



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

Vinca minor -- Illinois

2017 Farm Bill PRE Project

PRE Score: 12 -- Accept (low risk of invasiveness)

Confidence: 67 / 100

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

Privacy: Public

Status: Completed

Evaluation Date: April 23, 2017

This PDF was created on June 15, 2018



Plant Evaluated

Vinca minor



Image by 4028mdk09



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Vinca minor*) 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: April 23, 2017

Plant Information

Plant: *Vinca minor*

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

Answer / Justification:

Vinca minor has escaped cultivation and naturalized throughout the eastern United States. It has also been reported as a weed in China, Australia, and New Zealand.

Reference(s):

- Randall, R. (2012). A Global Compendium of Weeds. 2nd Edition..
- Weber, E., Sun S-G., & Li B. (2008). Invasive alien plants in China: diversity and ecological insights. *Biological Invasions*. 10, 1411–1429.
- Swearingen, J., & Barger C.. (2016). common periwinkle: *Vinca minor* (Gentianales: Apocynaceae): Invasive Plant Atlas of the United States.
- USDA NRCS (2017). USDA PLANTS Database: *Vinca minor* (common periwinkle).

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:

Vinca minor is naturalized in Illinois and across the eastern United States.



Reference(s):

- Swearingen, J., & Bargeron C.. (2016). common periwinkle: *Vinca minor* (Gentianales: Apocynaceae): Invasive Plant Atlas of the United States.
 - USDA NRCS (2017). USDA PLANTS Database: *Vinca minor* (common periwinkle).
 - Mid-Atlantic Exotic Pest Plant Council (2005). Mid-Atlantic Exotic Pest Plant Council Plant List.
 - Midwest Invasive Plant Network (2015). Midwest Invasive Plant List.
 - Stone, K. R. (2009). *Vinca major*, *V. minor*. In: Fire Effects Information System.
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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 **High** confidence in this answer based on the available literature.

Answer / Justification:

Vinca minor is invasive in much of the eastern United States.

Reference(s):

- Swearingen, J., & Bargeron C.. (2016). common periwinkle: *Vinca minor* (Gentianales: Apocynaceae): Invasive Plant Atlas of the United States.
 - Mid-Atlantic Exotic Pest Plant Council (2005). Mid-Atlantic Exotic Pest Plant Council Plant List.
 - Midwest Invasive Plant Network (2015). Midwest Invasive Plant List.
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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 *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Vinca minor is invasive in the Midwest and Mid-Atlantic United States.



Reference(s):

- Mid-Atlantic Exotic Pest Plant Council (2005). Mid-Atlantic Exotic Pest Plant Council Plant List.
 - Midwest Invasive Plant Network (2015). Midwest Invasive Plant List.
 - Swearingen, J., & Barger C.. (2016). common periwinkle: *Vinca minor* (Gentianales: Apocynaceae): Invasive Plant Atlas of the United States.
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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 *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Vinca major is also invasive in the eastern United States particularly the Southeast, but does not seem to be a problem in the Midwest.

Reference(s):

- Mid-Atlantic Exotic Pest Plant Council (2005). Mid-Atlantic Exotic Pest Plant Council 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:

Vinca minor is a widespread species that grows in many different climates.

Reference(s):

- GBIF Secretariat (2016). GBIF Backbone Taxonomy: *Vinca minor* L..



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

Answer / Justification:

There are some conflicting views on whether *Vinca minor* dominates plant communities. Some sources say that *Vinca minor* grows in dense smothering mats that shade out tree seedlings and other plants. Other sources point out that "bulbs and perennials are able to emerge through areas where *Vinca* is used as underplanting" (Shannon McEnerney, Midwest Groundcovers, reviewer).

Reference(s):

- Darcy, A. J., & Burkart M. C. (2002). Allelopathic Potential of *Vinca minor*, an Invasive Exotic Plant in West Michigan Forests. *Bios.* 73, 127–132.
- Swearingen, J., & Barger C.. (2016). common periwinkle: *Vinca minor* (Gentianales: Apocynaceae): Invasive Plant Atlas of the United States.
- Hilty, J. (2016). Lesser Periwinkle (*Vinca minor*).

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 **Low** confidence in this answer based on the available literature.

Answer / Justification:

Information on *Vinca* and fire regimes is lacking and warrants further study. "Some evidence suggests that periwinkles may alter local fuel characteristics by changing community structure, litter dynamics, fuel arrangement, and understory temperatures."



Reference(s):

- Stone, K. R. (2009). *Vinca major, V. minor*. 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 *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Vinca is generally unpalatable to animals and has not been reported as poisonous. There are some medicinal uses. A 2007 Michigan study found that *Vinca minor* negatively impacted the spider assemblage on the forest floor.

Reference(s):

- Bultman, T. L., & DeWitt D. J. (2008). Effect of an invasive ground cover plant on the abundance and diversity of a forest floor spider assemblage. *Biological Invasions*. 10, 749–756.
 - Stone, K. R. (2009). *Vinca major, V. minor*. 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: **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:

Vinca minor is a low-growing groundcover that does not impede the movement of humans or animals.

Reference(s):

- [Anonymous] .



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

Answer / Justification:

"Vegetative regeneration is very important to the establishment and spread of periwinkle." Trailing stems root at the nodes.

Reference(s):

- Hilty, J. (2016). Lesser Periwinkle (*Vinca minor*).
 - Missouri Botanical Garden (2017). *Vinca minor* - Plant Finder.
 - Stone, K. R. (2009). *Vinca major*, *V. minor*. 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: **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:

"It is likely that periwinkles establish from plant fragments"

Reference(s):

- Stone, K. R. (2009). *Vinca major*, *V. minor*. In: Fire Effects Information System.
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13. Does the species (or cultivar or variety) commonly produce viable seed?

- 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:

Vinca minor rarely produces seed.

Reference(s):

- Burnham, R. J., & Sondag RB. (2013). *Vinca minor* in: CLIMBERS: Censusing Lianas in Mesic Biomes of Eastern Regions.
 - Hilty, J. (2016). Lesser Periwinkle (*Vinca minor*).
 - East Central Illinois Master Naturalists, Champaign County Master Gardeners (2013). Invasive Plants of East Central Illinois.
 - Stone, K. R. (2009). *Vinca major*, *V. minor*. 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 *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Vinca minor rarely produces seed.

Reference(s):

- East Central Illinois Master Naturalists, Champaign County Master Gardeners (2013). Invasive Plants of East Central Illinois.
 - Burnham, R. J., & Sondag RB. (2013). *Vinca minor* in: CLIMBERS: Censusing Lianas in Mesic Biomes of Eastern Regions.
 - Hilty, J. (2016). Lesser Periwinkle (*Vinca minor*).
 - Stone, K. R. (2009). *Vinca major*, *V. minor*. In: Fire Effects Information System.
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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 points to the total PRE score.
- The *screeener* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

Germination rates and requirements for *Vinca minor* are unknown, but plants rarely set seed.

Reference(s):

- [Anonymous] .
-

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 points to the total PRE score.
- The *screeener* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

The time from germination to maturity is unknown. Since plants rarely produce seed, it can be assumed a plant would not do so within the first three years.

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?

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

Answer / Justification:

Vinca minor can have a long flowering period: "flowers typically have one large flush in spring and then flower rather infrequently after that" (Shannon McEnerny, Midwest Groundcovers, reviewer) into the fall. "While it does flower for prolonged periods, these flowers rarely produce seed" (Jeff Mengler, reviewer).

Reference(s):

- Burnham, R. J., & Sonday RB. (2013). *Vinca minor* in: CLIMBERS: Censusing Lianas in Mesic Biomes of Eastern Regions.
 - Missouri Botanical Garden (2017). *Vinca minor* - Plant Finder.
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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 *screeners* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

There are not reports of *Vinca minor* dispersal by animals.

Reference(s):

- [Anonymous] .
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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 *screeners* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

There is no evidence that *Vinca minor* propagules are dispersed long distance by wind or water.

Reference(s):

- Burnham, R. J., & Sondag RB. (2013). *Vinca minor* in: CLIMBERS: Censusing Lianas in Mesic Biomes of Eastern Regions.
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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 are reports of *Vinca* establishing in natural areas after dumping of contaminated yard waste, but no other evidence of dispersal by humans.

Reference(s):

- Evergreen Vancouver Office (2017). Invasive Plant Profile: Common Periwinkle, *Vinca*.
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Total PRE Score

PRE Score: 12 -- Accept (low risk of invasiveness)

Confidence: 67 / 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:

- Michael Yanny December 6, 2017
- Christopher Evans October 31, 2017

This evaluation has a total of 2 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 # 5589

Date Created: October 31, 2017 - 10:57am

Date Updated: December 10, 2017 - 11:57am

Submitted by: Christopher Evans

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Regional Information

Issue Description

This evaluation doesn't have a climate map associated with it. At least one wasn't linked to on the evaluation

Issue Resolution (Screener's Response to Issue)

Added climate map

Issue ID # 3284

Date Created: May 23, 2017 - 10:06am

Date Updated: June 19, 2017 - 2:35pm

Submitted by: Jeff Mengler

Status: Fixed

Type:



Severity: Minor

Scope: Q17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

Issue Description

The answer given for Q17 seems inconsistent with information given in response to other questions. Several other questions state that "Vinca minor rarely produces seed" while this questions answers yes, Vinca minor produces seed > 3months or more than once a year, This response is based on the flowering phenology of the plant. Perhaps this should be clarified that while it does flower for prolonged periods, these flowers rarely produce seed. This clearly does not affect the total score for this plant.

Issue Resolution (Screener's Response to Issue)

The text was changed as follows: Vinca minor can have a long flowering period: "flowers typically have one large flush in spring and then flower rather infrequently after that" (Shannon McEnerney, Midwest Groundcovers, reviewer) into the fall. "While it does flower for prolonged periods, these flowers rarely produce seed" (Jeff Mengler, reviewer).

Also, the confidence level for this question was lowered to medium.

Issue ID # 3182

Date Created: May 12, 2017 - 8:30am

Date Updated: June 19, 2017 - 2:40pm

Submitted by: Shannon McEnerney

Status: Fixed

Type:

Severity: Minor

Scope: Q07. Does this plant displace native plants and dominate the plant community in areas where it has been established?

Issue Description

Commonly used in landscapes, bulbs and perennials are able to emerge through areas where Vinca is used as underplanting.

Issue Resolution (Screener's Response to Issue)



The answer was changed as follows and confidence was lowered to medium: "There are some conflicting views on whether *Vinca minor* dominates plant communities. Some sources say that *Vinca minor* grows in dense smothering mats that shade out tree seedlings and other plants. Other sources point out that "bulbs and perennials are able to emerge through areas where *Vinca* is used as underplanting" (Shannon McEnerney, Midwest Groundcovers, reviewer)."

Issue ID # 3181

Date Created: May 12, 2017 - 8:23am

Date Updated: June 19, 2017 - 2:25pm

Submitted by: Shannon McEnerney

Status: Fixed

Type:

Severity: Minor

Scope: Q17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

Issue Description

From landscape observations, flowers typically have one large flush in spring and then flower rather infrequently after that.

Issue Resolution (Screener's Response to Issue)

The reviewer's comment was added to the answer for this question: "From landscape observations, flowers typically have one large flush in spring and then flower rather infrequently after that."



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.