

Perennial Pepperweed *(Lepidium latifolium)*

Description: Perennial pepperweed produces stems from 3 to 6 feet tall. Mature plants produce numerous erect, sometimes branching, semi-woody stems that originate from large, interconnected creeping roots. Roots can be herbaceous or form semi-woody crowns. Herbaceous roots are often creeping and are responsible for localized spread. Foliage is waxy, smooth and hairless, dark green to blue or grayish green in color with a prominent whitish mid-vein. Leaves are alternate, basal leaves lance shaped up to 12" with long stalks. Stem leaves are smaller with short stalks. Tiny, white 4-petaled flowers bloom in terminal clusters from June to September. In the winter, large stands of dense, woody biomass are left standing, accumulating a thick layer of debris.

Impacts: Perennial pepperweed is an aggressive invasive plant that can displace native or desired vegetation. It is also one of the most difficult invasive plants to remove because most non-chemical methods have little impact on controlling this weed once it has become established. Perennial pepperweed is extremely adaptable; it tolerates salty/wet soils, salt marshes and tide-lands, pastures, roadsides, cropland, as well as riparian areas, ditches, floodplains, and wetlands.

Spread is primarily from underground roots and root fragments, which can float in water for long periods and still sprout. The extensive root system allows the plants to successfully out-compete native species for water and nutrients. But, because the roots do not hold soil well, pepperweed infestations can destabilize river and stream banks and increase soil erosion.

Infestations can also produce over 6.4 billion seeds per acre annually. Seeds are spread by water, machinery, animals, and people. Fortunately, perennial pepperweed seeds do not appear to be viable in the soil for long periods of time.

Control Options: Thurston County's Integrated Pest Management emphasizes cultural, biological, and manual control methods to keep pests and vegetation problems low enough to prevent damage. The strategy of Thurston County's IPM policy is to minimize the use of pesticides.

► Cultural / Habitat

A key element in Integrated Pest Management is preventing infestations. Perennial pepperweed is commonly sold in dry flower arrangements, but these commercial flowers are treated to prevent seed viability. Do not collect pepperweed flowers or plant material from the wild because it will likely lead to seed dispersal and new infestations. Also, wash down boots and shoes, tools, vehicles and pets after visiting parks, forests or other areas where there is perennial pepperweed.

► Manual / Mechanical

Hand pulling has been used in situations where only a few plants are present, (relatively new infestations). It is most effective in moist, loose soils where a slow and steady pulling action will remove 6 to 8 inches or more of root. This is not a long-term control solution, since new plants will sprout from remaining root fragments. Hand-pulled areas must be monitored frequently and new growth pulled as soon as it appears. All plant material removed should be bagged carefully and deposited at a landfill. This is a labor-intensive method that is recommended when herbicide use is not desired.

► Biological

There are currently no biological control methods available for controlling perennial pepperweed.



University of Wisconsin,
Brown County Extension

Chemical:

Spot spraying with **triclopyr** (examples: Lilly Miller's liquid concentrate "Blackberry and Brush Killer" and Ortho's "Brush-B-Gon Poison Ivy Killer Concentrate") is effective in controlling perennial pepperweed. Triclopyr is a selective herbicide that will not kill grass when used according to label instructions, but may damage or kill other broadleaf plants. Triclopyr products are rated as "moderate in hazard" by Thurston County's pesticide review process because broadcast applications of triclopyr at greater than 2 lbs of active ingredient per acre can result in contaminating the food supply for birds and small animals. Since this prescription recommends only spraying individual plants or small patches, the risk to birds and small animals is greatly reduced.

Thurston County has observed that most ready-to-use, pre-mixed products do not contain sufficient active ingredients to be as effective as concentrated products that are then mixed with water to create a specific finished concentration. The following instructions are for products containing 8% triclopyr (be sure the product you choose lists triclopyr as the only active ingredient) which will be mixed down to a specified dilution rate. Be sure to read your label carefully, and make adjustments to rates accordingly.

Imazapyr (example: Polaris[®]) is also effective in controlling infestations of perennial pepperweed. Imazapyr is a non-selective herbicide and may damage or kill any other plants that it contacts, including grass. It may also leave persistent bare ground in the treatment area. This can be minimized by using only as directed, spraying at the recommended strength and no more than necessary to wet the surface of the leaves and stems. Products containing the active ingredient imazapyr are considered "moderate in hazard" by Thurston County's pesticide review process for the potential for chemical mobility and persistence.

Foliar applications of either **triclopyr** or **imazapyr**:

- Using a spot application, spray each plant thoroughly on the stems and leaves, enough to be wet but not to the point of dripping. Spot application means the herbicide is applied only to the Perennial pepperweed plants, and not on the surrounding plants or soil.
- Add methylated seed oil to the tank mix to allow the herbicide to penetrate the waxy coating on the leaves and stems.
- Keep people and pets off treated areas until spray solution has dried.

Timing: Apply either triclopyr or imazapyr in late spring or early summer when plants are actively growing and in the pre-bud to early bud growth stage—the goal is to insure all plants have emerged, but are treated before they reproduce. For most effective treatments, apply before plants produce seed.

Pollinator Protection: To minimize negative impacts to bees and other pollinators, treatment prior to blooming is recommended. Removal of flowers before treatment can be an option in some situations. If treatment must occur during the blooming period, try to spray early or late in the day or on cloudy, cool days when pollinators are least active.



Product/Method	Rates	Mix
Triclopyr Lilly Miller [®] "Blackberry & Brush Killer" or Ortho [®] "Brush-B-Gon Poison Ivy Killer Concentrate"	8 oz. per gallon water for up to 500 ft ²	To determine the amount of mix needed, first measure the area to be treated, then measure the amount of plain water needed to spray the area using a backpack or tank sprayer. Allow sufficient time for the area to dry completely before treatment. Then add 8 oz. of product to enough water for each 500 sq. ft of area that needs to be treated. Add 1.28 oz. methylated seed oil (3 Tablespoons) to the tank mix to allow the herbicide to penetrate the waxy coating on the leaves and stem. Spray plants until wet but not dripping.
Imazapyr Polaris [®]	2%	Add 2.6 oz (5.2 Tablespoons) concentrated product per gallon of water. Add 1.28 oz. methylated seed oil (3 Tablespoons) to the tank mix to allow the herbicide to penetrate the waxy coating on the leaves and stems. Spray plants until wet but not dripping.

READ AND FOLLOW ALL LABEL DIRECTIONS AND RESTRICTIONS. Obey all label precautions including site specific and safety measures. Always use personal protective equipment that includes coveralls, chemical resistant gloves, shoes plus socks, and protective eyewear. Use of brand names does not connote endorsement and is for reference only; other formulations of the same herbicides may be available under other names. Information provided is current as of the date of the fact sheet. Pesticide product registration is renewed annually. Product names and formulations may vary from year to year.

REFERENCES:

The Weed Workers' Handbook, by The Watershed Project and California Invasive Plant Council, 2004, pages 96-98.

<http://www.cal-ipc.org/ip/management/wwh/pdf/18601.pdf>

Washington State Noxious Weed Control Board, Perennial Pepperweed. http://www.nwcb.wa.gov/weed_info/Lepidium_latifolium.html

University of California, Agriculture and Natural Resources, 2004. <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74121.html>

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Thurston County Noxious Weed Control
11834 Tilley Road S.
Olympia, WA 9812
Phone: 360-786-5576
T.D.D. 360-754-2933
tcweeds@co.thurston.wa.us
www.co.thurston.wa.us/tcweeds