BUCKTHORN:

What You Should Know. What You Can Do.

Jay Rendall, MN DNR

Buckthorn leafs out early and retains its leaves late into the fall, creating dense shade that helps it to out-compete many native plants.

What happens when buckthorn has been planted as an ornamental shrub, hedgerow, shelterbelt, or tree in your backyard?

An impenetrable, messy thicket grows that:

- Out-competes native plants for nutrients, light, and moisture.
- Degrades wildlife habitat.
- Threatens the future of forests, wetlands, prairies, and other natural habitats.
- Contributes to erosion by out-competing plants on the forest floor that help hold soil in place.
- Serves as host to other pests, such as crown rust fungus and soybean aphid.
- Creates messy fruits that stain sidewalks and driveways.
- Lacks "natural controls," such as insects or disease that would curb its growth.

A LITTLE HISTORY

Common, or European buckthorn, and glossy buckthorn are the two non-native, invasive buckthorn species found in Minnesota. Common buckthorn was first brought here from Europe in the mid-1800s as a popular hedging material. It escaped and became a nuisance plant, forming dense thickets in forests, yards, parks, and roadsides. It crowded out native plants and displaced the native shrubs and small trees in the mid-layer of the forest where many species of birds nested. Today, common buckthorn is found in nearly every Minnesota county, even though the sale, transport, and movement of these plants is prohibited.

Glossy buckthorn, also from Europe, has been sold by the nursery trade in three different forms. The cultivar *Frangula alnus 'Columnaris'* is narrow and tall; the cultivars *Frangula alnus 'Asplenifolia'* and *'Ron Williams'* have narrow leaves that give them a fern-like texture.

Glossy buckthorn
Deborah Rose, MN DNR

The Minnesota Department of Agriculture has declared common buckthorn *(Rhamnus cathartica)* and glossy buckthorn *(Frangula alnus)* as restricted noxious weeds. This means that the sale, transport, or movement of these plants is prohibited statewide.

Minnesota Department of Natural Resources

COMMON BUCKTHORN

Scientific Name *Rhamnus cathartica*

Other Common Name European Buckthorn

Nursery Cultivars None

Shape of Plant 10–25 feet tall; oval form; upright; frequently multi-stem

Habitat Dry to moist areas such as woodlands, savannas, abandoned fields, roadsides. It will grow in both full sun and in shade.

Leaves Egg-shaped, dark green, dull to glossy; with finely tooth edges; 3–5 pair of curved leaf veins. Leaves stay dark green and on the tree late into fall. Easily confused with dogwoods, plums, and cherries.

Luke Skinner, MN DNR

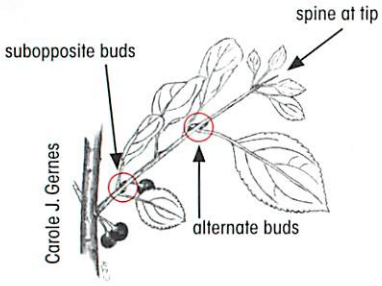
Flowers Small, yellow-green color; 4 petals; produced in May.

Welby Smith, MN DNR

Stems Buds are most commonly sub-opposite, but can be opposite or alternate; short, $^1/_8$–$^1/_4$-inch sharp spine at tip of the twig.

Fruit and Seed Round, berry-like fruit arranged in clusters; $^1/_4$-inch diameter; green (unripe) to black (ripe) color. Each fruit has 3–4 seeds. Berries persist throughout mid-winter.

Mark Muller



GLOSSY BUCKTHORN

Scientific Name *Frangula alnus*

Other Common Name Fen Buckthorn, Alder Buckthorn

Nursery Cultivars *'Columnaris'* (tall hedge buckthorn) *'Asplenifolia'* (fernleaf buckthorn) *'Ron Williams'* (Fine Line® buckthorn)

Shape of Plant 10–18 feet tall; oval form; upright

Habitat Primarily wet areas (bogs, marshes, riverbanks, wetlands, pond edges), but also will grow in dry areas. It will grow in both full sun and in shade.

Leaves Oval, smooth, dark green, glossy, with toothless edges; 8–9 pair of leaf veins. Leaves get fall color. Easily confused with native chokecherry.

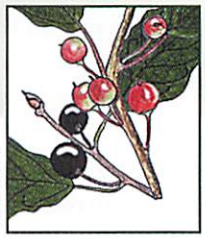
Luke Skinner, MN DNR

Flowers Small, creamy-green color; 5 petals; produced in late May–June.

Welby Smith, MN DNR

Stems Buds are alternate, fuzzy and brown, and lack scales; no spine at tip of the twig.

Fruit and Seed Round, berry-like fruit; $^1/_4$-inch diameter; produces less fruit than common buckthorn; red-brown (unripe) to black (ripe) color. Each fruit has 2–3 seeds. Berries do not persist.



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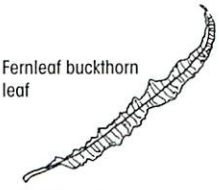
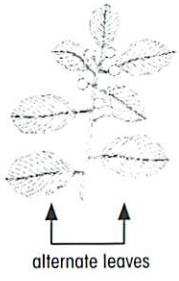
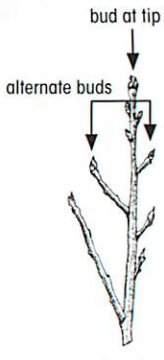






FINDING BUCKTHORN Common buckthorn is easily found in late fall when many native shrubs and trees have lost their leaves. Common buckthorn will often have green leaves through November. Glossy buckthorn does not stay green as late as common buckthorn. ***Caution!*** Many native trees look similar to buckthorn and some native trees hold their leaves into the winter. Before you cut, make sure you know you are cutting buckthorn and not a native tree.

WHAT YOU CAN DO TO CONTROL BUCKTHORN

Controlling Large Buckthorn Plants


Cindy Lueth, MN DNR

Buckthorn plants that are 2 inches in diameter or larger are best controlled by cutting the stem at the soil surface and then **treating the cut stump with herbicide** to prevent re-sprouting. This can be done effectively with hand tools, chain saws, or brush cutters. Stumps should be treated within two hours after cutting. Treat with an herbicide containing glyphosate (Roundup, Rodeo, etc.) or triclopyr (many brush killers, Garlon 3A, Garlon 4, etc.) to prevent re-sprouting. Herbicides can be applied to cut stumps with a paintbrush, wick applicator, dauber, or a low-volume sprayer. Apply the herbicide to the outermost growth rings next to the bark (see photo). The best time to cut and chemically treat the stumps is in late summer (avoid May and June) and throughout the fall.


Janet Van Sloun, City of Minnetonka

In cases where more than a few plants are treated, add an indicator dye (available where pesticides are sold) to the herbicide to mark the cut stumps you have treated. Colored flags can help mark cut stumps because the stumps are easily covered and lost under cut brush and leaves.


Cindy Lueth, MN DNR

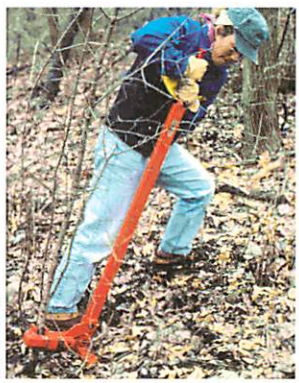
For **basal bark treatment,** a method that applies chemical through the bark, low-volume spray applications can be made with Garlon 4, Pathfinder II, and similar oil-based products. This application method uses triclopyr ester mixed with an oil diluent (e.g., Bark Oil Blue, kerosene, or diesel oil) applied directly to the bark of uncut buckthorn from the root collar up about 12–18 inches. This treatment works best on stems less than 5 inches in diameter. An ultra low-volume spray wand should be used to minimize herbicide use and reduce the potential for non-target injury. Buckthorn treated in this fashion can be left standing or cut at a later date after the plant dies.

When applying chemical treatments in the fall and winter, follow herbicide label instructions regarding temperatures at which the herbicide can be applied. Water-soluble herbicides like glyphosate (Roundup, Rodeo, etc.) or triclopyr amine (Garlon 3A, brush killers, etc.) can be applied to cut stumps when the temperature is above freezing (32° F). Oil-based products of triclopyr ester (Garlon 4, Pathfinder II) can be applied when the temperature is below freezing (below 32° F).

Controlling Seedlings and Small Buckthorn Plants


MN DNR

If individual plants are less than 3/8-inch in diameter, remove them by hand. Small seedlings can be pulled and will not re-sprout. If pulling individual plants is impractical, spray foliage of short buckthorn or seedlings with herbicide. Glyphosate will kill all actively growing vegetation on which it is sprayed. Triclopyr will kill broadleaf plants and conifers, but not grasses when applied properly. Spray after native plants have gone dormant (about mid-October). Follow all herbicide label instructions. Applications exceeding maximum labeled amounts may result in a non-target injury.


Bruce Larson

If you wish to hand pull plants greater than 3/8-inch, use a hand tool that pulls the shrub out, such as a Weed Wrench or Root Talon. Hand-pulling tools cause soil disturbance so tamp loose soil back into the ground. Take extra care when pulling on sensitive sites or steep slopes. Removing buckthorn by hand is easier if the soil is moist.

Before you pull or dig buckthorn, contact Gopher State One Call at 651-454-0002 or 800-252-1166 to make sure there are no buried utilities in the area.

SEED VIABILITY AND THE NEED FOR FOLLOW-UP Buckthorn seeds can remain viable in the soil for up to five years. Follow-up control of seedlings that emerge after initial control efforts is important on all sites. With no follow-up control, buckthorn will come back. Fire offers a long-term management option in grassland or savanna cover-types. Burning will need to be done every two to three years. If burning is not an option, a follow-up treatment of pulling or spraying the seedlings is needed. Successfully treating buckthorn requires a long-term commitment.

LIFE AFTER BUCKTHORN REMOVAL

Managing your woodland is an ongoing process. Removing buckthorn not only will benefit the environment, it provides opportunities to create wildlife habitat, redesign your landscape, and beautify an area. Do not make hasty decisions with your land after you have removed or controlled buckthorn. Think about the goals and objectives you have for your property.

Short-term recommendations include:

- Follow-up buckthorn control in areas where you have previously removed buckthorn.
- Remove any fruit-bearing buckthorn trees.
- Monitor areas that are relatively buckthorn-free and control buckthorn plants right away if detected.

Long-term recommendations include:

- Replant desirable tree, shrub, and herbaceous species if species do not return from the seed bank. If you are replanting in the same places buckthorn once grew, the soil may benefit if you wait one or two years before replanting other trees and shrubs. You will also need this time to do follow-up buckthorn control. Check with a local nursery, extension service, Minnesota Department of Natural Resources, or Minnesota Department of Agriculture for assistance on species recommended for your area.
- If you are managing a large area, consider fire as part of a forest management plan.

Alternative plantings for buckthorn

Several species of native trees and shrubs display characteristics similar to buckthorn. The following plants are examples of some of the environmentally-friendly species available at garden centers and nurseries.

High-bush cranberry *(Viburnum trilobum)*

Welby Smith, MN DNR

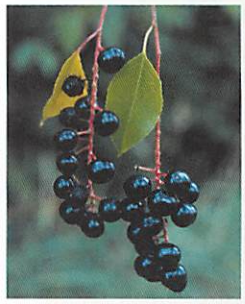
This multi-stemmed bush has lovely spring flowers and persistent red berries. Left unpruned, it will grow tall, but it can be pruned into a dense hedge. The European species *(Viburnum opulus)* is often sold in nurseries but is invasive and should be avoided.

Nannyberry *(Viburnum lentago)*

Welby Smith, MN DNR

Nannyberry is a tall shrub that grows in a variety of soils. It spreads gradually from a central clump, forming nicely shaped thickets. It has sweet, edible, blue-black fruits.

Chokecherry *(Prunus virginiana)*



Welby Smith, MN DNR

Chokecherry grows in a variety of soil types. It develops into a tall shrub on rich, loam soils. When planted on dry, sandy soil, it takes on a shorter, bushier form. The bright berries make a delicious jelly and are an important food for wildlife.

Pagoda dogwood *(Cornus alternifolia)*

Welby Smith, MN DNR

Native to rich, deciduous forests, pagoda dogwood is also commonly planted as a small ornamental tree. It prefers rich, loam soil where the rooting area is protected from summer heat or drought. Its branches spread in horizontal layers, giving the tree a beautiful form.

American hazelnut *(Corylus americana)*

Welby Smith, MN DNR

American hazelnut is a widespread shrub found in dry to moist forests and woodlands. It grows in a variety of soil types and tolerates dry, sandy soil or gravelly slopes. In the open, it sends up many stems, forming clumps. It provides food and cover for wildlife.

Black chokeberry *(Aronia melanocarpa)*

Welby Smith, MN DNR

Black chokeberry typically grows at the margins of lakes and wetlands—places where the soil is fairly rich and moist, and where it can get partial sun. It is colonial, but not aggressive. Black chokeberry has attractive white flowers in early summer and shiny black berries with lovely red foliage in the autumn.

FOR MORE INFORMATION: Call the Minnesota Department of Natural Resources at 651-296-6157 or 888-MINN-DNR or visit www.mndnr.gov/invasives

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