotic Weed Control Act of 1987. As such, its commercial sale in Illinois is prohibited.

CONTROL RECOMMENDATIONS

Research is currently being conducted into methods of biological control, and the U.S. Fish and Wildlife Service has begun a search for biological control agents that might be used against this species. However, only mechanical and chemical means of control are currently available. Current control methods have only limited success. The chances of success are best with the smallest infestations, and methods of control are determined by the size of the infestation. Early diagnosis is critical. Decisions on control methods must be balanced with the chances of success and the potential damage caused by the treatment method.

RECOMMENDED PRACTICES IN NATURAL COMMUNITIES WITH NO KNOWN INVASION

Potential loosestrife habitat should be searched annually during late July and August for the plant. Early detection is the best approach!

RECOMMENDED PRACTICES IN NATURAL COMMUNITIES WITH INVASIONS

Effort in areas with individual plants and cluster of up to 100 plants Younger plants (1-2 years old) can be hand-pulled. Do not pull after flowering because this will scatter seed. Older plants, especially those in bogs or in deep organic soils, can be dug out. Roots of older plants can be "teased" loose with a hand cultivator. Bag and remove the plants from the site. Failure to place the removed plants in a bag could result in spread-ing the plant along your exit route because fragments may be dropped. Dispose of the plant by burning (preferable) or in an approved landfill. Follow-up treatments are recommended for three years after the plants are removed. Clothing, equipment and personnel should be cleaned to insure no seeds are spread on them, if seeds were present on plants.

If the above control method is not feasible in areas with relatively small infestations, spot application of glyphosate herbicides can be used as described below.

Effort in areas with clusters in excess of 100 plants (up to 4 acres in size)

Spot application of a glyphosate herbicide to individual purple loosestrife plants is the recommended treatment where hand pulling is not feasible. Glyphosate is available under the trade names Roundup and Rodeo, products manufactured by Monsanto. Only Rodeo is registered for use over open water. Herbicides only may be applied according to label directions and by licensed herbicide applicators or operators when working on public properties. Glyphosate is nonselective so care should be taken not to let it come in contact with nontarget species. Glyphosate application is most effective when plants have just begun flowering. Timing is crucial, because seed set can occur if plants are in mid-late flower. Where feasible, the flower heads should be cut, bagged, and removed from the site before application to prevent seed set. Roundup should be applied by hand sprayer as a 1-1/2% solu-tion (2 oz. Roundup/gallon of clean water). Rodeo should also be applied as a 1-1/2% solution (2 oz. Rodeo/gallon clean water) with the addition of a wetting agent, as specified on the Rodeo label.

Another option is to apply glyphosate twice during the growing season. Foliage should be sprayed as described above, once when flowering has just started and a second time 2-3 weeks later. With this procedure control is likely more effective, because plants are not allowed to set seed and those missed because they were not flowering the first time are treated the second time.

Excessive application of herbicide (causing dripping from the plant) can kill desirable plants under the loosestrife. These plants, left unharmed, will be important in recolonizing the site after the loosestrife has been controlled. If the desirable plants are killed, the vigorously resprouting and growing purple loosestrife seeds present in the soil will fill the void. Since purple loosestrife is usually taller than the surround-ing vegetation, application to the tops of plants alone can be very effective and limit exposure of nontarget species. Complete coverage is not required to affect control.

The herbicide should be applied while backing away from treated areas to avoid walking through the wet herbicide. Equipment, clothing and personnel should be cleaned completely before entering other uninfested sensitive areas, if seeds were present in the treated area. It will be necessary to treat the same area again annually until missed plants and plants originating from the seed bank are eliminated.

Cutting purple loosestrife and subsequently flooding the area so that cut plant stalks are completely immersed has controlled purple loosestrife in at least one case. However, flooding may encourage the spread of purple loosestrife if seed are present in the soil. Artificial flooding should not be used in high-quality natural communities with an intact natural flooding regime.

Effort in areas with large monocultures (greater than 4 acres in size)

For large purple loosestrife populations, an assessment should be made to determine if the loosestrife can be eradicated with available resources. If it can not be controlled, then efforts should be placed on keeping the loosestrife out of the highest quality areas.

Applying glyphosate from a vehicle mounted sprayer is usually necessary in areas with extensive stands

of purple loosestrife. The most effective control can be achieved by beginning treatment at the periphery of large patches and working towards the center in successive years. This allows peripheral native vegetation to reinvade the treated area as the loosestrife is eliminated.

FAILED OR INEFFECTIVE PRACTICES

Mowing, burning, and flooding have proven largely ineffective. A single known exception is cutting followed by flooding as described above. Mowing and flooding can actually contribute to further spread of the species by disseminating seed and cut plant stems. Do not mow because cut parts may re-root. No biological control methods that are feasible in natural areas are known.

REFERENCES

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PERSONAL COMMUNICATION

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