Plant Risk Evaluator -- PRE™
Evaluation Report

Hosta sieboldiana 'Frances Williams' -- Illinois

2017 Farm Bill PRE Project

PRE Score: 7 -- Accept (low risk of invasiveness)
Confidence: 59 / 100
Questions answered: 19 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Submitted

Evaluation Date: September 6, 2017

This PDF was created on June 15, 2018

Plant Evaluated

Hosta sieboldiana 'Frances Williams'

Image by MBOT

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Hosta sieboldiana 'Frances Williams'*) 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: Submitted
Screener: Emily Russell
Evaluation Date: September 6, 2017

Plant Information

Plant: *Hosta sieboldiana 'Frances Williams'*

If the plant is a cultivar, how does its behavior differs from its parent's?
The leaves are variegated with irregular greenish-yellow margins. "This cultivar was registered by Connie Williams, the daughter of Frances Williams of Massachusetts in 1986. It was 'discovered' in a Connecticut nursery in 1936 and is considered a sport of H. sieboldiana 'Elegans'." (The Hosta Helper)

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

Answer / Justification:

Hostas have naturalized in northeastern North America. It is unknown if 'Frances Williams' contributed to these populations, but this cultivar has had long-standing popularity in the United States and does produce viable seed.

Reference(s):

- USDA NRCS (2017). USDA PLANTS Databse: Hosta (plantain lily).

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

Answer / Justification:

Hostas have naturalized in northeastern North America. It is unknown if 'Frances Williams' contributed to these populations, but this cultivar has had long-standing popularity in the United States and does produce viable seed.

Reference(s):

- USDA NRCS (2017). USDA PLANTS Databse: Hosta (plantain lily).

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3. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

- 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:

There are no citations of Hosta sieboldiana as an invasive species in the literature. Two citations in the Global Compendium of Weeds list the species as a weed in Japan (where it is native) and an alien plant in the British Isles.

Reference(s):

- Randall, R. (2012). A Global Compendium of Weeds. 2nd Edition..

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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: **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:

There are no citations of Hosta sieboldiana as an invasive species in the literature. Two citations in the Global Compendium of Weeds list the species as a weed in Japan (where it is native) and an alien plant in the British Isles.

Reference(s):

- Randall, R. (2012). A Global Compendium of Weeds. 2nd Edition..

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

Answer / Justification:

There are no citations of Hosta as an invasive species in the literature. Listings for 8 species in the Global Compendium of Weeds contain few citations mostly as naturalized, garden thug, or casual alien.

Reference(s):

- Randall, R. (2012). A Global Compendium of Weeds. 2nd Edition..

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

Answer / Justification:

Hostas are known to be widely cultivated in many climates.

Reference(s):

- GBIF Secretariat (2017). GBIF Backbone Taxonomy: Hosta sieboldiana (Hook.) Engl..
- GBIF Secretariat (2017). GBIF Backbone Taxonomy: Hosta Tratt..
- USDA-Grin (2005). Hosta sieboldiana. In: Taxonomy - GRIN-Global Web v 1.9.8.2.

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

Answer / Justification:

Evidence is lacking that Hosta sieboldiana 'Frances Williams' displaces native plants. However, gardeners report that hosta foliage shades out weeds.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

The moisture-retaining leaves of hostas do not promote fire.

Reference(s):

- Oregon State University (2006). Fire Resistant Plants for Home Landscapes: Selecting Plants That May Reduce Your Risk from Wildfire. 44.

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

Answer / Justification:

There is no evidence of health risks to humans, animals, or grazing systems. Leaves are edible, and are frequently grazed by deer.

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

Answer / Justification:

Hosta 'Frances Williams', as an herbaceous perennial less than 3' tall, is unlikely to produce impenetrable thickets.

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

Answer / Justification:

Hostas spread vegetatively via short rhizomes.

Reference(s):

- Grenfell, D., & Shadrack M. (2009). The New Encyclopedia of Hostas.
- Missouri Botanical Garden (2017). Hosta sieboldiana 'Frances Williams' - Plant Finder.

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

Answer / Justification:

There is no evidence that hostas frequently fragment to reproduce.

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:

Hostas usually reproduce by seed. 'Frances Williams' was a seed parent of many subsequent hosta cultivars.

Reference(s):

- Grenfell, D., & Shadrack M. (2009). The New Encyclopedia of Hostas.
- PlantsGalore.Com (2017). Hosta sieboldiana 'Francis Williams' from The Hosta Helper.

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

Answer / Justification:

No estimate of seed quantity could be found, except that "most hostas produce abundant seed."

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

Answer / Justification:

For Hostas generally: "Seed usually takes six to eight weeks to ripen. Once sown, it generally germinates quickly, within two to six weeks."

Reference(s):

- Thompson, P.. (1980). Hostas from seed.. Garden, UK. 105, 371–372.
- Grenfell, D., & Shadrack M. (2009). The New Encyclopedia of Hostas.

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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?

- 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:

"Hosta seedlings often don't bloom until their second or third season, but some hybridizers are very successful in getting their seedlings to bloom by the end of the first season."

Reference(s):

- Spece, J. (2008). Culling and Selecting Hosta Seedlings.
- Houzz Inc. (2005). Growing Hostas from seeds.

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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:

Bloom time is a few weeks.

Reference(s):

- Missouri Botanical Garden (2017). Hosta sieboldiana 'Frances Williams' - Plant Finder.
- PlantsGalore.Com (2017). Hosta sieboldiana 'Francis Williams' from The Hosta Helper.

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

Answer / Justification:

Birds may eat hosta seeds, but there is no evidence for long distance dispersal.

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

Answer / Justification:

"Although Hosta seeds are adapted for wind dispersal, most seeds fall around maternal plants at less than 1 m radius"

Reference(s):

- Chung, M. Yoon, Suh Y., López-Pujol J., Nason J. D., & Chung M. Gi (2005). Clonal and Fine-scale Genetic Structure in Populations of a Restricted Korean Endemic, Hosta jonesii (Liliaceae) and the Implications for Conservation. Annals of Botany. 96, 279–288.

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

Answer / Justification:

There is no evidence of accidental dispersal by humans.

Reference(s):

- [Anonymous] .

Total PRE Score

PRE Score: 7 -- Accept (low risk of invasiveness)
Confidence: 59 / 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:

• Shannon McEnerney	December 14, 2017
• Richard Hawke	September 18, 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.

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.