

Minnesota Noxious Weed Risk Assessment

Developed by the Minnesota Noxious Weed Advisory Committee

Assessment information

Common name: Tatarian maple

Scientific name: *Acer tataricum* L.

Family name: Sapindaceae

Current reviewer name and organizational affiliation: Laura Van Riper, Minnesota Department of Natural Resources

Date of current review: November 20, 2020

Previous reviewer name and organizational affiliation: Laura Van Riper, Minnesota Department of Natural Resources and Tim Power, Minnesota Nursery and Landscape Association

Date of previous review: 09-17-2015 (as part of Amur maple: *Acer ginnala* Maxim., synonym *Acer tataricum* ssp. *ginnala*)

Species description

Photo



Photo caption: Tatarian maple leaves and flowers (photo credit: Robert Vidéki, Doronicum Kft., Bugwood.org)

Why the plant is being assessed

- Amur maple (*Acer ginnala* Maxim.) was assessed in 2015. The assessment noted that *Acer tataricum* ssp. *ginnala* was considered a synonym. For a time *Acer ginnala* was considered a subspecies of *Acer tataricum*. There are sources that consider *Acer tataricum* to be a separate species so the Noxious Weed Advisory Committee decided to have a separate risk assessment prepared for it.

- Amur maple and Tatarian maple are closely related so there is concern that they could have similar impacts.
- Amur maple and Tatarian maple are so closely related that there is confusion in literature and websites as *Acer tataricum* is often listed as synonym when *Acer ginnala* is discussed. It can be unclear what species has been mapped or referred to. The taxonomy has changed over time and there is a lot of inconsistency.
- The concern is that Amur maple and Tatarian maple can produce abundant seed, form dense monocultures, and outcompete other species.

Identification, biology, and life cycle

- Current taxonomy according to the [Integrated Taxonomic Information System](#) and [USDA Plants](#).
 - *Acer ginnala* Maxim. = accepted name
 - *Acer tataricum* L. = accepted name
 - *Acer tataricum* ssp. *ginnala* (Maxim.) Wesm. = not accepted. Accepted name for *Acer tataricum* ssp. *ginnala* (Maxim.) Wesm. is *Acer ginnala* Maxim.
- Tall shrub or small tree: Reports of heights vary with reported heights of 18-30 ft. (Herman et al. 2015) or 15-20 ft. (Missouri Botanical Garden 2020).
- Plant hardiness zones: Missouri Botanical Garden (2020) lists zones 3-8 and Herman et al. (2015) note that it is hardy to zone 2.
- Larger than Amur maple, but less shiny foliage, yellow in the fall (Herman et al. 2015). Amur maple fall color is generally red to orange.
- Grows in full sun to partial shade (Herman et al. 2015, Missouri Botanical Garden 2020).

Current distribution

USDA Plants reports Tatarian maple from four states. Maps may not be complete due to the fact that *Acer tataricum* was often considered a synonym for *Acer ginnala* so it is possible that species reported as *A. ginnala* in the past are *A. tataricum*.

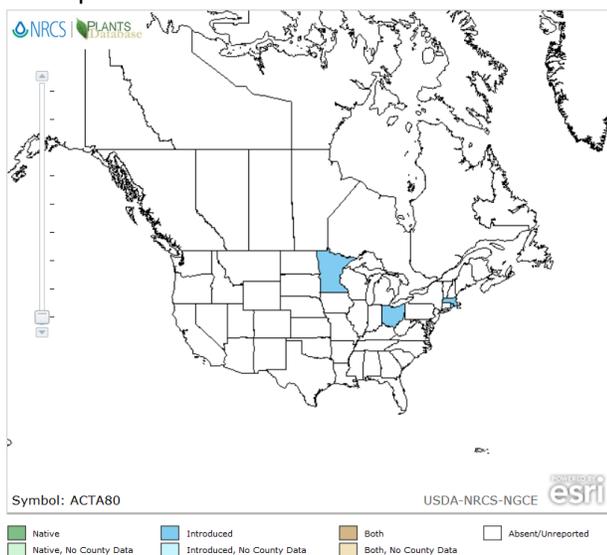


Photo caption: National level [Tatarian maple map from USDA Plants](#). Plants reported in Minnesota, Ohio, Massachusetts and Rhode Island. Map accessed January 6, 2020.

While the USDA Plants shows Tatarian maple as being present in Minnesota, EDDMapS does not. EDDMapS does show reports in two Wisconsin counties.

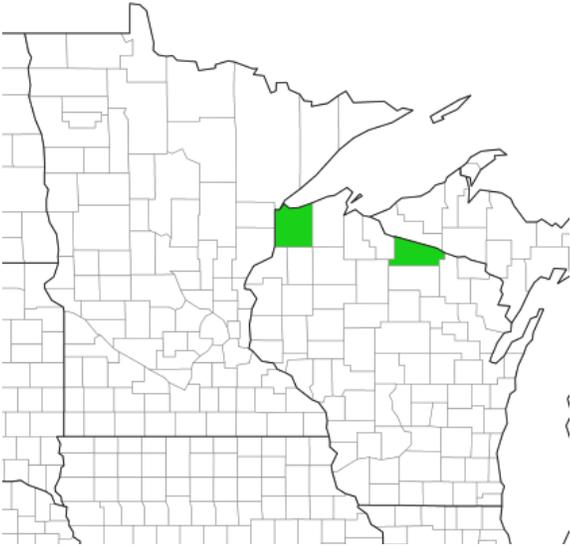


Photo caption: [EDDMapS map of Tatarian maple](#) in Minnesota and Wisconsin. There were no reports in Minnesota. In Wisconsin, there were three reports from Douglas county and three reports from Vilas county. Map accessed January 6, 2020.

Current regulation

Amur maple (*Acer ginnala* Maxim.) is regulated as a Specially Regulated Plant with the regulation: “Sellers shall affix a label that advises buyers to only plant Amur maple and its cultivars in landscapes where the seedlings will be controlled by mowing or other means. Amur maple should be planted at least 100 yards from natural areas.” As noted previously, at the time of Amur maple’s regulation, Tatarian maple was thought to be a synonym of Amur maple. [Wisconsin Department of Natural Resources](#) lists Amur maple as *Acer tataricum subsp. ginnala* and regulates it as a Restricted Invasive Species with all cultivars exempt from regulation. Wisconsin’s webpage lists *Acer tataricum* and *Acer ginnala* as other names for the plant.

Risk assessment

Box 1:

Is the plant species or genotype non-native?

Answer: Yes

Outcome: Go to Box 3

Native range includes central and western Asia and eastern Europe (Missouri Botanical Garden 2020). Kabas et al. (2014) discusses the bioclimatic areas in which it is found in Serbia and Kosovo.

Box 2:

Does the plant species pose significant human or livestock concerns or has 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 plant species, or a related species, documented as being a problem elsewhere?

Answer: Yes

Outcome: Go to Box 6

Could not find records of *Acer tataricum* being regulated. The closely related *Acer ginnala* (synonym *Acer tataricum ssp. ginnala*) is noted as a problem from these sources:

- Regulated as a Restricted Invasive Species in Wisconsin (all cultivars exempt). [Wisconsin Department of Natural Resources](#) lists Amur maple as *Acer tataricum subsp. ginnala* and regulates it as a Restricted Invasive Species with all cultivars exempt from regulation. Wisconsin's webpage lists *Acer tataricum* and *Acer ginnala* as other names for the plant.
- Ranked as moderately invasive in [New York](#).
- Listed on Illinois Departments of Natural Resources [Exotic Species webpages](#).
- Has a [NatureServe](#) I rank of Medium/Insignificant.
- Listed as potentially invasive, but not banned in [Connecticut](#).

Box 4:

Are the plant species' life history & 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 plant 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

USDA Plants shows *Acer tataricum* as present in Minnesota, but the source of that information is not provided. The University of Minnesota herbarium did not have *Acer tataricum* records for Minnesota. It has been sold as a landscape plant, so it is likely present in Minnesota. The closely related Amur maple (*Acer ginnala*) is widespread in Minnesota as [EDDMapS](#) reports it from 42 counties in Minnesota).

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

Answer: **This text is provided as additional information and is not directed through the decision tree process.**

Hardiness zones for *Acer tataricum* indicate that it could establish in Minnesota. Missouri Botanical Garden (2020) lists zones 3-8 and Herman et al. (2015) note that it is hardy to zone 2.

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 plant 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

There are cultivars noted to have more vivid colors, but no information was found on cultivars with different reproductive properties. *Acer tataricum* 'Rubrum' is noted to have red fall color (Herman et al. 2015). Hot Wings Tatarian maple (*Acer tataricum* 'GarAnn') is noted to have red samaras (the wings on the seeds are red) and to be more tolerant of drought and alkaline conditions ([Minor's Garden Center](#)).

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

Answer: No

Outcome: Go to Question 7D

No evidence found for asexual/vegetative reproduction.

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

Outcome: Decision tree does not direct to this question.

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

Amur maple has been found to produce 5,000 or more fruits per year (each fruit has two seeds) and seeds require stratification to germinate (Ma and Moore 2008, Wisconsin 2011). Tatarian maple may be similar, but specific information could be found. Jim Calkins (Minnesota Nursery and Landscape Association, personal communication March 9, 2020) has found that Tatarian maple seeds are viable and hardy to USDA Cold Hardiness Zone 4 and probably lower given that the species is hardy to at least Zone 3. Jim Calkins also has had a report by one seed supplier that found 91% viability based on a cut test for the lot being offered for sale.

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: Limited self-fertility. ***This text is provided as additional information and is not directed through the decision tree process.***

Rosado et al. (2018) found that the breeding system of *Acer tataricum* is andromonoecious (hermaphroditic/bisexual and male flowers produced on the same plant and in the same inflorescence) and protandrous/dichogamous (having male reproductive structures that mature before the female reproductive structures which limits self-pollination because the pollen is released before the stigmas are receptive).

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

Answer: Yes

Outcome: Go to Question 7I

The fruits are winged samaras and are typically borne in pairs. Distribution is likely to be similar to Amur maple, with most of the seeds landing within 100m of the parent tree, a portion that can potentially be carried long distances by wind and water (Oliver 2004, Ma and Moore 2008).

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 text is provided as additional information and is not directed through the decision tree process.***

Acer tataricum can hybridize with *Acer ginnala* (Rosado et al. 2018).

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

Missouri Botanical Gardens (2020) notes: “No serious insect or disease problems. Verticillium wilt, stem canker, leaf spots, tar spot and anthracnose may appear. Watch for aphids, borers, scale, leafhoppers, caterpillars and mites.”

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 plant 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 Question 8B

No reports found. It has been found that other maple species, such as red maple (*Acer rubrum*) are toxic to horses when horses eat the wilted leaves. The University of Minnesota’s Extension program on horses classifies the [wilted leaves of all maples](#) as toxic (personal communication Krishona Martinson, University of Minnesota, 2 June 2015).

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 Question 8C

No reports found on this.

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

Answer: Yes

Outcome: Go to Box 9

Tatarian maple is likely to have impacts similar to Amur maple. Amur maple is “shade-tolerant and can shade out understory species in forests or herbaceous species in grasslands” (Wisconsin 2011). Allelopathic chemicals have been found in Amur maple (Cawly et al. 2005 cited by Wisconsin 2011).

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

Answer: No. ***This text is provided as additional information and is not directed through the decision tree process.***

No reports found of this.

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 text is provided as additional information and is not directed through the decision tree process.***

Tatarian maple is likely to have impacts similar to Amur maple which can add a shrub layer to a prairie/grassland or an open woodland (Ma and Moore 2008, Wisconsin 2011).

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

Answer: No. ***This text is provided as additional information and is not directed through the decision tree process.***

No reports found of this.

Box 9:

Does the plant 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

Outcome: Go to Question 9B

Amur maple and Tatarian maple are sold in Minnesota. The Minnesota Nursery and Landscape Association (MNLA) and the Minnesota Department of Agriculture sent out a survey on the plant species being assessed by the Noxious Weed Advisory Committee. The online survey was open from September 8, 2020 to October 5,

2020. Respondents were asked if they sell the species. Of the 74 people who responded to the question, 20% of them sold Tatarian maple.

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

Outcome: Go to Box 11

Tatarian maple is an introduced species. Control methods are similar to Amur maple, involving control by cutting and treating the stumps with glyphosate herbicide, and fire can be useful for controlling it in prairies (Oliver 2004). Due to the similarity of Tatarian maple and Amur maple it makes sense to regulate them in the same way as Specially Regulated Plants.

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 text is provided as additional information and is not directed through the decision tree process.**

Native Substitutes on MN Department of Natural Resources [Amur maple web page](#):

- Mountain maple (*Acer spicatum*)
- American hornbeam (*Carpinus caroliniana* ssp. *virginiana*)
- Pagoda dogwood (*Cornus alternifolia*)
- Fireberry hawthorn (*Crataegus chrysocarpa*)
- Pin Cherry (*Prunus pensylvanica*); requires well-drained, acid soil
- Nannyberry (*Viburnum lentago*)
- High-bush cranberry (*Viburnum trilobum*)

Non-invasive substitutes from Dan Shaw of the MN Board of Water and Soil Resources (personal communication 1 June 2015):

- Saskatoon Serviceberry (*Amelanchier alnifolia*) (mostly western MN)
- Smooth Serviceberry (*Amelanchier laevis*)
- American Hazelnut (*Corylus americana*)
- Ninebark (*Physocarpus opulifolius*)
- American Wild Plum (*Prunus pensylvanica*)
- Choke cherry (*Prunus virginiana*)
- Smooth Sumac (*Rhus glabra*)
- Red Berried Elder (*Sambucus racemosa*)
- Showy Mountain Ash (*Sorbus decora*) (mostly northern MN)

Acer ginnala and *A. tataricum* are the known understory maples that will thrive in urban soils in Minnesota. Urban soils by roads and buildings may be more compact and have other properties that make it difficult for some species to thrive.

In the 2020 online survey of MNLA members, 65% of respondents agreed there are good alternative plant species available with desirable traits that are similar to Tatarian maple and 13% said that there were no good alternatives.

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

Outcome: Decision tree does not direct to this question.

Box 10:

Should the plant 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 can the plant be reliably eradicated (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.*

Outcome: Decision tree does not direct to this question.

Question 10G: Is the plant known to cause significant ecological or economic harm and can the plant be reliably controlled 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 plant is being designated as a Specially Regulated Plant. What are the specific regulations proposed?

Answer: List as a Specially Regulated Plant with the regulation: “Sellers must affix a label that advises buyers to only plant Tatarian maple and its cultivars in landscapes where the seedlings will be controlled by mowing or other means. Tatarian maple should be planted at least 100 yards from natural areas.”

For clarity Tatarian and Amur maple should be regulated in the same way. They fill a niche for understory maples that are appropriately hardy and adaptable to plant in Minnesota’s compacted urban soils. Since the invasion risk with Tatarian maple is based on the spread of seeds, an effective management strategy is to control seedlings by mowing. Tatarian maple seeds are spread primarily by wind, not by birds or other animals, so the risk of invasion drops dramatically as distance increases from a parent plant.

Sales of Tatarian maple and its cultivars should be allowed to continue in Minnesota, with the caveat that plant sellers advise buyers that Tatarian maple should be planted only in managed landscapes where seedlings will be controlled by mowing or other methods. Tatarian maple should not be planted near natural areas, including prairie, savanna and upland forest ecosystems, in Minnesota.

Final results of risk assessment (2020)

NWAC Listing Subcommittee

Outcome: Specially Regulated Plant using the same regulations as Tatarian maple.

Comments: Due to the similarity of Amur maple and Tatarian maple, the two species should be regulated in the same way as Specially Regulated Plants. List as a Specially Regulated Plant with the regulation: “Sellers must affix a label that advises buyers to only plant Tatarian maple and its cultivars in landscapes where the seedlings will be controlled by mowing or other means. Tatarian maple should be planted at least 100 yards from natural areas.”

NWAC Full Committee

Outcome: List as a Specially Regulated Plant

Comments: Vote was 14-1 in favor of listing as a Specially Regulated Plant.

MDA Commissioner

Outcome: List as a Specially Regulated Plant

Comments: No comments

Risk Assessment Current Summary (04-26-2021)

- Amur maple was assessed in 2015 and regulated as a Specially Regulated Plant in 2016. Under some taxonomy, Amur maple is considered a subspecies of Tatarian maple and under other taxonomy the two are completely separate. For clarity, Tatarian maple now has its own risk assessment.
- Amur maple and Tatarian maple are both capable of producing abundant seeds and outcompeting other species to form dense monocultures.
- Due to the similarity of Amur maple and Tatarian maple, the two species should be regulated in the same way as Specially Regulated Plants. List as a Specially Regulated Plant with the regulation: “Sellers must affix a label that advises buyers to only plant Tatarian maple and its cultivars in landscapes where the seedlings will be controlled by mowing or other means. Tatarian maple should be planted at least 100 yards from natural areas.”
- A commissioner’s order to list Tatarian maple as a Specially Regulated Plant was signed on 04/26/2021. The species will be added to the Minnesota Noxious Weed List on 01/01/2023 with the regulation: “Sellers must affix a label that advises buyers to only plant Tatarian maple and its cultivars in landscapes where the seedlings will be controlled by mowing or other means. Tatarian maple should be planted at least 100 yards from natural areas.”

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