



***Plant Risk Evaluator -- PRE™
Evaluation Report***

Acer palmatum -- Illinois

2017 Farm Bill PRE Project

PRE Score: 10 -- Accept (low risk of invasiveness)

Confidence: 73 / 100

Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public

Status: Completed

Evaluation Date: March 29, 2017

This PDF was created on June 15, 2018



Plant Evaluated

Acer palmatum



Image by Kurt Stüber



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Acer palmatum*) in an effort to understand the invasive history, reproductive strategies, and the impact, if any, on the region's native plants and animals. This research reflects the data available at the time this evaluation was conducted.

General Information

Status: Completed

Screener: Emily Russell

Evaluation Date: March 29, 2017

Plant Information

Plant: *Acer palmatum*

Regional Information

Region Name: Illinois

Climate Matching Map

To answer four of the PRE questions for a regional evaluation, a climate map with three climate data layers (Precipitation, UN EcoZones, and Plant Hardiness) is needed. These maps were built using a toolkit created in collaboration with GreenInfo Network, USDA, PlantRight, California-Invasive Plant Council, and The Information Center for the Environment at UC Davis.

Click [here](#) to see the generated climate matching map for this region. This climate match database is hosted by GreenInfo Network and publicly accessible.



Evaluation Questions

These questions are based in an original article published at the University of California, Davis, and can be found on the PLOS One website, here: <https://doi.org/10.1371/journal.pone.0121053>

Invasive History and Climate Matching (Questions 1 - 6)

1. Has the species (or cultivar or variety, if applicable; applies to subsequent "species" questions) become naturalized where it is not native?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Acer palmatum has escaped cultivation and naturalized in parts of the eastern United States and Hawaii, Canada, Australia, and New Zealand.



Reference(s):

- Swearingen, J., & Barger C. (2016). Japanese maple: *Acer palmatum* (Sapindales: Aceraceae): Invasive Plant Atlas of the United States. 2016 Invasive Plant Atlas of the United States. 2017,
 - Serviss, B. E., & Peck J. H. (2008). NEW AND NOTEWORTHY RECORDS OF SEVERAL NON-NATIVE VASCULAR PLANT SPECIES IN ARKANSAS. *Journal of the Botanical Research Institute of Texas*. 2, 637–641.
 - Basinger, M. A. (1999). Notes on some naturalized woody plant species new to Illinois. *Transactions of the Illinois State Academy of Science*. 92, 33–36.
 - Jordan, M.J., Moore G., & Weldy T.W.. (2008). Invasiveness ranking system for non-native plants of New York.
 - New Jersey Invasive Species Strike Team (2015). New Jersey Invasive Species Strike Team 2015 DO NOT PLANT LIST.
 - McAvoy, W. A. (2013). NON-NATIVE AND INVASIVE PLANTS IN DELAWARE.
 - Zell, G. (2012). Non-native invasive plants of Arlington County, Virginia.
 - Suffolk County (2011). Suffolk County's Management List of Invasive Species.
 - Swearingen, J. M. (2008). Survey of invasive plants occurring on National Park Service lands, 2000-2007. 2017,
 - The State of Queensland Department of Agriculture and Fisheries (2016). *Acer palmatum* Fact Sheet from Environmental Weeds of Australia for Biosecurity Queensland Edition.
 - Randall, R. (2012). *A Global Compendium of Weeds*. 2nd Edition..
 - Blue Mountains Bushcare Network (2017). *Bushland Weeds of the Blue Mountains Region*. 2017,
 - Randall, RP. (2007). The introduced flora of Australia and its weed status. 524.
-

2. Is the species (or cultivar or variety) noted as being naturalized in the US or world in a similar climate?

- Answer: **Yes**, which contributes **2** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Acer palmatum is naturalized in the Mid-Atlantic states where there is climate overlap with Illinois.



Reference(s):

- Swearingen, J., & Barger C. (2016). Japanese maple: *Acer palmatum* (Sapindales: Aceraceae): Invasive Plant Atlas of the United States. 2016 Invasive Plant Atlas of the United States. 2017,
 - Basinger, M. A. (1999). Notes on some naturalized woody plant species new to Illinois. Transactions of the Illinois State Academy of Science. 92, 33–36.
 - Zell, G. (2012). Non-native invasive plants of Arlington County, Virginia.
 - Swearingen, J. M. (2008). Survey of invasive plants occurring on National Park Service lands, 2000-2007. 2017,
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3. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

- Answer: **Yes**, which contributes **2** points to the total PRE score.
- The *screeners* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Acer palmatum is described as naturalized, a weed, a species to watch, a moderate concern, or a potential invader in most instances. Some information is conflicting: The Global Compendium of Weeds lists it as an environmental weed in Hawaii, but a current invasive species list for Hawaii containing *Acer palmatum* could not be found. No descriptions of impacts of *Acer palmatum* on plant communities in Hawaii or Australia could be located. Overall, evidence of significant economic or environmental damage caused by *Acer palmatum* is lacking. These issues resulted in a lowered confidence level for this answer to "medium."



Reference(s):

- Serviss, B. E., & Peck J. H. (2008). NEW AND NOTEWORTHY RECORDS OF SEVERAL NON-NATIVE VASCULAR PLANT SPECIES IN ARKANSAS. *Journal of the Botanical Research Institute of Texas*. 2, 637–641.
 - Swearingen, J., & Barger C. (2016). Japanese maple: *Acer palmatum* (Sapindales: Aceraceae): Invasive Plant Atlas of the United States. 2016 Invasive Plant Atlas of the United States. 2017,
 - The State of Queensland Department of Agriculture and Fisheries (2016). *Acer palmatum* Fact Sheet from Environmental Weeds of Australia for Biosecurity Queensland Edition.
 - Basinger, M. A. (1999). Notes on some naturalized woody plant species new to Illinois. *Transactions of the Illinois State Academy of Science*. 92, 33–36.
 - Jordan, M.J., Moore G., & Weldy T.W.. (2008). Invasiveness ranking system for non-native plants of New York.
 - McAvoy, W. A. (2013). NON-NATIVE AND INVASIVE PLANTS IN DELAWARE.
 - Zell, G. (2012). Non-native invasive plants of Arlington County, Virginia.
 - Suffolk County (2011). Suffolk County's Management List of Invasive Species.
 - Randall, R. (2012). *A Global Compendium of Weeds*. 2nd Edition..
 - Blue Mountains Bushcare Network (2017). *Bushland Weeds of the Blue Mountains Region*. 2017,
 - Randall, RP. (2007). The introduced flora of Australia and its weed status. 524.
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4. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar climate?

- Answer: **Yes**, which contributes **3** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

The climate in Arlington, Virginia is similar to Illinois and they have published an invasive list containing *Acer palmatum*. The New Jersey Invasive Strike Team characterize it as an emerging invasive species (may be locally abundant but not widespread) bearing a "moderate" ecological threat, and include it on their "do not plant" list.

Reference(s):

- Zell, G. (2012). Non-native invasive plants of Arlington County, Virginia.
- New Jersey Invasive Species Strike Team (2015). New Jersey Invasive Species Strike Team 2015 DO NOT PLANT LIST.



5. Are other species of the same genus (or closely related genera) invasive in a similar climate?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Acer platanoides and *Acer ginnala* are invasive in Illinois and the Midwest.

Reference(s):

- Midwest Invasive Plant Network (2015). Midwest Invasive Plant List.
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6. Is the species (or cultivar or variety) found predominately in a climate matching the region of concern?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Acer palmatum is a widespread species that grows in many different climates.

Reference(s):

- GBIF Secretariat (2016). GBIF Backbone Taxonomy: *Acer palmatum* C.P. Thunberg ex A. Murray.
-



Impact on Native Plants and Animals (Questions 7 - 10)

7. Does this plant displace native plants and dominate (overtop or smother) the plant community in areas where it has established?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeners* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

There is a lack of evidence for domination of plant communities in areas where *Acer palmatum* has established.

Reference(s):

- [Anonymous] .
-

8. Is the plant noted as promoting fire and/or changing fire regimes?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeners* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

There is a lack of information about *Acer palmatum* and fire regimes.

Reference(s):

- [Anonymous] .
-



9. Is the plant a health risk to humans or animals/fish? Has the species been noted as impacting grazing systems?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Acer palmatum has not been noted as a health risk to humans or animals.

Reference(s):

- [Anonymous] .
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10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

There is a lack of evidence that *Acer palmatum* produces impenetrable thickets.

Reference(s):

- [Anonymous] .
-

Reproductive Strategies (Questions 11 - 17)

11. Does this species (or cultivar or variety) reproduce and spread vegetatively?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.



Answer / Justification:

A cut stump may re-sprout and the plant can be propagated via cuttings, but there is no evidence of *Acer palmatum* spreading by vegetative reproduction in the wild.

Reference(s):

- [Anonymous] .
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12. If naturally detached fragments from this plant are capable of producing new plants, is this a common method of reproduction for the plant?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Acer palmatum usually reproduces by seed.

Reference(s):

- [Anonymous] .
-

13. Does the species (or cultivar or variety) commonly produce viable seed?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Reference(s):

- Tanaka, H. (1995). Seed Demography of Three Co-Occurring *Acer* Species in a Japanese Temperate Deciduous Forest. *Journal of Vegetation Science*. 6, 887–896.
- Wada, N., & Ribbens E. (1997). Japanese Maple (*Acer palmatum* var. *Matsumurae*, Aceraceae) Recruitment Patterns: Seeds, Seedlings, and Saplings in Relation to Conspecific Adult Neighbors. *American Journal of Botany*. 84, 1294–1300.



14. Does this plant produce copious viable seeds each year (> 1000)?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Acer palmatum can produce copious seeds on most years, but seeds typically have a low rate of viability (15-33%).

Reference(s):

- Wada, N., & Ribbens E. (1997). Japanese Maple (*Acer palmatum* var. *Matsumurae*, Aceraceae) Recruitment Patterns: Seeds, Seedlings, and Saplings in Relation to Conspecific Adult Neighbors. *American Journal of Botany*. 84, 1294–1300.
 - Tanaka, H. (1995). Seed Demography of Three Co-Occurring *Acer* Species in a Japanese Temperate Deciduous Forest. *Journal of Vegetation Science*. 6, 887–896.
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15. Is there significant germination (>25%) of seeds the next growing season, with no requirement of an infrequent environmental condition for seeds to germinate (i.e. fire) or long dormancy period?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Acer palmatum seeds usually germinate one or more years after dispersal.

Reference(s):

- USDA Forest Service (2008). USDA FS Agriculture Handbook 727 - The Woody Plant Seed Manual.
- Tanaka, H. (1995). Seed Demography of Three Co-Occurring *Acer* Species in a Japanese Temperate Deciduous Forest. *Journal of Vegetation Science*. 6, 887–896.



16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.

Reference(s):

- [Anonymous] .
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17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Reference(s):

- USDA Forest Service (2008). USDA FS Agriculture Handbook 727 - The Woody Plant Seed Manual.
 - Tanaka, H. (1995). Seed Demography of Three Co-Occurring Acer Species in a Japanese Temperate Deciduous Forest. *Journal of Vegetation Science*. 6, 887–896.
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Dispersal (Questions 18 - 20)

18. Are the plant's propagules frequently dispersed long distance (>100 m) by mammals or birds or via domestic animals?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.



Answer / Justification:

In the study referenced below, the mean dispersal distance was 41.5m for sound seeds. *Acer palmatum* seeds are eaten by small mammals.

Reference(s):

- Wada, N., & Ribbens E. (1997). Japanese Maple (*Acer palmatum* var. *Matsumurae*, Aceraceae) Recruitment Patterns: Seeds, Seedlings, and Saplings in Relation to Conspecific Adult Neighbors. *American Journal of Botany*. 84, 1294–1300.
 - Tanaka, H. (1995). Seed Demography of Three Co-Occurring *Acer* Species in a Japanese Temperate Deciduous Forest. *Journal of Vegetation Science*. 6, 887–896.
-

19. Are the plant's propagules frequently dispersed long distance (>100 m) by wind or water?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

In the study referenced below, the mean dispersal distance was 41.5m for sounds seeds. Samaras are wind-dispersed, but are not usually carried long distances. Water dispersal is possible if plants are growing near water.

Reference(s):

- Wada, N., & Ribbens E. (1997). Japanese Maple (*Acer palmatum* var. *Matsumurae*, Aceraceae) Recruitment Patterns: Seeds, Seedlings, and Saplings in Relation to Conspecific Adult Neighbors. *American Journal of Botany*. 84, 1294–1300.
 - Tanaka, H. (1995). Seed Demography of Three Co-Occurring *Acer* Species in a Japanese Temperate Deciduous Forest. *Journal of Vegetation Science*. 6, 887–896.
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20. Are the plant's propagules frequently dispersed via contaminated seed (agriculture or wildflower packets), equipment, vehicles, boats or clothing/shoes?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeners* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

There is no evidence of accidental human dispersal.

Reference(s):

- [Anonymous] .
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Total PRE Score

PRE Score: 10 -- Accept (low risk of invasiveness)

Confidence: 73 / 100

Questions answered: 20 of 20 -- Valid (80% or more questions answered)

PRE Score Legend

The PRE Score is calculated by adding the point totals for each (answered) question.

< 13 : accept (low risk of invasiveness)

13 - 15 : evaluate further

> 15 : reject (high risk of invasiveness)

Questions Answered Legend

It is important to answer at least 16 questions to consider a PRE Score as "valid".

>= 16 : valid (80% or more questions answered)

<= 15 : invalid (not enough questions answered)



Organization Ownership and Content Privacy

Organization: 2017 Farm Bill PRE Project

Content Privacy: Public



Evaluation Reviewers

The PRE approach is to base decisions on science and make decisions by consensus of diverse horticultural stakeholders. The literature review and process of answering PRE's questions are based on science; the decisions of which plants to prioritize are based on consensus. To ensure this process is in place and that PRE is collaborative, volunteer stakeholders are recruited from each region to review evaluations. The following experts in their profession (plant science, conservation, or horticultural trade) have participated as volunteer PRE reviewers for this evaluation:

- Linda Mackechnie

November 12, 2017

This evaluation has a total of 1 reviewer(s).



Evaluation Issues

The following section lists all public issues for this evaluation. Issues provide a way for stakeholder reviewers to communicate any concerns or suggestions they might have with the plant or evaluation. Please email PlantRight@suscon.org if additional action is required to resolve open issues.

Issue ID # 3208

Date Created: May 15, 2017 - 3:56pm

Date Updated: July 16, 2017 - 11:45am

Submitted by: Clair Ryan

Status: Fixed

Type:

Severity: Minor

Scope: Q04. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar climate?

Issue Description

The New Jersey Invasive Species Strike Team ([NJISST](#)) has also listed Japanese maple as invasive. They characterize it as an emerging invasive species (may be locally abundant but not widespread) bearing a "moderate" ecological threat. They also include it on their "do not plant" list. I do agree that there is not much evidence in the literature of this species causing ecological harm. You could consider bumping the confidence level to "medium" based on this additional info, though perhaps without documentation of ecological harm it isn't warranted. Regardless, I would recommend listing NJISST as a source under this question.

Issue Resolution (Screener's Response to Issue)

This suggestion was incorporated into the evaluation. I missed the small swatch of New Jersey that is a climate match for Illinois.



About PRE and this Plant Evaluation Report

The PlantRight Plant Risk Evaluator -- PRE is an online database and platform enabling those involved in non-native, terrestrial plant production to know before they grow if a plant poses a regional invasive risk. This tool offers many benefits, and we encourage you to visit the PRE website (<https://pre.ice.ucdavis.edu>) for more information.

If you are a nursery trade association, or involved in the research, development or distribution of horticultural plants we invite you to join the PRE community. If you are a plant scientist, affiliated with a horticultural college or botanic garden, and would like to learn more about becoming a PRE Screener, please drop us an email, PlantRight@suscon.org, requesting a PRE Account.

PRE beta funding is provided by Sustainable Conservation (<http://www.suscon.org/>) and a USDA Farm Bill grant.