	Spotted	Diffuse	Meadow	Brown
Flower			 Photo Credit: T. Jacobson, MnDOT	
Bracts	Brown to black triangular spot on tip	Long spine on tip	Rounded at tip with fine fringe	Rounded and wide at tip often appearing raggedly torn
Leaf				
Rosette				 Photo Credit: B. Ackley, The Ohio State University, Bugwood.org
Plant				 Photo Credit: Wikimedia Commons
Habitat	Sunny areas with well-drained soils	Sunny areas with well-drained soils	Sunny areas with moist soils	Sunny areas with moist soils

Knapweed flower heads appear as single flowers but they are actually tight clusters of individual flowers called florets. The clusters are attached at the base and surrounded by bracts to form the flower head. Characteristics of the bracts are very important for identification.

A guide to identifying knapweeds called Identification of Knapweeds and Starthistles in the Pacific Northwest is available at http://content.libraries.wsu.edu/cdm/ref/collection/cahnrs-arch/id/374.

Minnesota Department of Agriculture

University of Minnesota Extension

Minnesota Department of Natural Resources

UW Extension University of Wisconsin-Extension

Iowa Weed Commissioners Association

Play Clean Go — Stop invasive species in your tracks. PlayCleanGo.org

MIPN.org Midwest Invasive Plant Network

Meadow knapweed flower

Meet the Knapweeds

File Name: Knapweed Brochure 2014.indd

Knapweeds are invasive plants that can overtake grasslands thereby reducing pasture productivity, hay quality and outcompeting native prairie plants. Infestations increase soil erosion and water runoff as well as reduce wildlife habitat quality in natural areas. These knapweeds are native to Eurasia.

Four invasive knapweed species are confirmed in the upper Midwest. Spotted knapweed (*Centaurea stoebe* ssp. *microanthos*) is abundant in many areas and spreading into uninfested regions. Diffuse (*C. diffusa*), meadow (*Centaurea* x *moncktonii*) and brown (*C. jacea*) knapweeds are confirmed in isolated pockets in the Midwest. Knapweeds can hybridize making identification difficult and increasing the risk that a superweed could result.

Management of spotted knapweed is recommended to contain populations and prevent spread to uninfested areas. Other knapweed species populations that are found should be prioritized for eradication as populations are typically small. Please report infestations, particularly of knapweed species that are not recognizable as spotted knapweed, to the Early Detection and Distribution Mapping System (EDDMapS at www.eddmaps.org).

Knapweeds are biennials or perennials. Seedlings emerge throughout the growing season to form rosettes. Rosettes send up a flowering stalk in the summer. Seed produced from the flowers is the primary means of reproduction and can be easily spread with infested hay, on equipment and animals, and by wind and water movement

Control

IDEAL TIMING FOR TREATMENT OPTIONS		
Spring	**Summer**	**Fall**
Hand-pull rosettes during the growing season and flowering plants in summer		
	Biological Control	
Foliar Spray		Foliar Spray

Please note that mowing is not an effective management option as plants are rarely killed by this method. While mowing can reduce seed production, often knapweeds will re-sprout after mowing and flower then produce viable seed. Mowing after seed is produced is a common method of spreading these invasive plants.

Meadow knapweed Spotted knapweed

For site specific recommendations, please contact your local Extension. **For herbicide treatments, review and follow product labels and avoid contact with non-target plants as these products may cause severe injury to plants.** Seedling emergence may continue for years so additional treatments may be required.

Hand-pulling wearing protective clothing including gloves is an option for small infestations but will not control large populations. The taproot must be removed.

Grazing with sheep and goats can suppress populations if done multiple times throughout the growing season. For best results, initiate grazing when rosettes are present and repeat when plants have re-grown. Palatability of spotted knapweed when it is flowering is low. In these cases, increasing the stocking rate of animals can improve utilization and suppression.

Biological control is an option for large, stable infestations of spotted knapweed. Two types of weevils are utilized to effectively reduce knapweed infestations over many years. Seedhead weevils reduce the amount of knapweed seed produced and root weevils develop in and damage spotted knapweed roots. For more information in Minnesota, contact your County Agricultural Inspector (www.mda.state.mn.us/en/plants/pestmanagement/weedcontrol/cailist.aspx) or go to www.mda.state.mn.us/en/plants/badplants/knapweed.aspx. In other states, contact your local department of agriculture for information on permits for the release of biological control agents. Eradication, rather than biological control. is the management objective for infestations of other knapweed species.

Spotted knapweed infestation

Foliar spray spring and fall rosettes. Choose ONE of the following common herbicides used for spotted knapweed control:

Active Ingredient	Broadcast Spray Rate Per Acre	Spot Spray Rate Per Gallon	Efficacy One Year Post Treatment
Aminopyralid	5-7 fl oz	See label	Good to Excellent
Clopyralid	10-16 fl oz	0.2-0.4%	Good
2,4-D	2-4 pt	1-2%	Moderate
Glyphosate	Not Recommended	1-2%	Moderate

Recommended herbicide application rates are subject to change so please refer to the label. Also refer to the label for recommended adjuvants. Reference to commercial products or trade names does not imply endorsement.

Herbicide treatment options are based upon the Midwest Invasive Plant Network Control Database http://mipncontroldatabase.wisc.edu/