



## JEFFERSON COUNTY NOXIOUS WEED CONTROL BOARD

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### BEST MANAGEMENT PRACTICES

#### Butterfly Bush (*Buddleja davidii*) (Family—*Buddlejaceae*—Butterfly Bush Family)

**Legal Status in Jefferson County:** Class B Noxious Weed (non-native species selected for control by the Jefferson County Noxious Weed Control Board, under State Law RCW 17.10). The Jefferson County Noxious Weed Control Board requires control of butterfly bush on private and public lands throughout the county. 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).



### BACKGROUND INFORMATION

#### Impacts and History

- Highly invasive in riparian areas where it displaces native species and disrupts natural succession.
- Competes with native plants for space, light, water, nutrients and pollinators.
- Although butterfly bush serves as a nectar source for many insects, it does not provide a food source for the larval stage of native butterflies.
- It has been observed to displace native willows and red alder, which some native butterfly species depend upon for both food and nectar.
- Native to China, introduced to Britain in the 1890s and since then introduced to many parts of the world as a garden ornamental.
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- Oregon foresters consider butterfly bush a pest because it out-competes Douglas-fir (*Pseudotsuga menziesii*) seedlings in recent timber clear-cuts.
- Adapted to survive along streambanks where sediment deposition is a common disturbance—this may give it a competitive edge over other plants.
- Very difficult to eradicate once established, often requiring herbicide application.

## Description

- Deciduous shrub up to 15 feet tall with arching branches
- Showy flower spikes grow at the branch ends, either upright or often nodding, 4 to 10 inches long.
- Flowers typically light purple with orange centers (hence the common name "orange eye"), four-petaled, bell-shaped, and in dense clusters.
- Cultivars have been developed with a range of colors including red, magenta, blue, orange, yellow, white and dark purple.
- Flowers bloom continuously between mid-summer and the first frost in Washington State.
- Young stems are green, older stems have peeling, gray-brown bark.
- Leaves are long and narrow or somewhat egg-shaped and arranged oppositely on the branches.
- Leaves are usually 4 to 10 inches long and 1 to 3 inches wide.
- Edges of the leaves are toothed.
- Upper leaf surface is deep green to blue-gray, while the undersides seem whitish due to dense covering or short, fuzzy hair.
- Seed capsules split in two to release small, winged seeds.



## Habitat

- Butterfly bush is able to colonize many types of both disturbed and natural areas, including roadsides, riverbanks, gravel bars and recently logged or burned forests.
- It flourishes in well-drained soil and full sun, but can also grow in challenging conditions such as low-nutrient gravelly substrates, cracks in pavement, under bridges and along railroad tracks.

## Reproduction and Spread

- Butterfly bush spreads by producing abundant amounts of very lightweight, winged seeds that are dispersed by wind and water over many miles.
- A study at Longwood Gardens in Pennsylvania found that a single flower spike produced 40,000 seeds.
- The germination rate of several cultivars was found to be 80%, with one cultivar producing 92% viable seeds.
- Butterfly bush is quick to mature, often producing seeds during its first year of growth.
- Butterfly bush can develop roots on branches that have been buried or broken off.
- It can re-sprout from the rootstock after it has been damaged or cut down to its base, and the cut stems can grow into new plants if not disposed of properly.

## Local Distribution

- Butterfly bush can be seen in many yards and gardens throughout Jefferson County. Although it is on the State Noxious Weed List, it is not on the Plant Quarantine List and is still legally sold by nurseries.
- A large infestation has established itself on gravel bars near the mouth of the Dosewallips River.

## 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. Prevention is the most effective method (see below).
- 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 plants, set priorities and select best control method(s) for the site conditions. Small infestations can be effectively dug. Isolated plants should be carefully removed in order to stop them from infesting a larger area.
- For larger infestations, the strategy will depend on the land use of the site. Specific suggestions are given later in this 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 noxious 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 butterfly bush 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.
- There are many other showy, non-invasive, butterfly-attracting alternatives for north-west gardeners. These include California lilac, red-flowering currant, Chilean potato vine or chaste tree.

## **Prevention and Early Detection**

- Do not plant butterfly bush and encourage nurseries not to sell it.
- Prevent plants from spreading from existing populations by washing equipment, vehicles, and boots that have been in infested areas.
- Isolated small populations can be dug but the site should be monitored for several years for plants growing from the seed bank or resprouting from remaining roots.
- Cover all noxious weed loads when transporting to a landfill.

## **Manual**

- Deadheading plants in ornamental settings, before seed-set, is an acceptable control method.
- Hand pulling may be effective for small infestations, in removing seedlings and young plants up to about three feet tall. Seedlings are easiest to remove after rain, when the whole root system can be removed.
- Extraction with a weed wrench can successfully remove larger plants.
- Pulling or digging will disturb the ground and likely cause germination of seeds already in the ground. Monitoring for three to five years is essential. Planting a ground cover to compete with seedlings may help in the long term.

## **Mechanical**

- Cutting down butterfly bush will remove aboveground growth only and is a temporary treatment. The roots remain in the ground and will re-sprout. Cut stems can grow into new plants if not disposed of properly. Cutting can be appropriate to increase the accessibility to the plants, reduce standing biomass to assist in future manual or chemical control, to facilitate the cut-stump treatment method described below, or to prevent seed-set for a growing season.
- Follow up control methods will need to be incorporated following initial mechanical control.

## **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.

- Goats will eat butterfly bush but whether goat-grazing can eradicate it is unknown.

## 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 butterfly bush. Or use the cut-stump method described below.
- Woody plants such as butterfly bush 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.
- 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.

**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](mailto:noxiousweeds@co.jefferson.wa.us).**

## SUMMARY OF BEST MANAGEMENT PRACTICES

### Small Infestations in Desirable Vegetation

- Manual control is very effective on seedlings and young plants. Pull plants by hand if soil is wet; if the soil is dry or compacted dig or extract with a weed wrench (call the Weed Board—360-379-5610 ext 205 for details on the weed wrench).
- Plants which have been pulled or dug should be burned or removed from the site. If left on site on damp ground they can regrow.
- Flower heads, especially those in seed, should be clipped, bagged, and disposed of in trash or a municipal composting facility. Cover all loads during transport.
- OR apply appropriate herbicide.
- 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. Use of a weed wrench is recommended—see above.
- OR large infestations can be controlled with herbicide.
- Herbicide can be sprayed--smaller amounts of herbicide need to be used if the plants are first cut. Allow new shoots to emerge before spraying. Be aware the cut branches can grow into new plants—dispose of them by burning, chipping or stacking off the ground where they cannot take root.
- OR use the cut-stump treatment described above, to minimize damage to non-target plants.

## Riparian and Aquatic Area Control

- Manually remove small infestations if possible.
- If manual control is not feasible, apply an appropriate herbicide.
- When large areas of weeds are removed, the cleared area needs to be replanted with native 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 wherever possible.
- If manual control is not feasible, apply an appropriate herbicide.
- If bare spots are left, replant with low-growing native vegetation.

## REFERENCES

- King County Noxious Weed Control Board—Butterfly Bush Identification. <http://www.kingcounty.gov/environment/animalsAndPlants/noxious-weeds/weed-identification/butterfly-bush.aspx>
- Production and Invasion of Butterfly Bush (*Buddleja davidii*) in Oregon. A project submitted by Julie Ream to Oregon State University Honors College and Bioresource Research, May 31<sup>st</sup>, 2006. Accessed, November 21<sup>st</sup> 2012, at [http://oregonstate.edu/dept/nursery-weeds/research/buddleja\\_report.pdf](http://oregonstate.edu/dept/nursery-weeds/research/buddleja_report.pdf)
- Washington State Noxious Weed Control Board—Written Findings. Available online at [http://www.nwcb.wa.gov/siteFiles/Buddleja\\_davidii.pdf](http://www.nwcb.wa.gov/siteFiles/Buddleja_davidii.pdf)
- WSU Extension Butterfly Bush Bulletin, Joe Yenish , Alison Halpern , Timothy Miller <https://pubs.wsu.edu/ItemDetail.aspx?ProductID=13965&SeriesCode=&CategoryID=221&Keyword>

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