



## JEFFERSON COUNTY NOXIOUS WEED CONTROL BOARD

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### BEST MANAGEMENT PRACTICES Scotch Broom (*Cytisus scoparius*) (Family—*Fabaceae*—Pea Family)

**Legal Status in Jefferson County:** Class B Noxious Weed (non-native species designated for control only in select areas by the Jefferson County Noxious Weed Control Board, under Washington State law RCW 17.10). The Jefferson County Noxious Weed Control Board requires control in and within 50 feet of gravel pits or stockpiles of rock or soil products that may be transported offsite. State Weed Law defines control as *to prevent all seed production and to prevent the dispersal of all propagative parts capable of forming new plants.* (See WAC 16-750-003) State quarantine laws prohibit transporting, buying, selling or offering Scotch broom for sale, or distributing plants, plant parts or seeds.



## BACKGROUND INFORMATION

### Impacts and History

- Scotch broom displaces native and beneficial plants, causing considerable loss of grassland and open forest habitat.



- Seeds and other plant parts are mildly toxic to humans, horses and livestock.
- Renders rangeland and grasslands worthless.
- Interferes with re-establishment of conifer seedlings on harvested forests.
- Damages western Washington and Oregon prairies by changing the chemical composition of the soil and shading out prairie species.
- Dense stands can impede movement of wildlife.
- Potential fire hazard that can increase the intensity of grassland and forest fires.
- Scotch broom is difficult to eradicate due to substantial and long-lived seed bank.
- Native to the British Isles and central Europe
- It was planted along roadsides and cut banks in the 1940s to prevent soil erosion and is found throughout most of western Washington, British Columbia, Oregon and California.
- Also commonly known as Scot's broom.

## Description



- Large, yellow-flowered shrub in the pea family with evergreen stems and small, deciduous leaves.
  - Grows 6 to 12 feet tall.
  - Branches are erect, 5-angled with prominent ridges, and star-shaped in cross-section. Young stems are green. Older branches and trunks are yellowish-brown.
  - Flowers are bright yellow, pea-like, sometimes with orange-red markings in the center, and are borne on short stalks in the leaf axils. They are ½ to 1 inch long.
  - Leaves are small, oval and can be single at the stem ends but are generally in three leaflets.
- Leaves are often dropped during dry summer months or periods of stress. Plants may be leafless for most of the year.
  - Seedpods are black or brown, flattened, hairy on the margins, and are 1 to 2 ½ inches long.

## Habitat

- Tolerant of a wide range of conditions but grows best in dry, well-drained soils in full sun.
- Seedlings can establish under the canopy of mature plants in full shade.
- It is tolerant of low-nutrient soils and a wide range of soil moisture conditions.
- Scotch broom is commonly found in disturbed areas, pastures, agricultural lands, harvested timberlands, roadsides, trails, river banks, parks and vacant lots.

## Reproduction and Spread

- Reproduces primarily by seed.
- Peak bloom time is April to June but some flowers may appear sporadically throughout the year.
- Seeds are produced in late summer, germinate in fall and spring.
- When mature, seedpods split and eject seeds up to 20 feet away.
- Seeds are further dispersed by natural forces such as erosion, flowing water, and ants collecting seeds for food, as well as by human disturbance such as road work and other activities.
- A single plant can produce over 10,000 seeds per year.
- Plants typically start producing seeds after three years and usually live about 17 years, but can survive as many as 25 years.
- Seeds can remain viable in soil from 5 to 80 years.



## Local Distribution

Scotch broom is widely distributed throughout Jefferson County, especially along roadsides, on rivers, in parks, and in disturbed vacant lots and un-maintained pastures.

# 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 which reflect the available time, funding, and labor of the participants, the 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.
- Think about the long-term health of the site, and sources of seeds within a distance that could re-infest the site. Re-vegetation with native plants adapted to the site conditions may reduce re-infestation by Scotch broom and other weeds. However, re-vegetation can limit control options since care needs to be taken not to damage young plants. Make sure re-vegetation plan is compatible with broom management activities.
- Sites that have other beneficial plants present should be controlled at times when the least amount of damage will be done to the desirable plants.
- In pastures, good grazing practices and management of grass and forage species will greatly improve control of Scotch broom.
- Application of lime has been reported to reduce the germination of seeds.
- Be adaptive: If the Scotch broom doesn't respond to one method, try a different method, change the timing or modify the technique.
- Be persistent. Any plants that go to seed will prolong the infestation problem. When plants become mature, they need to be removed or controlled before they go to seed. Most infestations require control work several times a year.
- 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 reed canarygrass and other weeds.
- 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 Scotch broom 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

- Small populations can be pulled or dug but the site should be monitored for several years for plants growing from root fragments and from the seed bank.
- Prevent plants from spreading from existing populations by washing vehicles, boots and animals that have been in infested areas.
- If livestock are being moved from an infested pasture to an un-infested pasture, if possible first hold them for at least five days so that any seeds pass out of the animals' digestive system.
- Do not purchase or introduce these invasive plants into your yard or landscape. According to state quarantine laws it is illegal to buy or sell Scotch broom, or any of its cultivars.
- After the control is complete, re-vegetate the site with non-invasive vegetation to compete with broom seedlings, but make sure re-vegetation plan is compatible with follow-up weed control activities.

## Manual

- When digging or pulling, make sure to remove as much root as possible so the plant will not re-sprout. This method can be highly labor-intensive and to be fully effective all mature plants in the site need to be pulled so that no new seeds are produced. Both methods are significantly easier when soils are moist.
- Pulling of medium to large plants is much easier with a **Weed Wrench™**, a solid steel tool for pulling woody plants. Several wrenches are available to borrow from the Jefferson County Noxious Weed Control Program (360-379-5610 ext 205). Weed wrenches may be purchased from The Weed Wrench Company at 877-484-4177 or <http://www.weedwrench.com>.
- Pulling disturbs the soil and creates ideal conditions for broom seed germination so sites will need to be carefully monitored for new growth.
- Cutting can be an effective control method for older plants that are no longer green at the base. If cutting, it is best to cut the plants when they are stressed during the summer drought in late July to August. Cut stems as close to the ground as possible. Monitor for regrowth and cut again. The disadvantage of this method is that plants are typically in seed during the late summer. Cutting may spread the seeds around so try to cut the plants before the seed pods mature.
- Cutting has been shown to be most effective on plants with a stem diameter greater than 2". Younger, smaller diameter plants that are cut should be monitored closely for regrowth.
- Expect the level of control work to be intensive for the first several years due to seed banks, soil disturbance that occurs when pulling or digging, and regrowth of cut plants.



## Mechanical

- Mechanical control methods can be used to suppress larger infestations with either manually operated brush cutting tools or tractor mounted mowers.
- Plants should be cut between flowering and seed pod maturation to prevent seed spread. However, cutting at this time may not increase plant mortality. A late summer cutting after the broom has gone to seed can exhaust root reserves and decrease re-sprouting.
- Older plants are less likely to resprout from cut stems (usually about 20 percent over 5 years old will resprout).
- Younger plants are more likely to resprout (about 50 percent).
- Mowing, and other mechanical control techniques alone are generally not as effective as other methods and will either need to be repeated throughout the season or combined with other control methods to prevent re-sprouting, especially with younger plants. Mowing in the spring followed by a fall herbicide application, once plants have re-grown, can be an effective control method.
- Mature plants with a stem diameter of greater than 2" are the most susceptible to mechanical control, and may not require other methods.
- Bulldozing is not a recommended control method. It tends to spread seeds on a site and removes all other vegetation that was competing with the broom.

## Disposal

- **Do not put plants with seed pods in compost or yard waste.** Seeds are very tough and long-lived and can contaminate mulch made from compost. Ideally, control activities should be done before plants go to seed to avoid disposal problems.
- Plants without seeds can be disposed of in household yard waste containers or taken to the Jefferson County transfer station.
- Plants with seeds can be chipped and left on site or burned (after obtaining appropriate burn permits).
- If it is not practical to dispose of the broom as recommended above, leave plants with mature seed pods on-site in order to limit spread to new areas.
- Take extreme care not to introduce soils, mulch, or gravel infested with broom seeds – and where older plants have dropped seeds, do not move soil with seeds to new locations for 80 years.

## Biological

- Several biological control insects have been released in Washington State including Scotch broom bruchid (*Bruchidius villosus*), a beetle whose larvae feed on developing seeds, and Scotch broom seed weevils (*Exapion fuscirostre* or *Apion fuscirostre*). Results for both are still tentative.
- It takes many years for biological control insect populations to be large enough to impact the infestation (usually at least 5-7 years, possibly longer).
- Grazing by goats and consumption of seeds by chickens has been shown to reduce the spread of broom infestations.

## Chemical

- To kill a perennial plant such as Scotch broom it is essential to use a translocated herbicide—one that moves through the plant’s system and kills 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 Scotch broom. Or use the cut-stump method described below.
- Woody plants such as Scotch broom can be cut to 6 inches above the ground, and herbicide can be painted on the cut stump. This has to be done immediately after cutting.
- The best time to use foliar spray on broom is in the spring when plants are actively growing. Cut-stump and other non-foliar treatments can be performed any time of the year depending on the herbicide used.
- 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.

**For questions about herbicide use, and specific herbicide recommendations, contact the Jefferson County Noxious Weed Control Program at 360-379-0470 ext 205, or [noxioussweeds@co.jefferson.wa.us](mailto:noxioussweeds@co.jefferson.wa.us).**

# SUMMARY OF BEST MANAGEMENT PRACTICES

## Small Infestations in Desirable Vegetation

- Dig or pull up plants by hand when soil is moist (fall through spring). This method is very effective on seedlings and smaller plants up to 1" in diameter. Larger plants can be removed with the Weed Wrench (see Mechanical section)
- OR apply appropriate herbicide by spot spraying or cut-stump treatment, to minimize non-target injury.
- Monitor site throughout growing season and remove any new plants.
- Do not leave bare soil, use heavy mulch or replant to help compete with broom seedlings. This is especially important if small evergreen trees are being grown.

## Large Infestations \ Monocultures

- If enough labor is available, even large infestations can be controlled manually—see guidelines above.
- Mowing multiple times per season for several seasons can keep broom from setting seed, but is unlikely to kill all of the broom, especially young plants.
- Mature plants of 2" plus diameter can generally be controlled by cutting the plant at the base between flowering and seed set (late July – August), but this may not work in all cases.
- Large infestations can be effectively controlled with herbicides but eradication of Scotch broom with a single herbicide application is unlikely.
- Smaller amounts of herbicide will be needed if plants are first cut or mowed as there will be less plant matter to treat. However, plants need to be actively growing when sprayed.
- Cut-stump herbicide treatment (see Chemical section) is time-consuming but effective.
- Suppression of large infestations of broom with a selective herbicide can greatly increase grass production, which in turn increases the suppression of the broom.
- Promote healthy grassy areas by seeding and fertilizing. Use a mix of grass and clover species to improve resistance to broom. Fertilize according to the soil needs.
- Heavily infested areas that are not candidates for other types of control may be managed with bio-control to reduce seed production.

## Riparian and Aquatic Area Control

- Focus on manual removal for small infestations if possible.
- Mowing can be effective at killing larger established plants but not younger ones. Mowing must be repeated multiple times over a season to prevent seed set and is not likely to kill plants unless combined with other methods.
- If manual control is not feasible, apply an appropriate herbicide (see Chemical section) by spot spraying or cut-stump treatment, to minimize injury to other plants.
- When large areas of weeds are removed, the cleared area needs to be replanted with native or non-invasive vegetation and stabilized against erosion.
- **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

- Pull small infestations if possible.
- If manual control is not feasible, apply an appropriate herbicide (see Chemical section) by spot spaying or cut-stump treatment, to minimize injury to other plants.
- If plants are on a steep slope make sure to re-plant with vegetation of varying root depth to stabilize slopes.

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This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement PO-00J08601 to Jefferson County Department of Community Development for the Watershed Stewardship Resource Center (now known as Square One). The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

