

Flatweed

Management in Pacific Northwest Landscapes

Purpose & Introduction

This guide was created with a homeowner and landscaper audience in mind. The purpose is to provide information on the background, identification, reproduction and control techniques of flatweed in a landscape setting so people can make more informed decisions about safely controlling it and reducing pesticide use.

Flatweed (*Hypochaeris radicata*), also known as hairy cat's ear, is a low-lying perennial in the family As-

teraceae. It acts as a weed in lawns, pastures and waste areas due to its ability to spread aggressively^{1,2} and its preference for sandy, loamy or clay soils.³ Following its introduction from Eurasia, the plant became established throughout the eastern half of North America as well as in the Pacific Northwest.⁴ It is listed as a Class C noxious weed in Washington State due to the plant's ability to spread and its implications for the agricultural industry.²

Identification

Flowers & Fruit

Flatweed plants can grow up to 400 mm (16 inches) wide with yellow daisy type flowers up to 30 mm (1¼ inch) in diameter at any time of the year, with a majority of blooms in spring to early summer. The small flower heads all have radiating petal-like blades.⁵

Flatweed seeds are housed within small, dry one-seeded fruits called achenes that do not open to release the seed. The achenes are orange-brown and 4 to 7mm long, have fine, toothed ribs and long slender beaks that are 7 to 10mm long,⁶ and are topped by a stalked ring of barbed to feathery bristles for wind distribution.⁵



Photo: Stevens County Noxious Weed Control Board



Photo: Lauren Odenkirk, Ohio Perennial & Biennial Weed Guide



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Leaves & Stems

Flatweed is often mistaken for the common dandelion as it has multiple basally clustered leaves that are irregular in shape with multiple lobes and yellow composite flowers that mature to a puffball of seeds.³ The upper and lower leaf surfaces and margins are

covered with coarse hairs.⁴ The flower stems are tall, stiff, wiry, smooth, branched, and contain a milky sap.⁵ The stems of *H. radicata* often show gall swellings caused by the hymenopteran insect *Aulax hypochoeridis*.⁶



Photo: Alex Blackwood



Reproduction

Seed Viability/Germination

Flatweed produces many seeds per plant per year and each seed can become a mature plant in two months.¹ Research has found that each flatweed plant can produce an average of 970 seeds with a germination rate of 60 to 70%.⁷ This high germination rate combined with allelopathic traits benefits the success of flatweed by inhibiting the growth of other plants.⁸

Crown Sprouting

Flatweed has the ability to reproduce vegetatively through buds that form on its root crown.⁴ In south Puget Sound prairies, early researchers found that frequent fires slowed the spread of flatweed but it was later realized that these fires also slowed the spread of native prairie plants.⁹

Root Section

Flatweed has a long central taproot with several fibrous roots that spread from it that allows it to survive extended periods of drought. Resprout can be avoided by cutting the taproot several inches below the root crown and removing it.¹⁰

Flatweed Control Techniques

Manual Control

Flatweed can be controlled successfully in the spring by removing the entire taproot using manual control techniques such as digging with a hand mattock.¹¹ On larger pasture areas, flatweed can be managed by plowing and cultivating for a period of one to two years.⁴

Flame weeding is the killing of weeds with intense heat produced by a fuel-burning device with the goal of damaging the plant's cell structure.¹² It can be an effective method of killing flatweed top growth but the short bursts of heat will not kill the seeds or tuber so manual digging is also necessary for total removal.



Photo: Stemonitis, Wikimedia, CC BY-SA 3.0

Biological Control

Flatweed is often preferred by sheep, pigs, and some wildlife over more traditional pasture species.⁴ Pigs exert some control by uprooting plants and feeding on the roots.¹³ Flatweed can also be utilized as food for people if not sprayed with pesticides. The leaves and roots can be used a variety of ways: leaves can be eaten in salads or cooked in stir-fries and the roots can be roasted and ground for a coffee substitute.¹

Cultural Control

Cultural control techniques make soil growing conditions less favorable for unwanted plants. The sheet mulching or lasagna composting technique uses a biodegradable weed barrier such as cardboard and layers it with a weed-free organic material such as compost or straw to improve soil and its structure.¹⁴ This method is both a good preventative to control germination and post-establishment of flatweed.

In highly degraded sites with heavy soil and high populations of flatweed, a technique called soil solarization can be implemented. Plastic covers, black or clear, are placed over the soil surface for a number of months to trap solar radiation and heat to inhibit seed germination.¹⁵ This is often used in combination with other manual removal techniques such as plowing.

Least Toxic Chemical Alternatives

Herbicidal or horticultural vinegar is a concentrated acetic acid formulated for non-selective vegetation control.¹⁶ Herbicidal vinegar is four times stronger than household vinegar with an acetic acid concentration of 10 to 20% compared to 5%.¹⁷ This method is most effective when applied during warm sunny days.



Photo: Stevens County Noxious Weed Control Board

References

1. N.C. State Extension. North Carolina Extension Gardener Plant Toolbox: *Hypochaeris radicata* [Internet]. N.C. Cooperative Extension; undated [cited 2020 Nov 14]. Available from: <https://plants.ces.ncsu.edu/plants/hypochaeris-radicata/>
2. Washington State Noxious Weed Control Board. Common catsear: *Hypochaeris radicata* [Internet]. Olympia, WA: Washington State Noxious Weed Control Board; undated [cited 2020 Nov 14]. Available from: <https://www.nwcb.wa.gov/weeds/common-catsear>
3. Buschmann G. Weeds of South Puget Sound prairies. IN: Dunn PV, Ewing K, editors. Ecology and conservation of the South Puget Sound prairie landscape. Seattle, WA: Nature Conservancy of Washington; 1997. p. 163-180. Available from: <https://cascadiaprairieoak.org/tech/Weeds%20of%20S%20Puget%20Sound.pdf>
4. The Ohio State University. Common Catsear (*Hypochaeris radicata*) [Internet]. Wooster, OH: Ohio Perennial and Biennial Weed Guide; undated [cited 2020 Nov 15]. Available from: <https://www.oardc.ohio-state.edu/weedguide/index.php>
5. Colorado State University. Guide to poisonous plants [Internet]. Colorado State University; undated [cited 2020 Nov 15]. Available from: https://csuvth.colostate.edu/poisonous_plants/Plants/Details/127
6. Popay I. *Hypochaeris radicata* (cat's ear) [Internet]. CAB International, Invasive Species Compendium; undated [cited 2020 Nov 15]. Available from: <https://www.cabi.org/isc/datasheet/27895>
7. Salisbury EJ. The reproductive capacity of plants: studies in quantitative biology. London, England: G. Bell and Sons; 1942.
8. Newman EI, Rovira AK. Allelopathy among some British grassland species. *J Ecol*. 1975;64: 727-737.
9. Wolfe JS, Horton DE. Investigations on the clearing of weeds from bulk beds by flaming. *J Agr Eng Res*. 1959;3:324-335.
10. DiTomaso JM, Kyser GB, Oneto SR, Wilson RG, Orloff SB, Anderson LW, Wright SD, Roncoroni JA, Miller TL, Prather TS, Ransom C, Beck KG, Duncan C, Wilson KA, Mann JJ. Weed control in natural areas in the western United States. Davis, CA: University of California Weed Research and Information Center; 2013.
11. Garry Oak Ecosystems Recovery Team. *Hypochaeris radicata*: hairy cat's ear [Internet]. Invasive Species in Garry Oak and Associated Ecosystems in British Columbia; 2005 Jul [cited 2020 Nov 30]. Available from: https://goert.ca/documents/InvFS_hairycats.pdf
12. Grubinger V. Flaming stale seedbeds for weed control. University of Vermont, UVM Extension's Vermont Vegetable and Berry Program; 2004 May [cited 2020 Nov 30]. Available from: <https://www.uvm.edu/vtvegandberry/factsheets/flameweeding.html>
13. Georgia AE. A manual of weeds: with descriptions of all the most pernicious and troublesome plants in the United States and Canada, their habits of growth and distribution, with methods of control. New York, NY: The Macmillan Company; 1914. p. 593.
14. Oregon State University Extension Service. Sheet mulching-aka lasagna composting-builds soil, saves time [Internet]. OSU Extension Service; 2013 Jan [cited 2020 Dec 4]. Available from: <https://extension.oregonstate.edu/gardening/techniques/sheet-mulching-aka-lasagna-composting-builds-soil-saves-time>
15. Elmore CL, Stapleton JJ, Bell CE, DeVay JE. Soil solarization: a non-pesticidal method for controlling diseases, nematodes, and weeds. Oakland, CA: University of California Division of Agriculture and Natural Resources; 1997 Jan.
16. Smith-Fiola D, Gill S. Vinegar: an alternative to glyphosate? [Internet]. University of Maryland Extension; updated 2017 [cited 2020 Nov 29]. Available from: https://extension.umd.edu/sites/extension.umd.edu/files/_docs/programs/ipmnet/Vinegar-AnAlternativeToGlyphosate-UMD-Smith-Fiola-and-Gill.pdf
17. Bubl, C. Is vinegar really good for killing weeds? [Internet]. Oregon State University Extension Service; 2020 Jul [cited 2020 Nov 29]. Available from: <https://extension.oregonstate.edu/ask-expert/featured/vinegar-really-good-killing-weeds>