



JEFFERSON COUNTY NOXIOUS WEED CONTROL BOARD

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BEST MANAGEMENT PRACTICE **Bull thistle (*Cirsium vulgare*)** (Family—*Asteraceae*—Sunflower Family)

Legal Status in Jefferson County Class C--there is no legal requirement for controlling Canada thistle. The County Weed Board provides education and strongly recommends control and containment of existing populations.

BACKGROUND INFORMATION

Impacts and History

- A common weed of roadsides, pastures, vacant fields, burned areas, and logged areas.
- Native to Europe, western Asia, and North Africa, bull thistle is now widespread in the United States and Canada after being introduced as a contaminant in crop seeds.
- Common in overgrazed pastures where it may form dense stands that reduce productivity and stocking levels.
- May dominate forest clear cuts and reduce growth of tree seedlings.



Description

- Bull thistle has a biennial (two-year) life cycle. Plants grow vegetatively their first year as rosettes of green, prickly, sparsely hairy leaves. The flowering stems elongate and flower in the second year. The plants die after flowering or after the first frost of that second year.
- Flowering stems reach 2-5 ft in height. The heads of purple flowers are 1.5-2 in wide and are located at the branch ends. The flower head bases are covered in spine-tipped bracts.
- The upper leaf surfaces are sparsely hairy with short prickles on the leaf surfaces and cottony hairs on the leaf undersides. There are sharp spines on the leaf margins and leaf tips.



Habitat

- Prefers full sun and cannot tolerate shade.
- Common in recently or repeatedly disturbed areas, especially pastures, overgrazed rangelands, roadsides and logged areas. Can become a dominant species following disturbance.

Reproduction and Spread

- Plants can flower from June until the first frost.
- Mature plants can produce up to 4,000 seeds per plant. Seeds are capped with a circle of white hairs and can be windblown for long distances; however, most fall within only a few feet of the parent plant.
- Bull thistle reproduces only by seed.
- Seeds usually germinate in the spring and fall. The seeds are short-lived and most on or near the soil surface do not remain viable for more than a year. Seeds buried at a depth of 5 inches may remain viable for up to three years. Tilling, grazing or other soil disturbance may cause these seeds to germinate.

Local Distribution

Bull thistle is widespread in Jefferson County. While primarily found in rural pastures and fields, it is also found in vacant urban lots and throughout the county along city, county and state roads.

CONTROL INFORMATION

Integrated Pest Management

- The preferred approach for weed control is Integrated Pest Management (IPM). IPM involves selecting from a range of possible control methods to match the management requirements of each specific site. The goal is to maximize effective control and to minimize negative environmental, economic and social impacts.
- Use a multifaceted and adaptive approach. Select control methods that reflect the available time, funding, and labor of the participants, land use goals, and the values of the community and landowners. Management will require dedication over a number of years, and should allow for flexibility in method as appropriate.

Planning Considerations

- Survey area for weeds, set priorities and select best control method(s) for the site conditions.
- Bull thistle reproduces entirely by seed, so a successful management program must focus on preventing seed production.
- Small infestations can be effectively hand-pulled or dug. Isolated plants should be removed in order to prevent them from infesting a larger area.
- For larger infestations, the strategy will depend on the land use of the site. In pastures, for example, good grazing practices and management of grass and forage species will reduce bull thistle infestations. Specific suggestions are given in a later section.
- Generally work first in least infested areas, moving towards more heavily infested areas.
- Control practices in critical areas should be selected to minimize soil disturbance and reduce the potential for erosion. Minimizing disturbance also avoids creating more opportunities for germination of weed seeds.
- If the control site requires extensive clearing or grading, or is located near a shoreline, steep slope, stream, or wetland, contact the Jefferson County Department of Community Development to find out whether or not a permit may be necessary.
- Because bull thistle is a state-listed noxious weed, control (both manual and chemical) in critical areas is allowed as long as the landowner consults with the Jefferson County Noxious Weed Control Board and follows their guidelines.

Early Detection and Prevention

- Dig isolated or small populations before the infestation spreads. If there are more rosettes than can be removed manually, it may be necessary to treat the area with an appropriate herbicide in the fall or spring.
- Bull thistle does not compete well in areas with thick, tall grasses and forbs. Preserving the health of a natural area and preventing disturbance or overuse are good preventative measures against bull thistle.
- Manage grazing areas to promote grass and clover vigor. Graze uniformly and move animals from area to area in a planned sequence. Avoid grazing when soil is very wet to minimize soil disturbance.
- Prevent seeds from spreading to other un-infested areas by washing vehicles, equipment, boots and animals that have been in infested areas.
- If animals are being moved from an infested pasture to an un-infested pasture, if possible, first isolate them for at least five days so that the seeds pass out of their digestive system.

Manual

- Because bull thistle is a biennial plant which reproduces solely by seed, pulling or digging before seed production will eventually eliminate a population.
- Pull or dig plants after they bolt but before they flower. It is not necessary to remove the entire root, but be sure to dig it out 3-4 inches below the surface, to prevent re-sprouting.
- Plants in flower or with buds can form viable seeds even after removal, so carefully bag and dispose of all flower or seed heads.
- In areas where mature plants are removed, there are usually many small rosettes left in the area. Search the area for rosettes and dig them up or remove with a hoe. Removing plants is easiest when the soil is loose or wet.
- Return to the same location in the following spring and summer to remove plants coming up from seeds already in the soil. Continue to monitor the area for several years.
- Do not remove plants or seed heads if your management program relies on seed head biological control organisms.

Mechanical

- Mowing will not get rid of biennial plants such as bull thistle. It will encourage resprouting from the crown and may make plants harder to get rid of.
- However, mowing may prevent seed production when done at the pre-flower stage. Avoid mowing plants in flower, as cut flowers may still form viable seeds.
- Mowing may need to be repeated throughout the season to prevent re-flowering.
- If mowing is followed by covering with several layers of cardboard topped with 6 to 8 inches of mulch, this may suppress regrowth, but there is no data to support this. This method will kill all plants so should not be used in areas where there is desirable vegetation.

Biological

Biological control is the deliberate introduction of insects, mammals or other organisms that adversely affect the target weed species. Biological control is generally most effective when used in conjunction with other control techniques.

- The bull thistle seed head gall fly (*Urophora stylata*) lays eggs on closed flower buds in June and July. After hatching, the larvae burrow into the seed-producing tissues to feed, forming galls and reducing seed production. Often, multiple larvae are needed to completely prevent seed production.
- The bull thistle seed head gall fly was first released in the United States in Washington State in 1983. It is now established in Oregon and has a limited distribution in Washington State. Control of seed production is effective where the population of gall flies is high.
- Biological control agents may take several years after release to have a significant impact on the infestation. Population density and the number of flowering plants can be reduced but there will always be some plants remaining when using biological control agents.
- Biological control agents are not recommended or prescribed for small infestations.
- Goats will eat seedlings, rosettes, and flower heads. If appropriate for site conditions, they may be used to reduce bull thistle infestations.

Chemical

- Effective chemical control of biennial and perennial weeds can be achieved only with *translocated* herbicides (ones that move through the plant and kill the roots).
- If desirable grasses or other monocots (sedges, rushes or cattails) are present, use a selective herbicide (one that affects only broadleaved plants), or carefully spot-spray only the bull thistle.
- Herbicides are most effective on actively growing plants in warm, dry weather.
- Herbicides should only be applied at the rates and for the site conditions and/or land usage specified on the label. **Follow all label directions.**
- Treated areas should not be mowed or cut until after the herbicide has had a chance to work. This can be as long as 2-3 weeks.
- It is important to establish new vegetation after treating an area. Follow the label for the timing because some herbicides stay active longer than others.
- **If using herbicide on plants that are about to flower, the flower heads need to be removed and bagged before applying herbicide.**

For questions about herbicide use, and specific herbicide recommendations, contact the Jefferson County Noxious Weed Control Program at 360-379-0470 ext 205, or noxiousweeds@co.jefferson.wa.us.

SUMMARY OF BEST MANAGEMENT PRACTICES

Small Infestations in Desirable Vegetation

- Pull or dig rosettes before flower buds have formed. This is easiest when the ground is soft and moist.
- If it is necessary to dig or pull plants with flowers or buds, be sure to clip flower heads, bag and dispose of safely. If left on the ground they will produce seed.
- A layer of mulch on the soil surface may inhibit the germination of new seedlings.
- OR apply appropriate herbicide by spot spray to minimize injury to desirable plants.
- Monitor site throughout growing season and remove any new plants.

Large Infestations\Monocultures

- If enough labor is available, even large infestations can be controlled manually—see guidelines above.
- Mowing can prevent flowering and seed production but will not get rid of plants. Do not mow bull thistle that is in full flower or that has gone to seed.
- Large infestations can be controlled with the appropriate herbicides.
- Application of a selective herbicide followed by good pasture management will greatly increase grass production. Thick grass will suppress bull thistle re-growth. Promote healthy grass areas by seeding and fertilizing according to the soil needs. For more information on pasture management, contact the Jefferson Conservation District (<http://www.jeffersoncd.org/links.html>).
- Monitor for bull thistle on edges of pastures and disturbed areas around fences and watering holes. Remove isolated plants before they flower.

Riparian and Aquatic Area Control

- Focus on manual removal for small infestations.
- If manual control is not feasible, spot spray an appropriate herbicide.
- **Any herbicide application over or near water can be done only by a specially-licensed applicator using an approved aquatic formulation, and may require a permit from the Washington State Department of Ecology.**

Road Right-of-Way Control

- Manually remove infestations if possible.
- If manual control is not feasible, spot spray an appropriate herbicide.
- If bare spots are left after weed removal, replant with low-growing native plants.
- Repeated mowing can prevent flowering and seed production of bull thistle.

REFERENCES

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