
as widespread as the other exotic buckthorns. Common buckthorn apparently is more light-demanding than Dahurian buckthorn, as it is found in prairies and abandoned fields.

All exotic buckthorns produce a fruit that is readily eaten by birds. The severe laxative effect of these fruits results in abundant distribution of seeds. These shrubs also readily resprout from cut or damaged stems.

Control efforts must balance improvement of the biotic community with damage caused by the management methods. It is always best to take the least damaging approach that will result in the desired control of an exotic.

Fire is very effective in controlling buckthorns in high quality natural areas and is the preferred method whenever feasible. Regular prescribed fire will kill seedlings and larger stems of these species in fire-adapted upland and wetland sites (e.g., fens, sedge meadows, marshes). Some control usually will be evident after the first burn. However, for complete control in established stands of buckthorn, annual or biennial burns may be required for five to six years or more. Fire should not be used if the natural community will be affected adversely. Burns should be conducted by persons trained or experienced in conducting prescribed burns.

In wetlands, where the water table has been artificially lowered, restoration of water levels often will kill glossy buckthorn. Care should be taken not to flood sensitive communities by raising water higher than historical levels.

When burning is not feasible, larger stems can be cut or girdled and resprouts clipped as they occur. For girdling to be effective, use an axe or saw to make two parallel cuts 10–12 cm apart, cutting through the bark slightly deeper than the cambium. The bark then should be either knocked off using a blunt object like an axe head, or peeled away using a blunt axe blade. 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. Girdled large stems take

**VEGETATION MANAGEMENT
GUIDELINE: EXOTIC
BUCKTHORNS — COMMON
BUCKTHORN (*Rhamnus cathartica*
L.), GLOSSY BUCKTHORN
(*Rhamnus frangula* L.), DAHURIAN
BUCKTHORN (*Rhamnus davurica*
Pall.)**

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Common and glossy buckthorn readily invade natural communities. Once established, these exotic buckthorns crowd or shade out native shrubs and herbs. Common buckthorn invades woodlands, savannas, and prairies. Glossy buckthorn is found most frequently in wetland communities such as fens, bogs, and sedge meadows. However, glossy buckthorn also invades mesic upland sites, including prairies, roadsides, and old fields. Dahurian buckthorn invades woodlands and savannas, but is not

time to die and the results may not be seen until a year later. Basically, the tree is slowly starving to death. All sprouts should be cut.

In upland areas where burning is not feasible, cut stems can be treated with Trimec (a formulation of 2,4-D, MCPP, and dicamba) or Roundup (formulation of glyphosate) to prevent resprouting. Trimec, an herbicide specific for broadleaf plants, should be diluted with an equal portion of water and applied according to label instructions. Roundup is nonspecific and kills all photosynthetically active vegetation. Although the Roundup label recommends a rate of 50–100% for cut-stem treatment, a 50% solution has proven effective. Autumn is the preferred time to cut and treat buckthorn, because (1) these species retain green leaves late into the fall, making it easy to find all plants; and (2) most native vegetation is dormant, minimizing potential harm to nontarget plants.

To be effective, the herbicides mentioned above must be applied immediately after cutting. These chemicals can be applied either by spraying individual cut stumps with a low-pressure hand sprayer or by wiping the herbicide on each cut surface with a sponge applicator. Care should be taken to avoid herbicide contact with nontarget plants; native nontarget plants will be important for recolonizing the site after buckthorn is eliminated. By law, herbicides must be applied according to label directions and by licensed herbicide applicators or operators when working on public properties.

On buffer and severely disturbed sites, the following control measures also may be used.

In addition to the cut-stem treatments already recommended, Garlon 3A (a formulation of triclopyr) is a selective herbicide that also can be applied on cut surfaces. A 50% Garlon solution diluted with water can be sprayed with a hand sprayer on the cut stem. Application should be within a few hours of cutting. Cut-surface application can be made during any season of the year, but application during the dormant season reduces the potential for drift injury to nontarget species.

Dormant-season basal-bark treatment using Garlon 4 herbicide is effective on large stems and resprouts less than 15 cm in diameter; however, this treatment is not labelled for use in wetlands. Two to 2.5 oz. of Garlon 4 is added to one gallon of diesel fuel. Thoroughly spray this mixture, using a hand sprayer, on the basal portion of the trunk, i.e., to a height of 30.5–38.1 cm above ground. This treatment should not be used in high quality natural areas because the diesel fuel may kill surrounding vegetation.

Use of triclopyr is best done in the dormant season to lessen damage to nontarget species. Great care should be exercised to avoid getting any of the mixture on the ground near the target plant since some nontarget species may be harmed. Avoid using triclopyr if rain is forecast for the following one to four days because runoff will harm nontarget species.

In wetland areas, buckthorn can be cut or girdled and the cut stems treated with Rodeo (a formulation of glyphosate approved for use in wetlands), as a 50% solution. Any resprouts should be cut and treated again or hand sprayed with a 1.5% foliar spray of Rodeo herbicide. Care should be taken to avoid herbicide contact with nontarget plants. As with most exotic plant control projects, follow-up treatments may be needed.

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