Plant Risk Evaluator -- PRE™
Evaluation Report

Ampelopsis brevipedunculata -- Minnesota

2017 Farm Bill PRE Project

PRE Score: 14 -- Evaluate this plant further
Confidence: 75 / 100
Questions answered: 18 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: August 30, 2017

This PDF was created on June 15, 2018

Plant Evaluated

Ampelopsis brevipedunculata

Image by James H. Miller, USDA Forest Service

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Ampelopsis brevipedunculata*) 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.

Summary

Ampelopsis brevipedunculata has several characteristics that lend it to being potentially invasive. Among these are that it overgrows and displaces native vegetation and produces seed that is attractive to and dispersed by birds. Conversely, the plant perhaps does not produce copious amounts of viable seed, does not commonly spread vegetatively, and is not hazardous to humans or animals. These characteristics warrant that this plant be further reviewed in the coming years.

General Information

Status: Completed
Screener: Mike Monterusso
Evaluation Date: August 30, 2017

Plant Information

Plant: *Ampelopsis brevipedunculata*

Regional Information

Region Name: Minnesota

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 *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

A. brevipedunculata has naturalized in several US states.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for Ampelopsis brevipedunculata (Amur peppervine).

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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 *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

It has naturalized in Wisconsin.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for Ampelopsis brevipedunculata (Amur peppervine).
- Wisconsin Department of Natural Resources (2013). Porcelain berry - Wisconsin DNR.

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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 *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

It is a noxious weed in Connecticut and Massachusetts. It has been reported by Charlottesville Parks and Rec as invasive in twelve states in the Northeast: Connecticut, Delaware, Massachusetts, Maryland, New Jersey, New York, Pennsylvania, Rhode Island, Virginia, Washington D.C., West Virginia, and Wisconsin.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for Ampelopsis brevipedunculata (Amur peppervine).
- Rhode Island Wild Plant Society (2015). Invasive Alert, Ampelopsis brevipudunculata - Rhode Island Wild Plant Society.
- Charlottesville Parks and Recreation (2014). Species Specific Removal Methods.
- National Park Service (2010). PCA Fact Sheet -- Porcelainberry (Ampelopsis brevipedunculata) .

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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 *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

It is prohibited in Wisconsin.

Reference(s):

- Wisconsin Department of Natural Resources (2013). Porcelain berry - Wisconsin DNR.

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

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

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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 *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

According to GBIF, most incidences occur outside the matching climate zone (Minnesota). It may be worth noting that A. brevipedunculata is a synonym of Ampelopsis glandulosa var. brevipedunculata (plantlist.org)

Reference(s):

- GBIF (2017). Ampelopsis glandulosa var. brevipedunculata (Maxim.) Y. Momiyama.

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

Answer / Justification:

"... forms dense mats that cover and shade out low vegetation and small trees"...."Once established, the vine quickly overwhelms native vegetation by shading out smaller plants and competing for water and nutrients. The vine smothers native plants as it surrounds them and burdens them with extra weight, which causes the natives to become susceptible to wind and ice damage" (GISD).

Reference(s):

- Minnesota Department of Agriculture (2014). Porcelain Berry.
- Bargeron, C., & Swearingen J. (2016). porcelain-berry: Ampelopsis brevipedunculata (Rhamnales: Vitaceae): Invasive Plant Atlas of the United States.
- Invasive Species Specialist Group (2007). GISD, Ampelopsis brevipedunculata..
- National Park Service (2010). PCA Fact Sheet -- Porcelainberry (Ampelopsis brevipedunculata) .

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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 *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

"In its nonnative North American range, porcelainberry occurs in plant communities with a wide range of historical fire regimes. It is especially invasive in deciduous forests in the northeastern United States where high severity fires have historically been infrequent..."

Reference(s):

- Waggy, M. A. (2009). Ampelopsis brevipedunculata. In: Fire Effects Information System.

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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 *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Birds forage on and disperse the berries. "In Asia, porcelainberry has been used in traditional folk medicine as an anti-inflammatory, diuretic, anti-hepatotoxic agent, and to treat liver disease. Porcelainberry extracts are being investigated for their antioxidant activity..." Risk assessment conducted by Minnesota Department of Agriculture states "No; berries may have toxic qualities, but the idea that the berries are poisonous doesn’t stand out in the literature as a significant concern; information found seems to be primarily anecdotal and is relatively obscure and mixed variously indicating the fruits are both poisonous and edible or saying nothing at all; one veterinary clinic in New Hampshire includes porcelain berry on a list of plants poisonous to dogs; probably best if avoided, but doesn’t appear to be a major concern."

Reference(s):

- Minnesota Department of Agriculture (2014). Porcelain Berry.
- Witty, M., Yard A., Kinard J. L., & Adekunle R. O. (2010). Ampelopsis brevipedunculata Berries are Simultaneously Attractive to Birds and Repulsive to Mammals.
- Waggy, M. A. (2009). Ampelopsis brevipedunculata. In: Fire Effects Information System.

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

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

Answer / Justification:

"In Rock Creek National Park, the Allegheny blackberry/porcelainberry shrubland vegetation type occurs on forest edges or in forest gaps. In this community, porcelainberry forms dense thickets with other native and nonnative vines..."

Reference(s):

- Center for Invasive Species and Ecosystem Health at the University of Georgia (2012). IPSF/Ampelopsis brevipedunculata - Bugwoodwiki.
- Waggy, M. A. (2009). Ampelopsis brevipedunculata. In: Fire Effects Information System.

Reproductive Strategies (Questions 11 - 17)

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

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

Answer / Justification:

It has the ability to reproduce vegetatively: "Although reviews indicate that porcelainberry regenerates vegetatively, it is unclear by what means this occurs or how important this characteristic is to wild populations..."

Reference(s):

- Minnesota Department of Agriculture (2014). Porcelain Berry.
- Waggy, M. A. (2009). Ampelopsis brevipedunculata. In: Fire Effects Information System.

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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 *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

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

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

Answer / Justification:

"Each porcelainberry fruit contains 1 to 4 smooth, triangular ovoid seeds about 3.5 mm in length ..."

Reference(s):

- National Park Service (2010). PCA Fact Sheet -- Porcelainberry (Ampelopsis brevipedunculata) .
- Waggy, M. A. (2009). Ampelopsis brevipedunculata. In: Fire Effects Information System.

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

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

Answer / Justification:

"In Japan, seed rain was surveyed every 1 or 2 weeks for approximately 8 months in 1987 on 6 plots containing 4 seed traps each. During that time, seed traps on one plot averaged 133 porcelainberry seeds per m², while seed traps on the remaining 5 plots had no porcelainberry seed." The above statement implies that a single plant could produce

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

Answer / Justification:

"Available evidence indicates that porcelainberry seed has a high germination rate, and readily germinates following soil disturbance. Germination of porcelainberry seed may be enhanced by removing the fruit pulp or by scarifying seed through digestion. Moist chilling may also stimulate germination of porcelainberry seed. In Japan, freshly collected porcelainberry seed failed to germinate in a controlled environment. Seeds were placed in a paper bag for less than 1 month to facilitate after-ripening and then were exposed to a variety of moisture and temperature regimes. Porcelainberry germination rates were low with one exception: 53% of porcelainberry seeds germinated when placed in moist, cool conditions for 1 month and then exposed to increasing temperatures. Researchers speculated that moist chilling of porcelainberry seed had a dormancy breaking effect." The above implies that the germination rate is relatively high in nature or under conditions that simulate the natural environment.

Reference(s):

- National Park Service (2010). PCA Fact Sheet -- Porcelainberry (Ampelopsis brevipedunculata) .
- Waggy, M. A. (2009). Ampelopsis brevipedunculata. In: Fire Effects Information System.

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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?

Reference(s):

- [Anonymous] .

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

Reference(s):

- [Anonymous] .

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

Answer / Justification:

"The fruits of porcelain berry are eaten and dispersed by birds and various small mammals..."

Reference(s):

- Minnesota Department of Agriculture (2014). Porcelain Berry.
- Rhode Island Wild Plant Society (2015). Invasive Alert, Ampelopsis brevipudunculata - Rhode Island Wild Plant Society.
- National Park Service (2010). PCA Fact Sheet -- Porcelainberry (Ampelopsis brevipedunculata) .
- Waggy, M. A. (2009). Ampelopsis brevipedunculata. In: Fire Effects Information System.

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 *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

No evidence found, although it has been speculated that its seeds may be dispersed by water.

Reference(s):

- Waggy, M. A. (2009). Ampelopsis brevipedunculata. In: Fire Effects Information System.

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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 *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

Total PRE Score

PRE Score: 14 -- Evaluate this plant further
Confidence: 75 / 100
Questions answered: 18 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:

• Chel Anderson	December 27, 2017
• Laura Van Riper	December 18, 2017
• Tom Buechel	November 9, 2017

This evaluation has a total of 3 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 # 5924

Date Created: November 22, 2017 - 8:30am
Date Updated: December 22, 2017 - 9:20am

Submitted by: Laura Van Riper

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Evaluation as a whole

Issue Description

The Minnesota noxious weed risk assessment for this species could be reviewed for additional references: http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/mnnwac/ra/2014/00038pobe.aspx

Issue Resolution (Screener's Response to Issue)

11/28/17 - MM - Thank you. Will maintain this issue as "not fixed" for future reference and inclusion as time allows.

12/22/2017 - Issue resolved by PRE Data Manager -- went through the WRA and selected several sources that had not been previously cited, although the WRA itself had already been linked to several evaluation questions. Added some text to several of the questions and linked additional sources.

Issue ID # 5923

Date Created: November 22, 2017 - 8:30am
Date Updated: January 25, 2018 - 9:04am

Submitted by: Laura Van Riper

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q20. Are the plant’s propagules frequently dispersed via contaminated seed, equipment, vehicles, boats or clothing/shoes?

Issue Description

I'm confused by the variation in responses to Question 20. In some cases when a plant is mainly spread horticulturally by people planting it (such as the goutweed), then this question is a yes. My understanding is that porcelainberry is also commonly spread by people planting it. But in this case, there are no points given to porcelainberry for Question 20.

Issue Resolution (Screener's Response to Issue)

11/29/17 - question referred to PRE developers for clarification.

1/25/18 Issue resolved by PRE Data Manager -- changed Q20 for Aegopodium podagraria 'Variegatum' (goutweed) evaluation from yes to no. There is nothing in the how to answer guidelines about answering the question yes when the species is intentionally planted. Went through all MN evaluations and checked Q20 to ensure the screener followed guidelines.

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.