

SPOTTED KNAPWEED

Centaurea biebersteinii



Description: Spotted knapweed is a short-lived perennial herb. First year plants form low-growing rosettes. It has flowering, leafing stems that are 1-2 feet tall with wiry, hoary branches. Leaves are grayish, hairy, and deeply cut with narrow lobes. Flowers are thistle-like and pink to purple with bases covered by black-tipped bracts.



Native range: Central Europe, east to central Russia, Caucasia, and western Siberia (<http://www.nps.gov/plants/alien/fact/cebi1.htm>)



Ecological threat: This plant threatens savannas, grasslands, sand dunes and prairies. It infests a variety of natural and semi-natural habitats and outcompetes native species, reduces native plant and animal biodiversity, and decreases forage production for livestock and wildlife. It may degrade soil and water resources by increasing erosion, surface runoff, and stream sedimentation.

Current North American Range: Spotted knapweed is currently observed in central to southern portions of Missouri, Illinois, Indiana, and Ohio.

Current Midwest general distribution, including southern Ontario Not Known Isolated Locally Abundant Widespread

Early Detection and Rapid Response Can Help Stop the Spread!

SPOTTED KNAPWEED, *Centaurea biebersteinii*

MANAGEMENT OPTIONS: (<http://www.nps.gov/plants/alien/fact/cebi1.htm>)

The most cost effective management strategy for spotted knapweed is to prevent its spread to non-infested areas. Spread by seed can be minimized by avoiding travel through infested areas; by cleaning footwear, clothing, backpacks, and other items after hiking through infested areas; by not grazing livestock when ripe seeds are present in the flower heads; and by using weed free hay.

Manual and Mechanical

Small infestations of spotted knapweed can be controlled by persistent hand-pulling done prior to seed set. Gloves should be worn because of the possibility of skin irritation. Because spotted knapweed can regrow from the base, care must be taken to remove the entire crown and taproot.

Biological control

A variety of natural enemies are used as biological control agents for large infestations of spotted knapweed. Most biocontrol techniques use insect larvae to damage the root, stem, leaf, or flower. Two species of seed head flies, *Urophora affinis* and *U. quadrifasciata*, are well-established on spotted knapweed. The larvae of these species reduce seed production by as much as 50% by feeding on spotted knapweed seed heads and causing the plant to form galls. Three moth species (*Agapeta zoe-gana*, *Pelochrista medullana*, and *Pterolonche dispersa*) and a weevil (*Cyphocleonus achates*) that feed on spotted knapweed roots have also been released.

The collective stress on the plant caused by these insects reduces seed production and may lead to reduced competitiveness. Biological control agents may be more effective when combined with other control methods such as herbicides, grazing, and revegetation with desirable, competitive plants.

Chemical

Control of spotted knapweed infestations using three chemical herbicides (2,4-D, clopyralid, and picloram) has been reported but is problematic. Existing plants can be killed with 2,4-D but it needs to be reapplied yearly to control new plants germinating from seed stored in the soil. Picloram is a more persistent herbicide and has controlled knapweed for three to five years when applied at 0.25 lb/acre at any stage of plant growth; or with clopyralid (0.24 lb/acre) or clopyralid (0.2 lb/acre) plus 2,4-D (1 lb./acre) applied during bolt or bud growth stage. In the absence of desirable native grasses, longevity of control may be increased by revegetating with competitive grasses and forbs. Picloram may pose a risk of groundwater contamination where soils are permeable, particularly where the water table is shallow.

Other methods

Long-term grazing by sheep and goats has been found to control spotted knapweed. Burning, cultivation, and fertilization typically are not effective on spotted knapweed unless combined with other methods of control.

For more information on control and management of this species, please visit the following Web sites: www.usda.plants.gov, www.nps.gov/plants/alien/factmain.htm, tncweeds.ucdavis.edu/control.html, dnr.wi.gov/invasives/plants.htm, www.invasivespeciesinfo.gov/plants/main.shtml, <http://www.nps.gov/plants/alien/fact/pope1.htm>

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