Minnesota Noxious Weed Risk Assessment

Developed by the Minnesota Noxious Weed Advisory Committee

Assessment information

Common name: Black swallow-wort, dog strangling vine, Louise's swallow-wort, climbing milkweed

Scientific name: *Cynanchum louiseae* (Kartesz & Gandhi), synonyms: *Cynanchum nigrum* (L.) Pers., non Cav. and *Vincetoxicum nigrum* (L.) Moench

Family name: Asclepiadaceae Borkh. (milkweed family), for the newer taxonomy of *Vincetoxicum nigrum* the family is Apocynaceae

Current reviewer name and organizational affiliation: Kelsey Taylor, Fond du Lac Band of Lake Superior Chippewa and Laura Van Riper, Minnesota Department of Natural Resources
Date of current review: July 7, 2025
Previous reviewer name and organizational affiliation: Laura Van Riper, Minnesota Department of Natural Resources
Date of previous review: September 13, 2012

Species description

Photo

Photo caption: Close- up photo of the flower of *C. louiseae.* The flower is approximately 1/8 inch, is star shaped, and is purple with a yellow center. Flowers cluster at the leaf axils. Photo credit: Minnesota Department of Agriculture.

Why the plant is being assessed

- Black swallow-wort can be a fatal host (or population sink) for monarch butterflies (*Danaus plexippus* L.), The adults lay eggs on the plants, but the larvae do not survive (Douglass et al. 2009).
- Black swallow-wort is toxic to deer and livestock (Brown 2018).
- It has been shown alter the chemistry of the soil, preventing other plants from growing in an area, reducing biodiversity and degrading the habitat by forming dense monocultures (Gibson et al. 2015).
- It poses threats to natural areas and ecosystems, including forest lands and crops such as Christmas trees through aggressive growth and outcompeting other species (Lawlor 2003).
- It tolerates many different ecological conditions, including a wide range of light and moisture, which allows them to form large, dense stands (Lawlor 2003).

Identification, biology, and life cycle

- Perennial, herbaceous vine growing up to 7 feet in length (Michigan Invasive Species Program 2025).
- Approximately 1/8 inch flowers which are star-shaped with five petals, are deep purple in color with a yellow center, and grow in clusters of 6-10 at the axillary ends (Michigan Invasive Species Program 2025, University of MN Extension 2019).
- Vine has twining stems up to 6 feet long (University of Minnesota Extension 2019).
- Opposite, dark green, glossy, lance shaped leaves with smooth edges (University of Minnesota Extension 2019).
- Has typical “milkweed-like pod”, up to 2 ½ inches long and smooth (University of Minnesota Extension 2019).
- Black swallow-wort looks very similar to the closely related plant pale swallow-wort [*Cynanchum rossicum* (Kleopow) Borhidi, synonym *Vincetoxicum rossicum* (Kleopov) Barbarich]. Pale swallow-wort is also present in Minnesota and is regulated as a Prohibited Eradicate Noxious Weed. Pale swallow-wort was regulated by the Minnesota Department of Agriculture in 2023. Flower color is the easiest way to distinguish between the species. Black swallow-wort flowers are purple while pale swallow-wort flowers are light pink.
- Minnesota has a number of native milkweed (*Asclepias*) species, but they are all upright plants; none are vines like black and pale swallow-wort (Minnesota Department of Natural Resources 2025).
- Notes on nomenclature/taxonomy:
    - The Minnesota Department of Agriculture uses USDA Plants (2025) as the scientific name authority for species names. USDA Plants (2025) uses *Cynanchum louiseae* as the accepted scientific name.
    - The Integrated Taxonomic Information System (2025) states that *C. louiseae* is no longer accepted and that the accepted name is *Vincetoxicum nigrum*. It also states that the correct Family is now Apocynaceae. Organizations such as EDDMapS (2025) are using *Vincetoxicum nigrum*.
    - This risk assessment will use *Cynanchum louiseae* following USDA Plants but know that *Cynanchum louiseae* is synonymous with *Vincetoxicum nigrum*.

Current distribution

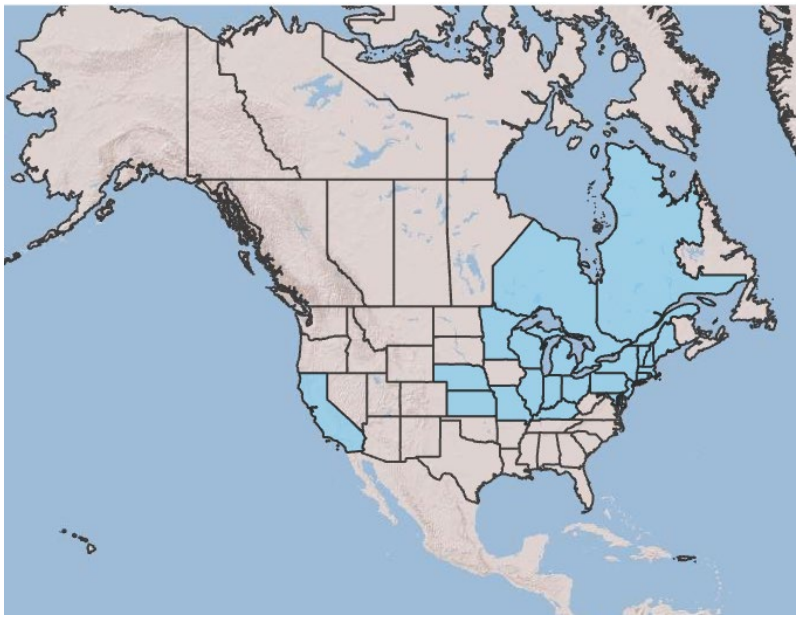

Image caption: National level map from USDA Plants (2025). *C. louiseae* is mainly found in the northeast United States extending westward to Minnesota, Kansas, and Nebraska, and south to Missouri and Kentucky. There are also detections in California.

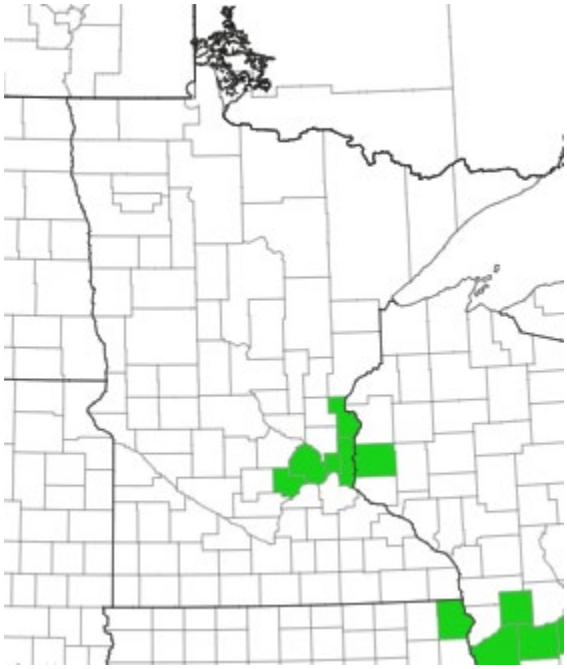

Image caption: State level map from EDDMapS (2025). *C. louiseae* has been reported in five counties around the metro area in Minnesota and has a total of 37 reports of detection in the combined counties. An EDDMapS query indicates these sites cover 6 acres. Note that EDDMapS has reports in a county in Iowa while USDA Plants does not have the Iowa reports. The Iowa reports are National Park Service reports from 2014 and 2017.

Current regulation

Cynanchum louiseae is currently regulated as a prohibited eradicate species in Minnesota (Minnesota Department of Agriculture 2025). It is not regulated at the federal level, but it is regulated as an invasive species/noxious weed in four other states: Connecticut, New York, Michigan, and Wisconsin (USDA 2025). A review of National Plant Board (2025) information found regulations in Connecticut, Indiana, Massachusetts, New Hampshire, New York, Vermont, and Wisconsin. It is also listed as a noxious weed in Ontario, Canada (Government of Ontario 2022).

Risk assessment

Box 1:

Is the plant species or genotype non-native?

Answer: Yes.

Outcome: Go to Box 3.

C. louiseae is endemic to southwestern Europe, specifically regions of the Iberian Peninsula, southern France, and northern Italy (DiTommaso et al. 2005). It was first found in the United States in 1854 in Massachusetts (Douglass et al. 2009).

The most likely source of introduction for pale swallow-wort and black swallow-wort was intentional importation for botanical purposes, though it remains uncertain (DiTommaso et al. 2005, Sheeley 1992). For many years after importation and introduction the swallow-wort species were cultivated and sold as ornamental plants, though this is no longer common practice (DiTommaso et al. 2005, Monachino 1957).

Box 2:

Does the species pose significant human or livestock concerns or have the potential to significantly harm agricultural production?

Question 2A: Does the plant have toxic qualities that pose a significant risk to livestock, wildlife, or people?

Outcome: Decision tree does not direct to this question.

Question 2B: Does the plant cause significant financial losses associated with decreased yields, reduced quality, or increased production costs?

Outcome: Decision tree does not direct to this question.

Box 3:

Is the species, or a related species, documented as being a problem elsewhere?

Answer: Yes.

Outcome: Go to Box 6.

Currently, black swallow-wort is listed as a noxious weed/invasive species in Connecticut, Michigan, New York, and Wisconsin (USDA 2025). A review of National Plant Board (2025) information found regulations in Connecticut, Indiana, Massachusetts, New Hampshire, and Vermont. It is also listed as a noxious weed in Ontario, Canada (Government of Ontario 2022).

Douglass et al. (2009) state that black swallow-wort (BSW) "has a wider distribution longitudinally" than pale swallow-wort (PSW), "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)."

Box 4:

Are the species' life history and growth requirements understood?

Outcome: Decision tree does not direct to this question.

Box 5:

Gather and evaluate further information

Outcome: Decision tree does not direct to this question.

Box 6:

Does the species have the capacity to establish and survive in Minnesota?

Question 6A: Is the plant, or a close relative, currently established in Minnesota?

Answer: Yes.

Outcome: Go to Box 7.

Currently, there are 37 infestations reported in five counties in Minnesota of black swallow-wort (EDDMapS 2025). This means that it has established and can continue to spread.

Question 6B: Has the plant become established in areas having a climate and growing conditions similar to those found in Minnesota?

Answer: ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

Douglas et al. (2009) state: "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)."

Van Riper (2011) states: "An unpublished study of projected range expansion conservatively estimates that black swallowwort range could include the southern half of Minnesota (Little et al. 2009)".

Westbrook et al. (2023) state: "*Vincetoxicum nigrum* may inhabit cooler and wetter habitats in North America than in southwestern Europe (DiTommaso et al. 2005b)."

Question 6C: Has the plant become established in areas having a climate and growing conditions similar to those projected to be present in Minnesota under future climate projections?

Answer: ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

EDDMapS (2025) provides maps of projected future ranges of species by 2041-2060 under future climate conditions. Black swallow-wort is projected to have acceptable climate in the eastern half of Minnesota.

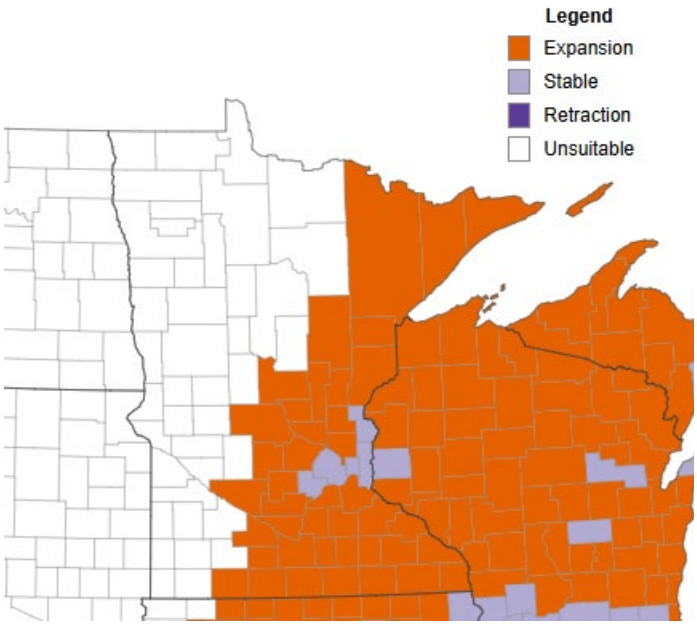

Image caption: The projected future range of black swallow-wort includes most of the eastern half of Minnesota (EDDMapS 2025). Purple indicates counties where black swallow-wort is currently mapped. Orange indicates counties that would have acceptable climate conditions.

Box 7:

Does the species have the potential to reproduce and spread in Minnesota?

Question 7A: Are there cultivars of the plant that are known to differ in reproductive properties from the species?

Answer: No.
Outcome: Go to Question 7B.
Could not find any information about cultivars for *C. louiseae* (or synonym *Vincetoxicum nigrum*).

Question 7B: Does the plant reproduce by asexual/vegetative means?

Answer: Yes.
Outcome: Go to Question 7C.
Black swallow-wort reproduces via rhizomes and are reported to contribute to population expansion (Douglass et al. 2009).

Question 7C: Are the asexual propagules - vegetative parts having the capacity to develop into new plants - effectively dispersed to new areas?

Answer: No.
Outcome: Go to Question 7D.
Though plants can expand on existing populations via rhizome, it is more likely that new populations would start in new locations via seed. Rhizomes can connect underground existing populations, but vegetative means of spread would not likely be the cause of detection in a new location (Douglass et al. 2009).

Tewksbury et al. (2002) state: Black swallow-wort spreads long distances by seed and "spreads clonally from deep rhizomes (Lumer and Yost, 1995)".

Question 7D: Does the plant produce large amounts of viable, cold hardy seeds? For woody species, document the average age the species produces viable seed.

Answer: Yes.
Outcome: Go to Question 7G.
Seeds generally require a cold treatment to germinate (Douglass et al. 2009).

Milbrath et al. (2017) state: "Both species [black and pale swallow-wort] showed moderate to high rates of seed germination and high survival of seedlings, with the primary exception of a heavily shaded forest population (In New York State). Survival generally continued to remain high post establishment, although transitions to different life staged was varied by species, location, and habitat".

Question 7E: For species that produce low numbers of viable seeds, do they have a high level of seed/seedling vigor or remain viable for an extended period (seed bank)?
Outcome: Decision tree does not direct to this question.

Question 7F: Is the plant self-fertile?

Answer: ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
Yes. It is self-compatible and also pollinated by fly, ant, bee, wasp, and beetle species (Douglass et al. 2009).

Question 7G: Are sexual propagules – viable seeds – effectively dispersed to new areas? List and consider all vectors.

Answer: Yes.
Outcome: Go to Question 7I.
C. louiseae (referred to as *V. nigrum* in the following quote) are primarily wind dispersed and typically travel short to moderate distances. Release height is the most important influence on how far a seed may travel. Westbrook et al. (2023) state: "The maximum dispersal distance (from a 2-meter release height) for *V. nigrum* was 72.1 meters. Long distance wind dispersal of *V. nigrum* seed could require the combination of a high release point and a strong wind (DiTommaso et al. 2018)".

Other seed dispersal mechanisms, such as animal transport or movement along hiking trails is a much less likely vector. Any further dispersal is mostly anthropogenic. Historically, *Cynanchum* species were transported for ornamentals and intentionally planted, and presumably they are still incidentally transported through today (Westbrook et al. 2023).

Question 7H: Can the species hybridize with native species (or other introduced species) and produce viable seed and fertile offspring in the absence of human intervention?

Answer: ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
Yes, there is the potential to hybridize with other European species (Van Riper 2011). DiTommaso et al. (2005) state: "Although hybridization is rare in the Asclepiadaceae (Woodson, 1941), *C. rossicum* [pale swallow wort] has been reported to hybridize with *C. vincetoxicum* [while swallow wort]. Hybridization is unlikely in North America since *C. vincetoxicum* is rarely cultivated and occasional escapes are not known to persist (Pringle, 1973; Sheeley, 1992)".

Question 7I: Are there natural controls (species native to Minnesota) which have been documented to effectively prevent the spread of the species in question?

Answer: No.
Outcome: Go to Box 8.
Though some native controls exist, they are not effective enough to prevent the spread of *C. louiseae* or keep the population "in-check". "*V. nigrum* harbor few arthropods, mainly with little to no damage, in their introduced North American range" (Westbrook et al. 2023). All other controls that could potentially be used a biological aid are endemic to European or Asian countries.

There have been reports of a leaf spot fungus in North America (though not in Minnesota), that has been causing significant leaf defoliation in black swallow wort. However, this fungus is not selective and is likely harmful to several broadleaf species (Westbrook et al. 2023).

Due to the impacts of black and pale swallow-wort, research was conducted to find biological control insects for the species. Biocontrol insects are native to the native range of the target invasive plant (Karn et al. 2020). Researchers studied *Hypena opulenta* Christoph (Lepidoptera: Erebidae), commonly known as leaf-feeding moth. *H. opulenta* is native to Ukraine. *H. opulenta* development from egg to adult is completed in about 5-6 weeks. It has five larva instars which feed on the plant leaves, defoliating the plants and impeding their development. *H. opulenta* was approved for release in the United States in 2017. Michigan State University (2020) released *H. opulenta* in Michigan in 2020. No releases have occurred in Minnesota. Biological control is a tool to depress established populations, not to eradicate plant populations. In Minnesota, black and pale swallow-wort have very limited populations, so the focus has been on removing any existing plants.

Question 7J: Was the answer to Question 7A (Are there cultivars that differ in reproductive properties from the original species) "Yes"?
Outcome: Decision tree does not direct to this question.

Box 8:

Does the species pose significant human or livestock concerns or have the potential to significantly harm agricultural production, native ecosystems, or managed landscapes?

Question 8A: Does the plant have toxic qualities, or other detrimental qualities, that pose a significant risk to livestock, wildlife, or people?
Answer: Yes.
Outcome: Go to Box 9.
Douglass et al. (2009) state: "The potential for both swallow-wort species [pale and black] to serve as fatal hosts for Monarch butterflies (*Danaus plexippus* 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 *(Asclepias syriaca* L.- the butterflies' normal host species), the density of eggs found on black swallow-wort stems was five time 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)."

Question 8B: Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs?

Answer: Yes. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
Douglass et al. (2009) state: "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) state: "The species pose a substantial and looming threat to New York states' important agricultural industry. The detection of PSW plants in no-till corn and soybean fields is problematic given the relative difficulty of controlling either of the swallow-wort species effectively with commonly used herbicides in crop systems (DiTommaso et al. 2005b; Lawlor 2003; Weston et al. 2005). There have been numerous reports of landowners abandoning horse pastures due to unmanageable infestations of PSW, possibly due to the physical obstruction posed by dense swallow-wort stands or the suspected toxicity to mammals of plant tissues (Lawlor 2003; Weston et al. 2005). A feeding trial with fresh PSW plant material resulted in the death of a goat from suspected cardiac arrest 4 days after the last tissue treatment, which seems to support evidence from Scandinavia that sheep avoid grazing on PSW plants (DiTommaso et al 2005b; Haeggstrom 1990)."

Question 8C: Can the plant aggressively displace native species through competition (including allelopathic effects)?

Answer: ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
Westbrook et al. (2023) state: "*Vincetoxicum* [*Cynanchum*] species outcompete resident and desirable species (DiTommaso et al. 2005b). They grow in dense near- monospecific stands, altering ecosystem structure and function... and significantly decreased plan community diversity".

Westbrook et al. (2023) state: "In addition to reshaping resident plant communities, *Vincetoxicum* [*Cynanchum*] invasion effects changes at other trophic levels".

Gibson et al. (2011) state: "Antofine was identified as a potent phytotoxin in roots, leaves, and seeds of both swallow-wort species. In seedling bioassays, (-)-antofine resulted in greatly reduced root growth of *Asclepias tuberosa*, *A. syriaca,* and *Apocynum cannabinum,* three related, native plant species typically found in habitats where large stands of swallow-wort are present... the presence of the highly bioactive phytochemical (-)-antofine in root and seed tissues indicates a potential allelopathic role in swallow-worts' invasiveness".

Displacement of native species is likely due to increased competition and reduction of resources for native vegetation than allelopathic effects.

Question 8D: Can the plant hybridize with native species resulting in a modified gene pool and potentially negative impacts on native populations?

Answer: ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
No information was found on hybridizing with species native to Minnesota, but there was information on hybridizing with other swall-worts.

Douglass (2008) states: "There is some current evidence pointing to the potential for black swallow-wort and pale swallow-wort to hybridize. There is also evidence of pale swallow-wort successfully hybridizing with other species in Europe."

Douglass (2008) states: “Ellstrand and Schierenbeck (2000) proposed that hybridization (both inter- and intra-specific) could play an important role in enhancing the invasiveness of introduced species. In particular, they suggested that hybridization between populations of the same taxa could lead to adaptive evolution in cases where the species was intentionally introduced multiple times (resulting in a diverse gene pool), and that this process would occur only after a lag period. Given the evidence of hybridization occurring between *Vincetoxicum* species, we suggest that the potential for evolutionary changes in invasive SWs is high considering their increasingly overlapping ranges (DiTommaso et al. 2005b; Lauvanger and Borgen 1998)”.

Question 8E: Does the plant have the potential to change native ecosystems (adds a vegetative layer, affects ground or surface water levels, etc.)?

Answer: Yes. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

Douglass et al. (2009) state: "Once established, both swallow-wort species grow profusely and aggressively. Pale swallow-wort and black swallow-wort 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)”.

Question 8F: Does the plant have the potential to introduce or harbor another pest or serve as an alternate host?

Answer: Yes. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

Westbrook et al. (2023) state: “*Vincetoxicum* species may be more problematic as reservoirs for fungal pathogens. For example, research in northern and southern Europe has demonstrated that *V. nigrum* can serve as an alternate host for *Cronartium flaccidum* (Alb. & Schwein). G. Winter, a rust fungus that causes disease in pines (*Pinus* spp.) (Bon and Guermache 2012; Kaitera et al. 2012, 2017). In an outdoor experiment in Switzerland, leaves of *V. rossicum* and *V. nigrum* became infected with the fungal pathogens *Ascochyta* sp. and *Cercospora* sp. (Ascomycota), respectively (Weed et al. 2011a). There is some evidence that the fungal communities associated with *V. rossicum* in North America could have positive effects on *V. rossicum* and negative effects on native plants (Day et al. 2016; Dickinson et al. 2021).”

The main damages from black swallow-wort include serving as a fatal host for monarch butterflies and its ability to outcompete native species and habitats. Douglass et al. (2009) state: “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. Indeed, several orchard owners east of Rochester, NY cited PSW as their most problematic weed species (A. Fowler, personal communication; Lawlor 2003).”

Box 9:

Does the species have clearly defined benefits that outweigh associated negative impacts?

Question 9A: Is the plant currently being used or produced and/or sold in Minnesota or native to Minnesota?

Answer: No.

Outcome: Go to Box 10.
C. louiseae has been listed as a prohibited eradicate noxious weed in Minnesota since 2013 (Minnesota Department of Agriculture), as such it should not be being sold or produced intentionally anywhere in the state. *C. louiseae* is native to Ukraine and southwestern Russia (DiTommaso et al. 2005). It is naturalized in Norway and has been introduced to several other countries in Europe (Westbrook et al. 2023).

Question 9B: 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?

Outcome: Decision tree does not direct to this question.

Question 9C: Is the plant native to Minnesota?

Outcome: Decision tree does not direct to this question.

Question 9D: Is a non-invasive, alternative plant material or cultivar commercially available that could serve the same purpose as the plant of concern?

Answer: Yes. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
There are milkweed species native to Minnesota which are crucial to the survival of monarch butterflies and can often be found in pollinator seed mixes available throughout the state. A Minnesota Board of Water and Soil Resources (2013) milkweed handout lists 14 native milkweed species include purple and pink flowered species such as common milkweed (*Asclepias syriaca*), swamp milkweed (*Asclepias incarnata*), and showy milkweed (*Asclepias speciosa*). A native vining plant is virgin's bower (*Clematis virginiana*) (Minnesota Department of Natural Resources 2025).

Question 9E: Does the plant benefit Minnesota to a greater extent than the negative impacts identified at Box #8?

Answer: No. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
(Westbrook et al. (2023) state: "*Vincetoxicum* plants offer some benefits. For example, they have traditionally been used for medicinal purposes in Europe. *Vincetoxicum hirundinaria* has been administered as an emetic, diuretic, or anti-tumor agent (Duke 2002, p. 325; Tanner and Wiegrebe 1993; Uphof 1968, p. 168). Extracts from *Vincetoxicum* species, including *V. hirundinaria*, exhibit antifeedant activity against the phytophagous larvae of the Colorado potato beetle (*Leptinotarsa decemlineata* Say) and Egyptian cotton leafworm (*Spodoptera littoralis* Boisduval) (Guzel et al. 2015; Pavela 2010). Despite these possible uses, *Vincetoxicum* invasion should generally be considered deleterious.".

Box 10:

Should the species be regulated as Prohibited/Eradicate, Prohibited/Control, or Restricted Noxious Weed?

Question 10A: Is the plant currently established in Minnesota?

Answer: Yes.
Outcome: Go to Question 10D.

See Minnesota distribution map. *C. louiseae* has currently had 37 recorded detections in five different counties in Minnesota (EDDMapS 2025). An EDDMapS query indicates these sites cover 6 acres. Though many of these detections have been treated, there are still several also listed as "positive" in the EDDMapS database, which have not been treated or undergone successful management efforts. This suggests *C. louiseae* is established in Minnesota.

Question 10B: Would prohibiting this species in trade prevent the likelihood of introduction and/or establishment?

Outcome: Decision tree does not direct to this question.

Question 10C: Does this risk assessment support this species being a top priority for statewide eradication if found in the state?

Outcome: Decision tree does not direct to this question.

Question 10D: Does the plant pose a serious human health threat?

Answer: No.
Outcome: Go to question 10F.
Black swallow-wort poses many ecological risks to different flora and fauna, but there has been no evidence found of significant direct impacts to human health.

Question 10E: Is the health threat posed by the plant serious enough, and is the plant distribution sufficiently small enough to be manageable, and are management tools available and effective enough to justify listing as Prohibited / Eradicate species?

Outcome: Decision tree does not direct to this question.

Question 10F: Is the plant known to cause significant ecological or economic harm and can the plant be reliably <u>eradicated</u> (entire plant) on a statewide basis using existing practices and available resources considering the distribution, reproductive biology and potential for spread?

- *For distribution, note if the distribution is well documented, the number and acreage of known infestations and how widespread they are in the state. Note if there are infestations in border areas.*
- *For reproductive biology, note if there are reproductive biology factors that make the plant easier to control and eradication more likely (for example, long pre-reproductive period, self-incompatible pollination, short-lived seed bank).*
- *For potential for spread and re-invasion of controlled areas, note its potential to spread beyond places where it is being controlled such as deliberate planting by people, wildlife vectors, re-infestation from border states, or other factors that facilitate spread.*
- *For known management tools, note what management tools are available, potential non-target impacts, and the reasonableness of state management or mandating that landowners throughout the state use the management tools to eradicate or control existing plants.*

- *For available resources, consider the capacity of state and local personnel and availability of funding to respond to new and existing infestations.*

Answer: Yes

Outcome: LIST THE PLANT AS A PROHIBITED / ERADICATE NOXIOUS WEED.

Black swallow-wort has the potential for large impacts to the economy and the environment and its small populations are a high priority for control to prevent it from becoming widespread.

Distribution: The distribution of *C. louiseae* is currently relatively well documented in the state of Minnesota as it has been on the noxious weed list for several years and has been a high priority for education and detection efforts. New detections have been readily recorded in EDDMapS (EDDMapS 2025). However, there is no evidence that large-scale targeted surveillance activities have occurred throughout the state of Minnesota. There are currently 37 recorded detections in five different counties in Minnesota, totaling 6 acres of coverage (EDDMapS 2025). This is a small area of coverage from a statewide perspective.

Reproductive biology: *C. louiseae* relies heavily on wind dispersal, with a single seed having the ability to travel up to 72 meters, though this is not typical. It is also self- compatible and can clonally reproduce via rhizomes (Westbrook et al. 2023, Tewksbury et al. 2002). Black swallow-wort showed a high rate of germination and survival of seeds and seedlings in establishment in a study conducted in New York State (Milbrath et al. 2017).

Potential for spread: The potential for spread is high via wind dispersal of seeds. However, there is only anecdotal notes and evidence that *C. louiseae* is spread via other means such as animals or along hiking trails (Westbrook et al. 2023). Historically, black and pale swallow-wort were planted as ornamentals and presumably are still incidentally transported (Westbrook et al. 2023).

Known management tools:

Glyphosate applications generally provide good control. No treatment prevented regrowth and new seedling emergence, so long term control would require re-treatment. Herbicide control typically outperformed manual/ mechanical control such as cutting or pulling. Mowing weeks before spraying does not always increase effectiveness of herbicide treatments (Westbrook et al. 2023, Milbrath et al. 2022).

Westbrook et al. (2023) state: *"*Herbicide applications generally provide good *Vincetoxicum* control... Only one chemical control study has been conducted with V. nigrum. Glyphosate greatly reduced V. nigrum biomass, but mowing several weeks before spraying did not always increase the effectiveness of herbicide treatments. Triclopyr was ineffective, but additional approaches including higher rates or greater frequency of application should be investigated (Milbrath et al. 2022)."

Douglass et al. (2009) state: *"*Manual methods can often be effective at controlling established patches of perennial weeds (Radosevich et al. 1997; Ross and Lembi 1999). However, both pale swallow-worts and black swallow-worts 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). Mowing can contain invasive populations of the swallow-worts when timed to suppress seed production, but must be repeated for the duration of the growing season as plants tend to regrow more rapidly than non-mowed plantsand produce seed at a more immature stage of growth than is typical (C.H. Douglass, personal observations). Averill et al. (2008) found that clipping of PSW stems once annually at the beginning of summer (June) led to a 44% reduction in cover at an infested site in northern New

York over a 2-year period. Because of their tall, brittle stems, swallow-worts are also particularly sensitive to trampling, which has resulted in substantial reduction of PSWs in some localized fields (DiTommaso et al. 2005b)."

Douglass et al. (2009) state: "There are several herbicides that provide relatively effective control of black or PSWs when applied postemergence (Averill et al. 2008; Lawlor 2002; Weston et al. 2005). Foliar applications are generally more difficult to apply than cut stem applications because of the intertwining growth habit of the swallow-worts and high patch densities at maturity, but are generally more effective (Lawlor and Raynal 2002). Furthermore, Lawlor and Raynal (2002) found that foliar applications were significantly more effective at controlling plants in shaded plots than drier, full sun plots. In particular, 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). Recent work has demonstrated that glyphosate applied at a much lower rate (1.79 kg ai ha−1) was equally as effective (77% reduction in cover when applied in late June) as a higher rate, and more effective overall than triclopyr alone or combinations of triclopyr and 2,4-D or dicamba and 2,4-D (F. Lawlor unpublished data in Weston et al. 2005)."

Due to the impacts of black and pale swallow-wort, research was conducted to find biological control insects for the species. Biocontrol insects are native to the native range of the target invasive plant (Karn et al. 2020). Researchers studied *Hypena opulenta* Christoph (Lepidoptera: Erebidae), commonly known as leaf-feeding moth. *H. opulenta* is native to Ukraine. *H. opulenta* development from egg to adult is completed in about 5-6 weeks. It has five larva instars which feed on the plant leaves, defoliating the plants and impeding their development. *H. opulenta* was approved for release in the United States in 2017. Michigan State University (2020) released *H. opulenta* in Michigan in 2020. No releases have occurred in Minnesota. Biological control is a tool to depress established populations, not to eradicate plant populations. In Minnesota, black and pale swallow-wort have very limited populations, so the focus has been on removing any existing plants.

Available resources: With targeted time and effort there could be enough available resources through the state of MN to treat 6 acres black swallow-wort. The state would need to continue to make black swallow-wort an early detection treatment priority and county agricultural inspectors would need to continue to follow up with landowners to make sure that treatments continue over multiple years to exhaust the seedbank. Continued education and scouting for new populations (especially near known locations) would be important.

Question 10G: Is the plant known to cause significant ecological or economic harm and can the plant be reliably <u>controlled</u> to limit spread on a statewide basis using existing practices and available resources? Would the economic impacts or other hardships incurred in implementing control measures be reasonable considering any ongoing or potential future increase of ecological or economic harm?

- *Also consider all bullet points listed under 10F when evaluating 10G*

Outcome: Decision tree does not direct to this question.

Question 10H: Would prohibiting this species in trade have any significant or measurable impact to limit or reduce the existing populations or future spread of the species in Minnesota?

Outcome: Decision tree does not direct to this question.

Question 10I: Are there any other measures that could be put in place as Special Regulations which could mitigate the impact of the species within Minnesota?
Outcome: Decision tree does not direct to this question.

Box 11:

The species is being proposed to be designated as a Specially Regulated Plant. What are the specific regulations proposed?

Outcome: Decision tree does not direct to this question.

Final outcomes of risk assessment (2025)

NWAC Listing Subcommittee

Outcome: Remain a prohibited eradicate noxious weed.
Comments: No comments

NWAC Full Committee

Outcome: Remain a prohibited eradicate noxious weed
Comments: The vote on 12/16/25 was 19 to 0 in favor of the recommendation.

MDA Commissioner

Outcome: Remain a prohibited eradicate noxious weed
Comments: No comments

Risk Assessment Current Summary (06-30-2025)

- *C. louiseae* causes ecological harm by outcompeting native flora, forming extremely dense almost mono-specific stands, and through some allelopathic changes.
- *C. louiseae* poses a threat to wildlife, specifically monarch butterflies, serving as a fatal host to larvae.
- *C. louiseae* poses a threat to agriculture through thick understory growth in forestry regeneration and for sales of Christmas tree farms. It also has anecdotal evidence of being toxic to farm animals who would graze on infested pastures. It also outcompetes crops or overtakes fields and needs some form of herbicide control and still may produce yield loss.
- Mechanical, manual, and chemical can all be effective control methods if applied properly. However, multiple seasons of treatment for control will be required.
- *C. louiseae* will spread readily to new areas via seed and wind dispersal.
- C. *louiseae* is currently documented in 37 locations in five different counties covering an estimated 6 acres.
- C. *louiseae* has the potential for large impacts to the economy and the environment and its small populations are a high priority for control to prevent it from becoming widespread.
- The state can continue to make C. *louiseae* an early detection treatment priority and keep it as a Prohibited Eradicate noxious weed. That would also keep it in the same regulatory category as the closely related pale swallow-wort.

Final outcomes of risk assessment (2012)

NWAC Listing Subcommittee

Outcome: List as Prohibited Eradicate.
Comments:

NWAC Full Committee

Outcome: List as Prohibited Eradicate.
Comments:

MDA Commissioner

Outcome: List as Prohibited Eradicate.
Comments: Approved 1/14/2013 – Prohibited Eradicate Noxious Weed

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