



**Perennial Pepperweed**

*Lepidium latifolium* L.

Mustard family (Brassicaceae)

**NATIVE RANGE**

Southeastern Europe and southwestern Asia

**DESCRIPTION**

Perennial pepperweed (synonym: *Cardaria latifolia* (L.) Spach), is also known as tall whitetop, giant whiteweed, perennial peppergrass, slender perennial peppergrass, broadleaf or broadleaved pepperweed, ironweed and other names. Plants are multiple stemmed and grow in stiffly erect masses up to 5 ft. (1.5 m.) tall, sometimes taller. Leaves are lanceolate, bright green to gray green, and entire or toothed. Basal leaves are stalked, up to 1 ft. (30 cm) long and 3 in. (8 cm.) wide and have serrate margins. Stem leaves are smaller, ranging from 3-10 in (7-25 cm) in length, tapered at the base, entire to weakly serrate and are sessile to stalked. Flowering occurs from early summer to fall. Abundant small white 4-petaled flowers are borne in dense clusters near the stem tips. The fruits are small, flattened pods about 1/10th inch long, each containing 2 seeds (1 per chamber). Fruits remain on the plant, dropping irregularly throughout the winter. The base of the stem is semi-woody. The roots enlarge at the soil line, forming a woody crown. Root length is dependent on soil tilth, but can be up to 6 feet. Roots are creeping, with new plants springing from root sections as small as 2 inches. Seedlings, when present, have leaves that are ovate to oblong, 1/4-1/2 inch long, with smooth to slightly wavy edges and a petiole approximately 1/5th inch long. Subsequent leaves resemble first leaves, but are larger in size.



**ECOLOGICAL THREAT**

Perennial pepperweed is a highly invasive herbaceous perennial. It can invade a wide range of habitats including riparian areas, wetlands, marshes, and floodplains. It adapts readily to natural and disturbed wetlands. As it establishes and expands, the plants create large monospecific stands that displace native plants and animals. In addition to impacting alfalfa and pasture production, it has been reported to adversely affect food quality and nesting habitat for native birds and threaten the Carson's Wandering Skipper butterfly. Most of the reports of habitat and food quality are anecdotal.



**DISTRIBUTION IN THE UNITED STATES**

Infestations have been reported in coastal, intermountain and mountainous areas in New England, all the states west of the Rocky Mountains, except Arizona. It also occurs in Canada and Mexico.

**HABITAT IN THE UNITED STATES**

Perennial pepperweed occurs in riparian (stream) areas, coastal wetlands, marshes, roadsides, railways, ditches, hay meadows, pastures, cropland, and waste places.

**BACKGROUND**

Pepperweed probably entered the U.S. prior to 1940 in a shipment of beet seed (*Beta vulgaris*) from Europe.

**BIOLOGY & SPREAD**

Perennial pepperweed rarely produces seedlings in the field. There is no known reason for this, as laboratory tests have shown seed viabilities to be high. Seeds lack a hard seed coat and lose viability rapidly, suggesting that resurgence of a treated infestation from the seed bank would be low. The plant mainly propagates clonally from its brittle rhizome-like roots. Roots exposed by washouts and land disturbances fragment and move along riparian corridors to start new

infestations downstream. Roots fragmented by the mechanical actions of land management practices increase infestation densities and facilitate spread.

**MANAGEMENT OPTIONS**

Deep-seated rootstocks make pepperweed difficult to control. With the exception of continual flooding, no non-chemical treatments have been found to effectively control this weed as a sole control option. Excellent control can be obtained with a combination of herbicides and cultural practices which fit in various control strategies, but application of the control plan must be repeated numerous times to obtain lasting management. Slow recovery of desirable plants is often an issue when combating pepperweed. Revegetation with desirable species may be necessary to restore the landscape.

Perennial roots can also remain dormant in the soil for several years, thus intense early detection monitoring and removal are the best control measures for perennial pepperweed. Sources of infestations should also be located and eliminated to prevent future infestations.



Treating pepperweed with herbicides at a non-optimal time of year (e.g. other than at flower bud) is ineffective, as the roots, where carbohydrates are stored, are not affected by the spray and new plants will rapidly resprout.



The most effective control regimes are:

- Spring grazing with subsequent chlorsulfuron or imazapyr application at flower bud
- Spring mowing with subsequent chlorsulfuron or imazapyr application at flower bud
- Glyphosate alone at flower bud when populations are not dense
- Spring mowing followed by glyphosate at bud stage in wetland areas

**Chemical**

*Foliar application*

Only foliar application methods have been shown to be effective. A list of herbicides, sites where the compound has been approved for use, restrictions, and effectiveness is included in the table. For rates and other important information, see the herbicide label.

Herbicide	Site	Restrictions	Effectiveness
Telar® (chlorsulfuron)	Noncrop, Industrial	Selective herbicide (will not harm most grasses), do not apply near water.	Excellent control for 1-2 years
Habitat® (imazapyr) Stalker® (imazapyr)	Riparian, Wetlands Wildlands	Nonselective herbicide, do not apply near water.	Excellent control for 1-2 years. Treated areas typically remain void of any vegetation for 1-2 years after treatment.
Roundup® and others (glyphosate) Rodeo®, Aquamaster® and others (glyphosate)	Wildlands Aquatic	Nonselective herbicide. Rodeo for areas near/in aquatic sites.	Effective unless infestation is dense. If dense, mow area and apply to resprouting plants.
Weedar 64® (2,4-D)	Wildlands, Aquatic	Selective herbicide (will not harm grasses)	Somewhat effective unless infestation is dense. If dense, mow area and apply to resprouting plants.

**Manual and Mechanical**

Mechanical control options are typically not effective. Very small patches can be controlled by hand removal if the process is repeated often for several years and plants are not allowed to mature. Because root systems are brittle and can extend so deep in the soil most mechanical techniques, such as disking, can spread the weed and increase the density.

**USE PESTICIDES WISELY:** Always read the entire pesticide label carefully, follow all mixing and application instructions and wear all recommended personal protective gear and clothing. Contact your state department of agriculture for any additional pesticide use requirements, restrictions or recommendations.

**NOTICE:** mention of pesticide products on this page does not constitute endorsement of any material.

## CONTACTS

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- USDA Agricultural Research Service, Exotic and Invasive Weeds Research [http://www.ars.usda.gov/main/site\\_main.htm?modecode=53-25-43-00](http://www.ars.usda.gov/main/site_main.htm?modecode=53-25-43-00)

## OTHER LINKS

- <http://nbii-nin.ciesin.columbia.edu/ipane/icat/browse.do?specielid=8>

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