MN NWAC Risk Assessment Worksheet (04-2011)	Common Name	*Latin Name*
	Wild Parsnip	***Patinaca sativa* L.**
Reviewer	**Affiliation/Organization**	**6/03/2013**
Anthony B. Cortilet 	**MN Dept. of Agriculture**	

Box	Question	Answer	Outcome
1	Is the plant species or genotype non-native?	Yes – various regions of Europe and Asia	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?		
3	Is the plant species, or a related species, documented as being a problem elsewhere? 	Wild Parsnip is found throughout the US and is thought to be problematic for 1) its ability to invade disturbed habitats and create monoculture & 2) dermatological problems (photoactive burns) associated with human skin and light skinned livestock. It is documented to be a prohibited noxious weed in MN and Ohio and a Restricted Invasive Species in WI. Most US state list it as an invasive species of major concern – mostly for human health.	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?	The species is found throughout MN (MDA 4-year statewide roadside survey – 2003 – 2007) but is extremely populated in the SE ¼ of the state where it continues to spread north and west.	
	A. Is the plant, or a close relative, currently established in Minnesota?	Yes	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?	No – Monocarpic Perennial	7C
	B. Are the asexual propagules effectively dispersed to new areas?		
	C. Does the plant produce large amounts of viable, cold-hardy seeds?	Yes. Single parsnip plants can produce hundreds of cold-hardy viable seeds (Avg. of 975/plant – Mark Renz, U of Wisconsin) that can survive for several years in MN soils (4 year Average – Mark Renz, U of Wisconsin).	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?		
	E. Is this species self-fertile?		
	F. Are sexual propagules – viable seeds – effectively dispersed to new areas?	Yes – wind, water, animals, snow, humans (recreational vehicles, mowers/tractors, foot traffic, etc.). Average dispersal has been measured to be 3 meters with a maximum of 13 meters – Mark Renz, U of Wisconsin)	7I

Box	Question	Answer	Outcome
	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. The Parsnip webworm, *Depressaria pastinacella*, was unintentionally brought to North America. It is established in most of SE MN and has been observed by MDA scientist to have 7 – 10 year cyclic population booms over the past 3 decades. It has not been documented to stop the spread of wild parsnip in MN, but has been shown to destroy umbel production in plants, thus lowering average seed production. Parsnip webworms are of concern to producers of cultivated parsnips and have been shown to decimate large acres of cultivated parsnips in New Zealand. There is also evidence in the US that relationships developing over time between webworms and parsnip populations could be influencing the plant's production of furanocoumarin compounds that cause blistering of mammal skin when exposed to sunlight.	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?	Yes	

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 – Wild Parsnip contains chemical compounds that can cause serious burns, blisters, and lesions on human skin and light-skinned livestock and pets. Cattle will graze wild parsnip, but some reports exists where blistering can occur orally on horses and cattle that consume wild parsnip expressing high amounts of furanocoumarins.	Box 9
	B. Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs?		
	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?	No – not the wild form. Cultivated parsnips are the same species as wild parsnip. There is some cultivation in MN, but is negligible and separate from the issue of escaped/naturalized wild parsnip.	
	A. Is the plant currently being used or produced and/or sold in Minnesota or native to Minnesota?	Yes – cultivated variety in home gardens, small acre farms supplying local farmer's markets, and a small percentage of organic farms. No – Pastinaca sativa is not native to MN.	B

Box	Question	Answer	Outcome
	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?	Yes – species is introduced. Yes – management of parsnip using fall applied herbicides have been shown to be very effective.	Box 11
	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?		
11	Should the plant species be allowed in Minnesota via a species-specific management plan; designate as specially regulated?		

Box	Question	Answer	Outcome
Final Results of Risk Assessment			
	Review Entity	**Comments**	**Outcome**
	NWAC Listing Subcommittee	First review – 06/20/2013, Final Review 08/12/2013	Specially Regulated Plant – Due to it being a grown crop in MN - Special Regulation would be to control all wild populations, excluding approved cultivated varieties.
	NWAC Full-group	Reviewed 12/18/13	Vote 12 – 1 in favor of reclassifying from a Prohibited – Control species to a Specially Regulated Plant per Listing Subcommittee's assessment
	MDA Commissioner	Reviewed 2/24/2014	**Denied NWAC's recommendation** due to petition letters and other stakeholder input that suggested reclassifying would cause confusion with the requirements under the law and the fact that parsnips are a minor crop in MN. Commissioner ordered that it remain a Prohibited Control Species with an exemption for approved non-wild cultivated varieties.
	FILE # MDARA00025WIPAR_2_24_2014	**Prohibited – Control (EXCEPT FOR NON-WILD CULTIVATED VARIETIES)**	

References:

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Mark R. Berenbaum, A.r. Zangerl, and J.K. Nitao. 1986. Constraints on Chemical Coevoloution: Wild Parsnips and The Parsnip Webworm. Evolution, 40 (6), PP 1215 – 1228.

Diane Yates. University of Illinois at Urbana-Champaign. After more than 100 years apart, webworms devastate New Zealand parsnips. http://www.eurekalert.org/pub_releases/2008-01/uoia-amt013008.php

Mark J Renz. 2009. Wild Parsnip Identification and Management. IPAW Presentation on Controlling Biennials and Monocarpic Species: http://weedwatchers.org/media/Document_18.pdf

MDA. Minnesota Noxious Weed Lists. 2013: http://www.mda.state.mn.us/en/plants/badplants/noxiouslist.aspx

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MN DNR. Wild parsnip (*Pastinaca sativa*). 2013: http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/wildparsnip.html

MN DOT. Minnesota Noxious Weeds. 2013: http://www.dot.state.mn.us/roadsides/vegetation/pdf/noxiousweeds.pdf

Wisconsin NR40 Assessment. Craig Annen and Jerry Doll. 2007 http://dnr.wi.gov/topic/Invasives/documents/classification/LR_Pastinaca_sativa.pdf

USDA Plants Database. Plant Profile for Wild Parsnip, *Pastinaca sativa* L. 2013: http://plants.usda.gov/java/profile?symbol=PASA2