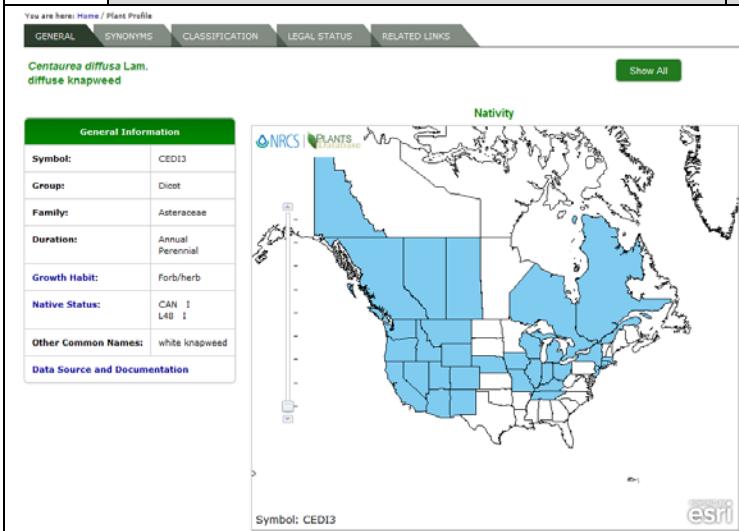


MN NWAC Risk Assessment Worksheet (04-2011)	Common Name	Latin Name
	Diffuse Knapweed	<i>Centaurea diffusa</i> Lam.
Reviewer	Affiliation/Organization	Date (mm/dd/yyyy)
Monika Chandler	MN Dept. of Agriculture	08/24/14



Diffuse knapweed is commonly a biennial but it can complete its lifecycle as an annual or be a short-lived perennial. It reproduces quickly by seed. Once established diffuse knapweed can form a monoculture and overtake large areas. Resulting infestations can reduce forage and wildlife habitat.

Box	Question	Answer	Outcome
1	Is the plant species or genotype non-native?	Diffuse knapweed is native to the eastern Mediterranean.	Go to Box 3
3	Is the plant species, or a related species, documented as being a problem elsewhere?	Yes. It is regulated in AZ, CA, CO, ID, MT, NE, NV, NM, ND, OR, SD, UT, WA and WY (USDA, NRCS. 2014).	Go to Box 6
6	Does the plant species have the capacity to establish and survive in Minnesota?	Yes	Go to Box 7
	A. Is the plant, or a close relative, currently established in Minnesota?	Yes, there is a single known infestation at the Port of Duluth. It was found and reported by a University of Minnesota Duluth botanist in 2013. The infestation was treated in 2014. An attempt will be made to prevent this infestation from further establishing and spreading.	Go to Box 7



Box	Question	Answer	Outcome
7	Does the plant species have the potential to reproduce and spread in Minnesota?	Yes	
	A. Does the plant reproduce by asexual/vegetative means?	No, reproduction is by seed (Wilson and Randall 2003)	Go to Question C
	C. Does the plant produce large amounts of viable, cold-hardy seeds?	Yes. Diffuse knapweed is self-compatible. A single plant can produce over 700 seeds and seed density has been recorded as high as 40,000 seeds/m ² (Jacobs and Sing 2008).	Go to Question F
	F. Are sexual propagules – viable seeds – effectively dispersed to new areas?	Yes. Unlike many other knapweeds, the seedheads containing developed seed remain closed until the heads are fully dry. For short range dispersal, the dry seedheads break open and seed falls to the ground. For long range dispersal, plants break off at the ground level and tumble in the wind dispersing seed along their path. Seed can also be moved with water, wildlife or equipment. (Jacobs and Sing 2008)	Go to Question I
	I. Do natural controls exist, species native to Minnesota, that are documented to effectively prevent the spread of the plant in question?	No	Go to Box 8
8	Does the plant species pose significant human or livestock concerns or has the potential to significantly harm agricultural production, native ecosystems, or managed landscapes?	Yes	Go to Box 9
	A. Does the plant have toxic qualities, or other detrimental qualities, that pose a significant risk to livestock, wildlife, or people?	Forage for cattle and wildlife is reduced both by the loss of existing forage and by the low palatability of diffuse knapweed to many herbivores.	Go to Box 9
	B. Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs?	<i>Yes. A study in Washington estimated revenue losses totaling \$1 million for grazing and \$2.9 million for hay in 1988. In addition to loss of forage, diffuse knapweed infestations increase the cost of roadside maintenance (Jacobs and Sing 2008).</i>	<i>Additional information to the decision tree</i>
	C. Can the plant aggressively displace native species through competition (including allelopathic effects)?	<i>Yes. Native species diversity decreased and bare ground increased as diffuse knapweed cover increased in a Colorado study (Jacobs and Sing 2008).</i>	<i>Additional information to the decision tree</i>

Box	Question	Answer	Outcome
	D. Can the plant hybridize with native species resulting in a modified gene pool and potentially negative impacts on native populations?	<i>Knapweeds and starthistles can hybridize (Wilson and Randall 2003). American starthistle (<i>C. americana</i>) is native to many states of the central US including WI and IA. Rothrock's knapweed (<i>C. rothrockii</i>) is native to AZ and NM. Alpine knapweed (<i>C. transalpina</i>) is documented in 8 states including MN. USDA, NRCS. 2013</i>	<i>Additional information to the decision tree</i>
	E. Does the plant have the potential to change native ecosystems?	<i>Diffuse knapweed infestations can increase soil erosion (Jacobs et al. 2008). This can have long-term consequences involving both topsoil loss and water quality degradation resulting from increased sediment runoff.</i>	<i>Additional information to the decision tree</i>
9	Does the plant species have clearly defined benefits that outweigh associated negative impacts?	No.	Go to Box 10
	A. Is the plant currently being used or produced and/or sold in Minnesota or native to Minnesota?	No.	Go to Box 10
10	Should the plant species be enforced as a noxious weed to prevent introduction &/or dispersal; designate as prohibited or restricted?		
	A. Is the plant currently established in Minnesota?	Yes.	Go to Question B
	B. Does the plant pose a serious human health threat?	No, diffuse knapweed is not a serious threat to human health, but gloves should be worn when handling it to prevent a rash (Jacobs and Sing 2008).	Go to Question C

Box	Question	Answer	Outcome
	C. Can the plant be reliably eradicated (entire plant) or controlled (top growth only to prevent pollen dispersal and seed production as appropriate) on a statewide basis using existing practices and available resources?	<p>A variety of tools are used to effectively manage diffuse knapweed. These include hand-pulling, herbicides, biological control using insects, goat and sheep grazing and prescribed fire.</p> <p>Very small infestations can be hand-pulled.</p> <p>Herbicides can be used to effectively manage diffuse knapweed infestations. Recommended herbicides include one of the following active ingredients: Aminopyralid, clopyralid or 2,4-D.</p> <p>Biological control is an effective tool for managing large infestations. Fourteen insect species are approved for release in North America on diffuse knapweed but declines in diffuse knapweed populations are largely attributed to a seedhead weevil, <i>Larinus minutus</i> (Jacobs and Sing 2008). <i>Larinus minutus</i> is widely distributed in Minnesota for spotted knapweed biological control.</p> <p>Goats and sheep can graze on diffuse knapweed (Jacobs and Sing 2008).</p>	List as prohibited eradicate or prohibited control

Final Results of Risk Assessment

Review Entity	Comments	Outcome
NWAC Listing Subcommittee		List as Prohibited Eradicate
NWAC Full-group		List as Prohibited Eradicate
MDA Commissioner	Approved NWAC Recommendation	List as Prohibited Eradicate
File #: MDARA00040DIFK_8_24_2014		

References

Jacobs, Jim and S. Sing. 2008. Ecology and Management of Diffuse Knapweed (*Centaurea diffusa* Lam.). USDA-NRCS Invasive Species Technical Note N. MT-20.

Wilson, L.M., and C.B. Randall. 2003. Biology and Biological Control of Knapweed. USDA-Forest Service FHTET-2001-07. 2nd Edition.

DRAFT

Image of the one known diffuse knapweed infestation at the Port of Duluth in Minnesota

