



King County

Department of Natural Resources and Parks
Water and Land Resources Division
Noxious Weed Control Program
206-296-0290 TTY Relay: 711

BEST MANAGEMENT PRACTICES

Policeman's Helmet—*Impatiens glandulifera*
Balsaminaceae

Class B Noxious Weed

Legal Status in King County: Class B Noxious Weed (non-native species designated for control 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 control and prevent the spread of policeman's helmet on private and public lands throughout the county. Control is defined by state law as the prevention of all seed production. State quarantine laws prohibits transporting, buying, selling or offer policeman's helmet for sale or distribute plants, plant parts or seeds.



BACKGROUND INFORMATION

Impacts and History

- Aggressive invader of wetlands and streams.
- The combination of dense stands, great height, and large leaves suppresses other plants and creates bare patches under the policeman's helmet's canopy.
- Displaces native plants and threatens habitat.
- Strong roots anchor plants and enable them to establish in swift moving water. Can contribute to flooding and erosion by changing or stopping the movement of water.
- Competes with native plants for pollinators such as bumblebees, reducing native plants' ability to set seed.
- Policeman's helmet seeds were sent from the Himalayan region of northern India and Kashmir to Europe in the mid-19th century as a garden ornamental. Naturalized populations were first recorded in 1855 in England, and continued to spread throughout the British Isles.
- In the mid 1990's Western Europe began controlling policeman's helmet after as much as 40% of England's riparian habitat had been invaded.
- It is tallest annual plant in Europe and is considered one of the "top 20" alien species in Britain based on its abundance and distribution.
- In the US it was initially introduced and sold as an ornamental which subsequently escaped.
- The King County Noxious Weed Control Program began monitoring for it in 1996.
- Listed as a Washington State Class B noxious weed in 1999.

Description

- Hollow-stemmed annual plant ranging from 3 to 8 feet in height.

- Plant stems are smooth in texture, multi-branched, reddish in color, and have large swollen nodes and glands.
- The spurred, irregular five parted flowers resemble an English policeman's helmet. Flower color can range from white to pink to red to purple and are arranged in sparse clusters from the leaf axils.
- The large simple leaves are rounded, sharply toothed, and can be opposite or whorled in groups of three.

Habitat

- Tolerant of many soil types and requires high moisture content, although not necessarily standing water.
- Can grow in full sun as well as partial shade.
- Plants can be found in lowland, riparian areas which include moist forests, stream sides, wetlands and roadside thickets

Reproduction and Spread

- Reproduces by seed but can also spread vegetatively.
- Annual plant, flowers from July until September.
- Seed production begins in late summer through fall until first frost (August-September).
- Single plant can produce from 800 to 2500 seeds.
- Seeds are large in size (3 to 5 mm) and black when mature. The seeds over winter in soil until the following spring.
- Seeds are dispersed from mature capsules, which upon the slightest touch explode ejecting seeds up to 20 feet.
- Seedlings with large seed leaves (cotyledons), emerge in thick stands in early spring beginning in March through April.
- Seeds can float and be moved along waterways and deposited on stream banks.
- Seed banks are viable in natural conditions for 18 months.
- Seeds require cold weather to break dormancy.

Local Distribution

Infestations are scattered throughout King County. The largest occur in parks and along streams in the Kelsey Creek drainage in Bellevue, and in Peasley Canyon in Auburn. Other sites include Carkeek Park, Meadowbrook Park, Thornton Creek Open Space, Four Lakes area in Issaquah and Ravenna Park in Seattle. Policeman's helmet is commonly found in ornamental gardens where it has been intentionally introduced. Cities where it has been observed in landscaped areas include City of Auburn, Bellevue, Black Diamond, Carnation, Covington, Duvall, Enumclaw, Federal Way, Issaquah, Kenmore, Kent, Maple Valley, Normandy Park, Ravensdale, Renton, Seattle, Shoreline, Skykomish, and Vashon.

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 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.
- Generally work first in least infested areas, moving towards more heavily infested areas.
- Minimize disturbance to avoid creating more opportunities for seed germination.

Early Detection and Prevention

- Single plants and isolated small populations can be hand-pulled or dug up, but the site should be monitored the following year for new seedlings from the seed bank.
- Do not purchase or plant policeman's helmet plants or seeds, it is frequently sold or shared as a garden ornamental.
- Prevent plants from spreading from existing populations by washing vehicles, boots and animals that have been in infested areas.

Manual

- Policeman's helmet is an annual plant with relatively shallow roots and can be pulled very easily during all life stages and should be utilized for most removal efforts.
- Pull or dig up plants in the spring or early summer when the soil is still moist and before the plant develops seed capsules.
- If the plants are in flower carefully place a bag around the entire flower head cluster to prevent the seeds from escaping and then remove the flower/seed head
- Dispose the bagged flower/seed head with household garbage.
- The vegetative and pre-flowering parts of the plants can be dried out and composted on site, usually within 6-7 days.

- Larger piles may take up to two weeks before they are destroyed. The piles could either be exposed to air or covered to aid in decomposition.
- When removing vegetation near streams and wetlands use barriers to prevent sediment and vegetative debris from entering the water system.

Mechanical

- Mechanical control methods using manually operated grass and brush cutting tools are very effective and will reduce the risk of disturbance and erosion compared to hand-pulling.
- Mowed or cut plants may re-sprout later in the season. Follow up may include either hand-pulling or additional mowing treatments.
- Plants should be cut as close as possible to ground level.
- If plants are in flower or have developed seed capsules remove flowering plant parts and capsules before cutting.

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.
- Herbicides should only be considered for very large policeman's helmet infestations.
- Infested areas should not be mowed until after the herbicide has had a chance to work.
- For several years following treatment, monitor areas for new plants germinating from the seed bank.

Specific Herbicide Information

Information on controlling policeman's helmet is limited however there are reports that selective and non-selective herbicides can be effective.

- **Glyphosate:** (e.g. Rodeo® or Aquamaster™) may effectively control policeman's helmet. Treatment with glyphosate needs to be combined with effective re-vegetation of the site to prevent policeman's helmet seedlings from re-infesting the area.
- **Selective Broadleaf Herbicides** such as 2, 4-D or triclopyr (e.g. DMA*4IVM, Renovate†3) would be most effective when policeman's helmet is growing in a grassy area or with other monocots. Re-treatment the following year is necessary to control late-germinating plants. Continue to monitor for new plants for several 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.

- Both non selective and selective herbicides should be applied before flower but late enough that the seedlings have grown to a stage where they can be covered by the herbicide application.

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

- No biological control agents have been identified.

SUMMARY OF BEST MANAGEMENT PRACTICES

Small Infestations in Native and/or Desirable Vegetation

- Pull plants by hand if soil is wet; plants may need to be dug up in dry compacted soil.
- Replace any divots created when removing the plants to lessen the amount of disturbed soil.
- The vegetative and pre-flowering parts of the plants can be dried out and composted on site, usually within 6-7 days.
- During on site composting stack plants on a tarp to prevent plants from rooting.
- Cut and bag all flower and seed heads and dispose as garbage.
- Monitor site throughout growing season and remove any new plants.
- Prevent plants from spreading from existing populations by washing vehicles, boots and animals that have been in infested areas.

Large Infestations in Areas with Monocots

- Large infestations can be controlled effectively by pulling the plants with the help of volunteers.
- Mowing is effective for controlling policeman's helmet. Cut the plants as close to ground level as possible. Avoid disturbing the ground.
- Mowed or cut plants may re-sprout later in the season. Follow up may include either hand-pulling or additional mowing treatments.
- Collect all cut or pulled plants and dispose the collected plants correctly.
- Larger piles can be composted on site but may take up to two weeks before they are destroyed. The piles could either be exposed to air or covered to aid in decomposition.
- Policeman's helmet needs to be piled on tarps during the composting process to prevent plants from rooting.
- If using herbicide for the suppression of large infestations of policeman's helmet with monocots present, applications should utilize a selective herbicide. This will selectively control the policeman's helmet, and encourage the growth of the monocots.

- Be sure to monitor for policeman's helmet throughout the growing season to pull any seedlings that develop.

Control in Riparian Areas

- Survey area and document extent of infestation.
- Focus on manual removal.
- Selective mowing will control policeman's helmet but may need follow-up control work by either mowing or pulling.
- If composting on site, be sure to stack pulled or cut plants on tarps to prevent re-rooting.
- When removing vegetation near streams and wetlands use barriers to prevent sediment and vegetative debris from entering the water system.
- If herbicide use is warranted in large areas, apply with a wick wiper or spot spray using low pressure and larger 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 or other desirable monocots, the area should be re-vegetated to prevent reinvasion by weeds.
- Infested areas will need to incorporate a management plan lasting for several years to control plants germinating from the seed bank.

Control Along Road Rights-of-Way

- Pull small infestations if possible.
- Mow / cut plants avoiding desirable shrubs.
- 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.
- Re-check controlled area and pull any returning plants.

References

1. *Impatiens glandulifera*: Written findings of the Washington State Noxious Weed Control Board, November 1998.
2. Beerling, D. J. and J. M. Perrins. 1993. Biological Flora of the British Isles. *Impatiens glandulifera* Royle (*Impatiens roylei* Walp). Journal of Ecology. Vol 81 (2). Pp. 367-382
3. Ennos, A. R. Crook, M. J. & Grimshaw, C. (1993) A comparative study of the anchorage systems of Himalayan balsam *Impatiens glandulifera* and mature sunflower *Helianthus annuus*. Journal of Experimental Botany, 44, 133-146.