



COLORADO STATE PARKS
BEST MANAGEMENT PRACTICES
WEED PROFILE



Date Created: April 25, 2003

Revised: April 1, 2005

Author: Various

Parks Affected: Many

Whitetop/Hoary cress

Cardaria draba (L.) Desv.



Family: *Brassicaceae* (Mustard)

Other Names: heart-podded hoary cress, pepperweed, whitetop

USDA Code: CADR

Legal Status: Colorado Noxious List B (top ten worst)

Identification

Growth form: Perennial forb.

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

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

Leaves: Leaves are alternate, 1.6-4 inches long, blue green in color, and lance-shaped. Lower leaves are stalked, while the upper leaves have two lobes clasping the stem.

Stems: Mature hoary cress plants are up to two feet tall with erect stems.

Roots: Roots are rhizomatous and usually occur at depth of 29-32 inches, but have been recorded to penetrate to a depth of 30 feet in the Pacific Northwest (FEIS 1996).

Seedling: No information available.

Similar Species

Exotics: Two other closely related species, *Cardaria pubescens* and *Cardaria chalapensis* are designated as noxious weeds in some states (Sheley and Stivers 1999).

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

Impacts

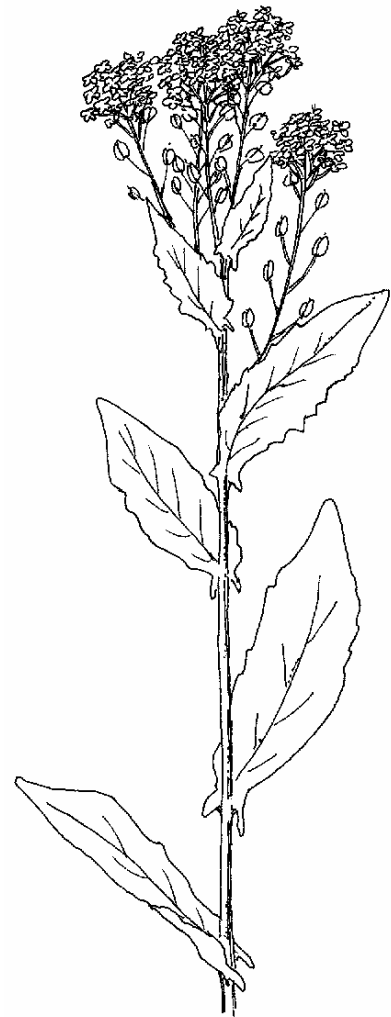
Agricultural: Hoary cress is generally considered unpalatable to livestock.

Ecological: Hoary cress is invading rangelands throughout North America. It is a highly competitive weed once it becomes established. Hoary cress spreads primarily by extremely persistent roots and will eventually eliminate desirable vegetation and become a monoculture.

Human: No information available.

Keys to Identification:

- Whitetop can be easily identified by the clusters of numerous, four-petaled, white flowers that give it a flat-topped appearance.



Habitat and Distribution

General requirements: Hoary cress is typically found on generally open, unshaded, disturbed ground. Hoary cress grows well on alkaline soils that are wet in late spring and generally does better in areas with moderate amounts of rainfall. It is widespread in fields, waste places, meadows, pastures, croplands, and along roadsides (FEIS 1996). Hoary cress is commonly found in saltcedar (*Tamarix* spp.), antelope bitterbrush / rough fescue (*Purshia tridentata* / *Festuca scabrella*), antelope bitterbrush / bluebunch wheatgrass (*Pseudoroegneria spicata*), big sagebrush (*Artemisia tridentata* spp.), and Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) communities (FEIS 1996).

Distribution: It is widespread in the United States except along the southern boundary of the western and south-central states (USDA 1971). In Colorado, hoary cress is commonly found at elevations of 3,500 to 8,500 feet.

Historical: Hoary cress is a weed of Eurasian origin.

Biology/Ecology

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 aboveground 5 to 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 center of each rosette in late April (FEIS 1996). Plants flower from May to June, are self-incompatible, and are pollinated by insects. Hoary cress plants set seed by mid-summer (Whitson et al. 1996). If conditions are favorable, a second crop of seeds can be produced in the fall (Sheley and Stivers 1999).

Mode of reproduction: Reproduces both by seeds and vegetatively. Hoary cress spreads vigorously by creeping roots (FEIS 1996). Within three weeks of germination, a seedling root can begin producing buds (FEIS 1996). One plant can eventually result in a large colony and push out other vegetation to form a hoary cress monoculture.

Seed production: One plant can produce from 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 three years in the soil (Sheley and Stivers 1999).

Dispersal: No information available.

Hybridization: No information available.

Control

Biocontrol: Currently, there is little information about biological controls that attack hoary cress. Sheep grazing may control whitetop, but evidence is limited. Managing the grazing is important so desirable plant species are not damaged.

Mechanical: Mowing 2-3 times a year for several years may slow the spread and reduce seed production of hoary cress. Mowing may increase the effectiveness of subsequent herbicide application (Sheley and Stivers 1999). Mowing should be conducted during the bud stage and repeated when the plants re-bud. The effectiveness of a mowing program can be increased by planting perennial grasses as competitors.

Fire: Rapid growth rate may favor hoary cress after fires which temporarily eliminate native vegetation. Plants may resprout from rhizomes or establish from seeds (FEIS 1996).

Herbicides: Hoary cress is most commonly controlled with herbicides. However, multiple applications are usually needed to provide lasting control. The best time to apply herbicides is in May or June before flowering. The non-crop herbicides metsulfuron and chlorsulfuron are the most effective herbicides as long as the plants still have green tissue (CSU 1998a). It is important to use a non-ionic surfactant with the herbicide (Sheley and Stivers 1999). 2,4-D + dicamba is very effective when applied during the early pre-bud stage (late May through early June) (CSU 1998a). Glyphosate at 1.5 lb. ai/acre applied during the flower stage will provide

Keys to Control:

- Exhaust the root system and eliminate seed production by mowing or treating with herbicides.
- Maintain a healthy cover of perennial plants to discourage the establishment and spread of hoary cress.

good control of hoary cress. Picloram does not control whitetop. Also, spraying followed by spring mowing can control hoary cress by up to 90% (FEIS 1996).

Cultural/Preventive: Cultivation alone will control hoary cress when tillage begins at flowerbud stage and is repeated every ten days throughout the growing season (FEIS 1996). Reseeding of depleted areas with competitive grasses would probably be an effective complement to sheep grazing. Also, nitrogen fertilization can increase the growth of grasses and slow the rate of whitetop invasion (Sheley and Stivers 1999).

Integrated Management Summary

Hoary cress is an aggressive weed since it reproduces both from seed and vegetatively. It can crowd out desirable species and form a hoary cress monoculture. In the absence of a competitor, a single plant can spread over an area 12 feet in diameter in a single year (FEIS 1996). Hoary cress is commonly controlled with herbicides and less commonly controlled by mowing. Control of hoary cress is difficult because of the perennial root system, abundant seed production, and diverse habitats of the plant (FEIS 1996).

References

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