


MN NWAC Risk Assessment Worksheet (04-2011) 	Common Name	Latin Name
	Black Swallow-wort (Louise's Swallow-wort, dog strangling vine, climbing milkweed)	<i>Cynanchum louiseae</i> Kartesz & Gandhi, syn. <i>Cynanchum nigrum</i> (L.) Pers., non Cav. and <i>Vincetoxicum nigrum</i> (L.) Moench
Reviewer	Affiliation/Organization	Date (mm/dd/yyyy)
Laura Van Riper	Minnesota Department of Natural Resources	DRAFT 09/13/2012

Box	Question	Answer	Outcome
1	Is the plant species or genotype non-native?	<p>Yes. Endemic to southwestern Europe, particularly regions of the Iberian Peninsula, southern France, and northern Italy (DiTommaso et al. 2005). First found in the US in 1854 in Massachusetts (Douglass et al. 2009). The most likely source of introduction of both species was importation as specimens for botanical or estate gardens, though this remains uncertain (DiTommaso et al. 2005b; Sheeley 1992). For many years the two swallow-wort species were cultivated and sold as ornamental plants, though this is no longer common (DiTommaso et al. 2005b; Monachino 1957).</p>	Go to box 3

Box	Question	Answer	Outcome
3	Is the plant species, or a related species, documented as being a problem elsewhere?	Yes. Listed as invasive, prohibited, or noxious in Connecticut, Massachusetts, New Hampshire, and Vermont (USDA Plants). “BSW has a wider distribution longitudinally, with populations reported as far west as Kansas, Nebraska, Minnesota, and even California. However, its invasion is also centered in New York, with the heaviest infestations found in the Hudson River Valley, but also in Massachusetts and Connecticut (DiTommaso et al. 2005b). The wider distribution of BSW has been attributed to its apparent ability to adapt to more severe climatic conditions than encountered in its native Mediterranean range, unlike PSW that has largely remained within its predicted climatic boundaries (DiTommaso et al. 2005b).” Douglass et al. 2009	Go to box 6
6	Does the plant species have the capacity to establish and survive in Minnesota?	Yes, black swallowwort has established in Minnesota.	
	A. Is the plant, or a close relative, currently established in Minnesota?	Isolated patches of black swallowwort have been found in Minnesota in Hennepin and Ramsey counties (www.EDDMaps.org)	Go to Box 7
	B. Has the plant become established in areas having a climate and growing conditions similar to those found in Minnesota?	“Both swallow-wort species are typically found in habitats with temperature ranges in the winter of -11 to 0.7°C (12 – 33 deg F) and in the summer of 20.7–26.4°C (68 – 79 deg F), while mean annual precipitation levels in these areas range from 776–1,206 mm (DiTommaso et al. 2005b).” Douglas et al. 2009 An unpublished study of projected range expansion, conservatively estimates that black swallowwort range could include the southern half of Minnesota (Little et al. 2009)	
7	Does the plant species have the potential to reproduce and spread in Minnesota?		
	A. Does the plant reproduce by asexual/vegetative means?	Yes. “Root structures in Black Swallow-wort are similar but tend to be thicker and more fibrous than Pale swallow-wort, and rhizomes in Black Swallow-wort species are reported to contribute more significantly to population expansion (DiTommaso et al. 2005b; Lumer and Yost 1995).” Douglass et al. 2009	Go to Box 7B

Box	Question	Answer	Outcome
	B. Are the asexual propagules effectively dispersed to new areas?	Asexual reproduction seems to be a way that the species increases at a site, but not a primary method of dispersing to new sites.	Go to Box 7C
	C. Does the plant produce large amounts of viable, cold-hardy seeds?	Yes. Seeds generally require a cold treatment to germinate (Douglass et al. 2009).	Go to Box 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?	Yes. It is self-compatible and also pollinated by fly, ant, bee, wasp, and beetle species (Douglass et al. 2009).	
	F. Are sexual propagules – viable seeds – effectively dispersed to new areas?	Yes. Like other members of the milkweed family, seeds are wind dispersed (Czarpata 2005).	Got to Box 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?	Potential to hybridize with other European species (DiTommaso et al 2005).	
	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?	There are no native controls that have been documented.	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?	<p>Yes.</p> <p>“The potential for both swallow-wort species to serve as fatal hosts for Monarch butterflies (<i>Danaus plexippus</i> L.), a condition in which adults lay eggs on the plants but the larvae do not survive, has been well reported (Casagrande and Dacey 2001; DiTommaso and Losey 2003). Casagrande and Dacey (2007) found that in fields with little or no common milkweed (<i>Asclepias syriaca</i> L. – the butterflies’ normal host species), the density of eggs found on BSW stems was five times greater than that found in a more diverse old-field site with abundant common milkweed. Although there have been studies that questioned whether swallow-worts play a significant role as fatal hosts for Monarch butterflies (Mattila and Otis 2003), it is likely that through the competitive displacement of common milkweed populations, the two swallow-wort species could ultimately pose a serious threat to Monarch butterfly populations in infested areas (DiTommaso et al. 2005b; Tewksbury et al. 2002).” Douglass et al. 2009</p>	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?	<p>Yes.</p> <p>“The New York State Forest Owner’s Association and many foresters have claimed that swallow-wort infestations in understories are also compromising forest regeneration (Lawlor 2003). Horticultural nursery owners and Christmas tree producers affected by swallow-wort infestations reported that due to lack of effective control methods and regeneration impacts, land abandonment was often the only reasonable option.” Douglass et al. 2009</p>	
	C. Can the plant aggressively displace native species through competition (including allelopathic effects)?	<p>Displacement likely mainly due to displacement.</p> <p>Allelopathy:</p> <p>“Both swallow-wort species have been found to have high concentrations of cytotoxic secondary products in their roots, stems, and leaves (Capo and Saa 1989; Lee et al. 2003; Nowak and Kiesel 2000; Staerk et al. 2000, 2002).” Douglass et al. 2009</p> <p>“A comparison of inhibitory effects with common milkweed (generally not considered to be invasive) found that the swallowworts did not exhibit significantly greater negative allelopathic abilities than the related nonnative species.” Douglass et al. 2009</p>	

Box	Question	Answer	Outcome
	D. Can the plant hybridize with native species resulting in a modified gene pool and potentially negative impacts on native populations?	Potential to hybridize with other European species (DiTommaso et al 2005).	
	E. Does the plant have the potential to change native ecosystems (adds a vegetative layer, affects ground or surface water levels, etc.)?	“Once established, both swallow-wort species grow profusely and aggressively. PSW and BSW can rapidly alter the abiotic and biotic features of their understory and surrounding areas: decreasing sunlight penetration, increasing nutrient acquisition through large root biomasses, and altering rhizosphere dynamics both through shifts in the AMF community and the exudation of allelopathic chemicals (Douglass 2008; Greipsson and DiTommaso 2006; Lawlor 2002; Sheeley and Raynal 1996; Weston et al. 2005).” Douglass et al. 2009	
	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. (personal communication with Debbie Lonnee and Tim Power, Minnesota Nursery and Landscape Association)	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?		
	A. Is the plant currently established in Minnesota?	No. Populations that have been discovered have been controlled. (pers. comm. with MDA)	LIST THE PLANT AS A PROHIBITED/ERADICATE NOXIOUS WEED
	B. Does the plant pose a serious human health threat?		

Box	Question	Answer	Outcome
	<p>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?</p>	<p>No cultural controls are available. Broad spectrum herbicides and mechanical control must be repeated during the growing season and over multiple years and even then are only somewhat effective (Douglass et al. 2009).</p> <p>“Both PSWs and BSWs can rapidly regrow from buds on the root crown, rendering mowing, tillage, clipping, and other frequently used control strategies less effective against these perennials (Averill et al. 2008; Lawlor 2002; Lawlor and Raynal 2002; Weston et al. 2005).” Douglass et al. 2009</p> <p>“The most effective chemical treatments were glyphosate (10.4 kg ai ha⁻¹) applied at an early stage of flowering and triclopyr (2.6 kg ai ha⁻¹) applied at early fruit formation, both of which resulted in a 73% reduction in cover, decreased densities, and a loss of apical dominance (Lawlor and Raynal 2002).” Douglass et al. 2009</p> <p>Biocontrol research was initiated in 2006. There are potential insect biocontrol candidates, but nothing is approved for release at this time. Dick Cassagrande (University of Rhode Island) submitted a petition to USDA for release for the insect <i>Hypena opulent</i>. No recommendation from the Technical Advisory Group (TAG) has been received at this time (5-1-12). Research on other insects is ongoing. (personal communication with Lindsay Milbreth – USDA-ARS and Harriet Hinz - CABI)</p>	

Box	Question	Answer	Outcome
Final Results of Risk Assessment			
	Review Entity	Comments	Outcome
	NWAC Listing Subcommittee	May 2012 meeting: Black swallowwort is known to be able to survive in MN. The subcommittee seemed supportive of placing black swallowwort in the prohibited noxious weed – eradicate category. Sept. 2012 meeting: The subcommittee supported placing black swallowwort in the prohibited noxious weed – eradicate category.	List as Prohibited-Eradicate
	NWAC Full-group		Vote to list as Prohibited-Eradicate
	MDA Commissioner		Commissioner Approved as a Prohibited – Eradicate Noxious Weed 1/14/2013
File #	MDARA00021BLKSW_1_18_2013		

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(List any literature, websites, and other publications)

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