VEGETATION MANAGEMENT GUIDELINE: White poplar (*Populus alba* L.)

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White poplar (*Populus alba* L.) is an aggressive, exotic tree that can take over portions of natural areas, especially prairie communities, shading out native vegetation. It easily escapes cultivation and, if left unchecked, can form dense groves that are hard to eradicate. White poplar grows in open sunny habitats. It will grow in most soil types and under varied conditions.

In the Midwest, white poplar appears to primarily reproduce vegetatively. Suckers arise from adventitious buds produced on the extensive lateral root system. Profuse suckers from the "mother" plant will form large vegetative colonies. The vegetative colonies (clones) form dense groves that are the primary threat this species poses to natural areas: light is prevented from reaching native vegetation. Suckering will occur naturally but also can be enhanced by disturbance to the plant or its suckers. Top removal and fires can stimulate suckering too.

A single white poplar tree can produce thousands of seeds. The seeds are wind-dispersed and can travel over long distances. However, spread and establishment of this species by seed does not seem to be a problem.

Very little research has been done on control of white poplar, and listed control methods are ones that have been used successfully for aspen species (aspens are similar in their life history traits). Use of cutting, girdling, burning, and herbicides offers the best control. In many cases, the best solution is a combination of these control measures. No effective biological controls are known that are feasible in natural areas.

Girdling can be an effective control method, when feasible. Girdling lessens the amount of resprouting, although dense resprouting can still occur. White poplar produces more suckers than quaking aspen or cottonwood when girdled. The large parent tree and any suckers over 5 cm dbh should be girdled. Phloem should be removed without damaging the xylem. Girdles should be checked after a few weeks to make sure that bark does not develop over the cut area. In conjunction with girdling, all small suckers should be cut.

For girdling to be effective, use an ax or saw to make two parallel cuts 10–13 cm apart, cutting through the bark slightly deeper than the cambium. The bark is then either knocked off, using a blunt object like an ax head, or peeled away, using a blunt ax blade. Girdled trees take time to die and the results may not be seen until a year later.

As for most woody plants, cutting the stem or trunk close to ground level is a method of control. Cutting during summer months (June through August) appears to decrease suckering. Summer cutting affects the plant when its root resources are low; the possibility of adverse weather during the fall and winter may further harm the plant. Cutting twice (June and August) also can be effective.

Yearly recutting of any new suckers is necessary for good control. All stems should be cut each time to stress the plant as much as possible. At first, cutting may increase the number of suckers, so it is important to continue cutting once started. If this is not possible a combination of prescribed burning and cutting may be an effective control. Once the number of large suckers has decreased, prescribed burning, as discussed below, will aid in controlling white poplar.

Prescribed burning can be effective in controlling poplar species, but repeated burns are needed. Cutting and prescribed burning are best used together. The fire should carry into and through the poplar clone. For thick clones, cut the poplar for one or two years before the burn to allow herbaceous fuel to build up in the clone. If this is impractical, work around the edges, cutting into the clone and allowing fire to burn into the edges of the clone. Each year, work farther into the clone, allowing fire to penetrate farther.

A single burn may increase the number of suckers. Good results are possible with three consecutive burns, each separated by two-year intervals. All aboveground stems must be killed the first year for maximum effectiveness. Even biennial burns will help control white poplar, especially if used with cutting.

Triclopyr herbicide (trade name Garlon 4

or 3A) is effective as a bark or cut-surface treatment. A 20–30% solution of Garlon 4 in diesel fuel can be applied in a thin stream to all sides of the stem, 15 cm above the base of the plant. Although this thin-line treatment usually will only work on stems less than 5 cm in diameter, it will work on some larger trunks because poplar species have thin bark. A narrow band of Garlon 4 encircling each stem is needed. This method should not be used in high-quality natural areas because the diesel fuel may kill vegetation around the tree.

Basal bark treatment with Garlon 4 also is effective. Add 2 to 2.5 ounces of Garlon 4 to one gallon of diesel fuel. Spray this mixture, using a hand sprayer, onto the basal portion of the white poplar trunk. Spray to a height of 30–40 cm. A thorough spraying is necessary. Spray until run-off at the ground line is noticed. Again, do not use this treatment in high-quality natural areas because the diesel fuel may kill vegetation around the tree.

Cut-surface treatment with Garlon 3A also is effective in controlling white poplar. Undiluted or diluted Garlon 3A at a rate of 50% water can be applied to the cut surface. It can either be sprayed, using a low-pressure hand sprayer, or wiped, using a sponge applicator, on the stump or girdle. Girdles around the stem can be made quickly, using a chainsaw. Application should be within a few hours of cutting.

Use of these triclopyr herbicides is best done in the dormant season to lessen damage to nontarget species. Great care should be exercised to avoid getting any of the mixtures on the ground near the target plant since some nontarget species may be harmed. Avoid using triclopyr if rain is forecast for anytime during the following four days, otherwise runoff will harm nontarget species. By law, herbicides must be applied according to label directions and by licensed herbicide applicators or operators when working on public properties.

Glyphosate (trade name Roundup) can be sprayed on white poplar leaves as a control. Glyphosate is a nonselective herbicide, so care should be taken to avoid contacting nontarget species. Foliar spray of glyphosate should not be used in high-quality areas because of potential damage to nontarget species. Glyphosate should be applied by hand sprayer at a 1.5% solution (2 ounces of Roundup/gallon of clean water). Spray coverage should be uniform and complete. Do not spray so heavily that herbicide drips off the target species. The herbicide should be applied while backing away from the treated area to avoid contacting the wet herbicide.

Cut-surface treatment with Roundup also is effective. Undiluted or diluted Roundup at a rate of 50% water can be applied to the cut surface. It can either be sprayed, using a low-pressure hand sprayer, or wiped, using a sponge applicator, on the stump or girdle. For best results, application should be made during active growth and after full leaf expansion.

GENERAL REFERENCES

The Nature Conservancy. Element Stewardship Abstract for *Populus balsamifera, P. grandidentata, P. tremuloides.* The Nature Conservancy. Minneapolis, Minnesota.