

# Part IV. Plant Assessment Form

For use with “Criteria for Categorizing Invasive Non-Native Plants that Threaten Colorado’s Wildlands and Agriculture”  
By the Colorado Noxious Weed Advisory Committee

Electronic version: December 4, 2008

**Table 1. Species and Evaluator Information**

<b>Species name (Latin binomial):</b>	Hieracium Caespitosum Dumont.
<b>Synonyms:</b>	Hieracium pratense Tausch
<b>Common names:</b>	Meadow Hawkweed, Yellow Hawkweed, Yellow Paintbrush, Yellow Devil, Field Hawkweed, King Devil, Yellow King Devil
<b>Evaluation date (mm/dd/yy):</b>	1-22-10
<b>Evaluator #1 Name/Title:</b>	Ryan Edwards/ Graduate Student
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<b>Email address:</b>	enter text here
<b>Address:</b>	enter text here

Section below for list committee use—please leave blank

<b>List committee members:</b>	enter text here
<b>Committee review date:</b>	enter text here
<b>List date:</b>	enter text here
<b>Re-evaluation date(s):</b>	enter text here

**General comments on this assessment:**

Meadow Hawkweed is a serious invasive species in the north-western United States (e.g. Washington, Idaho, and Oregon). Meadow Hawkweed is a perennial herb with short rhizomes and long stolons (6). Plants produce a basal rosette which develops at the edge of a stolon. Stems are erect with multiple hairs along them, and are filled with a milky sap. Leaves are spooned shaped with multiple hairs across their surface. Meadow Hawkweed produces a single flower head at the end of each stem, similar to dandelions. Flowers are yellow in color, and produce multiple bracketed seeds which can easily become caught on clothing, or fur.

Meadow Hawkweed can spread rapidly across abandoned pastures, meadows, and clear-cut areas due to its prodigious stolon growth; some studies have found that in dense infestations, populations of Meadow Hawkweed can reach upwards of 3,200 plants per square yard. Infestations can quickly out compete native and forage species, completely taking over lands and pushing out wildlife and livestock.

Meadow hawkweed should go on the A list.

**Table 2. Criteria, Section, and Overall Scores**

<a href="#">1.1</a>	Impact on abiotic ecosystem processes	<b>B</b>	<b>Other Pub. Mat'l</b>	<p><b>Impact</b></p> <p><i>Enter four characters from Q1.1-1.4 below:</i></p> <p><b>BAAC</b></p> <p><i>Using matrix, determine score and enter below:</i></p> <p><b>A</b></p>	<p><b>Wildlands Plant Score</b></p> <p><i>Using matrix, determine Overall Score and Alert Status from the first, second, and third section scores and enter below:</i></p> <p><b>High Red Alert</b></p>
<a href="#">1.2</a>	Impact on plant community	<b>A</b>	<b>Rev'd, Sci. Pub'n</b>		
<a href="#">1.3</a>	Impact on higher trophic levels	<b>A</b>	<b>Doc'n level</b>		
<a href="#">1.4</a>	Impact on genetic integrity	<b>C</b>	<b>Other Pub. Mat'l</b>		
<a href="#">2.1</a>	Role of anthropogenic and natural disturbance	<b>B (2 pts)</b>	<b>Other Pub. Mat'l</b>	<p><b>Invasiveness</b></p> <p><i>Enter the sum total of all points for Q2.1-2.7 below:</i></p> <p><b>13</b></p> <p><i>Use matrix to determine score and enter below:</i></p> <p><b>B</b></p>	
<a href="#">2.2</a>	Local rate of spread with no management	<b>A (3 pts)</b>	<b>Other Pub. Mat'l</b>		
<a href="#">2.3</a>	Recent trend in total area infested within state	<b>U (0 pts)</b>	<b>No Information</b>		
<a href="#">2.4</a>	Innate reproductive potential <a href="#">Wksht A</a>	<b>A (3 pts)</b>	<b>Other Pub. Mat'l</b>		
<a href="#">2.5</a>	Potential for human-caused dispersal	<b>A (3 pts)</b>	<b>Rev'd, Sci. Pub'n</b>		
<a href="#">2.6</a>	Potential for natural long-distance dispersal	<b>B (2 pts)</b>	<b>Other Pub. Mat'l</b>		
<a href="#">2.7</a>	Other regions invaded	<b>U (0 pts)</b>	<b>No Information</b>		
<a href="#">3.1</a>	Ecological amplitude/Range	<b>U</b>	<b>No Information</b>	<p><b>Distribution</b></p> <p><i>Using matrix, determine score and enter below:</i></p> <p><b>U</b></p>	
<a href="#">3.2</a>	Distribution/Peak frequency <a href="#">Wrksht B</a>	<b>U</b>	<b>No Information</b>		

<a href="#">4.1</a>	Poisonous to livestock	<b>D (0 pts)</b>	<b>No Information</b>
<a href="#">4.2</a>	Detrimental to economic crops	<b>D (0 pts)</b>	<b>No Information</b>
<a href="#">4.3</a>	Detrimental to management of agricultural system, rangeland and pasture	<b>A (3 pts)</b>	<b>Other Pub. Mat'l</b>
<a href="#">4.4</a>	Human impacts <a href="#">Wrksht C</a>	<b>A (3 pts)</b>	<b>Other Pub. Mat'l</b>

### **Agricultural / Human Impact**

*Enter the sum total of all points for Q4.1-4.4 below:*

**6**

*Use matrix to determine score and enter below:*

**B**

### **Agricultural Plant Score**

*Using matrix, determine Overall Score and Alert Status from the second, third and fourth section scores and enter below:*

**Moderate**

**Red Alert**

**Table 3. Documentation**

<p><b>Question 1.1</b> Impact on abiotic ecosystem processes</p>	<p>B Other Pub. Mat'l <a href="#">back</a></p>
<p>Identify ecosystem processes impacted: No information in the literature directly indicated that Meadow Hawkweed can alter abiotic processes. However, a closely related species of Hawkweed, Mouse-ear Hawkweed (<i>H. Pilosella</i>) has been reported to have multiple impacts on abiotic processes. Impacts include drier soils found adjacent to patches, soils depleted of phosphorus and other cations, sequestration of mycorrhizal fungi resources, increasing soil acidity, and increasing soluble aluminum content beneath the patches (6).</p>	
<p>Rationale: The literature does not contain any information on the effects of Meadow Hawkweed on the environment. However, the research into Mouse-ear Hawkweed does shed some possible light on to the potential for Meadow Hawkweed to have similar characteristics.</p>	
<p>Sources of information:          (6) Giroday, H., and Baker, V. 2006. Invasive Hawkweeds (<i>Hieracium</i> spp.) in Northeastern British Columbia: Invasive plant risk assesment and literature search. British Columbia Ministry of forests and range.</p>	
<p><b>Question 1.2</b> Impact on plant community composition, structure, and interactions</p>	<p>A Rev'd, Sci. Pub'n <a href="#">back</a></p>
<p>Identify type of impact or alteration: Because of its mat forming growth habits, Meadow Hawkweed has taken over many pastures and mountain meadows in Oregon, Washington, and Idaho (5). Meadow Hawkweed infestations can severely reduce forage grass production, displace desirable species, and reduce the overall biodiversity of the areas that they infest (5). It is also suspected that Meadow Hawkweed has some allelopathic effects on surrounding vegetation; however more testing is required (2).</p>	
<p>Rationale: The ability for Meadow Hawkweed to crowd out other species and to take over sites is a very serious implication of an infestation. Losses in biodiversity for both plants and animals must be taken into consideration with Meadow Hawkweed infestations. Also, reports that allelopathy may exist, make Meadow Hawkweed a very serious pest species that deserves very close attention.</p>	
<p>Sources of information:          (5) Shinn, S.L., and Thill, D.C. 2003. The Response of Yellow Star Thistle, Spotted Knapweed, and Meadow Hawkweed to Imazapic. <i>Weed Technology</i> 17: 94-101.          (2) Meadow Hawkweed (<i>Hieracium pratense</i>). North Dakota Department of Ag. <a href="http://www.agdepartment.com/noxiousweeds/pdf/Meadowhawkweed.pdf">http://www.agdepartment.com/noxiousweeds/pdf/Meadowhawkweed.pdf</a>.</p>	
<p><b>Question 1.3</b> Impact on higher trophic levels</p>	<p>A Other Pub. Mat'l <a href="#">back</a></p>
<p>Identify type of impact or alteration: Once Meadow Hawkweed infestations become establish, they form dense patches which choke out surrounding native and forage species (1, 2).</p>	
<p>Rationale: There are many citations in the literature documenting the spread of Meadow Hawkweed, and its impacts on native and forge species. Once the seedbank of the forage species has become exhausted due to Meadow Hawkweed, higer trophic species will also be forced out as food and cover resources are depleted.</p>	
<p>Sources of information:</p>	

<p>(1) Callihan, R.H., Wilson, L. M., McCaffery, J.P., and Miller, T. Hawkweeds: Hieracium aurantiacum, H. pilosella, H. pratense, H. floribundum, H. piloselloides. Pacific Northwest Extension publications PNW 499. <a href="http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf">http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf</a>.</p> <p>(2) Meadow Hawkweed (Hieracium pratense). North Dakota Department of Ag. <a href="http://www.agdepartment.com/noxiousweeds/pdf/Meadowhawkweed.pdf">http://www.agdepartment.com/noxiousweeds/pdf/Meadowhawkweed.pdf</a>.</p>	
<b>Question 1.4</b> Impact on genetic integrity	C Other Pub. Mat'l <a href="#">back</a>
<p>Identify impacts: The literature cites instances in which Meadow Hawkweed can hybridize with similar hawkweeds, further confounding its identification (1). However, other papers indicate that there is no chance for Meadow Hawkweed to hybridize with native hawkweeds, due to the differences in chromosome numbers, and differences in life history patterns (6).</p>	
<p>Rationale: According to Weber and Wittmann (7) there are four species of Hawkweed that are related to Hieracium in Colorado. More research is needed to fully assess the potential for Meadow Hawkweed to hybridize with its native relatives.</p>	
<p>Sources of information:</p> <p>(1) Callihan, R.H., Wilson, L. M., McCaffery, J.P., and Miller, T. Hawkweeds: Hieracium aurantiacum, H. pilosella, H. pratense, H. floribundum, H. piloselloides. Pacific Northwest Extension publications PNW 499. <a href="http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf">http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf</a>.</p> <p>(6) Giroday, H., and Baker, V. 2006. Invasive Hawkweeds (Hieracium spp.) in Northeastern British Columbia: Invasive plant risk assesment and literature search. British Columbia Ministry of forests and range.</p> <p>(7) Weber, W.A., and Wittmann, R.C. 2001. Colorado Flora: Eastern slope. 3<sup>rd</sup> edition: pages 80 and 93</p>	
<b>Question 2.1</b> Role of anthropogenic and natural disturbance in establishment	B Other Pub. Mat'l <a href="#">back</a>
<p>Describe role of disturbance: Meadow Hawkweed can establish in clear-cut areas, abandoned farmlands, and roadsides (1). However, infestations typically occur at elevations of 5000 feet or higher, in moist areas (2).</p>	
<p>Rationale: Disturbance can allow Meadow Hawkweed infestations to occur. Once the infestations start, it will only take a matter of time before the site becomes a monotypic stand of Meadow Hawkweed.</p>	
<p>Sources of information:</p> <p>(1) Callihan, R.H., Wilson, L. M., McCaffery, J.P., and Miller, T. Hawkweeds: Hieracium aurantiacum, H. pilosella, H. pratense, H. floribundum, H. piloselloides. Pacific Northwest Extension publications PNW 499. <a href="http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf">http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf</a>.</p> <p>(2) Meadow Hawkweed (Hieracium pratense). North Dakota Department of Ag. <a href="http://www.agdepartment.com/noxiousweeds/pdf/Meadowhawkweed.pdf">http://www.agdepartment.com/noxiousweeds/pdf/Meadowhawkweed.pdf</a>.</p>	
<b>Question 2.2</b> Local rate of spread with no management	A Other Pub. Mat'l <a href="#">back</a>
<p>Describe rate of spread: Meadow Hawkweed infestations typically start with seed (1). Once establishment occurs, Meadow Hawkweed quickly reproduces from fast growing stolons; less than 2% of new plants develop</p>	

<p>from seeds. Vigorous stolon growth can quickly grow a colony of Meadow Hawkweed, forming a dense patch which can reach up to 3,200 plants per square yard (1).</p>	
<p>Rationale: The speed at which Meadow Hawkweed can become a serious infestation is relatively short. Once a population of Meadow Hawkweed takes hold, it will be a challenge to eradicate them, simply due to the relative speed and ease at which the plant reproduces.</p>	
<p>Sources of information:</p> <p>(1) Callihan, R.H., Wilson, L. M., McCaffery, J.P., and Miller, T. Hawkweeds: Hieracium aurantiacum, H. pilosella, H. pratense, H. floribundum, H. piloselloides. Pacific Northwest Extension publications PNW 499. <a href="http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf">http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf</a>.</p>	
<p><b>Question 2.3</b> Recent trend in total area infested within state</p>	<p>U No Information <a href="#">back</a></p>
<p>Describe trend: There is no information in the literature describing infestations of Meadow Hawkweed in Colorado at this time.</p>	
<p>Rationale: The USDA PLANTS database does not list colorado as containing any Meadow Hawkweed and was the closest scientific database with any information (4).</p>	
<p>Sources of information:</p> <p>(4)USDA PLANTS database: Hieracium caespitosum. <a href="http://plants.usda.gov/java/nameSearch">http://plants.usda.gov/java/nameSearch</a> .</p>	
<p><b>Question 2.4</b> Innate reproductive potential</p>	<p>A Other Pub. Mat'l <a href="#">back</a></p>
<p>Describe key reproductive characteristics: Meadow Hawkweeds are also notorious for freely hybridizing between separate patches, creating new subspecies and making identification hard (1). Most of the colony expansion occurs through stolon growth. As stolons grow, daughter rosettes form along the tips. Once the daughter rosettes take root, the original stolon dies, and the process continues. Regrowth typically occurs from underground rhizomes, resembling root crowns (1). Meadow Hawkweed is not expected to become a problem in any dry habitat, or in habitats lower than 5000 feet (1). Hawkweeds prefer soils that are well drained, coarse-textured, and moderately low in organic matter. Although they can grow in open woodlands, they do not tolerate shade very well.</p>	
<p>Rationale: There is much confusion in the literature over which species constitute Meadow Hawkweed. Callihan et al has a statement in their paper to that effect; " Species are difficult to distinguish because they interbreed freely, and many of our hawkweeds look like hybrids. For the purpose of this bulletin, these yellow flowered hawkweeds will collectively be called meadow hawkweed,".</p>	
<p>Sources of information:</p> <p>(1) Callihan, R.H., Wilson, L. M., McCaffery, J.P., and Miller, T. Hawkweeds: Hieracium aurantiacum, H. pilosella, H. pratense, H. floribundum, H. piloselloides. Pacific Northwest Extension publications PNW 499. <a href="http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf">http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf</a>.</p>	

<b>Question 2.5</b> Potential for human-caused dispersal	A Rev'd, Sci. Pub'n <a href="#">back</a>
Identify dispersal mechanisms: Meadow Hawkweed seeds have small bracts along them, which can easily be caught in fur, or clothing (1). Avenues of human dispersal include lodging on clothing, hair, feathers, farming and logging equipment, and other vehicles (3).	
Rationale: Unintentional human dispersal does play a factor in Meadow Hawkweed dispersal, and careful consideration must be asserted in situations where people and machinery have come in contact with the weed to prevent it reaching new habitats.	
Sources of information: (1) Callihan, R.H., Wilson, L. M., McCaffery, J.P., and Miller, T. Hawkweeds: Hieracium aurantiacum, H. pilosella, H. pratense, H. floribundum, H. piloselloides. Pacific Northwest Extension publications PNW 499. <a href="http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf">http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf</a> . (3) Carson, H.W., Lass, L.W., and Callihan, R.H. 1995. Detection of Yellow Hawkweed (Hieracium pratense) With High Resolution Multispectral Digital Imagery. Weed Technology 9: 477-483.	
<b>Question 2.6</b> Potential for natural long-distance dispersal	B Other Pub. Mat'l <a href="#">back</a>
Identify dispersal mechanisms: Studies in Canada showed that Meadow Hawkweed seeds are not carried far by the wind (1). Seeds have minute barbs along them which can easily stick to fur, clothing, and feathers and can be carried long distances where new colonies of Meadow Hawkweed can establish.	
Rationale: Meadow Hawkweed contains a milky sap, possibly to deter foraging animals (2). This adaptation, as well as the growth pattern of Meadow Hawkweed choking out other species around it, would most likely prevent animals from coming in contact with the seeds.	
Sources of information: (1) Callihan, R.H., Wilson, L. M., McCaffery, J.P., and Miller, T. Hawkweeds: Hieracium aurantiacum, H. pilosella, H. pratense, H. floribundum, H. piloselloides. Pacific Northwest Extension publications PNW 499. <a href="http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf">http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf</a> . (2) Meadow Hawkweed (Hieracium pratense). North Dakota Department of Ag. <a href="http://www.agdepartment.com/noxiousweeds/pdf/Meadowhawkweed.pdf">http://www.agdepartment.com/noxiousweeds/pdf/Meadowhawkweed.pdf</a> .	
<b>Question 2.7</b> Other regions invaded	U No Information <a href="#">back</a>
Identify other regions: There is no information in the literature indicating that Meadow Hawkweed has invaded the state.	
Rationale: Meadow Hawkweed typically infests areas such as open fields, abandoned pastures, mountain meadows, forest clearings, and moist areas typically at high elevations (6). If populations of Meadow Hawkweed are found, they will probably be in these locations.	
Sources of information: enter text here	

<b>Question 3.1</b> Ecological amplitude/Range	U No Information <a href="#">back</a>
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: There is no information in the literature describing infestations of Meadow Hawkweed in Colorado at this time.	
Rationale: Potential environments that Meadow Hawkweed can inhabit include pastures/haymeadows, abandoned farmlands, high mountain meadows, roadsides, and clearcut areas (1).	
Sources of information: (1) Callihan, R.H., Wilson, L. M., McCaffery, J.P., and Miller, T. Hawkweeds: Hieracium aurantiacum, H. pilosella, H. pratense, H. floribundum, H. piloselloides. Pacific Northwest Extension publications PNW 499. <a href="http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf">http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf</a> .	
<b>Question 3.2</b> Distribution/Peak frequency	U No Information <a href="#">back</a>
Describe distribution: There is no information in the literature describing infestations of Meadow Hawkweed in Colorado at this time.	
Rationale: The USDA PLANTS database does not list Colorado as containing any Meadow Hawkweed and was the closest scientific database with any information (4).	
Sources of information: (4)USDA PLANTS database: Hieracium caespitosum. <a href="http://plants.usda.gov/java/nameSearch">http://plants.usda.gov/java/nameSearch</a> .	
<b>Question 4.1</b> Poisonous to Livestock	D No Information <a href="#">back</a>
Describe impacts in terms of high probability of death, long-term health impacts, or short-term health impacts: There are no reports in the literature that indicate Meadow Hawkweed as poisonous.	
Rationale: The literature does mention Meadow Hawkweed as containing a milky sap, which may indicate a adaptation towards preventing herbivory, however more testing is needed (2).	
Sources of information: (2) Meadow Hawkweed (Hieracium pratense). North Dakota Department of Ag. <a href="http://www.agdepartment.com/noxiousweeds/pdf/Meadowhawkweed.pdf">http://www.agdepartment.com/noxiousweeds/pdf/Meadowhawkweed.pdf</a> .	
<b>Question 4.2</b> Detrimental to Economic Crops	D No Information <a href="#">back</a>
Describe impacts to all aspects of cropping systems (see guidelines): There are no reports in the literature of Meadow Hawkweed invading agronomic crops.	
Rationale: However, if pasturelands are considered, then Meadow Hawkweed could be considered a serious pest species, due to the losses of forage plants and the dense monotypic stand of Meadow Hawkweed which could become present.	

Sources of information: enter text here	
<b>Question 4.3</b> Detrimental to Mgmt of Agricultural System, Rangeland and Pasture A Other Pub. Mat'l <a href="#">back</a>	
Describe impacts to water diversion systems, increased water use, reduced forage for livestock: Due to the losses of forage plants and the dense monotypic stand of Meadow Hawkweed which can be produced, pastures and rangelands can become degraded (1).	
Rationale: Once the beneficial pasture species have become degraded or lost, livestock and grazing wildlife will, in turn, be pushed from the area, decreasing the economic values of the land and the animals.	
Sources of information: (1) Callihan, R.H., Wilson, L. M., McCaffery, J.P., and Miller, T. Hawkweeds: Hieracium aurantiacum, H. pilosella, H. pratense, H. floribundum, H. piloselloides. Pacific Northwest Extension publications PNW 499. <a href="http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf">http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf</a> .	
<b>Question 4.4</b> Human Health Impacts A Anecdotal <a href="#">back</a>	
Describe key human impacts such as; irritants, property values, recreational values, and industry impacts: Heavy infestations of Meadow Hawkweed can decrease rangelands, pastures and other grazing situations (1).	
Rationale: Impacts of large infestations can decrease forage species, and possibly alter the abiotic environment. Once infestations become established, management of the patches and potential reclamation of sites will cost large sums of funding, and left unmanaged, could decrease property values.	
Sources of information: (1) Callihan, R.H., Wilson, L. M., McCaffery, J.P., and Miller, T. Hawkweeds: Hieracium aurantiacum, H. pilosella, H. pratense, H. floribundum, H. piloselloides. Pacific Northwest Extension publications PNW 499. <a href="http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf">http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0499.pdf</a> .	

## Worksheet A

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Reaches reproductive maturity in 2 years or less	<b>Yes: 1 pt</b>
Dense infestations produce >1,000 viable seed per square meter	<b>Yes: 2 pts</b>
Populations of this species produce seeds every year.	<b>Yes: 1 pt</b>
Seed production sustained over 3 or more months within a population annually	<b>Yes: 1 pt</b>
Seeds remain viable in soil for three or more years	<b>Yes: 2 pts</b>
Viable seed produced with <i>both</i> self-pollination and cross-pollination	<b>Unknown: 0 pts</b>
Has quickly spreading vegetative structures (rhizomes, roots, etc.) that may root at nodes	<b>Yes: 1 pt</b>
<del>Fragments easily and fragments can become established elsewhere</del>	<b>No: 0 pts</b>

Resprouts readily when cut, grazed, or burned	<b>Yes: 1 pt</b>
	<b>9 pts      1 unknown</b>
<b>Note any related traits:</b> Species of Hawkweed can interbreed freely, forming multiple hybrids (1). Meadow Hawkweed can produce dense mats of interconnected rosettes, from vigorous stolon growth.	

**Worksheet B - Colorado Ecological Types and Land Use**

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<b>Major Ecological and Land Use Types</b>	<b>Minor Ecological and Land Use Types</b>	<b>Code*</b>
<b>Freshwater and Aquatic Systems</b>	lakes, ponds, reservoirs	<b>Unknown</b>
	rivers, streams, canals	<b>Unknown</b>
<b>Riparian and wetlands</b>	Riparian forest	<b>Unknown</b>
	Riparian shrublands	<b>Unknown</b>
	Wet meadows	<b>Unknown</b>
<b>Grasslands</b>	Shortgrass prairie	<b>Unknown</b>
	Tallgrass prairie	<b>Unknown</b>
	Sandsage prairie	<b>Unknown</b>
	Montane meadows	<b>Unknown</b>
<b>Irrigated Agriculture</b>	Hay meadows	<b>Unknown</b>
	Irrigated crops (alfalfa, corn, sugar beets)	<b>Unknown</b>
<b>Dryland Agriculture</b>	Dryland crops (wheat, corn, millet, dryland grass hay, sunflowers, mustard for biodiesel)	<b>Unknown</b>
<b>Developed Lands</b>	Urban, exurban, industrial	<b>Unknown</b>
<b>Arid Shrublands</b>	Sagebrush shrublands	<b>Unknown</b>
	Foothills shrublands	<b>Unknown</b>
	Gambel oak shrublands	<b>Unknown</b>
<b>Woodlands</b>	Pinyon - juniper	<b>Unknown</b>
	Ponderosa pine	<b>Unknown</b>
	Limber pine	<b>Unknown</b>
<b>Forest</b>	Lodgepole pine	<b>Unknown</b>
	Spruce-fir	<b>Unknown</b>
<b>Alpine</b>	Boulder and rock fields	<b>Unknown</b>
	Dwarf shrublands	<b>Unknown</b>
	Tundra	<b>Unknown</b>
<b>Barrens (lower elevation)</b>	Dunes	<b>Unknown</b>
	Rock outcrops	<b>Unknown</b>
	Canyonlands	<b>Unknown</b>

\* A. means >50% of type occurrences are invaded; B means >20% to 50%; C. means >5% to 20%; D. means present but ≤5%; U. means unknown (unable to estimate percentage of occurrences invaded).

### Worksheet C – Human Impacts

Human health impacts; irritants (sap), spines, poisonous, and/or smoke impacts	<b>No: 0 pt</b>
Property values are decreased due to increased risk of fire	<b>Unknown: 0 pts</b>
Decreased property value due to moderate to heavy infestations	<b>Yes: 2 pts</b>
Decreased land value for recreational use; boating, fishing, camping, etc.	<b>Unkown: 0 pts</b>
Impact of listing detrimental to industry; agriculture, horticulture, nursery, and/or seed	<b>Yes: 2 pt</b>
	<b>4 pts      2 unknowns</b>
	<b>A (4+ pts)</b>
<b>Note any related traits:</b> Infestations of Meadow Hawkweed can decrease property values of landowners, due to the losses of surrounding species, and the need to control infestations. Impacts to agriculture focus on losses of grazing and pasture lands when Meadow Hawkweed infestation occur.	