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Additional buckthorn bulletins are available from your county Extension office. Pub. HT2001

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Common and Glossy Buckthorn

Major Threats to Wisconsin's Woodlands

Threats

Buckthorn
- displaces native understory vegetation;
- forms an impenetrable understory layer;
- destroys wildlife habitat;
- causes long-term decline of forests by shading out other woody and herbaceous plants.

Identification

Growth: Common or European buckthorn, *Rhamnus catharticus*, is a multi-stemmed small tree to large shrub growing 10-25 ft. tall with an upright, oval form.

Glossy or smooth buckthorn (also known as European alder), *Rhamnus frangula*, is a large shrub to small tree with an upright, oval form growing 10-18 ft. tall. Glossy buckthorn has two common cultivars, 'Columnaris' (tall hedge buckthorn), which grows 10-12 ft. tall with a narrow, upright, columnar form and low branches, and 'Asplenifolia' (fernleaf buckthorn), which has finely textured, narrow, fern-like leaves and grows 6-10 ft. tall.

Leaves: Common buckthorn leaves are alternate or subopposite on the stems, and are simple, rounded to egg-shaped with finely toothed margins. The leaves are very dark, dull to glossy green with 3-5 pairs of leaf veins that are sickle-shaped (curve along the margins of the leaf).

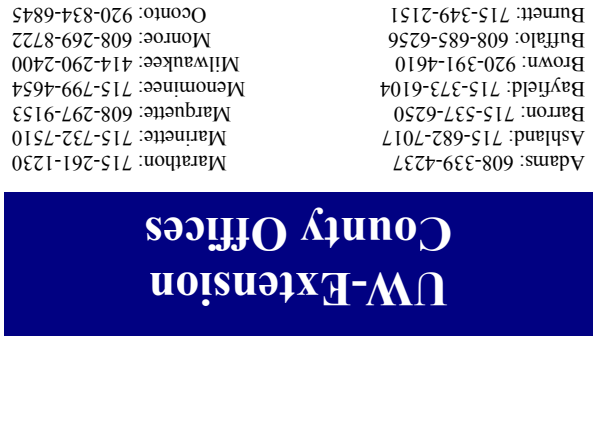
Glossy buckthorn leaves alternate on stems, and are simple and oval shaped with toothless margins. Leaves are dark green and glossy, with 8-9 pairs of leaf veins that radiate out from along the central midvein. Undersides of leaves are moderately hairy to smooth.

Buckthorns leaf out very early in spring and retain their leaves late into autumn. Leaves do not change color before being shed in the fall.

Stems: Common buckthorn has elongated, dark buds that are closely pressed against the twig. The terminal bud is often modified into a spine that is longer than the buds. Older bark resembles cherry or plum bark; it is gray to blackish-brown, and smooth, becoming roughened, with prominent, light-colored, horizontal lenticels.

Glossy buckthorn has naked, hairy buds. The twigs lack the terminal spine that is typical on common buckthorn twigs.

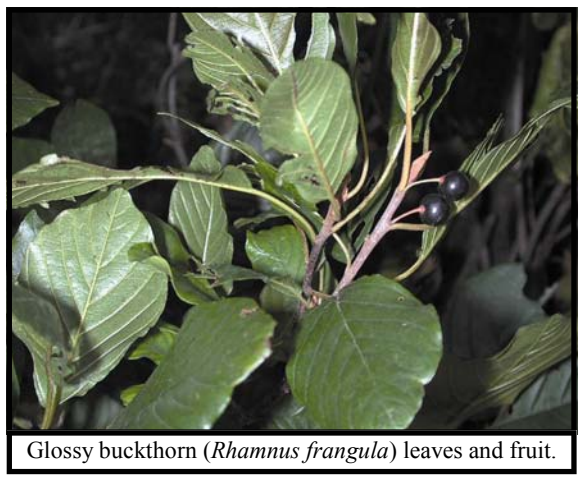
Both common and glossy buckthorn have closely-spaced, prominent leaf scars that give twigs a warty or bumpy silhouette. A cut branch of either buckthorn reveals yellow sapwood and a pinkish to orange colored heartwood.



Left: Glossy buckthorn (*Rhamnus frangula*).
Right: Common buckthorn (*Rhamnus catharticus*).
Note differences in leaf margins and veination.

Flowers: Common buckthorn flowers are produced in May and are dioecious (i.e., male and female flowers are produced on separate plants). Flowers form in clusters and are not showy, small and yellowish-green with four petals. Glossy buckthorn flowers are produced in late May-June and sporadically in the summer. Flowers are arranged in lateral clusters, and are not showy, but creamy-green with five petals.

Fruit and Seed: Both common and glossy buckthorn have berry-like drupes that are about ¼ in. in diameter and arranged in large clusters. Common buckthorn fruits are green changing to black in fall and each fruit contains 3-4 grooved seeds. Fruits are retained long into winter. Glossy buckthorn produces less fruit than common buckthorn. Glossy buckthorn fruit is red-brown, changing to black in late summer to early fall and the fruit falls rapidly when ripe. Each fruit contains 2-3 ungrooved seeds. Both species produce fruit annually, and fruit can serve as a food source for birds. However, fruit of both species is poisonous to humans.



Glossy buckthorn (*Rhamnus frangula*) leaves and fruit.

Common buckthorn (*Rhamnus catharticus*) leaves and fruit. Note the spine at the end of branch (see arrow).

History

Common and glossy buckthorn were introduced into North America as ornamentals. They were planted in hedgerows and shelter-belts during the 1800's. Cultivars of glossy buckthorn ('Columnaris' and 'Asplenifolia') are still available for sale due to their ornamental characteristics, but are invasive and should be phased out.

Distribution and Habitat

Although common and glossy buckthorn are native to Europe and northwestern Asia, they have readily naturalized in the northeastern and north central third of the U.S.A. and Canada. Common buckthorn invades woodlands, savannas, prairies, abandoned fields, and roadsides, forming dense thickets. Glossy buckthorn invades bogs, marshes, river banks, fens, wetlands, and pond margins, as well as dry sites such as forests, roadsides, and prairies. Both species are capable of growing in full sun and dense shade, and are quite adaptable to adverse habitats.

Other Problems

Common and glossy buckthorn are alternate hosts for the fungus (*Puccinia coronata*) that causes oat rust disease, and have been recently cited as an overwintering site for the newly introduced soybean aphid (*Aphis glycines*).

Spread

Common and glossy buckthorn are fast-growing, woody perennials. If buckthorn is not controlled, it can quickly spread from cultivated areas to nearby forests. Forest understories can become so dense with buckthorn that native species of wildflowers and other perennials cannot compete and eventually disappear.

The primary means of spread of both common and glossy buckthorn is by seeds that are eaten by birds during the harsh winter months. Birds such as wood ducks, starlings, blackbirds, cedar waxwings, robins, and blue jays, in addition to mammals such as elk and mice, can transport buckthorn seeds over long distances. Buckthorn fruit causes a severe laxative effect in animals, thereby allowing for distribution of seeds in their excrement.

Buckthorns growing in full sun produce seeds a few years after establishment. In shaded habitats, fruit production may be delayed for 10-20 years. Seedlings can readily grow beneath parent buckthorn plants, as well as underneath trees at the edges of forests and fields. Seedlings establish best in high light conditions, but can germinate and grow in the shade. Buckthorns grow fast, thus quickly forming dense thickets. Buckthorn stumps can resprout vigorously after plants have been cut.

Control Methods

Control of buckthorn is best achieved with early and frequent identification, and removal of isolated plants before they begin to produce seeds. Once established, buckthorn soon shades out existing vegetation and prevents establishment of native understory flora. With large infestations of buckthorn, the larger, seed-producing plants should be removed first.

Hand removal: Buckthorn seedlings can be removed by hand, if the stems are under 0.5 in. in diameter. Removal is easier when the soil is moist. Larger plants (0.5-1.5 in. diameter) can be dug or pulled using some type of mechanical device such as a Weed Wrench™. Be sure to tamp disturbed soil resulting from hand pulling to discourage reinfestation by buckthorn.

Flooding: In wetlands with lowered water tables, restoring the water to its historical levels will often kill glossy buckthorn.

Fire: Prescribed burns in early spring or fall may kill seedlings, but only kill the tops of larger plants, which can easily resprout. Use of fire is best left for fire-adapted plant communities, such as prairies. Fire should not be used if it could adversely affect a plant community. Annual or biannual burning may be needed for several years to control buckthorn. Consult with a restoration expert before attempting a burn. Also be aware of local and state fire codes, and local permits and ordinances that may be required for a burn.

Common buckthorn (*Rhamnus catharticus*) forming an impenetrable under story in a woodland setting. (*Photo provided by Gary Fewless*).

Cutting: Large plants are hard to remove by hand. These plants should be cut or girdled at the base. Remember that both common and glossy buckthorn can readily resprout from cut stumps, thus necessitating herbicide treatments.

Herbicides: Herbicides are an effective option for buckthorn control. Glyphosate (e.g., Roundup®, Touchdown®), triclopyr (e.g., Garlon 4™, Ortho Brush-B-Gon®), and 2,4-D with triclopyr (e.g., Crossbow™) are readily available and can provide excellent control when used properly. Dyes can be added to herbicide solutions to help identify treated areas. An advantage of using triclopyr-containing herbicides (or triclopyr + 2,4-D) is that these herbicides, unlike glyphosate-containing herbicides, do not kill grasses. The presence of dense layer of grass can potentially reduce germination of, and compete with, new buckthorn seedlings.

If you decide to use herbicides for buckthorn control, be sure to read and follow all label instructions for the product that you select to insure that you use the product in the safest and most effective manner possible. If you have questions, be sure to contact your county Extension agent for advice.

In general, the best time to treat buckthorn is in mid- to late autumn. At this time, sap is flowing toward the roots and this allows for maximum herbicide absorption. In addition, both common and glossy buckthorn retain their leaves and continue growing much later into the fall than other plants. Therefore, autumn applications of herbicides are less likely to be damaging to non-target (i.e., other) plants. Winter applications of herbicides also can be successful, decreasing even further the risk of damaging non-target species. Spring is the least effective time for treating cut stumps (see below), because sap is flowing away from the roots.

There are three common methods for applying herbicides for buckthorn control: cut stump, basal bark, and foliar sprays. Once again, check the label of the herbicide that you choose for the recommended (and legal) methods of applications.

Larger buckthorn plants (greater than 6" in diameter) should be treated using the cut stump method. As the name of this technique implies, buckthorn plants should be cut and then stumps should be treated immediately with a herbicide solution. Herbicide solutions can typically be applied using a low-pressure hand sprayer, a spray bottle, wick applicator, or sponge paintbrush. Spray treatments should be directed to the vascular tissue of the cut stem located just inside of the bark. Follow-up treatments may be necessary for the next several years if plants resprout.

Smaller buckthorn plants (less than 6 in. in diameter) can be treated using the basal bark method. These plants need not be cut before herbicide is applied. Apply the herbicide at the base of the plant, wetting the bark from the soil-line up to about 12-15 in. above the soil-line.

If you have a large number of buckthorn seedlings, then use of foliar sprays of glyphosate, triclopyr, or triclopyr + 2,4-D may be the most effective means of control. Foliar herbicides can be applied using a backpack sprayer. Foliar applications tend to require a lower concentration of herbicide than stump applications. However, keep in mind that foliar sprays are more likely to damage or kill non-target vegetation.

Biological Control: At this time, biological control agents are not available to control either common or glossy buckthorn.

Education: One of the best ways to insure adequate control of buckthorn is education. Tell your neighbors about buckthorn. A neighbor's buckthorn can produce large amounts of seed that can be disseminated into your backyard, and the surrounding neighborhood. Encourage your neighbors to remove their buckthorn and monitor their yards for seedlings in the future.

NOTE: References to pesticide and other products in this publication are for your convenience and are not an endorsement or criticism of one product over similar products. You are responsible for using pesticides according to the manufacturer's current label directions. Follow directions exactly to protect the environment and people from pesticide exposure. Failure to do so violates the law.

Tall hedge buckthorn (*Rhamnus frangula* 'Columnaris') is commonly used as an ornamental in landscape settings.