Minnesota Noxious Weed Risk Assessment

Developed by the Minnesota Noxious Weed Advisory Committee

Assessment information

Common name: Honeyberry, haskap, zhimolost, blue honeysuckle, sweet berry honeysuckle, swamp fly honeysuckle
Scientific name: *Lonicera caerulea* L.

Other species and subspecies:
L. caerulea subsp. *eudlis*– indigenous to northeast Asia (Russia)
L. caerulea subsp. *cauriana* – indigenous to North America
L. caerulea subsp. *villosa* – indigenous to North America
L. emphyllocalyx – asserted as an old world species of *L. caerulea* found in Ontario, but may be based on material in cultivation (Schimpf et. al 2011)

Cultivars (Source: Honeyberry USA)
All cultivars listed below are of the species *Lonicera caerulea* L. Bloom times are listed in bold.

- **VERY EARLY** Early Blue™; Sunrise™ - in Kentucky, they bloom alongside Borealis
- **EARLY** Tundra*; Indigo Gem*; Indigo Treat*; Russian varieties such as: Berry Smart Blue (aka Czech #17/Berry Blue™/Honeysweet™); Sugar Mountain Blue™; Cinderella (Zoluska); Svetlana; Blue Belle™ (Tomchika); Blue Bird™ ; Sinyaya Ptitsa-short bloom time; Blue Lightning™ (Zarnitsa); Blue Nova™ (Novinka); Blue Sky™ (Valery #2); Smokey Blue™ (Dimka); Eisbar™; Polar Bear™; Polar Jewel™; Balalaika™; Kalinka™
- **MID** USDA zones 2-5 overlap 90-95% with most early bloomers for good pollination: Aurora; Borealis; Honeybee. Start and finish blooming a few days later: Boreal Blizzard - 80% overlap with Tundra/Indigo/etc.; poor fruit set with Aurora; Boreal Beast Starts same as Blizzard; stops 5-7 days later than Blizzard; Blue Forest™ (Madagan)
- **LATE** Boreal Beauty - Starts 4-5 days later than Beast starts. Zone 3 - 2019 data Minnesota: - starts a week after Aurora/Blizzard/Beast start. Zone 2 Saskatoon, SK: -starts 4-5 days after Aurora/Blizzard stop and starts 1 week after Tundra/Indigo stops. 2019 zone 3 Minnesota: followed several days later by Solo™; Kawai; Blue Mist™. Then followed by: Maxie™; Tana; Blue Hokkaido™; Blue Pacific™ (F1-9-58); Blue Pagoda™; Blue Velvet™ (Kiev No. 8). Then: Honey Bunch™; Sugar Pie™; Taka; 85-19; Pirika
- **VERY LATE** Blue Moon™ (Sergie); Keiko. A few days later: Blue Sea™

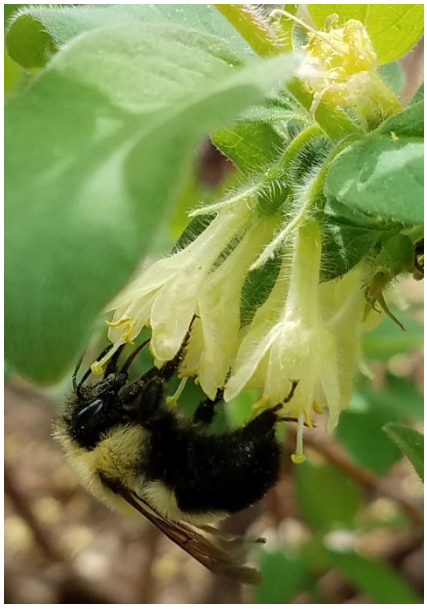
Family name: *Caprifoliaceae* (honeysuckle)

Current reviewer name and organizational affiliation: Julie Weisenhorn, University of Minnesota
Date of current review: 06-29-2021

Species description

Photos

Honeyberry cultivar ‘Borealis’, 10 June 2021. Photo credit: Julie Weisenhorn, University of Minnesota



Honeyberry flower (*L. caerulea* ‘Tundra’). Photo credit: Julie Weisenhorn, University of Minnesota

Honeyberry cultivar 'Tundra'. Photo credit: Julie Weisenhorn, University of Minnesota

Why the plant is being assessed

- Schimpf et al. (2011) identified and reported a population of *L. caerulea* in a naturalized area near Duluth, MN. The plants were later visited and confirmed by Peterson et al. (2018) and reported on EDDMapS.org by Mari Hardel (Minnesota Department of Agriculture) later in 2018.
- There is conflicting evidence of *L. caerulea* spreading beyond cultivation.
    - The Norwegian Biodiversity Information Centre has reported *L. caerulea* spreading rapidly from planted localities threatening natural plant communities in northern Europe (Peterson et. al 2018, Elven et. al 2018)
    - Plant Risk Evaluator / PlantRight (2017*a* and *b*) ranked *L. caerulea* cultivars 'Cinderella' and 'Tundra' as very low risk of invasiveness. However, PRE acknowledged that *L. caerulea* cultivars developed for commercial fruit production might have the potential to cross-pollinate with other exotic honeysuckles considered invasive.
        - *"While other species of Lonicera tend to be considered relatively invasive, multiple references state that L. caerulea is not one of them. That said, as more cultivars are developed and the plant increases in popularity, so too will the potential for one or more varieties to become invasive. Also, theoretically L. caerulea could promote invasiveness of the genus by hybridization with problematic Lonicera species. Going forward, the genus as a whole should be considered in the context of hybridization, assuming species/cultivars can successfully cross pollinate and produce viable offspring." – M. Monterusso (2017)*

- We should understand its risk level of invasiveness because *L. caerulea* cultivars are rising in popularity with home gardeners and commercial growers thanks to many attractive characteristics of both the plant and edible fruit.
    - Health benefits: "*The fruit shows anticancer, anti-inflammatory, and antioxidant activity—important factors in improving health. These features result from the diverse content of phytochemicals in honeysuckle berries with high concentrations of phytocompounds, mainly hydroxycinnamic acids, hydroxybenzoic acids, flavanols, flavones, isoflavones, flavonols, flavanones and anthocyanins but also iridoids, present in the fruit in exceptional amounts.*" (Golba 2020)
    - Easy to grow. Honeyberries are tolerant of various soil types and pH. They require minimal care (pruning) and are cold hardy. They have few to no pest issues and produce fruit early in the growing season. Honeyberry are not too large for a home landscape and easy to purchase (including online), so it is likely people may choose to grow it in their home landscapes (Bors mid-2000s).
    - Edible landscaping is a popular type of gardening.
    - Honeyberry is being grown at U-Pick farms and as a commercial fruit crop for the fresh fruit / frozen fruit market.
        - According to the 2021 MN Grown member directory, honeyberry growers are located in Bagley (Honeyberry USA), Sauk Centre (Early Boots Farm), Long Lake (Wahlfors Raspberry Farm), Winona (Blue Fruit Farm), and Alexandria (Country Blossom Farm, LLC).
        - Farm Lola in Wrenshall, MN, is also growing honeyberries (not listed in MN Grown).
        - Cultivars are being developed and sold for commercial production and home gardens. Honeyberry plants are available from Bergeson Nursery (Becker), Honeyberry USA (Bagley), Gertens (Inver Grove Heights) and likely other retail and wholesale growers.

Identification, biology, and life cycle (Sources: Bors mid-2000s, Haskap Canada, Honeyberry USA)

- *Lonicera caerulea* is a circumpolar species native to northern boreal forests in Asia, Europe, and North America. It mainly grows in low lying wet areas or high in mountains.
- *L. caerulea* are hardy to USDA zones 1-4.
- Commercially grown plants grow to 3 – 8 feet tall, with blue oblong berries ½ – 1 inch or more in length, depending on the cultivar.
- Bears fruit in early spring – various cultivars may bear early, mid, and late spring.
- Adaptable; grows in wide range of soil pH (4.5-8.5), clay soils may be better than sandy soils.
- Some varieties will bear 10+ lbs. of berries after 5 years, other 1-2 lbs.
- Lifespan: 50+ years
- Does not sucker. Sends up shoots from root crown.
- Sun or shade, bears best in sun in the northern US, requires protection from sun in the southern US.
- Disease / pest resistant
- Cross-pollination required by two different cultivars.

Current distribution

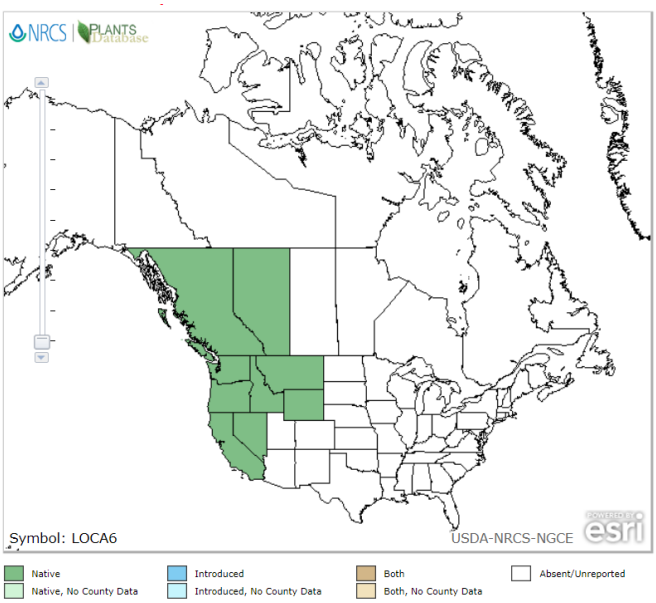


Photo caption: National level map from USDA Plants. March 23, 2020. Last revised by**:** USDA NRCS National Plant Data Team

Photo caption: State and local level maps from EDDMapS. April 21, 2021.
The only reported population was 25 plants found in Duluth, MN in 2011 (Schimpf et. al 2011). The population was visited July 20, 2016 (Peterson et. al 2018). Mari Hardel from the Minnesota Department of Agriculture reported five plants / groups of plants in the same area on 09/05/2018 per EDDMapS.org.

Current regulation

Not currently regulated in Minnesota.

Risk assessment

Box 1:

Is the plant species or genotype non-native?

Answer: Yes and no.
Outcome: Go to Box 3
There is conflicting information about whether *Lonicera caerulea* is native to Minnesota or naturalized here. Peterson et. al (2018) offers evidence that there is conflicting information about the taxa of *L. caerulea*. Smith includes mountain fly honeysuckle, *L. caerulea* var. *villosa* (Michx,), in his book *Trees and Shrubs of Minnesota* (2008) which provides information about woody plants native or naturalized in Minnesota. *L. caerulea* is described as a circumpolar species native to northern boreal forests in Asia, Europe, and North America (Bors et al. mid-2000s). Some researchers consider the mountain fly honeysuckle *L. villosa* (Michx.) Schult to be a variety or subspecies of *L. caerulea* (Hayes 2018). The cultivars of *L. caerulea* sold for fruit production and horticultural sales have come from European and Asian *Lonicera caerulea* subspecies (Bors, B. et. al, 2011).

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?

Answer: No. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

Honeyberry produces tasty fruit that has healthful, nutritious qualities.

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

In northern Europe, the Norwegian Biodiversity Information Centre has reported *L. caerulea* spreading rapidly from planted localities threatening natural plant communities in Norway. Sweden has listed *L. caerulea* as an invasive species. The European Network on Invasive Alien Species (NOBANIS 2016) reports that populations have established in Finland with some that have not yet naturalized in Iceland and Lithuania (Peterson et. al. 2018).

Peterson et al. (2018) indicated they found the original population had expanded as well as occasional plants far outside the area originally described by Schimpf (2011). *L. caerulea* has also been noted as a plant of Special Concern in Rhode Island (USDA NRCS Plant Database 2020). Hayes (2018) notes that in a follow-up visit to the Duluth population site, Peterson et al. (2016), found the naturalized population of *L. caerulea had expanded by* both natural layering and seedling recruitment and the group identified additional plants located well beyond the initial population location reported by Schimpf et al. (2011).

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

Schimpf et al. (2011) discovered and reported *L. caerulea* susbsp. *eudlis* population of 25 reproductive plants in 2011 distributed irregularly (as a self-seeded population might grow) in a naturalized woodland of mostly native plants (except *Frangula alnus* and *Lonicera tartaria*) in Duluth, MN. According to Peterson et. al (2018), this find represented the first vouchered report of Eurasian *L. caerulea* naturalized in North America. In 2016, Peterson

visited the site of the population found by Schimpf in 2011 and found "there are likely more than the 25 estimated by Schimpf et al. (2011). Observations at this site make it clear that persistent populations of *L. caerulea* subsp. *edulis* with high reproductive potential can be expected to establish in shady understories in northern portions of North America." Cultivated plants are being grown in Minnesota zones 3 and 4 in Bagley, Sauk Centre, Long Lake, Winona, Wrenshall, Becker, Inver Grove Heights (MN Grown 2021).

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

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

Minnesota and Norway have boreal coniferous forests. Peterson et. al (2018) noted that The Norwegian Biodiversity Information Centre lists *L. caerulea* as a "severe" invasive species in Norway (Gederaas et al. 2012) and that *Lonicera caerulea* is on the Norwegian Black List, "an overview of non-native species with the greatest ecological impact on native biodiversity" where is considered an invader of boreal coniferous forests previously thought to be resistant to invasion (Gederaas et al. 2012). *L. caerulea* is also listed as an invasive species in Sweden, and the European Network on Invasive Alien Species (NOBANIS 2016) reports that populations have established in Finland with some that have not yet naturalized in Iceland and Lithuania.

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?

Outcome: Decision tree does not direct to this question

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

No information has been found regarding evaluation of commercially produced cultivars for their potential to reproduce and spread without human intervention, but some growers have reported scouting for seedlings.

> *"The potential for escape was a major concern of mine, before we chose to plant honeyberries about 6 years ago, since honeysuckle is such an aggressive invasive. I asked all the nurseries who were selling them about the potential for escape, and none of them report any problems. I have continually been on the lookout for "volunteer" honeyberry plants in the field, and have found none. Even though we have bird netting over the field, birds do get in. In fact, we occasionally find bird nests in the honeyberry bushes! I have not found honeyberries outside of our field, either.* - Jim Riddle, owner of Blue Fruit Farm, (Weisenhorn, personal correspondence, July 22, 2020)

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

Answer: Yes

Outcome: Go to Question 7C

- According to the University of Saskatchewan, *L. caerulea* does not sucker.

- The plant can be propagated vegetatively. Low hanging plant stems may root when in contact with soil (Bors et al. mid-2000s).
- Hayes (2018) reports Peterson et. al (2016) found the Duluth population had expanded by both natural layering and seedling recruitment.
- Commercial crops are cultivars and must be vegetatively propagated (Bors et al. mid-2000s).
- According to Honeyberry USA, *Lonicera caerulea* L. is distinctly non-invasive as compared to exotic honeysuckles (*L. maaki, L. morrowii, L. tatarica, L. japonica* and *L. x bella*) (Honeyberry USA).

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

Vegetative parts such as stems and roots are not typically dispersed such as by wind, animals or rain.

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. Peterson et. al (2018) reported a single plant could theoretically produce 50,000 to 100,000 seeds.

Outcome: Go to Question 7G

- The pulp from the berry must be removed from the seed to germinate. Seeds can be sown in moist, warm conditions. No cold stratification required. (Royal Horticultural Society 2020).
- According to Phartyal et al. (2009), radicles emerged within two months from 98% of seeds buried at soil depths of 2 cm and 10 cm in the field in August.
- Plants require 3-4 years before planting and then bear fruit on last year's wood, so feasibly a 5-year old plant could bear fruit (Bors et al. mid-2000s).
- Peterson et. al (2016) reported additional plants located well beyond the location of the initial Duluth population reported by Schimpf et al. (2011).

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: No. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

Honeyberry have complete flowers. They require two unrelated varieties to cross-pollinate and set fruit. To pollinate each other both plants must bloom at the same time and be genetically compatible. When two compatible honeyberry varieties are planted close to each other, both bushes will set fruit (Bors 2016).

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

Answer: Yes

Outcome: Go to Question 7I

- Honeyberry reproduces by seed encased in succulent berries consumed by birds, making it possible for seeds to be spread over longer distances. (Elven et al. 2018)
- Birds such as cedar waxwings will feed on honeyberry and defecate, spreading the seeds.

- Humans could disperse seeds, but this is not likely.
- Animals such as bear, raccoon and deer may feed on the berries and then defecate, spreading the seeds.

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

Lonicera caerulea L. is related to exotic honeysuckles, which are currently listed on the Minnesota Department of Agriculture Noxious Weed List (*L. maakii*, *L. tartarica*, *L. x bella Zabel*, *L. morrowii*), and there is concern *L. caerulea* may cross-pollinate with these (PRE PlantRight 2017*a* and *b*). However, I could find no documentation demonstrating *L. caerulea* cross-pollinated with any of the exotic species listed above.

Question 7I: Do 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
No documentation found.

Question 7J: Was the answer to Question 7A (Are there cultivars that differ in reproductive properties from the original species) "Yes"?

Answer: No
Outcome: continue with risk assessment

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: No
Outcome: Go to Question 8B
L. caerulea is not toxic. It is an edible, healthful fruit crop.

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

Answer: No
Outcome: Go to Question 8C
Edible honeysuckle is currently grown as a commercial fruit crop. No evidence found of it interfering with other crops.

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

Answer: No (although future research may change this)
Outcome: Go to Question 8D

The Norwegian Biodiversity Centre has reported *L. caerulea* spreading rapidly from planted localities threatening natural plant communities (Peterson et al. 2018). It is also noted as a plant of Special Concern in Rhode Island (USDA NRCS Plant Database 2020).

However, Dr. Bob Bors, University of Saskatchewan, reports collecting wild Canadian Haskap (*L. caerulea* subsp. *villosa*) through the spring and early summer of 2009 from Northeast Ontario, Quebec, New Brunswick, Nova Scotia, and PEI (Prince Edward Island). Dr. Bors notes that *L. caerulea* "was never a dominant species and was very sporadic. Only by careful observation and recording what other species were frequently found with it were we able to find it. It is highly unlikely that this could become an invasive species in the wild." (Bors et al. 2012)

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

Answer: No hybridization with native species is known. However, I have not found research confirming they do not hybridize either.
Outcome: Go to 8E
Hayes (2018) stated "The reputation of *L. caerulea* as an invader of northern forests (Gederaas et al. 2012; Tyler et al. 2015) suggests continued introduction into North America is not without risk … Schimpf et al. (2011) reported a naturalized population of honeyberry near Duluth, Minnesota, and a subsequent visit to the site by Peterson et al. (2018) reported evidence of spread by both natural layering and seedling recruitment. Applications of checklist-based invasive plant screening tools by Peterson et al. (2016) indicated that blue honeysuckle cultivars from Eurasian stock pose a high risk of becoming invasive in North America, even with conservative ratings based on the limited data available on the growth, habit, and reproduction of *Blue honeysuckle*."

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

Answer: No
Outcome: Go to 8F
No data was found documenting this.

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

Answer: No.
Outcome: Do Not List
Powdery mildew is the only common pathogen that affects honeyberry. Birds are the bigger [pest] problem as they feast on the fruit. Even deer appear to leave honeyberry plants alone (Haskap Canada 2021).

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

L. caerulea cultivars are sold as an edible landscape plant and grown commercially for its fruit. The species is not sold.

In 2020, the Minnesota Nursery and Landscape Association (MNLA) reached out to wholesale nursery growers in an attempt to get an estimate of the wholesale value, and ultimately the combined monetary value (wholesale plus value-added retail) of honeyberry cultivars (*Lonicera caerulea*) to the Minnesota economy for inclusion in the risk assessment for this species (James Calkins, Minnesota Nursery and Landscape Association; personal communication, April 12, 2021). Although honeyberry cultivars are grown on a limited basis in Minnesota, based on the information available, sales did not appear to be a significant contributor to annual nursery and garden center sales and the Minnesota economy at the time this risk assessment was completed.

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?

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

The taxonomy of honeysuckles is still being debated. According to Hayes (2018), " … Some people believe the mountain fly honeysuckle *L. villosa* (Michx.) Schult to be a variety or subspecies of *L. caerulea*. (Fernald 1925, Schimpf et al. 2011). North American honeysuckles, including *Lonicera villosa*, generally form sparse populations and are often species of conservation concern in their native range (Lieurance and Cipollini 2013, USDA NRCS 2018)."

Some growers, like Blue Fruit Farm, grow their honeyberry cultivars in large net houses to protect the fruit from browsing by animals and birds. The fruits grown commercially are also picked regularly for sale. From Jim Riddle, Blue Fruit Farm, *"Are you aware that there is a native honeysuckle, the Mountain Fly Honeysuckle, found in northern MN and WI, that has oblong, blue, edible berries, much like the honeyberry? Maybe the introduced varieties would cross with that species, but I have found no evidence of them crossing with the invasive honeysuckle* [*L. maaki, L. morrowii, L. tatarica, L. japonica* and *L. x bella*]." (Weisenhorn, J. personal communication, July 22, 2020)

Question 9C: Is the plant native to Minnesota?

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

The taxonomy of honeysuckles is still being debated. According to Hayes (2018), " … Some people believe the mountain fly honeysuckle *L. villosa* (Michx.) Schult to be a variety or subspecies of *L. caerulea*. (Fernald 1925, Schimpf et al. 2011). North American honeysuckles, including *Lonicera villosa*, generally form sparse populations and are often species of conservation concern in their native range (Lieurance and Cipollini 2013, USDA NRCS 2018)." The cultivars of *L. caerulea* sold for fruit production and horticultural sales have come from European and Asian *Lonicera caerulea* subspecies (Bors, B. et. al, 2011).

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

Outcome: Decision tree does not direct to this question

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

Answer: Currently, yes. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
From Jim Riddle, Blue Fruit Farm: *"Personally, I think the honeyberry, which have the highest levels of antioxidants of any fruit we grow, are known as the "fruit of long life" for a reason! Plus, they are delicious, and the harvest is complete before spotted wing drosophila appear in our region."* (Weisenhorn, J. personal communication, July 22, 2020)

From Honeyberry USA: We understand that *Lonicera caerulea* L. is under investigation for invasiveness. We have been growing them since 201O and not witnessed escaped seedlings. We are surrounded by forest and pastureland." (Personal correspondence with Jim Calkins, Director of Research, MNLA, 16 June 2021).

According to the 2021 MN Grown member directory and UMN sources, there are six farms growing honeyberry commercially. Cultivars are being developed and sold for commercial production and home gardens. Honeyberry plants are available for homeowners from Minnesota growers (Minnesota Grown directory 2021) and retail garden centers (Weisenhorn, internet search, 25 May 2021).

Hayes, D. (2018) stated "The reputation of *L. caerulea* as an invader of northern forests (Gederaas et al. 2012; Tyler et al. 2015) suggests continued introduction into North America is not without risk … Schimpf et al. (2011) reported a naturalized population of honeyberry near Duluth, Minnesota, and a subsequent visit to the site by Peterson et al. (2018) reported evidence of spread by both natural layering and seedling recruitment. Applications of checklist-based invasive plant screening tools by Peterson et al. (2016) indicated that blue honeysuckle cultivars from Eurasian stock pose a high risk of becoming invasive in North America, even with conservative ratings based on the limited data available on the growth, habit, and reproduction of *Blue honeysuckle"*.

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?
Outcome: Decision tree does not direct to this question

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?
Outcome: Decision tree does not direct to this question

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 does the distribution, reproductive biology, potential for spread support a statewide eradication effort?

- *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 factor 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.*

Outcome: Decision tree does not direct to this question

Question 10G: Can the plant be reliably eradicated (entire plant) on a statewide basis using existing practices and available resources?

- *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.*

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 recommendations of risk assessment (2021)

NWAC Listing Subcommittee

Outcome**: Do not regulate *Lonicera* caerulea at this time.**

- The taxonomy of *L. caerulea* and subspecies is unclear meaning it may be a native or subspecies of our Minnesota native honeysuckles.
- The potential for negative impacts from *L. caerulea* are not clear.

- Honeyberry cultivars are a growing segment of commercial fruit production in Minnesota and offer a healthy fruit option that is easy for home gardeners to grow.
- Growers pick fruit regularly and may cover their crops to protect fruit from animal browsing and bird feeding, and would welcome best management guidelines (A. Klodd, UMN Extension – Fruits).
- The subcommittee recommends supporting research and development on the following topics:
    - Develop best management recommendations for commercial and home growers to use now and possible future innovations to help reduce crop loss and reduce potential spread of *L. caerulea* cultivars.
    - Study seed viability and the fecundity of *L. caerulea* cultivars.
    - Education programs for commercial and home growers.
    - Follow up on reports of spreading *L. caerulea* and document impacts.

NWAC Full Committee

Outcome: Do not list
Comments: The vote was 16-0 in favor and 1 abstained regarding recommendation.

MDA Commissioner

Outcome: Do not list
Comments: No comments

Risk Assessment Current Summary (06-28-2021)

- *Lonicera caerulea* is the first edible fruit plant being assessed for its potential invasiveness by the Noxious Weeds Advisory Committee.
- There is conflicting information about the taxonomy of *L. caerulea*, native origin and subspecies.
- *L. caerulea* has been found to spread vegetatively and by seed in the Duluth, MN, area.
- The species *L. caerulea* is not actively sold via retail or wholesale; however, it and other *Lonicera* species are used by plant breeders to develop new cultivars.
- Cultivars of *L. caerulea* are grown by commercial growers and homeowners for the nutritional and delicious fruit. These cultivars contribute to the economic growth of the Minnesota fruit industry. Fruit is sold fresh and frozen, and made into products such as wine and desserts.
- *Lonicera* cultivars are good early season pollinator plants.
- The sale of *Lonicera* cultivars are currently not a significant part of retail or wholesale nursery sales.
- There is no current information about whether *Lonicera* cultivars grown for fruit by commercial growers has the potential to become invasive.

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Personal communication

Email exchange between Jim Riddle, owner, Blue Fruit Farm, Winona, MN, and Julie Weisenhorn, Noxious Weeds Advisory Committee member, University of Minnesota Extension. July 21 - 22, 2020.

Letter from Honeyberry USA to Jim Calkins, MNLA Director of Research and Noxious Weeds Advisory Committee chair, 16 June 2021.