King County
Department of
Natural Resources and Parks
Water and Land Resources Division
Noxious Weed Control Program

BEST MANAGEMENT PRACTICES

Giant hogweed—*Heracleum mantegazzianum*
Apiaceae

Class A Noxious Weed

Legal Status in King County: Class A Noxious Weed (non-native species designated for eradication by State Law RCW 17.10 and by the King County Noxious Weed Control Board). The King County Noxious Weed Control Board requires property owners to eradicate giant hogweed on private and public lands throughout the county. Eradication is legally defined as the elimination of a noxious weed within an area of infestation. State quarantine laws prohibit transporting, buying, selling or offering giant hogweed for sale or distributing plants, plant parts or seeds. Also on the Federal Noxious Weed List as a Class A.

BACKGROUND INFORMATION

Impacts and History

- **Serious public health hazard.** Clear, watery sap in the leaves and stems contains a phototoxin that causes the skin to be hypersensitive to sunlight; burns and blisters can form. The sap contains glucosides called furanocoumarins that act as a phototoxin.
- **If sap gets on the skin, immediately wash with soap and water; keep exposed skin out of the sun and treat as you would a surface burn**.
- Symptoms of photosensitization include itchiness, redness, heat, swelling, and blistering that may last for many days, weeks, or even months.
- Watery blisters are very slow to heal and in severe cases may require medical treatment.
- Excessive pigmentation or hyper-pigmentation of the skin in the affected area may remain for a year or more, occasionally precipitating recurrent dermatitis.
- Children have been exposed when they play with the long, hollow stem as spyglasses, blowguns, swords, etc.
- Highly competitive and invasive plant due to vigorous early-season growth, tolerance of full shade and seasonal flooding, tall flower stalk height allowing for efficient spread of seeds, ability to thrive in disturbed sites, seed viability beyond seven years, and the ability to coexist with other widespread and aggressive weed species.
- By populating steep hillsides and stream banks, this species becomes an erosion hazard when it dies back in the winter, exposing the soil to Pacific Northwest winter rains. The relatively shallow roots do not hold the soil as well as a healthy complex of native trees, shrubs, forbs and grasses.
- Seeds landing on nearby water can float up to three days before becoming waterlogged and sinking, thereby allowing them to travel great distances, particularly during floods.

- Native to Caucasus Mountain region in southwest Asia, an area located between the Black and Caspian Seas. Introduced to the United Kingdom and Europe in the late nineteenth century and to the United States in the early twentieth century as a garden ornamental.
- Personal communication between J.K. Morton and C. Leo Hitchcock indicates Hitchcock knew of at least one population in the Seattle area during the early 1950's. This would be the earliest documented record of this species in Washington.

Description

- Tall, robust perennial with large flat-topped, umbrella-shaped white flower clusters on top of stout, hollow stems 2 to 4 inches in diameter with dark reddish-purple blotches.
- Reaches a height of 10 to 15 feet when in flower, and the flower head can be up to 2.5 feet in diameter across its flat top.
- Large compound leaves are deeply incised and 3 to 5 feet wide. Hairs on the underside of the leaf and along stem are stiff, dense and stubby (only about 0.25 mm long) and leaf stalks have clusters of short, coarse white hairs at the base.
- Seeds are borne in 3/8-inch, elliptic dry fruits with swollen brown resin canals; root stalks are large and tuberous.
- Resembles the native plant cow parsnip (*Heracleum lanatum*), which rarely exceeds 6 feet in height, has a flower cluster only 8 to 12 inches wide and has leaves usually only up to one foot wide. Seeds are narrower at base and wider at tip (hogweed seeds are elliptic). The hairs on the underside of this leaf are soft, wavy, shiny, and are about 1 mm long.

Habitat

- Found in ravines, parks, wooded open space areas between residential communities, roadside ditches, vacant lots, riparian areas and residential properties.
- Prefers moist soils, and will tolerate shallow seasonal inundation as well as permanently saturated wetlands.
- Grows in full shade to full sun but does best in partial shade.
- In King County, it is most commonly found in urban areas where it has escaped from garden cultivation.

Reproduction and Spread

- Plants take two, three or even four years from germination to first flower. Some plants are monocarpic and die after flowering; others are short-lived perennials and flower for several years.
- In the Pacific Northwest, plants sprout in the early spring (or late winter in mild years) from seed and perennating buds formed on the crown and tuberous root stalk.
- By mid-April, mature plants are 3 to 4 feet tall and up to 3 feet wide. Seedlings are 1 to 1.5 feet tall with leaves that are much more palmate than the mature plant.
- The mature plants start to bolt in May, sending a thick hollow stem up to a height of 10 to 15 feet; flowering starts mid May to mid June and lasts for several weeks.
- Green fruits form by late June/early July; these turn dry and brown when they ripen.

- From late August through September the plants become senescent, dying back to the roots. The dried stalk and bare flower stems will persist through the fall and winter.
- Winged seeds are dispersed by water or soil movement.

Local Distribution

Giant hogweed is found throughout Seattle and in Bellevue, Mercer Island, Auburn, Bothell, Burien, Federal Way, Des Moines, Issaquah, Kent, Kirkland, Redmond, Lake Forest Park, Newcastle, Renton, Normandy Park, SeaTac, Shoreline, Tukwila, Vashon, Woodinville and a few of the more rural areas of the county. Most infestations are on urban residential properties but there are also infestations in city parks, open space areas, commercial properties, schools and churches, vacant lots, roadsides, railroads, ravines and along streams and rivers. Water bodies with infestations include the Duwamish River, Longfellow Creek, Thornton Creek, Walker Creek and Miller Creek. Many parks are affected including Volunteer Park, Seward Park, Cheasty Greenspace, Bhy Kracke Park, Lincoln Park, West Seattle Golf Course, Thorndyke Park, Shoreview Park, Woodland Park, Martha Washington Park, Burke-Gilman Trail, Interlaken Park, Washington Park Arboretum, Frink Park, Mount Baker Park, Seola Park, Schmitz Park and Ravenna Park.

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

- **Avoid all skin contact with the plant sap because it can cause burns, blisters and scarring.**
- Protect skin from contact by wearing personal protective equipment (PPE) such as gloves, long sleeves, long pants, and eye protection.
- Survey area for weeds, set priorities and select best control method(s) for the site conditions and regulatory compliance issues **(refer to the King County Noxious Weed Regulatory Guidelines)**.
- Small infestations can be effectively hand-pulled or dug up. 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 in the Best Management section.

- Control practices in critical areas should be selected to minimize soil disturbance or efforts should be taken to mitigate or reduce impacts of disturbance. Any disturbed areas need to be stabilized to control erosion and sediment deposition. Refer to the King County Surface Design Manual for further information about sediment and erosion control practices (call 206-296-6519 or go to http://www.kingcounty.gov/wlr/Dss/Manual.htm for more information). Minimizing disturbance also avoids creating more opportunities for germination of giant hogweed and other weeds.
- Generally work first in least infested areas, moving towards more heavily infested areas.

Early Detection and Prevention

- Giant hogweed is easy to survey for because of its large size, even in the vegetative stage.
- Survey for hogweed in unmaintained urban open space areas and vacant lots, especially ravines and areas near known infestations.
- Optimal timing window for survey is mid-April through July; however, dried flower stalks at established infestations may be visible throughout the winter and into the next growing season.
- Dig up isolated plants and return the following year to check for new seedlings and plants resprouting from root fragments.
- Carefully examine plants sold as cow parsnip; giant hogweed is sometimes misidentified and sold by nurseries and at local plant sales.

Manual

- **Always wear the PPE mentioned above to avoid contact with hogweed sap.**
- Young plants can be effectively pulled, especially from moist soils. The stems of young hogweed plants are not woody and will break easily; pull them gently to ensure full root removal. The use of a trowel or other small hand tool may help to ease them out of the soil.
- When removing a large, mature plant, it is helpful to carefully cut the stem in a convenient place near the base, and pull the leaves and stem to the side. This will allow access to the central stem. Use a shovel to dig the root out, going at least 6 inches down to remove the majority of the central root core.
- It is usually not necessary to remove every bit of the root, so just focus on the central core. This can be helpful on steep slopes and ravines, where extensive soil disturbance can destabilize the slope.
- In areas where mature plants are removed that have flowered in the past, there are usually many small seedlings that remain. One can carefully search the area for seedlings and pull/dig them up, or wait a few weeks until the plants get a bit larger, which makes removal much easier. Completely 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 and continue to monitor the area for at least three years to catch any plants germinating from seeds in the soil.
- Hand pulling and the use of hand mechanical tools to control giant hogweed are allowable in all critical areas in unincorporated King County.

Mechanical

- Mowing will **not** eradicate giant hogweed effectively and serves only to stimulate budding on the perennating rootstalk. Plants are able to re-sprout and flower again in the same season when mowed.
- However, mowing may be an effective technique to use on dense carpets of seedlings after the juvenile and mature plants have been removed. In this case, it would eliminate some percentage of the tiny plants in a less labor-intensive manner than hand-pulling. The area should then be monitored for those plants strong enough to resprout, and then use an appropriate control method to remove these completely.
- Weed whackers should not be used in controlling mature hogweed plants because it can spray the phototoxic sap around, exposing the operator to potential injury. Since mowing is not effective for eradicating hogweed, the use of weed whackers on this plant should be discouraged.

Chemical

- 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**.
- Herbicides may be used in accordance with Federal and State Law in critical areas and their buffers with certain restrictions. Refer to the **King County Noxious Weed Regulatory Guidelines** for a summary of current restrictions and regulatory compliance issues.
- For control of large infestations or where access is difficult or the slopes are unstable, herbicide use may be necessary. Infested areas should not be disturbed until after the herbicide has had a chance to work and the hogweed is brown and dead.
- If conducting foliar herbicide applications, apply herbicides in the spring before stem elongation. If control is conducted later in the year after stem elongation, carefully cut plant down to the ground and then spray the regrowth. Apply herbicide on warm days when winds are low. Check label for specific information on wind and rain guidelines.
- Herbicide injection is also very effective for treating hogweed in areas with desirable vegetation.
- For at least three years following treatment, monitor areas for new plants germinating from the seed bank.

Specific Herbicide Information

Glyphosate: can effectively control giant hogweed. Treatment with glyphosate needs to be combined with effective re-vegetation of the site to prevent giant hogweed seedlings from re-infesting the area.

- Glyphosate (Roundup Pro or Aquamaster) can be injected into the stems. Inject one leaf cane per plant 12" above root crown with 5 ml of a 5% v/v solution of Roundup Pro.
- Hogweed can also be controlled by foliar applications of glyphosate for large infestations or where stem stalks are too small to inject.

Selective Broadleaf Herbicides: are most effective when giant hogweed is growing in a grassy area. Re-treatment the following year is necessary to control late-germinating plants. Continue to monitor for new plants for at least three years after the initial treatment and following any disturbance to the soil such as tilling or construction. **NOTE: Certain additional restrictions apply for products containing 2,4-D and Triclopyr BEE (e. g. Garlon 4, Crossbow). Refer to the King County Noxious Weed Regulatory Guidelines for more details.**

- Triclopyr: amine formulation (Brush-B-Gon, Garlon 3A) apply to foliage and stem when hogweed is actively growing.

The mention of a specific product brand name in this document is not, and should not be construed as an endorsement or as a recommendation for the use of that product. Chemical control options may differ for private, commercial and government agency users. **For questions about herbicide use, contact the King County Noxious Weed Control Program at 206-296-0290.**

Biological

- Cattle and pigs are cited as possible biocontrol agents. Both eat giant hogweed without apparent harm. Trampling also damages the plant. There are no biocontrol insects available for giant hogweed at this time.

SUMMARY OF BEST MANAGEMENT PRACTICES

Small Infestations in Native and/or Desirable Vegetation

- Mature plants can be removed manually if at least the first 4-6 inches of the central root is dug up.
- Replace any divots created when removing the plants to lessen the amount of disturbed soil.
- Apply appropriate herbicide with wick wiper or by spot spray to minimize off target injury.
- If using an herbicide in a grassy area, use a selective herbicide or stem injector to avoid injury to the grass.
- Monitor site throughout growing season and remove any new plants.

Large Infestations/Monocultures in Grassy Areas

- Mowing is not effective for controlling mature giant hogweed. Mowing can stimulate plant growth and will require multiple cuttings per growing season.
- Mowing can be effective in controlling seedlings, repeat visits are necessary to check for any seedlings that may have survived.
- Large infestations can be controlled with herbicides. (See the Chemical section of this BMP).

- Promote healthy grassy areas by seeding and fertilizing. Use a mix of grass and clover species to improve resistance to giant hogweed seedlings. Fertilize according to the soil needs.
- Be sure to monitor for giant hogweed in unmaintained urban open space areas and vacant lots especially ravines and areas near known infestations.

Control in Riparian Areas

- Survey area and document extent of infestation.
- Focus on manual removal for small infestations if possible.
- Cutting will not control giant hogweed but it can serve in the interim until more effective control measures can be utilized.
- For larger areas where herbicide use is warranted, apply with a wick wiper, stem injector or spot spray using low pressure and large droplet size.
- When large areas of weeds are removed, the cleared area needs to be replanted with native or non-invasive vegetation and stabilized against erosion.
- If a non-selective herbicide is used in grassy areas, the area should be re-seeded to prevent reinvasion by weeds.
- Infested areas will need to incorporate a management plan lasting for at least three years to control plants germinating from the seed bank.
- Obtain any required permits prior to conducting herbicide treatments in riparian areas. Refer to the **King County Noxious Weed Regulatory Guidelines** for a summary of current restrictions and regulatory compliance issues.

Control Along Road Rights-of-Way

- Dig up small infestations if possible.
- Spot spray with glyphosate if weeds are in areas with no desirable vegetation.
- If plants are in grassy areas, use a selective broadleaf herbicide; if controlled with a non-selective herbicide, re-seed after control is completed.
- If plants are about to flower, they can be cut down until a more effective control strategy can be used.

References

1. Oregon State University, **2006 Pacific Northwest Weed Management Handbook**.
2. Rees, N.E., P. Quimby Jr., G. Piper, E. Coombs, C. Turner, N. Spencer and L.Knutson, editors. 1996. **Biological Control of Weeds in the West**. Western Society of Weed Science.
3. Washington State Noxious Weed Control Board. Written Findings on giant hogweed- *Heracleum mantegazzianum*. http://www.nwcb.wa.gov/weed_info/Heracleum_mantegazzianum.html accessed December 13, 2006.
4. Wisconsin Department of Natural Resources. Giant Hogweed (*Heracleum mantegazzianum*) http://dnr.wi.gov/invasives/fact/hogweed.htm , accessed 4-17-06.