

MN NWAC Risk Assessment Worksheet (04-2011)	Common Name	Latin Name
	Yellow Hawkweed (Meadow)	<i>Hieracium caespitosum</i> Dumort. (syn. <i>H. pratense</i>)
Reviewer	Affiliation/Organization	Date (mm/dd/yyyy)
Roger Becker	Univ. of Minnesota	07/09/2018

NOTE: The most complete, one-stop reference is the USDA USFS Fire Effects Information System Website (USDA USFS 2010).

Species Description: (ND State Government, 2018)

Appearance: Perennial herbaceous plant that contains a milky sap and ranges in height from 10 to 36 inches. In the vegetative stage, the plant appears as a basal rosette with smooth, glabrous leaves. Each rosette is capable of producing 10 to 30 flower stems. Stems of the plant have short, stiff hairs and may have one to three small, clasping leaves located below the midpoint of the stem.

Leaves: Leaves are 4 to 6 inches long, dark green above, light green beneath, narrow, and spatula-shaped.

Flowers: Stems can produce between 5 and 30 yellow, dandelion-like flower heads that are one-half to three-quarters in diameter. Flower heads are ligulate and arranged in a flat-topped cluster

Seeds: Meadow hawkweed seeds are tiny, black, and have a tawny tuft of bristles on the flattened end.

Roots: Spreads primarily vegetatively through runners, (4-12 per flowering plant), rhizomes, (underground stems producing new plants) and sporadic root buds.

Family: Asteraceae

Habitat: Particularly successful where soils are well-drained, coarse-textured, and moderately low in organic matter. Mountain meadows, clearings in forest zones, pastures, hayfields, cleared timber units, roadsides, and disturbed sites are areas where the plant can thrive. In most cases, meadow hawkweed is found in small, isolated patches but can have a greater potential for spread than orange hawkweed. Meadow hawkweed is native to northern, central, and eastern portions of Europe. The plant was most likely introduced into the United States in 1828 as an ornamental. The plant is now found from Quebec to Ontario, and southward to Georgia and Tennessee. Meadow hawkweed is an aggressive species that can quickly develop into large, dense patches, thus reducing native plant communities. Meadow hawkweed can reduce forage quality by choking out desirable plants. The plant can also invade lawns and gardens. Meadow hawkweed may have an allelopathic effect on surrounding vegetation by exuding toxic chemicals into the soil.



www.edmonton.ca/programs_services/pests/meadow-hawkweed.aspx



Photo by
Richard Old
www.xidservices.com

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Photo by Richard Old, XID Services Inc

Box	Question	Answer	Outcome
1	Is the plant species or genotype non-native?	Yes (PLANTS, 2018). Native to northern, central, and eastern portions of Europe. The plant was most likely introduced into the United States in 1828 as an ornamental.	Go to Box 3.
2	Does the plant species pose significant human or livestock concerns or has the potential to significantly harm agricultural production?		

Box	Question	Answer	Outcome
	A. Does the plant have toxic qualities that pose a significant risk to livestock, wildlife, or people? B. Does the plant cause significant financial losses associated with decreased yields, reduced quality, or increased production costs?		
3	Is the plant species, or a related species, documented as being a problem elsewhere?	Of the 100 articles on <i>Hieracium</i> species in a U of M AGRICOLA Ovid search, roughly 2/3s were genetic studies on apomictic reproduction (asexual) as a model plant to understand apomixis (Catanach et al. 2006), ploidy levels, molecular markers to distinguish species, and hybridization. Most invasive references are on mouse-ear hawkweed (<i>H. pilosella</i>), the most invasive hawkweed worldwide, with a recent review article by Cipriotti et al. (2010) on mouse-ear hawkweed invasion broadly in the world and its introduction to the U.S., which has led to severe ecological and economic damage in New Zealand, (Meurk et al. 2002). Noxious weed designation in Idaho, Washington, Oregon, and Montana (PLANTS, 2018).	Go to Box 6
4	Is the plant species' life history & Growth requirements understood?		
5	Gather and evaluate further information:	(Comments/Notes)	
6	Does the plant species have the capacity to establish and survive in Minnesota?		

Box	Question	Answer	Outcome
	A. Is the plant, or a close relative, currently established in Minnesota?	<p>Yes. There are 54 <i>Hieracium</i> species in North America, 37 native and 16 exotic, and 1 native to Canada, but considered exotic in the U.S. (PLANTS, 2018). (See phylogenetic tree, Gaskin and Wilson 2007 Fig. 1). <i>Hieracium caespitosum</i> is in subgenus <i>Pilosella</i>, and is sometimes referred to as <i>Pilosella pratense</i>. In Minnesota, there are three related native <i>Hieracium</i> spp. <i>H. longipilum</i> (hairy hawkweed), <i>H. sacabrum</i> (sticky hawkweed), and <i>H. umbellatum</i> (narrow-leaf hawkweed, also separated into <i>H. kalmia</i> and <i>H. scabriuscum</i>), and three other exotics, <i>H. aurantiacum</i> (orange hawkweed), <i>H. pilosella</i> (mouse-ear hawkweed), and <i>H. piloselloides</i> (king-devil hawkweed) (Mn Wildflowers, 2018). The invasive <i>H. aurantiacum</i> (orange hawkweed) is more distinct. <i>H. pilosella</i> is aggressive world wide, notably in New Zealand, Australia, and the western U.S. The first U of M Bell Museum Herbarium record of <i>H. caespitosum</i> in MN is in 1978, relatively recent compared to orange hawkweed, and were all in NE MN, then were recorded in Anoka and Hennepin Co. in 2011 and 2014, respectively. Additionally, <i>H. piloselloides</i> (king-devil hawkweed) was first recorded in 2011 in NE MN west to Beltrami, south to Pine Co. (Bell Museum Herbarium U of M 2018). Figure 2 shows current records in Minnesota, Fig. 3 and 4 nationally. Figures 5 and 6 show mouse-ear hawkweed and Fig. 7 and 8, king-devil hawkweed, in MN and North America, respectively. Mouse-ear and king-devil will be easily confused with meadow hawkweed by casual observers.</p>	Go to Box 7
	B. Has the plant become established in areas having a climate and growing conditions similar to those found in Minnesota?		
7	Does the plant species have the potential to reproduce and spread in Minnesota?		
	A. Does the plant reproduce by asexual/vegetative means?	Yes, in addition to seed, can produce seed apomictically, and reproduce vegetatively via stolons, rhizomes, and adventitious root buds (Hitchcock and Cronquist 1981).	Go to 7B
	B. Are the asexual propagules effectively dispersed to new areas?	Yes. Since apomictic, always produces an abundant seed supply which readily disperse via wind (Rose and Frampton 1999, Wilson 1999) and animals and humans (Wilson 1999).	Go to 7I

Box	Question	Answer	Outcome
	C. Does the plant produce large amounts of viable, cold-hardy seeds?		
	D. If this species produces low numbers of viable seeds, does it have a high level of seed/seedling vigor or do the seeds remain viable for an extended period?		
	E. Is this species self-fertile?		
	F. Are sexual propagules – viable seeds – effectively dispersed to new areas?		
	G. Can the species hybridize with native species (or other introduced species) and produce viable seed and fertile offspring in the absence of human intervention?		
	H. If the species is a woody (trees, shrubs, and woody vines) is the juvenile period less than or equal to 5 years for tree species or 3 years for shrubs and vines?		
	I. Do natural controls exist, species native to Minnesota, that are documented to effectively prevent the spread of the plant in question?	No. A biological control gall wasp, <i>Aulacidea subterminalis</i> , was released in the U.S. and Canada in 2011, and has been recovered on <i>H. flagellaris</i> (<i>H. flagellaris - Hieracium x flagellare</i> Willd. (<i>caespitosum x pilosella</i>) (whiplash hawkweed) in the western U.S., and a hoverfly <i>Cheilosia urbana</i> Meigen (Grosskopf 2005) was recommended for release for biological control of several hawkweeds including <i>H. aurantiacum</i> and <i>H. pratense</i> by APHIS PPQ TAG in 2016, is pending USFWS approval (Cortat 2017, USDA APHIS PPQ TAG 2018), (Rhinella et al 2017). Biological control is not currently managing populations in Minnesota and will not for the foreseeable future.	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?		

Box	Question	Answer	Outcome
	A. Does the plant have toxic qualities, or other detrimental qualities, that pose a significant risk to livestock, wildlife, or people?	Yes. Has been linked to reduced biodiversity and degradation of wildlife habitat (Wilson and Callihan 1999). (No)	Go to Box 9 (Go to 8B – stronger case for economic impacts 8B, than actively degrading wildlife habitat, regardless of Yes or No here, same ending)
	B. Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs?	Yes. Because of their mat-forming growth, hawkweeds are of limited value for stock (Grundy, 1989). Hawkweed expansion has also lead to detrimental economic effects, costing stakeholders an estimated \$58 million per year to control (Duncan 2005). NPK fertilizer can increase grasses in low fertility soils in the presence of <i>H. floribundum</i> (Reader and Watt 1981), and mouse-ear hawkweed (<i>Hieracium pilosella</i> L.) (Davy and Bishop 1984), and was most successful when coupled to selective herbicide use with <i>H. caespitosum</i> (Wallace et al. 2010).	Go to Box 9
	C. Can the plant aggressively displace native species through competition (including allelopathic effects)?		
	D. Can the plant hybridize with native species resulting in a modified gene pool and potentially negative impacts on native populations?		
	E. Does the plant have the potential to change native ecosystems (adds a vegetative layer, affects ground or surface water levels, etc.)?		
	F. Does the plant have the potential to introduce or harbor another pest or serve as an alternate host?		
9	Does the plant species have clearly defined benefits that outweigh associated negative impacts?		
	A. Is the plant currently being used or produced and/or sold in Minnesota or native to Minnesota?	No.	Go to Box 10
	B. Is the plant an introduced species and can its spread be effectively and easily prevented or controlled, or its negative impacts minimized through carefully designed and executed management practices?		

Box	Question	Answer	Outcome
	C. Is the plant native to Minnesota? D. Is a non-invasive, alternative plant material commercially available that could serve the same purpose as the plant of concern? E. Does the plant benefit Minnesota to a greater extent than the negative impacts identified at Box #8?		
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? B. Does the plant pose a serious human health threat? 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 No No. Difficult to control by mowing due to prostrate growth, and can be exacerbated by mowing (Wilson and Callihan, 1999). Herbicides effective, if used, but will remove some or all forbs depending on herbicide used (Wallace et al. 2010). Meadow hawkweed control with selective herbicides often results in effective, short-term suppression, followed by recolonization of the site in the absence of competitors (Wilson et al. 2006). Too widely dispersed in NE Minnesota to control with herbicides. No biological controls currently effective. Yes with herbicides.	Go to 10B Go to 10C List as Restricted Noxious Weed.
11	Should the plant species be allowed in Minnesota via a species-specific management plan; designate as specially regulated?		

Final Results of Risk Assessment		
Review Entity	Comments	Outcome
NWAC Listing Subcommittee	We recommend not listing. Already established at numerous locations in the NE Minnesota, do not see the benefit of a state wide Noxious designation. Recommend counties in affected areas consider listing if deem appropriate. 07/11/18	Do Not List
NWAC Full Committee	Vote on 12/19/18 was 16:0 in favor of not listing.	Do Not List

MDA Commissioner	Commissioner agreed	Do Not List
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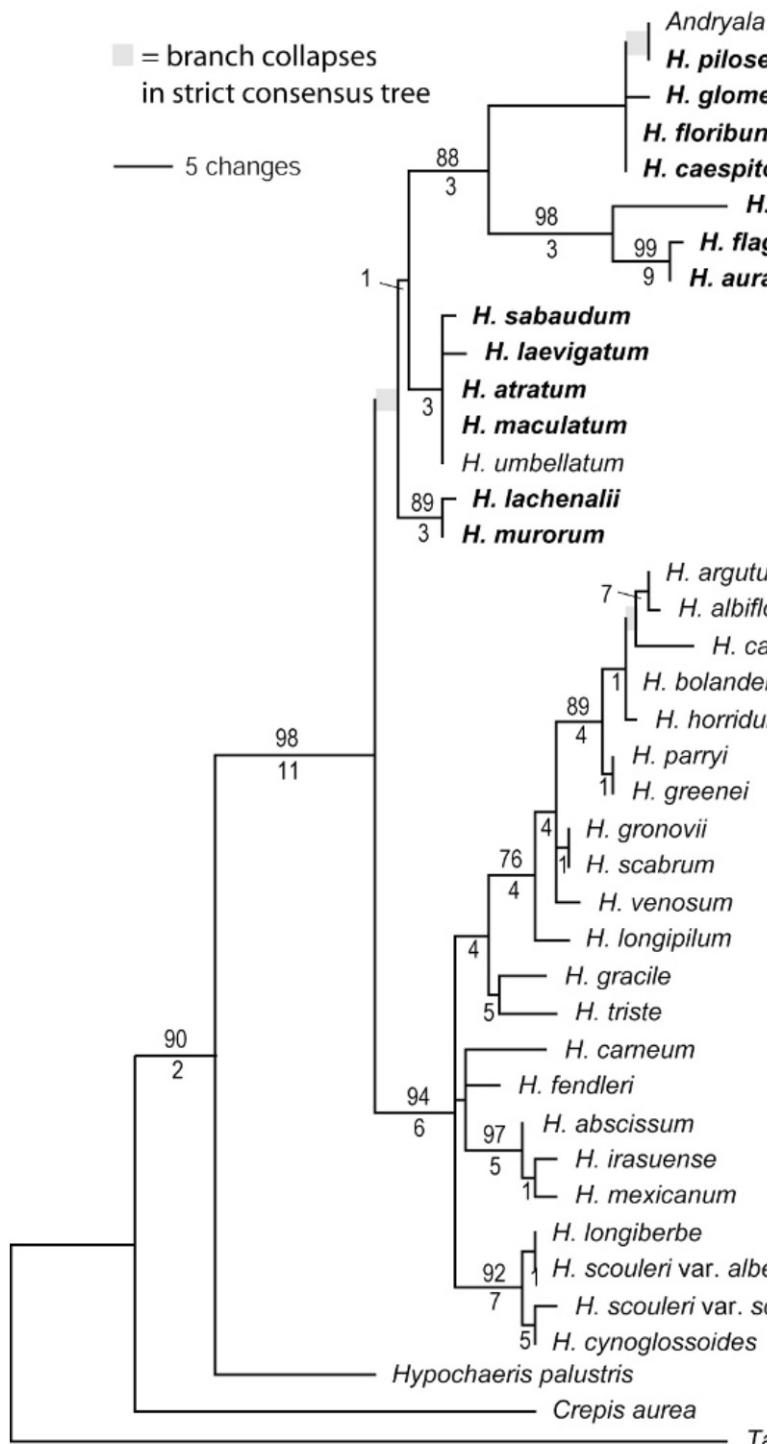


FIG. 1. One of the 104 most parsimonious trees of length 287 steps resulting from analysis of all species and outgroups based on the combined *trnT-trnF* and *petN-psbM* data set. Bootstrap decay indices below. Branches that collapse in the strict consensus tree are indicated by a colon. Species listed after species name, using the following code: O = Old World; cA = Central America; U.S.A.; C = North America north of continental U.S.A. Taxa in bold type are common to all 104 trees (see Fig. 2). The tree is rooted at the base of the clade containing *Ulmus*, *Fraxinus* and *Populus*. Bootstrap decay indices are given below branches. Branches that collapse in the strict consensus tree are indicated by a colon. Species listed after species name, using the following code: O = Old World; cA = Central America; U.S.A.; C = North America north of continental U.S.A. Taxa in bold type are common to all 104 trees (see Fig. 2).

Gaskin and Wilson 2007.

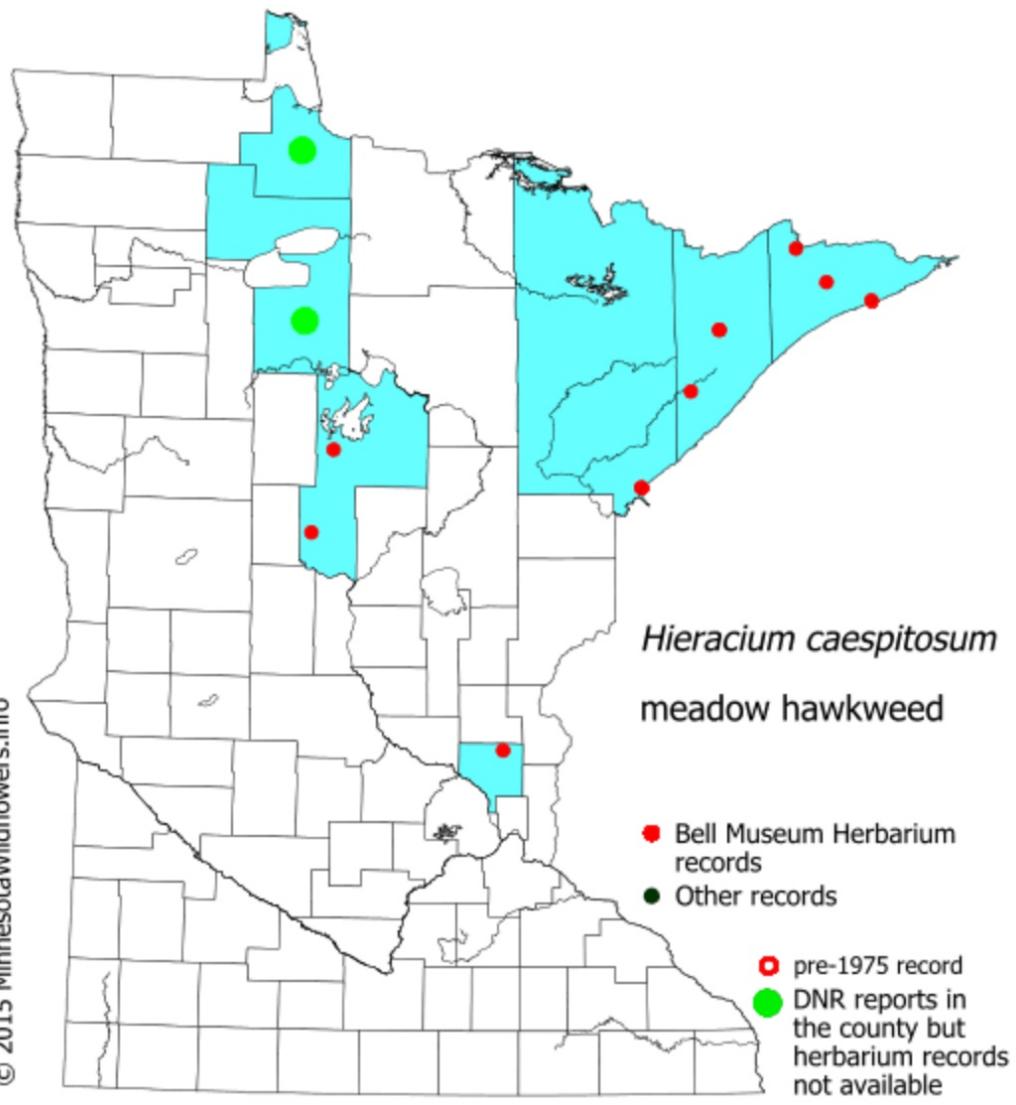


Figure 2. Meadow hawkweed distribution in Minnesota. Mn Wildflower.
<https://www.mnswildflowers.info/flower/meadow-hawkweed> Accessed July 2018.

meadow hawkweed

Hieracium caespitosum Dumort.

USDA PLANTS Symbol:HICA10
Invasive Plant Atlas
Species Information

States Counties Points List

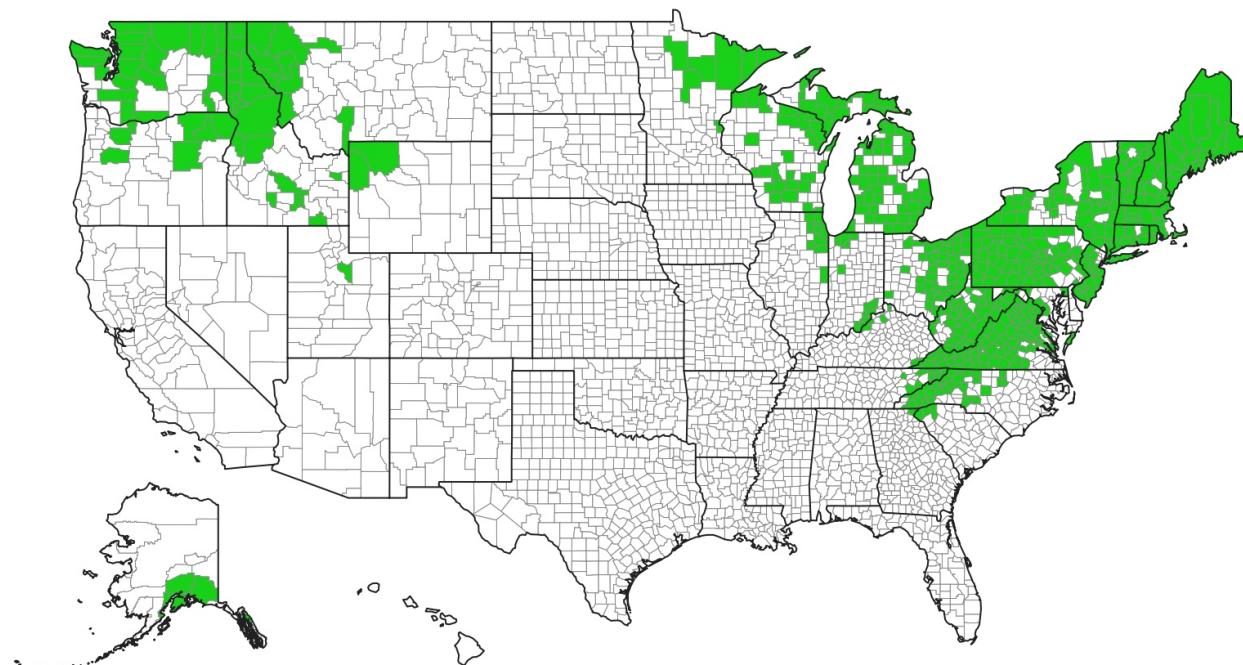
Distribution

Record Density

Literature vs Observation

CSV KML GPX

Share Download Flag Fullscreen



Legend

- No Data
- Species Reported

Figure 3. Meadow hawkweed distribution nationally. EDDMaps.

<http://www.eddmaps.org/distribution/uscounty.cfm?sub=4424> Accessed April 2018.v

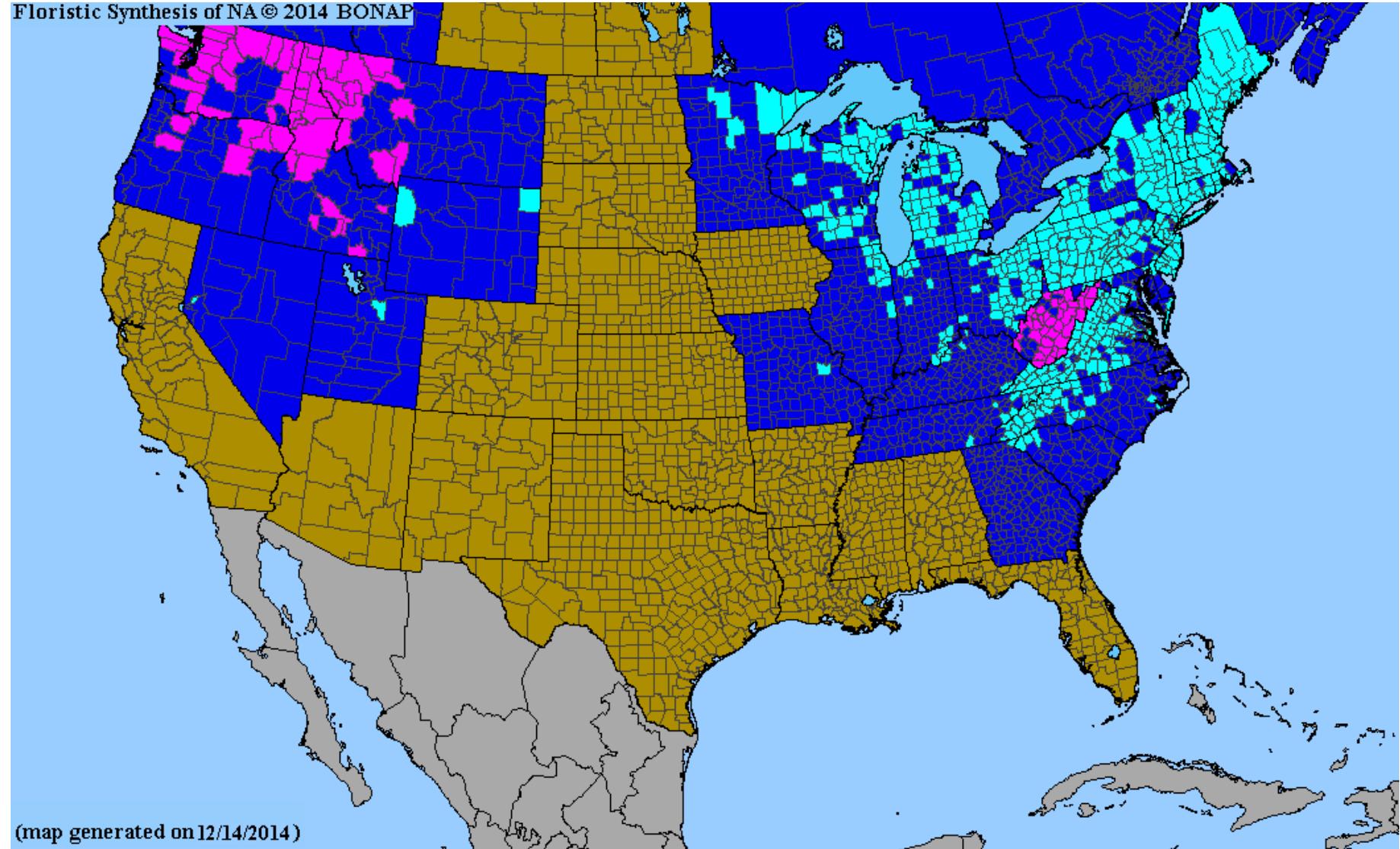


Figure 4. Meadow hawkweed distribution in North America. Floristic Synthesis of NA.
http://bonap.net/MapGallery/County/Hieracium_caespitosum.png Accessed April 2018.

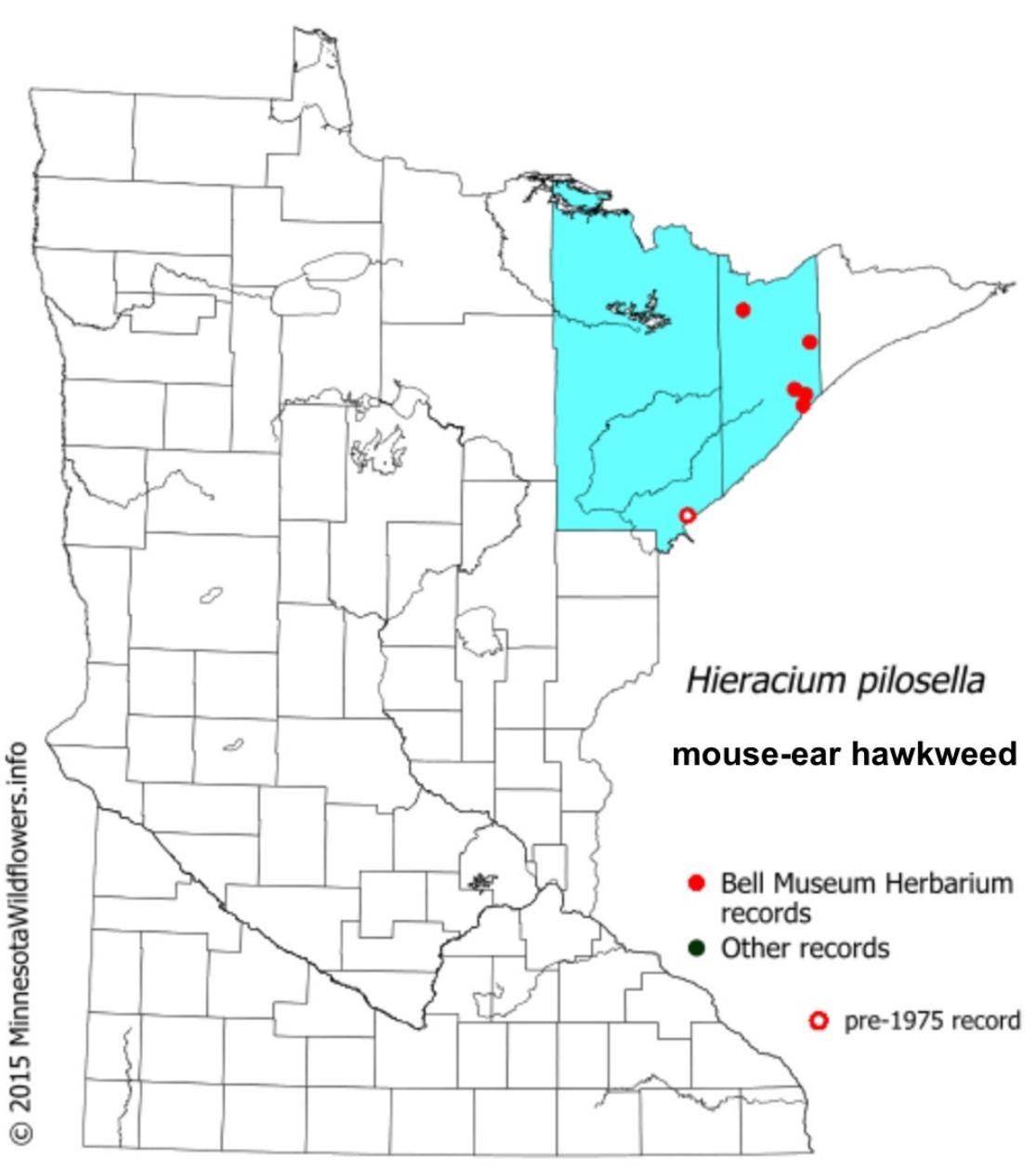


Figure 5. Mouse-ear hawkweed records in Minnesota. Mn Wildflower.
<https://www.mnwildflowers.info/flower/mouse-ear-hawkweed> Accessed July 2018.

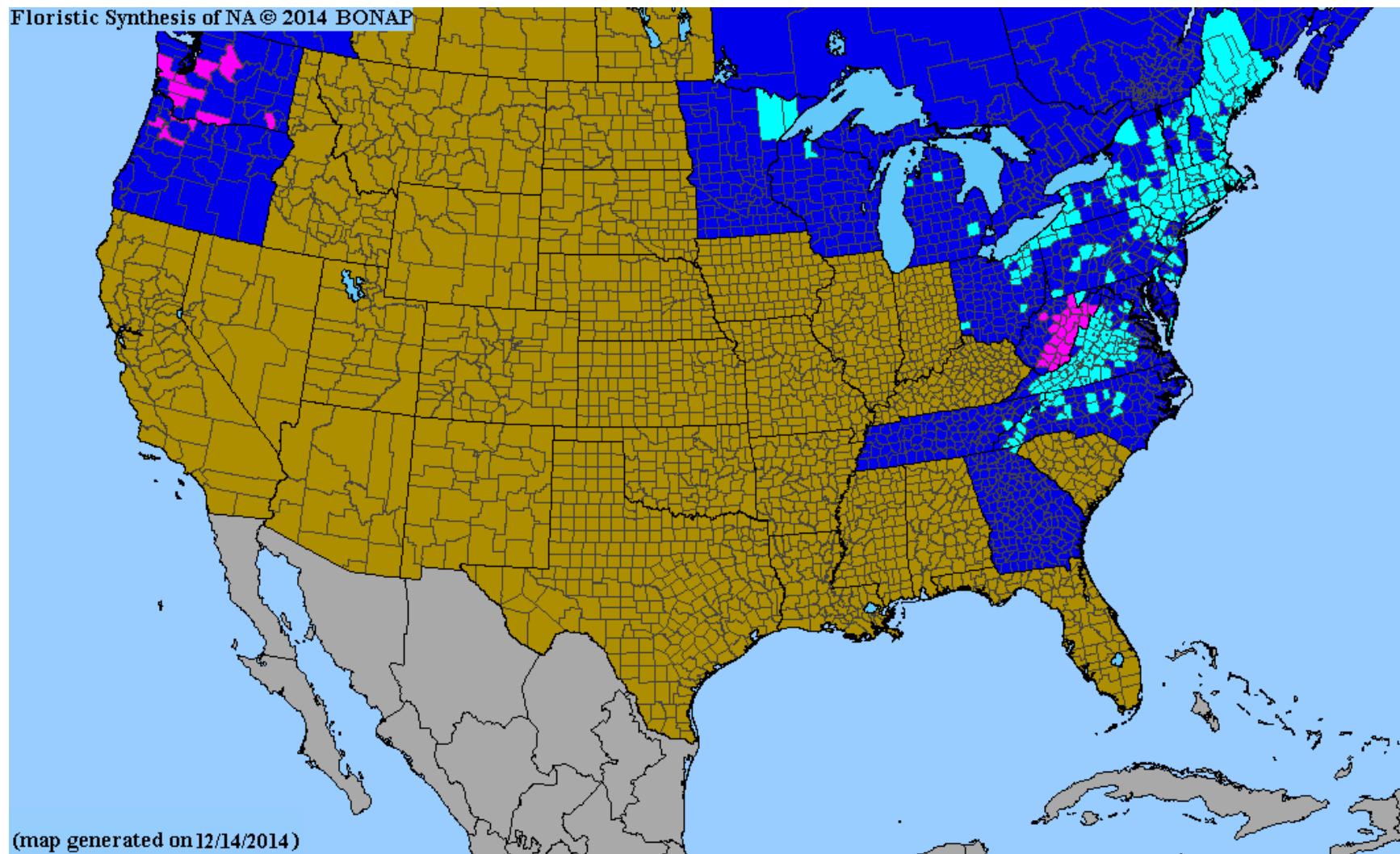


Figure 6. Mouse-eared hawkweed distribution in North America. Floristic Synthesis of NA.
http://bonap.net/MapGallery/County/Hieracium_pilosella.png Accessed April 2018.

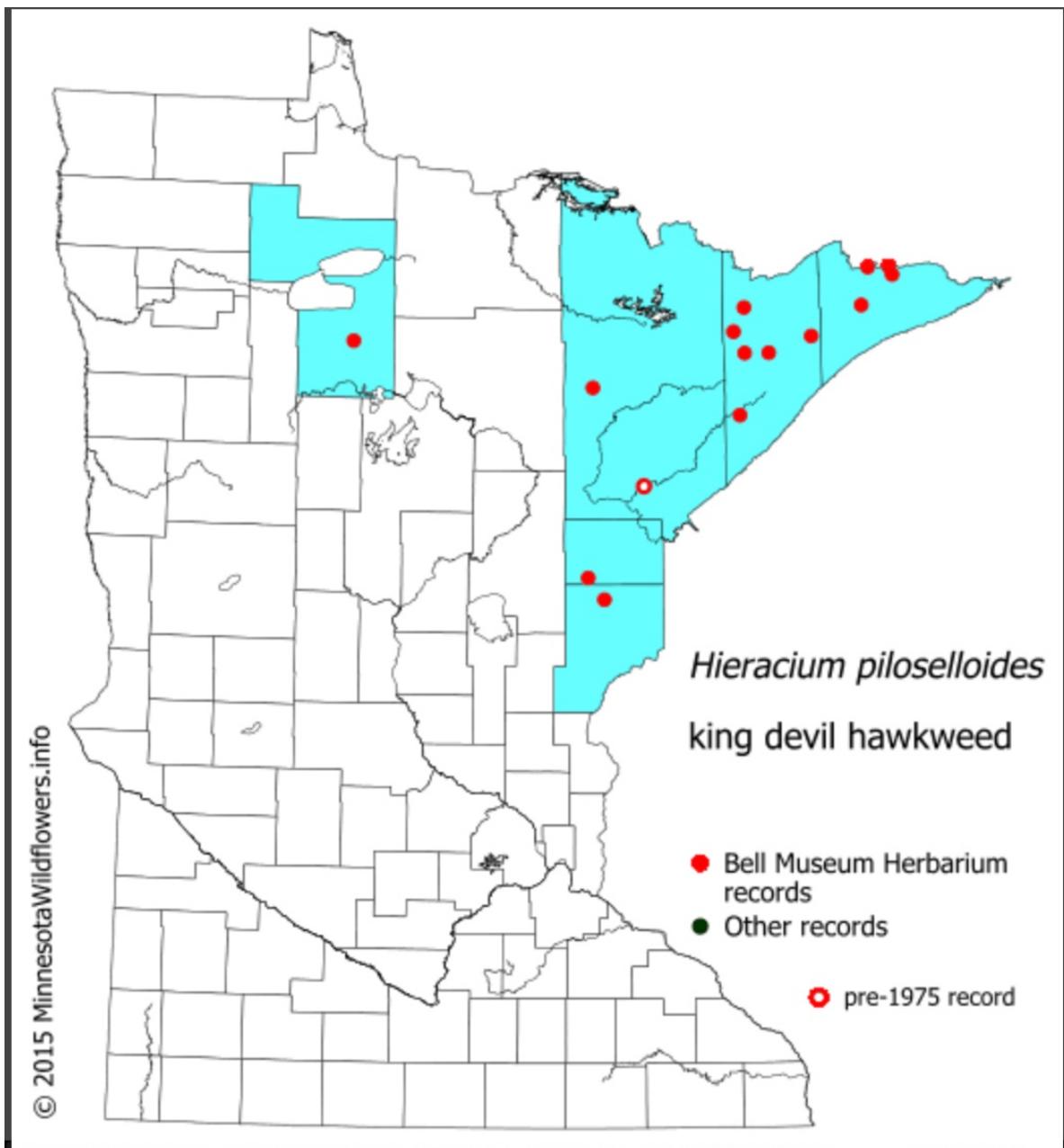


Figure 7. King-devil hawkweed records in Minnesota. Mn Wildflower.
<https://www.minnesotawildflowers.info/flower/glaucous-king-devil> Accessed July 2018.

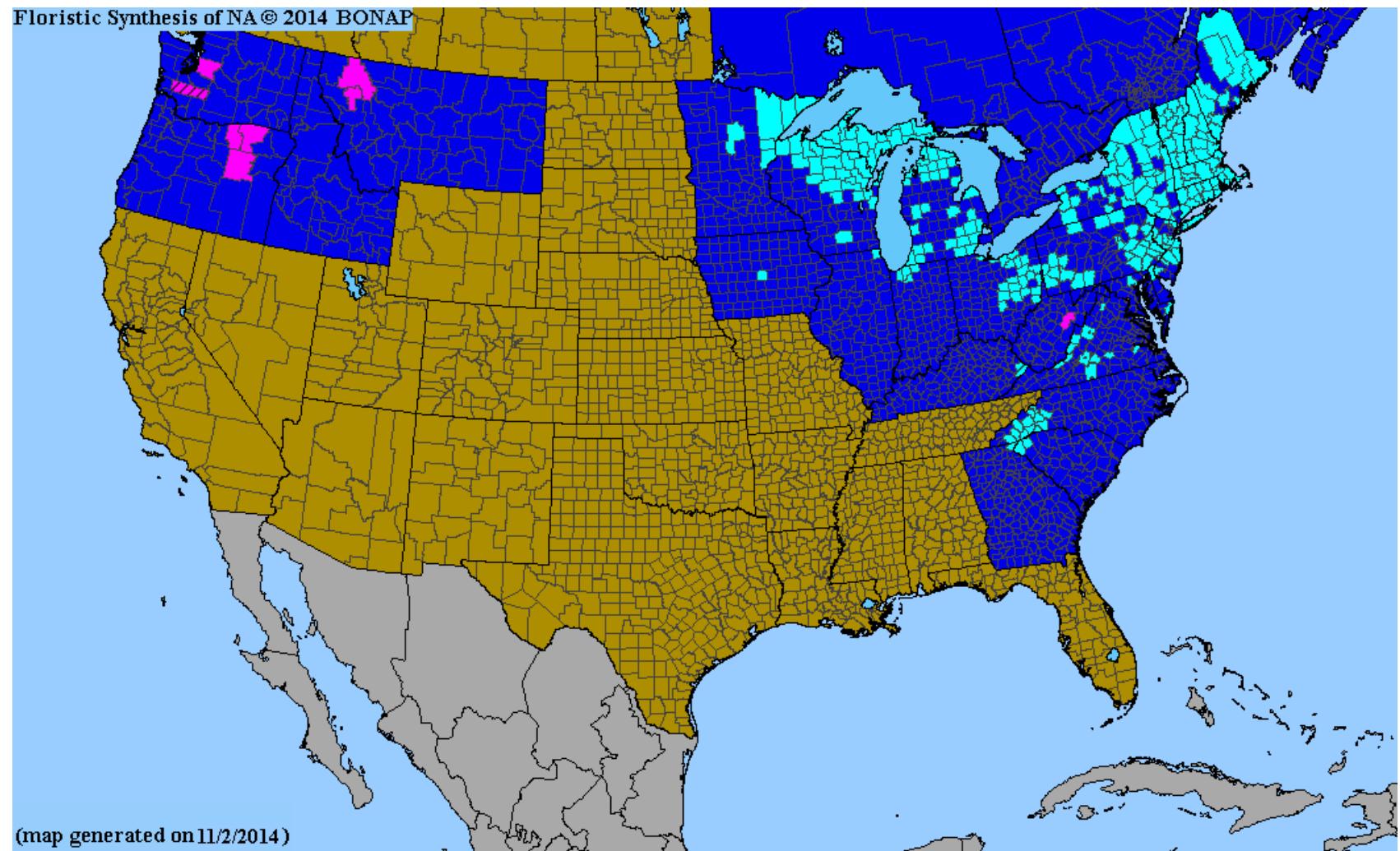


Figure 8. King-devil hawkweed distribution in North America. Floristic Synthesis of NA.
http://bonap.net/MapGallery/County/Hieracium_piloselloides.png Accessed April 2018.