



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

Hawkweeds - *Hieracium* spp.

Asteraceae

Class A, B and C Noxious Weeds

Description



Yellow hawkweed

Legal Status in King County: Class A, B, C Noxious Weeds (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 or eradicate and prevent the spread of hawkweed 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



Orange hawkweed

mouse-ear, orange, yellow, yellow devil hawkweed for sale or distribute plants, plant parts or seeds.

BACKGROUND INFORMATION

Impacts and History

- When the hawkweeds form monocultures by establishing a dense mat of plants, they lower biodiversity and reduce the forage value of grasslands for grazing animals.
- As a result of prolific seed and stolon production each season, hawkweeds have become successful competitors crowding out native, ornamental, pasture and crop species.
- Hawkweeds were introduced to the United States from Europe as herbal remedies and ornamentals. Mouseear hawkweed was introduced in Michigan in 1861, orange hawkweed was introduced before 1818 as an ornamental and the other hawkweeds were introduced around 1879. Reports of hawkweeds in Washington began in 1969.

Description

- Hawkweeds hybridize freely with native and non-native species, and are very difficult to identify to species.
- Perennials in the sunflower family with milky juice, yellow or orange flower heads and bristly-hairy overall.
- Rosettes of lance-shaped leaves at the base of the stem. Leaves usually persist through flowering.

- Most have stolons (runners) allowing for aggressive vegetative reproduction.
- Native species do not have stolons. Some non-native species do not have stolons either.
- **Orange hawkweed** (*H. aurantiacum*) is usually 12 inches tall, with deep red-orange, notch-tipped ray flowers. Flowers begin to open in May or June and plants produce from 12 to 30 seeds/flower and send out four to eight stolons each season. Has been reported to be allelopathic (inhibits other plants by producing toxic chemicals in the surrounding soil).
- There are several species of **yellow hawkweeds** (*H. atratum*, *H. laevigatum*, *H. caespitosum*) with yellow flowers and variable leaf types and arrangements. These are the most difficult to distinguish to species. Yellow hawkweed has clusters of flowers near the tops of the stems, stolons and no leaves on the stem. Smooth and polar hawkweeds have more branched flower clusters, toothed leaves, a few leaves along the stem and no stolons.
- **Mouseear hawkweed** (*H. pilosella*) is a low-growing hawkweed from 3 to 10 inches tall, commonly found in colonies of rosettes connected by stolons forming a circular pattern. All leaves either form a basal rosette, or grow as single leaves along the stolons. Each rosette produces only one yellow flower head on a single slender stem. Blooms in May and June.
- **Yellow devil hawkweed** (*H. floribundum*) has stems usually 12 – 24 inches tall. Flowers are yellow to whitish yellow and cluster at the top. Ray petals are square-tipped from ½ to 1 inch long and bloom from June to August.

Habitat

- Prefer full sun or partial shade and soil that is well-drained, coarse-textured and moderately low in organic matter.
- Mostly found on roadsides, in fields and pastures and in disturbed areas.
- Hawkweeds tolerate some shade and can grow in forest openings and cleared areas.
- Orange hawkweed often grows near garden areas where it escapes from intentional plantings as part of a “wildflower meadow mix”.

Reproduction and Spread

- Perennials that reproduce by seed. Many also spread out vegetatively through stolons.
- **Flowering typically starts in late May or early June.** Usually some plants go to seed starting in July but plants continue to flower and go to seed through September.
- If stems are mowed, they will send up a shorter stem and flower again soon after being cut.

Local Distribution

There are hawkweed infestations scattered throughout King County. The largest known infestation of yellow hawkweed is at the Tolt Reservoir east of Carnation. There are also hawkweed sites on I-90, U.S. Highway 2, and State Highways SR-410, SR-18, SR169, SR-202 and SR-203. There are sites east of Redmond, east of Woodinville, in Covington and Kent and in the Edgewick areas. Infestations in King County occur on roadsides, residential, fields and un-maintained properties.

Orange hawkweed is also scattered throughout the county but is more common in urban areas due to its use as an ornamental. There are a large number of sites in the Skykomish

area where it has escaped from ornamental plantings into many residential yards and roadside areas. There are also infestations in Seattle, Burien, Renton, Woodinville, Bellevue, Black Diamond, Maple Valley, Redmond area, North Bend, Enumclaw and Federal Way.

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 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. In pastures, good grazing practices and management of grass and forage species will greatly improve control of hawkweed. 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

- Difficult to spot in tall grass unless it is in flower. Survey pasture areas, unmanaged grasslands and roadsides for flowering and pre-flowering plants from **mid May to late June**.
- Isolated small populations can be dug up 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 cleaning vehicles, boots and animals that have been in infested areas. Seeds are small and are easily carried in mud.
- To prevent new infestations: monitor for hawkweed, avoid over-grazing, maintain proper turf or ornamental management (irrigation, fertilization, mowing) or increase shade by planting shrubs and trees.

Manual

- Hawkweeds with stolons will re-sprout from any fragments left in the soil so carefully remove all roots.
- Dig up plants in the spring or early summer when the soil is still moist and before the seeds mature. The roots are fibrous and relatively easy to dig up but break easily. It is important to remove as much root as possible.
- If the plants are in flower, cut off and bag all flower heads because they can form viable seeds after they are cut or dug up. If there are already seeds, bag and cut off the seed heads before digging up the rest of the plant. It is very difficult to pull the plants without dispersing the small, lightweight seeds. Brush off boots and clothes before leaving the infested area.
- Areas where mature plants are dug up may become infested with new seedlings unless they are carefully monitored and planted with grass or other competitive vegetation. Infested areas typically have many seedlings and an extensive seed bank.

Mechanical

- Mowing will not control hawkweeds because they are perennials and most reproduce by stolons as well as seed.
- Mowed plants respond by sending up shorter stems and quickly flowering again. Plants will also put more energy into spreading by stolons and the infestation size and density increases.
- A single plowing may increase hawkweed cover, but on productive agricultural sites, an intensive management program that combines cultivation and annual crops will effectively control hawkweed.

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 on roadsides and other non-pasture areas, herbicide use may be necessary. For hawkweed, it is most effective to apply selective broadleaf herbicides in the spring. Fall treatments may also be effective but research in this area is limited. Infested areas should not be mowed until after the herbicide has had a chance to work and the green vegetation is brown and has died back
- For several years following treatment, monitor areas for new plants germinating from the seed bank.

Specific Herbicide Information

Glyphosate: currently, there is no information on the effectiveness or timing of glyphosate treatment (e.g. Roundup) for hawkweed. Treatment with glyphosate needs to be followed by re-seeding with grass. Without re-seeding, bare areas will be re-infested from the seed bank and by any missed plants.

Selective Broadleaf Herbicides (such as triclopyr, 2,4-D and dicamba) Treatment with selective herbicides is most effective in the spring and early summer. Applications that are later than the ideal time will be less effective but the staggered flowering period means that herbicide applications can be partly effective throughout the flowering season. Flowering plants may go to seed immediately when sprayed.

Products containing the following active ingredients are effective:

- **2,4-D** (e.g. Weed-B-Gon, Weedmaster): 2,4-D alone does not provide good hawkweed control. 2,4-D in combination with other selective herbicides (Weed-B-Gon, Weedmaster or Crossbow) such as dicamba or triclopyr are effective. Apply to actively growing plants before buds form (usually before mid May).
- **Dicamba** (e.g. Banvel): Apply to actively growing plants before the flowers open (usually before June). Both dicamba and 2,4-D may require repeat treatments even under ideal conditions.
- **Triclopyr** (e.g. Brush-B-Gon, Garlon 3A): a surfactant is necessary. Apply to actively growing plants.
- **Clopyralid** (e.g. Transline): Apply to actively growing plants before the buds form (usually before mid-May). NOTE: This product can not be used in residential or commercial areas to control hawkweed in lawns and turf. For more information, contact this office.

Biological

- There are no biological controls currently available for hawkweeds.

SUMMARY OF BEST MANAGEMENT PRACTICES

Small Infestations in Native and/or Desirable Vegetation

- Dig up plants by hand including stolons. This is easier to accomplish when the soil is wet.
- 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.
- Monitor site throughout growing season and remove any new plants.
- If using an herbicide in a grassy area, use a selective herbicide to avoid injury to the grass.

Large Infestations in Grassy Areas

- Mowing is not effective for controlling hawkweed. See mechanical control section.
- Large infestations can be controlled with selective herbicides. (See the Chemical section of this BMP).

- Suppression of large infestations of hawkweed with a selective herbicide will greatly increase grass production, which in turn increases the suppression of the hawkweed.
- Apply the selective herbicide in early spring. The infested area should then be monitored in May and June for any flowering plants that were missed by the herbicide.
- All remaining flower heads should be bagged and removed before seeds mature in July.
- Promote healthy grassy areas by seeding and fertilizing. Use a mix of grass and clover species to improve resistance to hawkweed. Fertilize according to the soil needs.
- If grassy area is used for grazing, the area should be managed 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 because holes can be opened up to new weed infestations. Some winter grazing by smaller animals can stimulate growth of clover and improve grass health.
- Be sure to monitor for hawkweed on edges of pastures and disturbed areas around fences and watering holes. Remove isolated plants before they flower.
- If needed, apply a nitrogen fertilizer after the selective herbicide application and then manage grazing so that 4 to 6 inches of grass re-growth remains at the end of the growing season so that grasses can effectively resist re-invasion by hawkweed.
- For several years following treatment, monitor areas for new plants from the seed bank.
- If a non-selective herbicide (such as glyphosate) is used, it should be combined with an effective re-vegetation of the site. If the site is not re-vegetated, hawkweed seedlings from the existing seed bank will quickly re-infest the area.

Control in Riparian Areas

- Survey area and document extent of infestation.
- Focus on manual removal for small infestations if possible.
- Mowing will not control hawkweed see section under mechanical control.
- For larger areas where herbicide use is warranted, apply with a wick wiper 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 several years to control plants germinating from the seed bank.

Control Along Road Rights-of-Way

- Pull 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 using herbicide on plants that are about to flower, the flower heads need to be removed and bagged before applying herbicide.

References

- Abstract for *Hieracium pilosella*. Carol Piening & Mary J. Russo, The Nature Conservancy.
- Identification of Introduced *Hieracium* (hawkweed) specimens for Washington State
- Orange Hawkweed, Meadow Hawkweed, Idaho's Noxious Weeds. R.H. Callihan & T. W. Miller. [Http://www.oneplan.state.id.us/pest/nw14.htm](http://www.oneplan.state.id.us/pest/nw14.htm) and [/nw18.htm](http://www.oneplan.state.id.us/pest/nw18.htm).
- Weed Control Board, Partial Key. 1997. G.A Allen and B. Costanzo, University of Victoria.
- Written Findings. Washington State Noxious Weed Control Board.