



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

Vinca minor -- Georgia

2017 Farm Bill PRE Project

PRE Score: 15 -- Evaluate this plant further

Confidence: 73 / 100

Questions answered: 18 of 20 -- Valid (80% or more questions answered)

Privacy: Public

Status: Submitted

Evaluation Date: November 17, 2017

This PDF was created on August 13, 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.

Summary

Vinca minor has naturalized across the United States, particularly in the Eastern U.S. *Vinca minor* is listed as an invasive plant in Georgia, South Carolina, Tennessee, and Kentucky. *Vinca minor* rarely produces seeds. It typically spreads vegetatively through rhizomes and adventitious roots where not native.

General Information

Status: Submitted

Screener: Lila Uzzell

Evaluation Date: November 17, 2017

Plant Information

Plant: *Vinca minor*

Regional Information

Region Name: Georgia

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

Answer / Justification:

Vinca minor has become naturalized across the United States (particularly the Eastern United States) and Australia. "Common periwinkle occurs in every state in the eastern United States from Minnesota south to Louisiana. It is discontinuously distributed in the western United States, occurring in Nebraska, Kansas, Texas, Arizona, Utah, Oregon, Washington, and Montana."

Reference(s):

- Stone, K. R. (2009). *Vinca major*, *V. minor*. In: Fire Effects Information System.
- GBIF Secretariat (2016). GBIF Backbone Taxonomy: *Vinca minor* L..
- 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 *screeener* has a **High** confidence in this answer based on the available literature.



Answer / Justification:

This plant grows well in zones 4-8. *Vinca minor* spreads across all of the climate matching Georgias in Europe, and spreads well beyond that as well. GBIF shows that *Vinca minor* grows in Southern Australia, New Zealand, and all of the states in the U.S. similar in climate.

Reference(s):

- [Anonymous] .
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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 *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Vinca minor is invasive to Georgia, South Carolina, Tennessee, and Kentucky. In Georgia, it is listed as a category 2 invasive, "Exotic plant that is a moderate problem in Georgia natural areas through invading native plant communities and displacing native species, but to a lesser degree than category 1 species."

Reference(s):

- 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).
 - Georgia Invasive Species Task Force (2017). List of Non-native Invasive Plants in Georgia - Georgia Invasive Species Task Force.
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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 **Very High** confidence in this answer based on the available literature.



Answer / Justification:

Within the U.S. this species is already listed as invasive to Georgia. Parts of the U.S. in a similar climate to Georgia where this species is invasive include Kentucky, Tennessee, and South Carolina.

Reference(s):

- 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).
 - Georgia Invasive Species Task Force (2017). List of Non-native Invasive Plants in Georgia - Georgia Invasive Species Task Force.
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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:

Vinca major is also invasive to Georgia, South Carolina, and California

Reference(s):

- Invasive Plant Atlas of the United States (0). big periwinkle: *Vinca major* (Gentianales: Apocynaceae): Invasive Plant Atlas of the United States.
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6. Is the species (or cultivar or variety) found predominately in a climate matching the region of concern?

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



Answer / Justification:

>50% of the places where *V. minor* grows match Georgias climate region. It grows in all of the similar climate areas of the U.S., Australia, and New Zealand. It also grows in all of the similar climate areas of Europe, but extends far beyond the similar climate regions of Europe as well. The only areas (according to GBIF) outside of a similar climate region are Mexico and Colombia.

Reference(s):

- GBIF Secretariat (2016). GBIF Backbone Taxonomy: *Vinca minor* L..
 - USDA NRCS (2017). USDA PLANTS Database: *Vinca minor* (common periwinkle).
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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 *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

"*Vinca minor* grows vigorously and forms dense and extensive mats along the forest floor, displacing native herbaceous and woody plant species."

Reference(s):

- Swearingen, J., & Bargeron C.. (2016). common periwinkle: *Vinca minor* (Gentianales: Apocynaceae): Invasive Plant Atlas of the United States.
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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 *screeener* has a **Medium** confidence in this answer based on the available literature.



Answer / Justification:

More study needs to be undergone to answer this question. "It is unclear how the presence of periwinkles may affect fire regimes in invaded communities. In ecosystems where periwinkles replace plants with similar fuel characteristics, they may alter fire intensity or slightly modify an existing fire regime. If periwinkle spread introduces novel fuel properties to the invaded ecosystem, fire behavior, and potentially fire regime, may be altered (see these citations: [14,26]). This topic warrants additional study."

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:

There is no evidence that *V. minor* is a health risk to humans or animals. It is noted that many animals such as deer, rabbit, and birds will not eat this plant.

Reference(s):

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



Answer / Justification:

Though this species "forms dense and extensive mats along the forest floor, displacing native herbaceous and woody plant species", there is no evidence that *V. minor* blocks the movement of animals.

Reference(s):

- Swearingen, J., & Barger C.. (2016). common periwinkle: *Vinca minor* (Gentianales: Apocynaceae): Invasive Plant Atlas of the United States.
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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 *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

"*Vinca minor* reproduces by stolons (runners), with stems rooting at the nodes."

Reference(s):

- Evergreen Vancouver Office (2017). Invasive Plant Profile: Common Periwinkle, *Vinca*.
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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 *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

"Given how little is known about its sexual reproduction, vegetative reproduction seems more important for this species. It colonizes through rhizomes and produces adventitious roots "



Reference(s):

- Burnham, R. J., & Sondag RB. (2013). *Vinca minor* in: CLIMBERS: Censusing Lianas in Mesic Biomes of Eastern Regions.
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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:

V. minor rarely produces seeds.

Reference(s):

- Stone, K. R. (2009). *Vinca major*, *V. minor*. In: Fire Effects Information System.
 - Burnham, R. J., & Sondag RB. (2013). *Vinca minor* in: CLIMBERS: Censusing Lianas in Mesic Biomes of Eastern Regions.
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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:

This species rarely produces seed at all. When it does produce seed, there are typically 3-5 seeds per fruit. How many fruits *V. minor* produces is unknown.

Reference(s):

- Stone, K. R. (2009). *Vinca major*, *V. minor*. In: Fire Effects Information System.
- Burnham, R. J., & Sondag RB. (2013). *Vinca minor* in: CLIMBERS: Censusing Lianas in Mesic Biomes of Eastern Regions.



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 / Justification:

lack of information.

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 / Justification:

Lack of information.

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



Answer / Justification:

This question does not apply to this species. It rarely produces seed. The length of time or occurrence of seed production is understudied given that this species typically spreads vegetatively.

Reference(s):

- Stone, K. R. (2009). *Vinca major*, *V. minor*. In: Fire Effects Information System.
 - Burnham, R. J., & Souda RB. (2013). *Vinca minor* in: CLIMBERS: Censusing Lianas in Mesic Biomes of Eastern Regions.
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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: **Yes**, which contributes **1** points to the total PRE score.
- The *screeners* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

The U.S. Department of Agriculture, Forest Service states that, "Common periwinkle seeds are dispersed by ants in its native range [54,56]. Some authors suggest that common periwinkle has no active dispersal mechanism [44]." Given that this plant mainly reproduces vegetatively where not native, the proper answer to this question may be "No", but given the information provided by the Forest Service, I answered "Yes".

Reference(s):

- Stone, K. R. (2009). *Vinca major*, *V. minor*. In: Fire Effects Information System.
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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 **Medium** confidence in this answer based on the available literature.



Answer / Justification:

There is no evidence of this.

Reference(s):

- [Anonymous] .
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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 **Medium** confidence in this answer based on the available literature.

Answer / Justification:

There is no evidence of this.

Reference(s):

- [Anonymous] .
-

Total PRE Score

PRE Score: 15 -- Evaluate this plant further

Confidence: 73 / 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:

- Eamonn Leonard

December 7, 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.

There are currently no issues associated with this evaluation.



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.