

MN NWAC Risk Assessment Worksheet (04-2017)	Common Name	Latin Name (Full USDA Nomenclature)
	Poison Hemlock	<i>Conium maculatum</i> L.
Original Reviewer: David Hanson	Affiliation/Organization:	Original Review: (7/11/2017)
Current Reviewer: David Hanson	Minnesota Department of Transportation	Current Review Date: (11/30/2017)

**Species Description:**

**Plant:** A member of the family Apiaceae (carrots, parsley). Herbaceous, biennial. In the flowering year plants reach 3 to 7 feet tall. Said to be a mousy odor when plant parts are broken or crushed. All parts are hairless.

**Stem:** Hollow, glabrous, light green and often but not always purple spotted. Longitudinal veins cause a ridged appearance.

**Leaves:** Alternate, generally triangular in form. Leaves are doubly or triply, pinnately compound and fern like in appearance. Base of the leaf petiole attaches to the stems with a clasping sheath. Leaflets are lanceolate to ovate and again pinnately dentate.

**Flowers:** Compound umbels of 1/8 inch, 5-parted, white flowers. Flower petals slightly notched and unequal in size. Compound umbels are 2-5 inches across and comprised of 8-16 umbellets. At the base of the compound umbel are ovate-lanceolate floral bracts with a drawn out tip. Smaller but similar floral bracts exist at the base of the umbellets. Bloom time is 1-2 months from early to mid-summer.



**Biology:** Each flower produces a schizocarp (dry fruit) which at maturity splits, yielding two carpels (individual seeds). The seeds tend to fall close to the plant, thus dense colonies can form. After producing seed, plants senesce in late summer.

**Similar looking species:** Water hemlock (*Cicuta maculata* L.). Often confused with other family members like wild carrot (*Daucus carota* L.), wild chervil (*Anthriscus sylvestris* (L.) Hoffm.) and wild parsnip (*Pastinaca sativa* L.).

**Identification References:**

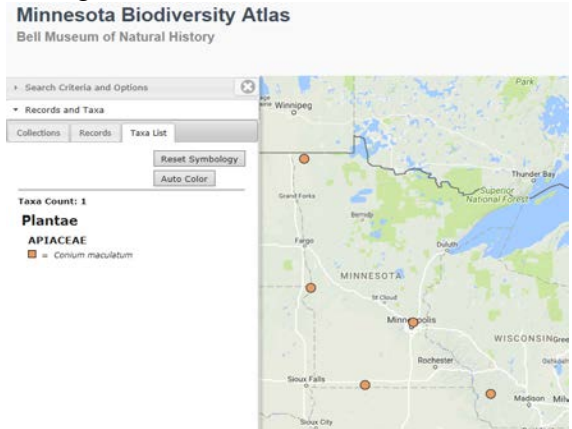
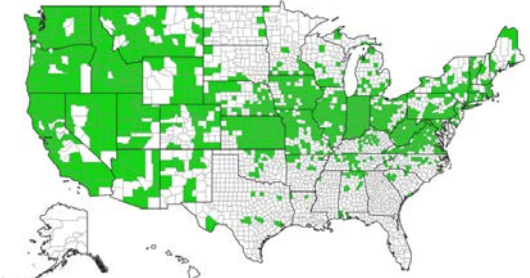
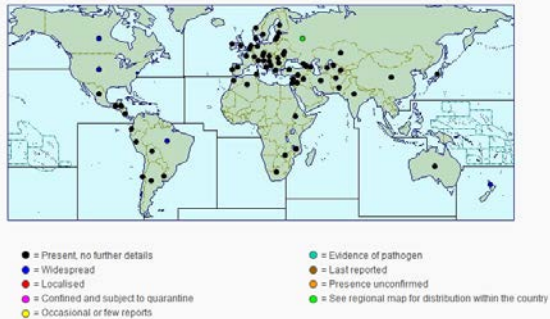
- [http://www.illinoiswildflowers.info/weeds/plants/poison\\_hemlock.htm](http://www.illinoiswildflowers.info/weeds/plants/poison_hemlock.htm)
- <https://www.minnesotawildflowers.info/flower/poison-hemlock>
- [www.dot.state.mn.us/roadsides/vegetation/pdf/noxiousweeds.pdf](http://www.dot.state.mn.us/roadsides/vegetation/pdf/noxiousweeds.pdf), page 46

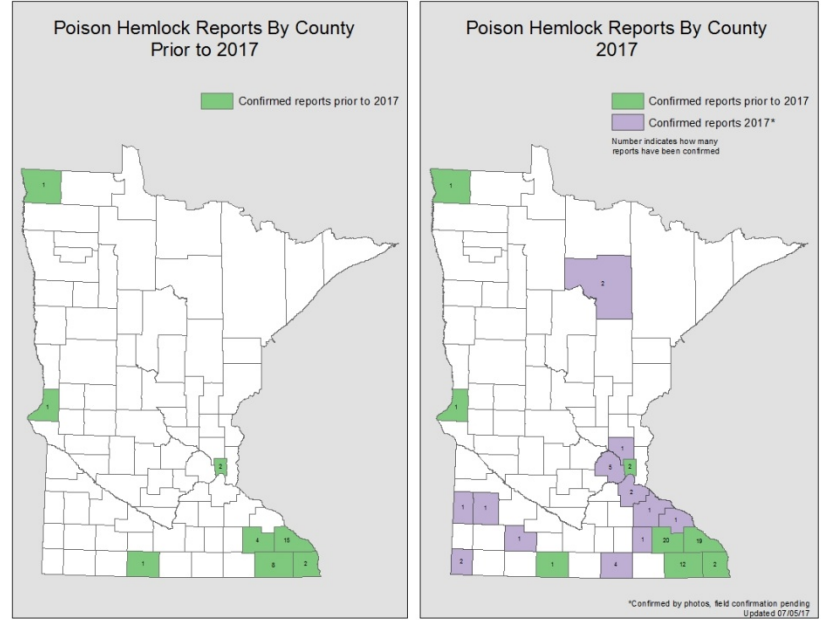
**Current Regulation:** USDA Plants Database

State	Common Name	Listing Category
Colorado	Poison Hemlock	C list (noxious weeds)
Idaho	Poison Hemlock	Noxious weed
Iowa	Poison Hemlock	Secondary Noxious weed
Nevada	Poison Hemlock	Noxious weed
New Mexico	Poison Hemlock	Class B noxious weed
Ohio	Poison Hemlock	Prohibited noxious weed
Oregon	Poison Hemlock	“B” designated weed
	Poison Hemlock	Quarantine
Washington	Poison Hemlock	Class C noxious weed

**NOTE:** (Additional supporting information may be added to a box even when the decision tree process bypasses that question. Text used for the Answer box for this non-required text should be **BOLD AND ITALIC**. Furthermore, whenever text is entered for an answer to a question not required by the risk assessment decision tree process, the outcome box should contain the following statement: **This text is provided as additional information not directed through the decision tree process for this particular risk assessment.**)

Box	Question	Answer	Outcome
1	Is the plant species or genotype non-native?	Yes. Native to Europe, Western Asia, and North Africa. (NatureServe) Europe (USDA Forest Service, 2006)	Go to box 3.
2	Does the plant species pose significant human or livestock concerns or has the potential to significantly harm agricultural production?		
	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?		

Box	Question	Answer	Outcome
3	Is the plant species, or a related species, documented as being a problem elsewhere?	<p>Yes. See “Current Regulation” section above.</p>  <p>Minnesota Biodiversity Atlas Bell Museum of Natural History</p> <p>Search Criteria and Options</p> <p>Records and Taxa</p> <p>Collections Records Taxa List</p> <p>Reset Symbology Auto Color</p> <p>Taxa Count: 1 <b>Plantae</b> APIACEAE Conium maculatum</p> <p>First report in Kittson County Minnesota: August, 1992 made by R. Dana (Bell Museum Records accessed August 16, 2017). Three other herbarium records are dated from 2009 (Martin and Ramsey counties) and 2015 (Traverse county).</p>  <p>EddMaps (August 11, 2017), county distribution of poison hemlock.</p> <p>Distribution Maps</p>  <p>● = Present, no further details ● = Widespread ● = Localised ● = Confined and subject to quarantine ● = Occasional or few reports ● = Evidence of pathogen ● = Last reported ● = Presence unconfirmed ● = See regional map for distribution within the country</p> <p>CABI, 2017</p>	Yes, go to box 6.

Box	Question	Answer	Outcome
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?	Yes. Anecdotally, infestations across southern Minnesota, in particular, appear to be reproducing. Neighboring states and parts of Canada are dealing with infestations (see maps box 3).	
	A. Is the plant, or a close relative, currently established in Minnesota?	Yes. The plant appears to be establishing in Minnesota.  <p style="text-align: right;">*Confirmed by photos, field confirmation pending Updated 07/05/17</p> <p style="text-align: center;">Map produced by Emilie Justen, MDA.</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?	Reported to perform well in USDA hardiness zones 4-8 (CABI).	
7	Does the plant species have the potential to reproduce and spread in Minnesota?		
	A. Does the plant reproduce by asexual/vegetative means?	No.	Go to 7C.

Box	Question	Answer	Outcome
	B. Are the asexual propagules effectively dispersed to new areas?		
	C. Does the plant produce large amounts of viable, cold-hardy seeds?	Yes. Seed production may range from around 1,500 to 39,000 seeds per plant, about 80% of which are viable (CABI – reference to MS Thesis from University of Missouri).  A single plant has the potential to produce up to 30,000 seeds (USDA, Forest Service).	Go to 7F.
	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?	Soil bank viability potentially to 6 years (NatureServe).  Viability from 3 to 6 years (USDA, Forest Service).	
	E. Is this species self-fertile?	Yes, hermaphroditic, insect pollinated (CABI).	
	F. Are sexual propagules – viable seeds – effectively dispersed to new areas?	Yes, equipment, agricultural produce, human movement, wildlife, mud and water. Potentially wind, but not very effective. (NatureServe).	Go to 7I.
	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?	Unknown –hybrids between regional ecotypes is possible. Consider global distribution and sexual reproduction. (DNR WI)	
	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. Nothing significant at this time. Black swallowtail ( <i>Papilio polyxenes</i> ) larvae will utilize the plant.  <i>Agonopterix alstroemeriana</i> – A moth that is said to be a biological control was introduced to the United States from Europe. The larvae are defoliators of poison hemlock. Presence in Minnesota is not known at this time (Chandler).	Go to box 8.

Box	Question	Answer	Outcome
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?	Yes. Several piperidine alkaloid toxins (namely coniine) cause the poisoning of humans, livestock and wildlife (Brooks).  Injurious to livestock – birth defects (crooked calf disease), potentially fatal after ingestion (Canadian Poisonous Plants, Cornell University).	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?	Due to the potential to cause livestock losses, infestations in pastures, hay fields and on crop-lands are problematic. Typically poison hemlock does not infest managed lands.	
	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.)?	Typically No. Poison hemlock can be classified as a pioneer species. Thus after disturbance, it can quickly colonize and displace or outcompete native species. Poison hemlock can degrade habitat but usually is indicative of some other management problem (Natureserve).	<i>This text is provided as additional information not directed through the decision tree process for this particular risk assessment.</i>
	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?		

Box	Question	Answer	Outcome
	A. Is the plant currently being used or produced and/or sold in Minnesota or native to Minnesota?	No. Historically components of the plant were used as homeopathic medicine. However, those have been for the most part abandoned as the piperidine alkaloid toxins (namely coniine) and the danger to humans has become better understood.	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?		
	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?	Yes – See box 6A – EddMaps reports pre-2017 and 2017.	Go to 10 B.
	B. Does the plant pose a serious human health threat?	Yes – Potential confusion for foragers of native plant food materials. Often confused with other edible family members like wild carrot ( <i>Daucus carota</i> L.), wild chervil ( <i>Anthriscus sylvestris</i> (L.) Hoffm.) and wild parsnip ( <i>Pastinaca sativa</i> L.).	List as a prohibited / control noxious weed.
	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.	

Box	Question	Answer	Outcome
11	Should the plant species be allowed in Minnesota via a species-specific management plan; designate as specially regulated?	No reason to do that.	
<b>Final Results of Risk Assessment</b>			
	Review Entity	Comments	Outcome
	NWAC Listing Subcommittee	Should be prohibited due to serious health concerns, but due to its wider distribution in the state, list as a Prohibited Noxious Weed on the Control List.	<b>List as Prohibited Control</b>
	NWAC Full-group	Full-group voted 12 – 1 that due to the public and livestock health concerns of poison hemlock, the species should be recommended to be regulated as a Prohibited Noxious Weed on the Eradicate List. A second vote was taken and passed (12 – 1) to send the recommendation to the commissioner immediately for emergency listing beginning in 2018.	<b>List as a Prohibited Noxious Weed on the Eradicate List in 2018.</b>
	MDA Commissioner	Approved NWAC’s recommendation – 1/26/2018	<b>List as a Prohibited Noxious Weed on the Eradicate List in 2018.</b>
	FILE # <b>MDARA00059POHEM_11_28_2017</b>		

**Risk Assessment Current Summary** (*Current Year – 11/28/2017*):

- List as Prohibited: Eradicate – Commissioner Approved 1/26/2018
- Considering current public awareness, if vote to list after the full committee meeting in September, expedite process to gain MDA Commissioner signature to add to the Noxious weed list in 2018. Clearly and effectively summarize the findings of the risk assessment, NWAC voting and committee issues, and the final decision. This includes a summary of petitions or other findings of NWAC, MDA or the Commissioner.

**References:**

(List any literature, websites, personal communications and other publications. All references should identified in a systematic and logical way within the RA text)



Annen, Craig A. 2007. Wisconsin Department of Natural Resources. Poison Hemlock Literature Review. <http://dnr.wi.gov/topic/Invasives/species.asp?filterBy=Terrestrial&filterVal=Y&catVal=PlantsReg#RegSelect>. (Accessed: July 11, 2017).

Minnesota Biodiversity Atlas. University of Minnesota: Bell Museum Herbarium Records. Poison Hemlock. Online. Accessed: August 11, 2017.

Brooks, Daniel E. MD Co-Medical Director, Banner Good Samaritan Poison and Drug Information Center, Department of Medical Toxicology, Banner Good Samaritan Medical Center. Hemlock Poisoning. MedScape, <http://emedicine.medscape.com/article/821362-overview>. Updated June 6, 2017. (Accessed: July 11, 2017).

CABI, 2017. *Conium maculatum*. In: Invasive Species Compendium. Wallingford, UK: CAB International. [www.cabi.org/isc](http://www.cabi.org/isc). (Accessed: July 11, 2017).

Canadian Poisonous Plants Information System. *Conium maculatum*: General Poisoning Notes. <http://www.cbif.gc.ca/eng/species-bank/canadian-poisonous-plants-information-system/all-plants-scientific-name/conium-maculatum/?id=1370403266818>. (Accessed: July 11, 2017).

Chandler, Monica. Minnesota Department of Agriculture, Email – personal communication.

Cornell University. Department of Animal Science - Plants Poisonous to Livestock. *Conium maculatum*. <http://poisonousplants.ansci.cornell.edu/php/plants.php?action=indiv&byname=scientific&keynum=28>. (Accessed: July 11, 2017).

Hall, Donald W. Featured Creatures: Eastern Black Swallowtail. Entomology and Nematology Department, University of Florida. [http://entnemdept.ufl.edu/creatures/bfly/bfly2/eastern\\_black\\_swallowtail.htm](http://entnemdept.ufl.edu/creatures/bfly/bfly2/eastern_black_swallowtail.htm). (Accessed: July 11, 2017).

Minnesota Biodiversity Atlas. University of Minnesota: Bell Museum Herbarium Records. Poison Hemlock. Online. Accessed: August 11, 2017.

NatureServe. 2017. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>. <http://explorer.natureserve.org/servlet/NatureServe?searchName=Conium+maculatum>. (Accessed: July 11, 2017).

USDA-FS, 2015. Field Guide for Managing Poison Hemlock in the Southwest. United States Department of Agriculture – Forest Service. (Accessed: July 11, 2017).

USDA-NRCS, 2015. *Conium maculatum*. The PLANTS Database. Baton Rouge, USA: National Plant Data Center. <http://plants.usda.gov/> (Accessed: July 11, 2017).

## **Appendix:**