



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

Aegopodium podagraria 'Variegatum' -- Illinois

2017 Farm Bill PRE Project

PRE Score: 13 -- Evaluate this plant further

Confidence: 76 / 100

Questions answered: 19 of 20 -- Valid (80% or more questions answered)

Privacy: Public

Status: Submitted

Evaluation Date: October 8, 2017

This PDF was created on June 15, 2018



Plant Evaluated

Aegopodium podagraria 'Variegatum'



Image by Wikimedia



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Aegopodium podagraria 'Variegatum'*) 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

Like its parent species, *Aegopodium podagraria 'Variegatum'* spreads aggressively via rhizomes to form large persistent colonies and can reproduce from small fragments. It appears to have limited reproduction and dispersal from seed which reduces its ability to spread into natural areas.

General Information

Status: Submitted

Screener: Emily Russell

Evaluation Date: October 8, 2017

Plant Information

Plant: *Aegopodium podagraria 'Variegatum'*

If the plant is a cultivar, how does its behavior differs from its parent's?

"'Variegatum' has basal foliage that is light green with creamy white margins. It is less aggressive than the species but plants may revert back to the species with all green leaves and greater vigor." (MOBOT) The species doesn't seem to be widely available in Illinois, but 'Variegatum' is and can regularly be found in gardens. Invasive species literature includes photos and descriptions of both the cultivar 'Variegatum' and the species.

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

Answer / Justification:

"Goutweed is currently known to occur in twenty-nine states in the mid-Atlantic, Northeast and Northwest (USDA PLANTS map) and is reported to be invasive in natural areas in Connecticut, Michigan, New Jersey, Pennsylvania, Vermont, and Wisconsin (WeedUS Database)."

Reference(s):

- Garske, S., & Schimpf D. (2009). PCA Alien Plant Working Group - Goutweed (*Aegopodium podagraria*).
- New England Wild Flower Society (2017). *Aegopodium podagraria* (bishop's goutweed): Go Botany.

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:

Aegopodium podagraria is naturalized in Illinois, as well as areas of the Mid-Atlantic, Northeast, and Midwest which have a climate similar to Illinois.



Reference(s):

- Garske, S., & Schimpf D. (2009). PCA Alien Plant Working Group - Goutweed (*Aegopodium podagraria*).
 - New England Wild Flower Society (2017). *Aegopodium podagraria* (bishop's goutweed): Go Botany.
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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:

Aegopodium podagraria 'Variegatum' is prohibited in Maine, Massachusetts, Connecticut and Vermont.

Reference(s):

- New England Wild Flower Society (2017). *Aegopodium podagraria* (bishop's goutweed): Go Botany.
 - Maine Department of Agriculture, Conservation and Forestry (2017). CRITERIA FOR LISTING INVASIVE TERRESTRIAL PLANTS.
 - Massachusetts Department of Agricultural Resources (2009). Massachusetts Prohibited Plant List.
 - Vermont Agency of Agriculture, Food & Markets (2013). Quarantine # 3 - Noxious Weeds.
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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:

Aegopodium podagraria 'Variegatum' is prohibited in Vermont and Maine, parts of which share a climate with Illinois.

Reference(s):

- Maine Department of Agriculture, Conservation and Forestry (2017). CRITERIA FOR LISTING INVASIVE TERRESTRIAL PLANTS.
 - Vermont Agency of Agriculture, Food & Markets (2013). Quarantine # 3 - Noxious Weeds.
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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:

No other species of *Aegopodium* are listed in the Global Compendium of Weeds

Reference(s):

- Randall, R. Peter (2017). A Global Compendium of Weeds. Third Edition..
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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 **High** confidence in this answer based on the available literature.

Answer / Justification:

Aegopodium podagraria is widespread in the Northern Hemisphere. In GBIF, occurrences in Central Europe, Australia, New Zealand, and the Northwestern United States do not match the climate of Illinois.



Reference(s):

- GBIF Secretariat (2016). GBIF Backbone Taxonomy: *Aegopodium podagraria* L..
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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:

"Goutweed is an aggressive invasive plant that forms dense patches, displaces native species, and greatly reduces species diversity in the ground layer. Goutweed patches inhibit the establishment of conifers and other native tree species as well. "

Reference(s):

- Garske, S., & Schimpf D. (2009). PCA Alien Plant Working Group - Goutweed (*Aegopodium podagraria*).
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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:

There is no evidence of changing 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 **Low** confidence in this answer based on the available literature.

Answer / Justification:

Leaves are edible. Cited as a weed of pastures in The Global Compendium of Weeds.

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

Answer / Justification:

As a low-growing herbaceous plant, it is unlikely to produce impenetrable thickets.

Reference(s):

- [Anonymous] .
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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:

"Goutweed is vigorous, rhizomatous perennial that spreads mainly by vegetative means."

Reference(s):

- Waggy, M. (2010). *Aegopodium podagraria*. In: Fire Effects Information System.
 - Garske, S., & Schimpf D. (2009). PCA Alien Plant Working Group - Goutweed (*Aegopodium podagraria*).
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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 **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Small segments of rhizomes can produce new colonies, making eradication difficult.

Reference(s):

- Waggy, M. (2010). *Aegopodium podagraria*. In: Fire Effects Information System.
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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 *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Aegopodium podagraria produces viable seed though the usual means of reproduction is vegetative. "Establishment by seed requires recently disturbed soil and rather bright light conditions" (PDCNR) Seed production of the cultivar 'Variegatum' is unknown, but since plants commonly revert to the species we will leave this answer "yes." Also, MOBOT recommends: "flower heads may be removed to prevent self-seeding and to maintain appearance of the ground cover. Any unvariegated shoots which appear should also be removed as they tend to be more vigorous and can quickly take over a planting.

Reference(s):

- Pennsylvania Department of Conservation and Natural Resources (0). Invasive Plants in Pennsylvania: Goutweed *Aegopodium podagraria*.
 - Phartyal, S. S., Kondo T., Baskin J. M., & Baskin C. C. (2009). Temperature requirements differ for the two stages of seed dormancy break in *Aegopodium podagraria* (Apiaceae), a species with deep complex morphophysiological dormancy. *American Journal of Botany*. 96, 1086–1095.
 - Missouri Botanical Garden (2017). *Aegopodium podagraria* 'Variegatum' - Plant Finder.
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14. Does this plant produce copious viable seeds each year (> 1000)?

Answer / Justification:

No information could be found on quantity of seed produced.

Reference(s):

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

Answer / Justification:

Aegopodium podagraria seeds show characteristics of deep complex morphophysiological dormancy, but the climate in Illinois routinely provides conditions needed for germination the next growing season. "In natural conditions, cotyledons of *A. podagraria* emerged soon after snowmelt in early spring." "Seedling emergence of *A. podagraria* in the garden was concentrated in the first spring after burial. Emergence of seedlings peaked between 19 February 2008 and 15 April 2008, and 82.7% had emerged by 29 April 2008."

Reference(s):

- Vandeloos, F., Bolle N., & Van Assche J. A. (2009). Morphological and physiological dormancy in seeds of *Aegopodium podagraria* (Apiaceae) broken successively during cold stratification. *Seed Science Research*. 19, 115.
- Phartyal, S. S., Kondo T., Baskin J. M., & Baskin C. C. (2009). Temperature requirements differ for the two stages of seed dormancy break in *Aegopodium podagraria* (Apiaceae), a species with deep complex morphophysiological dormancy. *American Journal of Botany*. 96, 1086–1095.

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

Answer / Justification:

"Plants may reach reproductive stage 5 to 7 years after germination..."



Reference(s):

- Waggy, M. (2010). *Aegopodium podagraria*. In: Fire Effects Information System.
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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.

Answer / Justification:

Aegopodium podagraria 'Variegatum' flowers May-June.

Reference(s):

- Missouri Botanical Garden (2017). *Aegopodium podagraria* 'Variegatum' - 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 *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

No evidence of dispersal by animals.

Reference(s):

- [Anonymous] .



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

Answer / Justification:

"Goutweed seed is dispersed by gravity, and a few goutweed seeds may be dispersed short distances by wind."

Reference(s):

- Waggy, M. (2010). *Aegopodium podagraria*. 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 *screner* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

"The primary vector for dispersal to new areas is humans. Most goutweed colonies spread to neighboring natural areas from intentional plantings, or by the dumping of yard waste that includes discarded rhizomes." No evidence of human dispersal by other means.

Reference(s):

- Garske, S., & Schimpf D. (2009). PCA Alien Plant Working Group - Goutweed (*Aegopodium podagraria*).
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Total PRE Score

PRE Score: 13 -- Evaluate this plant further

Confidence: 76 / 100

Questions answered: 19 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:

- Richard Hawke October 30, 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.