

MN NWAC Risk Assessment Worksheet (04-2011)	Common Name	Latin Name
	Squarrose Knapweed	<i>Centaurea virgata</i> Lam. subsp. <i>squarrosa</i> (Willd.) Gugler
Reviewer	Affiliation/Organization	Date (mm/dd/yyyy)
Monika Chandler	Minn Dept of Ag	08/03/15

Box	Question	Answer	Outcome
1	Is the plant species or genotype non-native?	Yes. Squarrose knapweed is native to the eastern Mediterranean and is a long-lived perennial (Wilson and Randall 2003).	Go to Box 3
3	Is the plant species, or a related species, documented as being a problem elsewhere?	It is a prohibited noxious weed in Arizona, a Class A noxious weed California, Colorado, Nevada, Oregon (USDA, NRCS 2015) and R68-9-2 Utah Designation and Publication of State Noxious Weeds, 2015). It is a noxious weed on Idaho's statewide early detection and rapid response list (www.agri.state.id.us/Categories/PlantsInsects/NoxiousWeeds/watchlist.php). Cal-IPC category is moderate (DiTomaso et al 2007). It is an eradication target in Wyoming (Wyoming Weed Watchlist). All known infestations in Montana were eradicated (Duncan et al, 2001).	Go to Box 6
6	Does the plant species have the capacity to establish and survive in Minnesota?		
	A. Is the plant, or a close relative, currently established in Minnesota?	No, although some <i>Centaurea</i> species are established in Minnesota.	Go to Question B
	B. Has the plant become established in areas having a climate and growing conditions similar to those found in Minnesota?	USDA Plants has a report in Kent County, Michigan from 1985 Michigan flora (USDA, NRCS 2015). This is in central Michigan. It is not documented in areas as cold as Minnesota and it is unknown if this species could establish in Minnesota.	If this species is not cold hardy for MN, it is not a risk Do not list at this time
7	Does the plant species have the potential to reproduce and spread in Minnesota?	Not sure	

Box	Question	Answer	Outcome
	A. Does the plant reproduce by asexual/vegetative means?	No.	Go to Question C
	C. Does the plant produce large amounts of viable, cold-hardy seeds?	Seed production is prolific but cold-hardiness has not been determined.	Go to Question F if seed is hardy
	F. Are sexual propagules – viable seeds – effectively dispersed to new areas?	Yes, seed can be spread on animal coats and by vehicles, mining, railroad and military and recreation activities in addition to movement by wind, water and with crop seed, hay and gravel (Roche et al 1992).	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?		
	A. Does the plant have toxic qualities, or other detrimental qualities, that pose a significant risk to livestock, wildlife, or people?	No	Go to Question B
	B. Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs?	Yes, if the species is cold hardy and Minnesota habitats are suitable. Loss of rangeland forage has been associated with squarrose knapweed Jensen et al, 2008; Whittaker and Jensen 2008 and DiTomaso et al 2007).	Go to Question C
	C. Can the plant aggressively displace native species through competition (including allelopathic effects)?	Yes, loss of species diversity has been associated with squarrose knapweed Jensen et al, 2008; Whittaker and Jensen 2008 and DiTomaso et al 2007).	Go to Question D
	D. Can the plant hybridize with native species resulting in a modified gene pool and potentially negative impacts on native populations?	Unknown	If yes, go to Box 9 If no, go to Question E
	E. Does the plant have the potential to change native ecosystems (adds a vegetative layer, affects ground or surface water levels, etc.)?	Unknown	If yes, go to Box 9 If no, go to Question F

Box	Question	Answer	Outcome
	F. Does the plant have the potential to introduce or harbor another pest or serve as an alternate host?	No	The species is not currently believed to be a risk
9	Does the plant species have clearly defined benefits that outweigh associated negative impacts?	No, although compounds from many Centaurea, including <i>C. virgata</i> are studied for potential medicinal uses.	
	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?	Based upon available information, we cannot reliably predict whether this species will be problematic in Minnesota. This species should not be listed at this time.	
	A. Is the plant currently established in Minnesota?	No	
	B. Does the plant pose a serious human health threat?	No	
	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?	Yes	
Final Results of Risk Assessment			
	Review Entity	Comments	Outcome
	NWAC Listing Subcommittee	It is unknown whether squarrose knapweed could establish in Minnesota. If this species establishes in a state or province with similar climate, this risk assessment should be revisited.	8/4/2015 - Do not list
	NWAC Full-group	Voted 11 in favor and 0 opposed.	NO REGULATORY ACTION. DO NOT LIST.
	MDA Commissioner		
	FILE # SquarroseKnapweed_2015_MDARA00052SQKNP		

References:

- DiTomaso, J.M., S.F. Enloe and M.J. Pitcairn. 2007. Exotic plant management in California annual grasslands. Pages 281-296 in M.F. Duncan, C., J. Story and R. Sheley. 2001. Montana knapweeds: identification, biology and management. Cooperative Extension Circ. 311. Bozeman, MT: Montana State University.
- Jensen, S., S. Monsen and P. Fosse. 2008. Spatial and temporal seed dispersal of squarrose knapweed (*Centaurea virgata* Lam. ssp. *squarrosa* (Willd.) Gugler) in west central Utah, a case study. In: Kitchen, Stanley G.; Pendleton, Rosemary L.; Monaco, Thomas A.; Vernon, Jason, comps. 2008. Proceedings-Shrublands under fire: disturbance and recovery in a changing world; 2006 June 6-8; Cedar City, UT. Proc. RMRS-P-52. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. p. 69-72.
- Roche C. T.; Roche, B.F.; Rasmussen, G.A. 1992. Dispersal of squarrose knapweed (*Centaurea virgata* ssp. *squarrosa*) capitula by sheep on rangeland in Juab County, Utah. Great Basin Naturalist. 52(2): 185-188.
- Stromber, J.D. Corbin and C.M. D'Antonio, editors. Ecology and management of California grasslands. University of California Press, Berkeley.
- USDA, NRCS. 2015. The PLANTS Database (<http://plants.usda.gov>, 3 August 2015). National Plant Data Team, Greensboro, NC 27401-4901 USA.
- Whittaker, A. and S. Jensen. 2008. Effects of Fire and Restoration Seeding on Establishment of Squarrose Knapweed (*Centaurea virgata* var. *squarrosa*). In: Kitchen, Stanley G.; Pendleton, Rosemary L.; Monaco, Thomas A.; Vernon, Jason, comps. 2008. Proceedings-Shrublands under fire: disturbance and recovery in a changing world; 2006 June 6-8; Cedar City, UT. Proc. RMRS-P-52. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. p. 69-72.
- Wilson, L.M., and C.B. Randall. 2003. Biology and Biological Control of Knapweed. USDA-Forest Service FHTET-2001-07. 2nd Edition. Wyoming Weed Watchlist, B-1227, University of Wyoming Extension. 2013.