HOARY CRESS

Cardaria draba (L.) Desv.

Family: *Brassicaceae* (Mustard).

Other Scientific Names: None.

Other Common Names: Whitetop, heart-podded hoary cress, pepperweed.

Legal Status: Regional Noxious: Columbia-Shuswap, North Okanagan, Thompson-Nicola.

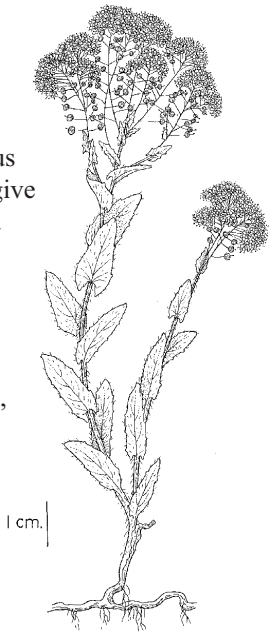
Identification

Growth form: Perennial forb.

Flower: Numerous white flowers with 4 petals give the plant a white, flat-topped appearance.

Seeds/Fruit: Seed capsules are heart-shaped and contain 2 reddish brown seeds.

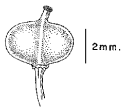
Leaves: Leaves are alternate, 4–10 cm long, blue-green in colour, and lance-shaped. Lower leaves are stalked, while the upper leaves have 2 lobes clasping the stem.



Stems: Mature hoary cress plants are up to 50 cm tall with erect stems.

Roots: Roots are rhizomatous and usually occur at a depth of 75–80 cm but have been recorded to penetrate to 9 m in the US Pacific Northwest (FEIS 1996).

Seedling: No information available.



Similar Species

Exotics: Globe-pod hoary cress (*Cardaria pubescens*) is infrequent in south-central BC (Douglas et al. 1998). Perennial pepperweed (*Lepidium latifolium*) is a regional noxious weed in the province.

Natives: Rosettes of gumweed (*Grindelia squarrosa*) are similar and found in similar habitats.

Impacts

Agricultural: Generally considered unpalatable to livestock. Often spread as a contaminant of alfalfa hay.

Ecological: Once established, hoary cress is a highly competitive weed and spreads primarily by roots. It can be highly competitive with native vegetation on rangelands.

Human: No information available.

Habitat and Ecology

General requirements: Hoary cress grows at low- to mid-elevations on the coast and in the Interior grassland and forest regions of BC, where it is found on dry roadsides, fields, and disturbed habitats (Douglas et al. 1998). It is typically found on open, unshaded, disturbed ground. Hoary cress grows well on alkaline soils that are wet in late spring and does better in areas with moderate amounts of rainfall. Outside BC, it is widespread in fields, disturbed habitats, meadows, pastures, and croplands, and along roadsides (FEIS 1996).

Distribution: Hoary cress is infrequent in southern BC (Douglas et al. 1998), but is considered a major concern in the Okanagan and Thompson agricultural reporting regions and is present in the Kootenay and Cariboo. It is widespread in the US except along the southern boundary of the western and south-central states (USDA 1971).

Historical: Introduced from Eurasia.

Life cycle: The root system of hoary cress consists of vertical and horizontal roots from which new rosettes and flowering shoots arise (Mulligan and Findlay 1974).

Plants emerge in very early spring. The first leaves appear above ground 5–6 weeks after planting (Mulligan and Findlay 1974; FEIS 1996). During this period, the first leaves emerge and form a loose rosette (Mulligan and Findlay 1974; FEIS 1996). Stems arise from the centre of each rosette in late spring (FEIS 1996). Plants flower from May to June and are pollinated by insects. Hoary cress plants set seed by midsummer (Whitson et al. 1996). If conditions are favourable, a second crop of seeds can be produced in the autumn (Sheley and Stivers 1999). When unimpeded by competition from other plants, a single plant can spread over a 3.5 m^2 area in one year (FEIS 1996).

Mode of reproduction: By seed and vegetatively from roots.

Seed production: One plant can produce 1,200–4,800 seeds.

Seed bank: 84% of seed produced are viable the first season (Mulligan and Findlay 1974; FEIS 1996). Buried seeds can remain viable for 3 years (Sheley and Stivers 1999).

Dispersal: No information available.

Hybridization: No information available.

Management

Biocontrol: None. Sheep grazing may manage hoary cress.

Mechanical: Mowing 2–3 times a year for several years may slow the spread and reduce seed production. Mowing should be conducted during the bud stage and repeated when the plants re-bud.

Fire: Fire may enhance hoary cress populations by setting back other vegetation because the plant rapidly re-sprouts from rhizomes or establishes from seeds (FEIS 1996).

Herbicides: Spring applications of metsulfuron-methyl and chlorsulfuron have been effective in the US when the plants still have green tissue (CSU 1998). It is important to use a non-ionic surfactant with the herbicide (Sheley and Stivers 1999). A combination of 2,4-D and dicamba can also be effective when applied during the early pre-bud stage (CSU 1998). Glyphosate, applied during the flower stage, will provide good control of hoary cress. Picloram does not control hoary cress. Multiple herbicide applications are usually needed to provide lasting control. Consult the most recent edition of BC Ministry of Agriculture, Food and Fisheries Crop Production Guides for specific recommendations. **Before applying herbicides, read the label for full use and precautionary instructions.**

Cultural/Preventive: Cultivation alone will manage hoary cress when tillage begins at flower bud stage and is repeated every 10 days throughout the growing season (FEIS 1996). Also, nitrogen fertilization can increase the growth of grasses and slow the rate of hoary cress invasion (Sheley and Stivers 1999).

Integrated Management Summary

Hoary cress is usually managed with herbicides and less commonly by mowing. Management is difficult because of the plant's deep rhizomatous root system, abundant seed production, and the diversity of habitats in which it can survive (FEIS 1996). Mowing may increase the effectiveness of subsequent herbicide application (Sheley and Stivers 1999) and may be even more effective if sites are seeded to perennial grasses.

References

Douglas, G. W., D. Meidinger, and J. Pojar, eds. 1998. *Illustrated Flora of British Columbia*. Vol. 2: *Dicotyledons (Balsaminaceae through Cuscutaceae)*. Province of British Columbia.

CSU Cooperative Extension. 1998. Whitetop. Colorado State University Cooperative Extension TriRiver Area. http://www.colostate.edu/Depts/CoopExt/TRA/whtop.html [11 Nov 98].

FEIS—Fire Effects Information System. 1996. Prescribed Fire and Fire Effects Research Work Unit, Rocky Mountain Research Station (producer), US Forest Service. http://www.fs.fed.us/database/feis/ [12 Mar 98].

Mulligan, G. A., and J. N. Findlay. 1974. The biology of Canadian weeds. 3. *Cardaria draba*, *C. chalapensis*, and *C. pubescens*. *Canadian Journal of Plant Science* 54: 149–160.

Sheley, R. L., and J. Stivers. 1999. Whitetop. In R. L. Sheley and J. K. Petroff, eds. *Biology and Management of Noxious Rangeland Weeds.* Corvallis: Oregon State University Press.

US Department of Agriculture, Agricultural Research Service. 1971. *Common Weeds of the United States*. New York: Dover Publications.

Whitson, T. D. (ed.), L. C. Burrill, S. A. Dewey, D. W. Cudney, B. E. Nelson, R. D. Lee, R. Parker. 1996. Hoary cress. *Weeds of the West*. Western Society of Weed Science, in cooperation with the Western United States Land Grant Universities Cooperative Extension Services, Newark, CA.