

MN NWAC Risk Assessment Worksheet (04-2011)	Common Name	Latin Name
	Black locust	<i>Robinia pseudoacacia</i>
Reviewer	Affiliation/Organization	Date (mm/dd/yyyy)
Ken Graeve	MnDOT	08/05/2015

Black locust (*Robinia pseudoacacia*) is an unusual invasive species in that it is native to North America, just not native to Minnesota or the upper Midwest. Nevertheless it is problematic in Minnesota, primarily for its negative ecological impacts. While the risk assessment flow chart puts it in the category of a Prohibited noxious weed, the listing subcommittee of the Noxious Weed Advisory Committee recommends regulating it as a Restricted noxious weed due to complications relating to the control of this species.

Box	Question	Answer	Outcome
1	Is the plant species or genotype non-native?	Yes, although it is native to the southern Appalachians and to the Ozarks, it is not native to the upper Midwest (Stone 2009, Natureserve 2015).	Go to box 3
3	Is the plant species, or a related species, documented as being a problem elsewhere?	Yes, as a threat to native ecosystems in many areas of the lower 48 united states that lie outside of its native range (Stone 2009). Invades forests, upland prairies and savannas, pastures, old fields, and roadsides...forms extensive, dense groves of clones that exclude native vegetation...Classified as “restricted” in WI (WI DNR) Black Locust is given a “High” Invasive Species Impact Rank by Natureserve (2015). Classified as invasive in Connecticut, banned in Massachusetts (USDA Plants) Rated as Limited for invasiveness by the California Invasive Plant Inventory (Cal-IPC 2006).	Go to box 6
6	Does the plant species have the capacity to establish and survive in Minnesota?	Yes	Go to box 7
	A. Is the plant, or a close relative, currently established in Minnesota?	Yes (EDDMaps 2015; USDA NRCS 2015).	Go to box 7

Box	Question	Answer	Outcome
	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?	Yes	
	A. Does the plant reproduce by asexual/vegetative means?	Yes	Go to question B
	B. Are the asexual propagules effectively dispersed to new areas?	Yes, short distances by natural growth but long distance dispersal if mediated by human activity (Stone 2009).	Go to question I
	C. Does the plant produce large amounts of viable, cold-hardy seeds?	<i>Moderate amounts (Stone 2009).</i>	<i>Blue text is provided as additional information not directed through the decision tree process for this particular risk assessment.</i>
	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?	<i>Seeds have impermeable seed coats and scarification is required for germination (Huntley 1990, Stone 2009). This gives them a very long seed life (over 80 yrs in one study), accumulating very high soil seed bank densities. This strategy combined with very fast seedling growth allows them to quickly colonize sites following disturbance (Stone 2009). Although black locust is commonly thought to spread primarily vegetatively, recent genetic research of established populations have shown that establishment from seed is also an important component population expansion (Kurokochi and Hogetu, 2014).</i>	<i>Blue text is provided as additional information not directed through the decision tree process for this particular risk assessment.</i>
	E. Is this species self-fertile?		

Box	Question	Answer	Outcome
	F. Are sexual propagules – viable seeds – effectively dispersed to new areas?	<i>Seeds are dispersed short to moderate distances by gravity, wind, and possibly birds (Kurokochi and Hogetu 2014, Stone 2009).</i>	<i>Blue text is provided as additional information not directed through the decision tree process for this particular risk assessment.</i>
	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?	<i>Can hybridize with a few other Robinia species, including bristly locust (R. hispida) (Stone 2009), which is also present in MN.</i>	<i>Blue text is provided as additional information not directed through the decision tree process for this particular risk assessment.</i>
	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>Seed production begins at 6yrs (Stone 2009).</i>	<i>Blue text is provided as additional information not directed through the decision tree process for this particular risk assessment.</i>
	I. Do natural controls exist, species native to Minnesota, that are documented to effectively prevent the spread of the plant in question?	<p>Black locust is susceptible to a number of insects, including the locust borer, in its native range (Stone 2009).</p> <p>Natural enemies include the locust borer, locust leaf miner, locust twig borer, and heart rot (Converse and Martin 2001). At least two, the locust borer and locust leaf miner, are present in MN and can be a problem when plants are water-stressed or injured (B. Aukema, personal communication, August 3, 2015, J. Hahn, personal communication, August 5, 2015).</p> <p>These native pests of black locust are not documented to effectively prevent the spread--it still appears to be a problem in this region despite the presence of at least the locust borer, but then again it is known as a weedy species in its native range as well</p>	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?	Yes	
	A. Does the plant have toxic qualities, or other detrimental qualities, that pose a significant risk to livestock, wildlife, or people?	No	Go to question B
	B. Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs?	Not quantified. Considered a weed species by forest managers in its native range (Huntley, 1990).	Go to question C
	C. Can the plant aggressively displace native species through competition (including allelopathic effects)?	Yes, many documented cases of native species exclusion throughout the U.S. (Stone 2009). “Invades primarily disturbed habitats, degraded woods, thickets, and old fields, crowding out native vegetation of prairies, oak savannas, and upland forests, forming single species stands.” (MN DNR) Shades out native vegetation in prairies and savannas (Converse & Martin 2001, Wieseler 2005) In its native range, dominant and persistent stands of black locust are rare and usually associated with severe disturbance (Stone 2009).	Go to box 9
	D. Can the plant hybridize with native species resulting in a modified gene pool and potentially negative impacts on native populations?	<i>No, but it can hybridize with the non-native R. hispida (Stone 2009), which is also present in MN.</i>	<i>Blue text is provided as additional information not directed through the decision tree process for this particular risk assessment.</i>

Box	Question	Answer	Outcome
	E. Does the plant have the potential to change native ecosystems (adds a vegetative layer, affects ground or surface water levels, etc.)?	<p><i>“A common concern with the establishment of black locust in its nonnative range is its ability to replace native vegetation. Developing black locust thickets may prevent other plants from establishing and could block historical successional trajectories ([269], review by [131]). Through its nitrogen-fixing abilities, black locust may alter local soil characteristics. While advantageous within its native range and on some plantations, this ability may be problematic to managers outside of its native range, particularly in areas of low soil fertility” (Stone 2009).</i></p> <p><i>By increasing soil nitrogen, black locust can facilitate the spread of other non-native species such as tatarian honeysuckle, common barberry, garlic mustard, and others (Stone 2009).</i></p> <p><i>This is often a species of low-quality disturbed sites but it also invades some important, high-quality prairie and savanna ecosystems where it can significantly alter community structure and species composition. In addition, its ability to fix nitrogen may have significant impacts on some ecosystems, including facilitating invasion by other non-native species. The legacy of these impacts may persist, even long after the locust trees have been removed. Removal is considered difficult, with monitoring and re-treatment over several years necessary. (Natureserve 2015).</i></p> <p><i>Alters fire effects by shading out grasses and producing rapidly-decomposing leaves (Wiesler 2005)</i></p>	<i>Blue text is provided as additional information not directed through the decision tree process for this particular risk assessment.</i>
9	Does the plant species have clearly defined benefits that outweigh associated negative impacts?	No	

Box	Question	Answer	Outcome
	A. Is the plant currently being used or produced and/or sold in Minnesota or native to Minnesota?	<p>There are cultivars of black locust available. The horticultural variety “Purple Robe,” a cultivar grafted onto wild type rootstock, is likely to be sold in MN for landscaping but in small quantities that represent a small component of trade (Tim Power, personal communication June 1,2015).</p> <p>Bailey Nurseries website lists “Purple Robe” and “Twisty Baby” cultivars. I couldn’t find black locust at any other nursery in MN during a web search.</p> <p>MN Tree Care Advocate website warns that it can colonize the area if planted in the wrong location (2015).</p> <p>Black locust is a desirable nectar source for honey producers (Huntley 1990) but information quantifying its value in relation to overall honey production is unavailable.</p>	Go to question B
	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?	Black Locust is an introduced species but its spread cannot be effectively and easily prevented or controlled, or its negative impacts minimized.	Go to question C
	C. Is the plant native to Minnesota?	No	Go to question D
	D. Is a non-invasive, alternative plant material commercially available that could serve the same purpose as the plant of concern?	Yes, MN DNR website lists multiple native tree species as suitable substitutes.	Go to box 10
10	Should the plant species be enforced as a noxious weed to prevent introduction &/or dispersal; designate as prohibited or restricted?	Yes	
	A. Is the plant currently established in Minnesota?	Yes	Go to question B

Box	Question	Answer	Outcome
	B. Does the plant pose a serious human health threat?	No	Go to question C
	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?	Top cutting is not effective at control because it encourages sprouting. Black Locust can be killed with herbicide (Boos and Mattson 2011; Huntley 1990) but Stone reports that chemical control needs to be combined with revegetation for a long term solution (2009).	List as prohibited/control
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	Although a strict adherence to the risk assessment flow chart puts this species in the Prohibited/Control category, the listing subcommittee recommends that it be regulated as a Restricted noxious weed for the following reasons: The control of woody noxious weeds and those in forested settings is more difficult to enforce because of the added complexities of requiring tools such as herbicides and chainsaws that may not be available to a typical landowner. Strict enforcement of the control of black locust could lead to numerous forests, especially in steep blufflands, requiring significant restoration work to prevent erosion and/or recolonization. This type of control and restoration, requiring years of follow-up work, does not have a good track record of implementation with the current system of noxious weed enforcement in Minnesota. Finally, control of this species and the subsequent restoration could require far more resources for agencies and landowners than control of herbaceous species with similar distribution.	List as a Restricted Noxious Weed.

Box	Question	Answer	Outcome
	NWAC Full-group	Voted 11 in favor and 0 opposed.	REGULATE. LIST AS A RESTRICTED NOXIOUS WEED.
	MDA Commissioner	Accepted NWAC Recommendation	LIST AS A RESTRICTED NOXIOUS WEED.
	FILE # BlackLocust_2015_MDARA00050BLOC		

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Range Maps
EDDMaps 2015.



