Mechanical Controls of Glossy Buckthorn

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Based on observational field trials conducted in 2008 and 2009 on university woodland in Durham, N.H. for a Conservation Innovation Grant funded by the Natural Resource Conservation Service (NRCS).

The Plant

Glossy buckthorn (*Alnus frangula*) is an ornamental shrub native to Europe, North Africa and Asia and brought here in the mid-1800s. Often found as a shrub, it can grow up to 30 feet tall, and greater than 4 inches in diameter (measured at 4.5 feet high). The plant has alternate-branching with oval, dark-green, glossy leaves and a grayish-brown stem with pronounced white lenticels. Berries ripen to a dark purplish-black. Glossy buckthorn is a highly capable plant on all sites, but it is especially competitive in shaded understories and in forested wetlands. It often is brought in through disturbance and its colony size grows quickly through early, prolific seed-production, starting as young as three years. It is well known for its vigorous sprouting response to stem-damage, making it hard to control through cutting.

Glossy Buckthorn http://plants.usda.gov/java/profile?symbol=FRAL4

Mechanical Treatments

Anecdotal evidence shows foliar or cut-stem application of herbicides is most successful at controlling glossy buckthorn. Where the use of herbicides is precluded by other objectives, the following repeated mechanical efforts can successfully remove individual stems or small colonies:

- Weeding (uprooting),
- Cutting at the base, or
- Burning stems or foliage.

In year one of the control effort, treat stems early after leaf-out in the spring to prevent the buildup of root energy-reserves. Close monitoring will allow a second and third treatment in year one, timed to prevent the plant from rebuilding stored energy after the sprout-response. Although most stems are killed following three individual treatments, a second season of treatments may be needed to fully remove all individuals and any new seedlings.

Of the mechanical treatments, weeding (uprooting) is by far the most successful. Even when thorough weeding removes 100% of all stems, follow-up treatments will be needed in any area that has been invaded for more than 3 years (because of seeds in the soil). Weeding of areas with greater than 1,000 stems per acre and greater than a few acres is probably financially unrealistic for most landowners. In stands this large, other mechanical and herbicidal treatments are the better options.

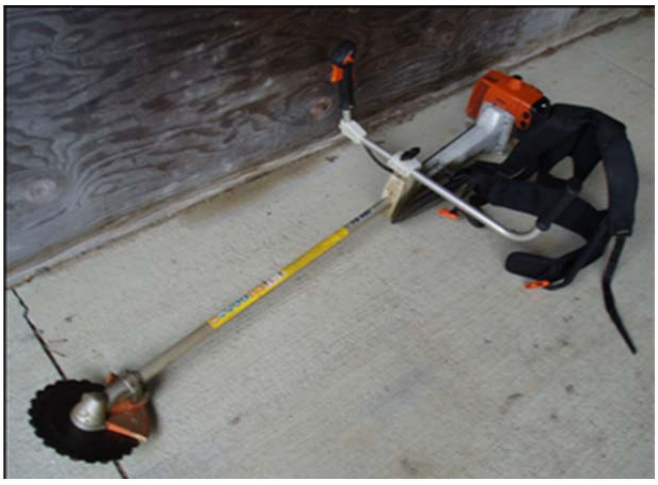
Regardless of the intended follow-up treatment, all stems greater than 1/8 inch in diameter must be cut for the initial treatment. It is time-prohibitive and costly to use flaming methods on stems of this size or larger. Herbicidal treatments may be unwieldy in stands with high stem densities or at a later stage of development.

Cutting Tools

Any cutting tool may be used, although brush saws and/or line-trimmers equipped with cutting blades are the fastest method. For areas with a large stems and older plants, a three-step sequential approach is suggested:

1.) Line-trimmers on seedlings and small stems,
2.) Brush saws on larger material and finally,
3.) Chainsaws on the largest stems and downed material.

Once the colony is brought back to a single size-class (essentially sprouts less than 1-inch tall) following the first treatment, the fastest method for subsequent mechanical treatments is a conventional line-trimmer or a flame-gun.



Brush saw left and above. Flame-gun below. UNH Woodlands

Flame-Gun Techniques

Conventional, weed-control, flame-guns may be used effectively on younger age-classes and stump-sprouts of formerly treated stems. Flame-guns may affect stems through destructive stem damage or through defoliation. Defoliation is a faster method of control than stem-heating and may be accomplished with a quick flame-burst. Treatment times and effectiveness in areas with young age-classes are equal when comparing line-trimmer and flaming methods although flaming is slightly more expensive due to the cost of fuel. Flaming is inadvisable in areas with heavy brush or dry fuels and ideally should be done in the rain.

Before proceeding with your control program, be sure to familiarize yourself with—and then follow—the safety instructions that come with the tools you have chosen to use.

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