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| MN NWAC Risk Assessment Worksheet (04-2017) | Common Name | <i>Latin Name (Full USDA Nomenclature)</i> |
| | Japanese honeysuckle | <i>Lonicera japonica</i> Thunb. |
| Original Reviewer: Laura Van Riper | Affiliation/Organization: Minnesota Department of Natural Resources | Original Review: 08/16/2018 |

Species Description:

- Japanese honeysuckle is being assessed due to its reported invasiveness in neighboring states. It has not yet been reported in Minnesota so early prevention, detection, and response could prevent it from establishing in Minnesota.
- Description come from the [Wisconsin DNR Japanese honeysuckle webpage](#) (WI DNR 2018).
- Japanese honeysuckle is a perennial, semi-evergreen woody vine.
- Reasons for concern:
 - Invasive in forests, grasslands, and roadsides
 - The vine can girdle trees and shrubs
- It is in the horticultural trade in the US. There are at least 12 horticultural varieties (Larson et al. 2007). A 2017 survey of Minnesota nursery certificate holders found that 2 of the 36 respondents sold the plant.
- Appearance:
 - Size: a vine that can group up to 80 feet long
 - Leaves: simple, opposite, 1.5 to 3 inches long
 - Flowers: tubular flowers in pairs at leaf axils, flowers start white to pink and then turn yellow with age
 - Fruit: small ¼ inch purple-black berries
 - Roots: has underground rhizomes and aboveground stolons; stolons develop roots where they contact soil



Photo 1. Japanese honeysuckle flowers and leaves, photo by [Leslie J. Mehrhoff, University of Connecticut, Bugwood.org](#)

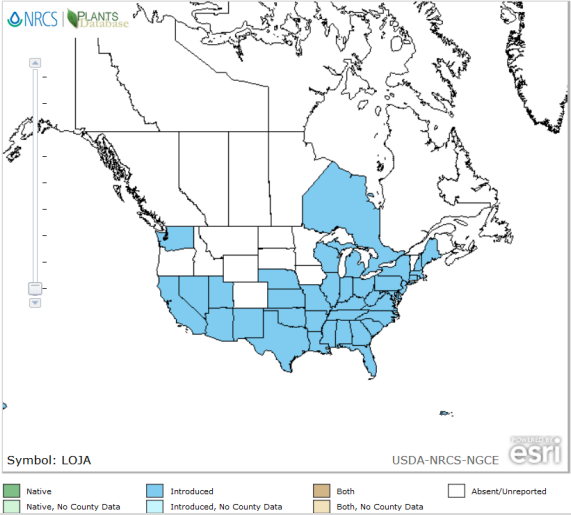


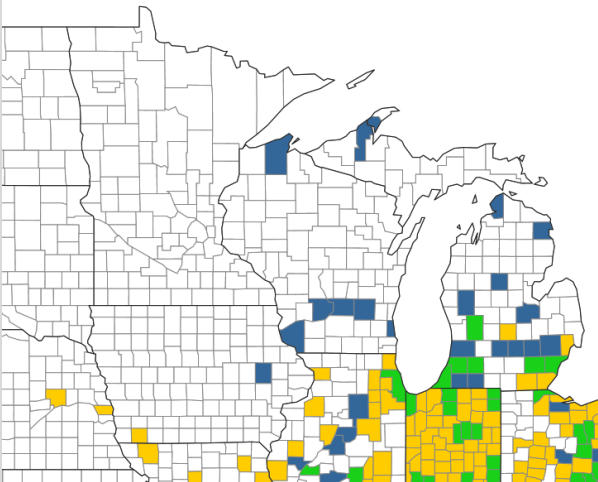
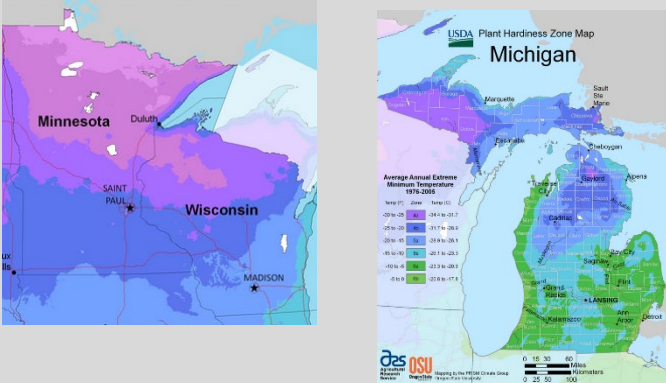
Photo 2. Japanese honeysuckle infestation, photo by [Leslie J. Mehrhoff, University of Connecticut, Bugwood.org](http://Bugwood.org).

Current Regulation: Not regulated in Minnesota or by the federal government. Listed as a Prohibited Invasive Species in Wisconsin. Listed in Illinois as an exotic weed.

NOTE: (Additional supporting information may be added to a box even when the decision tree process bypasses that question. Text used for the Answer box for this non-required text should be **BOLD AND ITALIC**. Furthermore, whenever text is entered for an answer to a question not required by the risk assessment decision tree process, the outcome box should contain the following statement: **This text is provided as additional information not directed through the decision tree process for this particular risk assessment.**)

| Box | Question | Answer | Outcome |
|-----|--|--|-------------|
| 1 | Is the plant species or genotype non-native? | Yes. Japanese honeysuckle is native to Japan, Korea, and eastern China (Larson et al. 2007). It was introduced to the US in 1806 as an ornamental plant and it was first recorded in regional floras as a naturalizing species in 1898 (Larson et al. 2007). | Go to Box 3 |
| 3 | Is the plant species, or a related species, documented as being a problem elsewhere? | Yes. Regulated in Wisconsin, Illinois, Indiana, Ohio, Vermont, Maine, and Connecticut (National Plant Board 2018). On non-regulatory invasive plant lists in Indiana, Michigan, and Missouri (MIPN 2018). | Go to Box 6 |
| 6 | Does the plant species have the capacity to establish and survive in Minnesota? | | |
| | A. Is the plant, or a close relative, currently established in Minnesota? | Not confirmed in Minnesota. Present in Wisconsin (USDA Plants 2018). | Go to 6B |

| Box | Question | Answer | Outcome |
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| | |  <p data-bbox="888 686 1539 756">No specimens from Minnesota in the University of Minnesota Bell Herbarium.</p> <p data-bbox="888 797 1581 977">EDDMapS (2018) has no confirmed reports in Minnesota. EDDMapS also shows Japanese honeysuckle in one county in northern Wisconsin, two counties in the upper peninsula of Michigan, and five counties in southern Wisconsin.</p> | |

| Box | Question | Answer | Outcome |
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| | |  <p>Legend: Yellow: literature report only Blue: observational report only Green: both literature and observational reports</p> | |
| | <p>B. Has the plant become established in areas having a climate and growing conditions similar to those found in Minnesota?</p> | <p>Yes. Present in Wisconsin, Michigan, and Ontario. Japanese honeysuckle hardiness zones listed as 5 – 9 (Morton Arboretum 2018). At present it is likely not very hardy in most of Minnesota. Climate change could make more of Minnesota have amenable growing conditions.</p>  | <p>Go to Box 7</p> |

| Box | Question | Answer | Outcome |
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| | | Maps show the USDA Plant Hardiness zones for Minnesota, Wisconsin, and Michigan (USDA ARS 2018). | |
| 7 | Does the plant species have the potential to reproduce and spread in Minnesota? | | |
| | A. Does the plant reproduce by asexual/vegetative means? | Yes. Japanese honeysuckle is a vine. Stems that contact the ground can form roots which allows the plant to spread laterally (Larson et al. 2007). | Go to 7B |
| | B. Are the asexual propagules effectively dispersed to new areas? | Yes. From Larson et al. 2007: “Dispersal may also result from transport and dumping of garden waste, which may include both vegetative material that roots readily as well as seeds (Larson, Catling and Waldron, personal observation).” | Go to 7I |
| | C. Does the plant produce large amounts of viable, cold-hardy seeds? | <p>From Larson et al. 2007: “Hidayati et al. (2000) showed that maximum germination occurs after cold stratification. These results are consistent with earlier studies that concluded that moist <i>L. japonica</i> seeds germinate after 28–40 days stratification at 4°C (Leatherman 1955; Williams et al. 2000).”</p> <p>Stems can grow up to 226 cm in a five months and produce 2 branches per stem in those five months. It can reach heights of 15m (Schierenbeck 2004). Schierenbeck (2004) also notes, “A mature stem 30 cm long will produce a mean of 27 flowers, and without controlling for pollination 57% of the flowers will produce fruit that contain between one and ten seeds (Leatherman, 1955).” This would lead to one 30 cm stem producing about 15 flowers that would then produce a total of 15 to 150 seeds. A 15 m stem could then produce 750 to 7,500 seeds.</p> | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |
| | 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? | <p>From Larson et al. 2007: “There is limited potential for a persistent <i>L. japonica</i> seed bank since seeds germinate to high percentages under either leaf litter or soil (Hidayati et al. 2000; Fowler and Larson 2004). Shelton and Cain (2002) found that seed viability was significantly reduced after 2 or 3 yr in the forest floor, with only 1% of seeds germinating after 3 yr of field storage.”</p> | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |

| Box | Question | Answer | Outcome |
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| | E. Is this species self-fertile? | No. Japanese honeysuckle is not self-fertile (Larson et al. 2002). | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |
| | F. Are sexual propagules – viable seeds – effectively dispersed to new areas? | Yes. From Larson et al. 2007: “Birds and small mammals have often been listed as dispersal agents for <i>L. japonica</i> (White and Stiles 1992; Suthers et al. 2000). Birds that have been observed to eat the fruits in North America include wild turkey, bobwhite, mockingbird, white-throated sparrow, white-crowned sparrow, dark-eyed junco, American robin, purple finch, goldfinch, bluebird, pine grosbeak, hermit thrush and house finch (Martin et al. 1951; Handley 1945; Schierenbeck 2004).” | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |
| | 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? | Minnesota has native <i>Lonicera</i> species, but no reports of hybridization between <i>L. japonica</i> and native <i>Lonicera</i> species were found. | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |
| | 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? | Yes. Flowering has been observed as quickly as one year after germination, but more typically begins in the second year after germination (Schierenbeck 2004). | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |
| | I. Do natural controls exist, species native to Minnesota that are documented to effectively prevent the spread of the plant in question? | No evidence found to support this. From Schierenbeck (2004): “Remarkably, there are no known pests or diseases that cause serious harm to Japanese honeysuckle (Gilman, 1999). Some disease-producing organisms have been observed on Japanese honeysuckle, but they don’t appear to cause much damage. These include the fungi, <i>Corticium koleroga</i> , <i>Phoma mariae</i> , <i>Polyporus dichrous</i> , <i>Rhytisma lonicericola</i> , and <i>Erysiphe polygoni</i> (Wescott, 1950), and the crown gall bacteria (<i>Pseudomonas tumefaciens</i> ; Leatherman, 1955). Insect larva of the hornworm (<i>Haemorrhagia diffinis</i>), bumblebee hawkmoths (sphingidae), and skippers and darters (hesperiidae) have been observed eating the leaves of Japanese honeysuckle but not in large numbers. Aphids (Homopterans) are observed in the warmer regions of its range, but they do not appear to seriously damage the plants (Williams <i>et al.</i> , 2001). In regions where there are seasonal | Go to Box 8 |

| Box | Question | Answer | Outcome |
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| | | fluxuations in climate, peak leaf expansion for Japanese honeysuckle occurs in the late fall, late winter, and early spring, and thus its leaf phenology mediates the effects of herbivory by completing leaf formation prior to most insect activity.” | |
| 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? | | |
| | A. Does the plant have toxic qualities, or other detrimental qualities, that pose a significant risk to livestock, wildlife, or people? | <p>No. While there are some toxic qualities, it is not likely a significant risk.</p> <p>From Larson et al. 2007: “Some caution may be required in using and handling <i>L. japonica</i> for medicinal purposes. There is a single record of three patients incurring a contact dermatitis similar to poison ivy (itchy raised blisters) after pruning Hall’s Japanese honeysuckle (<i>L. japonica halliana</i>), yet it was easily treated with topical steroids (Webster 1993). When eaten in large quantities the fruit may be toxic, causing diarrhea, vomiting, rapid heartbeat, respiratory failure, convulsion and coma (Russell 1997).”</p> <p>From Schierenbeck (2004): “There is evidence that Japanese honeysuckle has been used medicinally since the Tang dynasty in 659 AD (Turner and Wasson, 1997), and it continues to be a popular component of herbal teas in Guangdong, Hong Kong, and Macao (Hu, 1997). Only the flowers are used, as the fruits are poisonous, and the leaves can be poisonous in large quantities (Hu, 1997).”</p> <p>“Despite the historical use of Japanese honeysuckle for medicinal purposes, it is not “Generally recognized as Safe” by the U.S. Food and Drug Administration and thus is not approved for use as food or medicine in the U.S.”</p> | Go to 8B |
| | B. Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs? | It is not clear what the economic impact would be in Minnesota. | Go to 8C |

| Box | Question | Answer | Outcome |
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| | | <p>In more southern areas, there has been concern about Japanese honeysuckle preventing tree establishment after harvest. From Larson et al. 2007: “There is much concern that <i>L. japonica</i> establishment after selective logging will prevent forest re-growth (Evans 1984). It is particularly problematic in managed pine stands. For example, Cain (1984) reported that it causes severe regeneration problems in uneven-aged stands of loblolly and shortleaf pines in southeastern Arkansas. Nelson (1953) estimated that 1 million acres in the lower Piedmont had heavy honeysuckle growth, and that perhaps 2.5 million acres had some degree of coverage. The tendency of <i>L. japonica</i> to outcompete tree seedlings following site preparation by discing, burning and bush-hogging led forest companies to conduct research on herbicide control methods (Prine and Starr 1971; McLenmore 1981).”</p> <p>In more southern areas, there has been concern about Japanese honeysuckle as a host for crop pests. From Larson et al. 2007: “<i>Lonicera japonica</i> may also act as a host for insect pests of crop plants. In Tift County, Georgia, it was a local host for populations of two noctuid moths, the tobacco budworm [<i>Heliothis virescens</i> (F.)] and the corn earworm [<i>Helicoverpa zea</i> (Boddie)], which feed on crop plants (Pair 994). The larvae were found in populations along roadsides adjacent to agricultural fields in numerous sites, but whether <i>L. japonica</i> is a host outside of southern Georgia and northern Florida is unknown.”</p> <p>“In North Carolina, <i>L. japonica</i> populations adjacent to crop fields are host to overwintering populations of two spotted spider mite (<i>Tetranychus urticae</i> Koch) that re-invade corn and peanut in the spring (Margolies and Kennedy 1985).”</p> <p>“<i>Lonicera japonica</i> may also impact agriculture as a source of whitefly-transmitted viruses. For example, white-fly-transmitted begomoviruses have been introduced to Europe</p> | |

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| | | with <i>L. japonica</i> (Briddon 2001) and Osaki (1979) noted that a whitefly (<i>Bemisia lonicerae</i> Takahashi) may transmit tobacco leaf curl virus (TLCV) (which attacks tomatoes and tobacco) from <i>L. japonica</i> to crops.” | |
| | C. Can the plant aggressively displace native species through competition (including allelopathic effects)? | <p>Yes.</p> <p>From Larson et al. 2007: “In Michigan, adjacent to its area of occurrence in southwestern Ontario, it has been considered “an aggressive vine that defies eradication, forming dense tangles that overwhelm the native vegetation” (Voss 1996).”</p> <p>“<i>Lonicera japonica</i> outcompetes native vegetation for both light (Bruner 1967; Thomas 1980) and below-ground resources (Whigham 1984; Dillenburg 1993a, b), and thereby changes the structure of woodlands. Because it is evergreen it has a capacity to photosynthesize and grow during the early spring and late fall (Carter and Teramura 1988a), thereby excluding light from spring ephemerals and other woodland vegetation at these times of maximum light availability. By overtopping pre-existing vegetation, the vines topple shrubs and smaller trees (Slezak 1976; Thomas 1980; McLenmore 1981), producing a more open habitat favourable to their growth. Any disruption of the tree canopy was found to hasten development of <i>L. japonica</i> cover, resulting in further loss of trees (Thomas 1980). Similarly, Webb et al. (2000) found that large-scale removal of <i>Acer platanoides</i> L. resulted in significant release of non-native species, including <i>L. japonica</i>. Yurkonis and Meiners (2004) speculated that <i>L. japonica</i> affects local species richness by appropriation of resources available for colonizing species rather than through more direct competitive interactions emphasized in other studies.”</p> <p>Skulman et al. (2004) found evidence that allelopathy plays a role in Japanese honeysuckle effects on loblolly and shortleaf pine.</p> <p>From Schierenbeck (2004):</p> | Go to Box 9 |

| Box | Question | Answer | Outcome |
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| | | <p>“Japanese honeysuckle has been identified as a successful competitor and a contributor to reduced species diversity in many plant communities (Oosting, 1942; Davison and Forman, 1982; Bell <i>et al.</i>, 1988). It alters vegetative structure in deciduous forests and ensures its continued dominance through the suppression of juvenile individuals and the reproductive inhibition of associated species (Thomas, 1980; Friedland and Smith, 1982; Nyboer, 1990). Through root competition, Japanese honeysuckle affects a significant reduction on leaf photosynthetic capacity, nitrogen-use efficiency, and biomass allocation patterns of American sweetgum (<i>Liquidambar styraciflua</i>) saplings (Dillenburg <i>et al.</i>, 1993a, 1993b).”</p> <p>“In a study of ten old fields followed over 31 years of succession, Japanese honeysuckle was significantly involved in many negative associations and played a major role in the inhibition of later successional species (Myser and Pickett, 1992). Even with heavy grazing from wildlife, it remains dominant in many mid-successional communities (Oosting, 1942; Leatherman, 1955).”</p> <p>“Japanese honeysuckle will grow in full sun and full shade but it prefers light gaps, forest margins, old fields, and disturbed areas with light and moisture (Keever, 1979; Robertson <i>et al.</i>, 1994). Once established, it will spread rapidly by layering on roadcuts, abandoned fields, fences, woodlots, and crevices of natural or artificial stone walls (Leatherman, 1955).”</p> | |
| | D. Can the plant hybridize with native species resulting in a modified gene pool and potentially negative impacts on native populations? | Minnesota has native <i>Lonicera</i> species, but no reports of hybridization between <i>L. japonica</i> and native <i>Lonicera</i> species were found. | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |
| | E. Does the plant have the potential to change native ecosystems (adds a vegetative layer, affects ground or surface water levels, etc.)? | May move a wooded habitat towards an open habitat. From Larson et al. 2007: “By overtopping pre-existing vegetation, the vines topple shrubs and smaller trees (Slezak 1976; Thomas 1980; McLenmore 1981), producing a more open habitat favourable to their growth.” | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |
| | F. Does the plant have the potential to introduce or harbor another pest or serve as an alternate host? | See Box 8B for discussion of Japanese honeysuckle as an alternate host for crop pests. | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |

| Box | Question | Answer | Outcome |
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| 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? | <p>The plant is not native to Minnesota.</p> <p>In 2017, the Minnesota Department of Agriculture sent a survey to 1,402 Minnesota nursery certificate holders. In the questions on Japanese honeysuckle, the survey found that 2 of the 36 respondents sell Japanese honeysuckle. No respondents indicated that it was a significant source of income.</p> <p>Summary of the survey results with the percent (of 36 respondents) that agreed with the statement:</p> <ul style="list-style-type: none"> • I/we currently sell this species or one or more named cultivars of this species. 6% • This species provides significant income for my/our business. 0% • If this species were regulated as a noxious weed and not allowed to be sold in Minnesota, it would have a significant negative impact on my/our business. 3% • There are good alternatives available with desirable traits that are similar to this species. 50% • There are no good alternatives available with desirable characteristics that are similar to this species. 3% <p>Schierenbeck (2004) notes that there are 12 varieties of Japanese honeysuckle available for purchase through the internet, including ‘Elegant Creeper’, ‘Hall’s Prolific’, ‘Cream Cascade’, ‘Mint Crisp’, ‘Interold Dart’s World’, and ‘Hall’s /Halliana’.</p> | Go to 9B |

| Box | Question | Answer | Outcome |
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| | 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? | No. The plant is an introduced species and there is not an effective way to prevent spread. | Go to 9C |
| | C. Is the plant native to Minnesota? | No. The plant is native to Japan, Korea, and eastern China. | Go to 9D |
| | D. Is a non-invasive, alternative plant material commercially available that could serve the same purpose as the plant of concern? | Yes. There are alternative flowering vine species and there are native honeysuckle species. | Go to Box 10 |
| | E. Does the plant benefit Minnesota to a greater extent than the negative impacts identified at Box #8? | | |
| 10 | Should the plant species be enforced as a noxious weed to prevent introduction &/or dispersal; designate as prohibited or restricted? | | |
| | A. Is the plant currently established in Minnesota? | No. There is no evidence it is widely established. | List the plant as a Prohibited Eradicate Noxious Weed |
| | B. Does the plant pose a serious human health threat? | No. | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |

| Box | Question | Answer | Outcome |
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| | 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>Japanese honeysuckle is currently not confirmed to be present in the state. Early detection treatments could control the populations.</p> <p>Standard treatments were reported in Larson et al. 2007: “Glyphosate (Round-up) treatment is often recommended, though <i>L. japonica</i> may be defoliated by high-volume spring sprays of a variety of herbicides (Evans 1984). However, control is not dependable, and some individuals are nearly always present after treatment (Warbach 1953; Little 1961). Nyboer (1990) pointed out that the semi-evergreen habit of <i>L. japonica</i> allows it to be detected and treated in the winter when co-habitants are dormant (see also Nuzzo 1997). He recommended careful application of glyphosate or Crossbow (triclopyr and 2,4-D combination) at this time of the year, but the latter may be more persistent.”</p> | This text is provided as additional information not directed through the decision tree process for this particular risk assessment. |
| 11 | Should the plant species be allowed in Minnesota via a species-specific management plan; designate as specially regulated? | | |

| Final Results of Risk Assessment | | |
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| Review Entity | Comments | Outcome |
| NWAC Listing Subcommittee | The risk assessment leads to listing Japanese honeysuckle as Prohibited Eradicate. An alternative is to list Japanese knotweed as Restricted following the example of porcelain berry and tree of heaven. These are all plants that have been big problems in states south of Minnesota, but have limited distribution in Minnesota at this time, but may become more of an issue as climate changes. This would keep the Eradicate List shorter, but the trade-off could potentially be a lack of action on removing plants if found. 07/11/18 | Present the NWAC full group the risk assessment with Prohibited Eradicate as outcome and explain the alternative option of Restricted. |
| NWAC Full Committee | Vote was 15:1 in favor of Prohibited Eradicate. | Prohibited Eradicate |
| MDA Commissioner | Commissioner order was signed on 03/03/19. | Prohibited Eradicate |

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