Plant Risk Evaluator -- PRE™
Evaluation Report

Reynoutria japonica 'Devon Cream' -- Illinois

2017 Farm Bill PRE Project

PRE Score: 18 -- Reject (high risk of invasiveness)
Confidence: 66 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Submitted

Evaluation Date: October 5, 2017

This PDF was created on June 15, 2018

Plant Evaluated

Reynoutria japonica 'Devon Cream'

Image by Happenstance Garden

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Reynoutria japonica 'Devon Cream'*) 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

Reynoutria japonica is cited as one of the worst invasive plants in the world, with serious impacts on native plants and animals. It's generally accepted that cultivars of Reynoutria are also invasive and they are banned in several states. Not much information was available on 'Devon Cream' which lowers the confidence levels for this evaluation. It doesn't seem to be readily available in the trade. There was no evidence that 'Devon Cream' is substantially different than the species aside from leaf variegation and some reduced vigor. Reynoutria spreads primarily via rhizomes and small fragments, which are easily dispersed by water and human activity, can rapidly form new colonies. Cultivars can contribute to invasion by vegetative spread, reversion, pollinating wild populations, or producing seed themselves.

General Information

Status: Submitted
Screener: Emily Russell
Evaluation Date: October 5, 2017

Plant Information

Plant: *Reynoutria japonica 'Devon Cream'*

If the plant is a cultivar, how does its behavior differs from its parent's?
'Devon Cream' is variegated and is said to be more compact and less aggressive than the species. Not much information is available on this cultivar. It doesn't appear to be common in the horticulture trade at this time, possibly because it is banned in several states.

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:

Reynoutria japonica is naturalized in Australia, New Zealand, Europe, North America, and Chile. Using parent species information for this answer so confidence level is medium.

Reference(s):

- Shaw, D. (2017). Fallopia japonica (Japanese knotweed) Datasheet In: Invasive Species Compendium.
- USDA-Grin (2011). Reynoutria japonica. In: Taxonomy - GRIN-Global Web v 1.9.9.2.
- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).

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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:

Reynoutria japonica is naturalized in the Eastern United States (including Illinois) and Eastern and Northern Europe where there is a climate match to Illinois. Using parent species information for this answer so confidence level is medium.

Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
- Shaw, D. (2017). Fallopia japonica (Japanese knotweed) Datasheet In: Invasive Species Compendium.
- USDA-Grin (2011). Reynoutria japonica. In: Taxonomy - GRIN-Global Web v 1.9.9.2.

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

Answer / Justification:

The Global Invasive Species Database named Japanese knotweed one of the world's top 100 invasive species. "There are several horticultural varieties (cultivars) of Japanese Knotweed, which may have different characteristics based on their breeding. These cultivars can also be invasive. If they are pollinated by Japanese, Bohemian or Giant Knotweed populations they can produce seeds and will also reproduce vegetatively." All cultivars including 'Devon Cream' are prohibited in AL, CA, CT, MA, MI, NE, NH, OH, OR, VT, and WA.

Reference(s):

- Anderson, H. (2012). Invasive Japanese Knotweed (Fallopia japonica (Houtt.)) Best Management Practices in Ontario.

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

Answer / Justification:

Japanese Knotweed is prohibited in Illinois. The species and all cultivars including 'Devon Cream' are prohibited in MI, NE, OH and VT, which share a climate with Illinois. "All potentially invasive members of the Knotweed 'Alliance' have been designated a Nebraska noxious weed. This designation includes Japanese knotweed and Giant knotweed and their hybrid Bohemian knotweed and all cultivars and hybrids. There are several Japanese knotweed cultivars developed for the ornamental market included in this designation since they can contribute to the Japanese knotweed invasion by providing pollen necessary for Japanese knotweed to produce viable seed."

Reference(s):

- Midwest Invasive Plant Network (2015). Midwest Invasive Plant List.
- Shultz, R. (2010). FACT SHEET: KNOTWEED “ALLIANCE”.
- Illinois General Assembly (2016). 525 ILCS 10/ Illinois Exotic Weed Act..

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

Answer / Justification:

R. sachalinensis and R. x bohemica are also invasive in Illinois.

Reference(s):

- Midwest Invasive Plant Network (2015). Midwest Invasive 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 *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Reynoutria japonica 'Devon Cream' will grow in many climates.

Reference(s):

- GBIF Secretariat (2016). GBIF Backbone Taxonomy: Reynoutria japonica Houtt..

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:

"Dense thickets of Japanese Knotweed can reduce sunlight penetration by more than 90%, and its thick mats of dead and decaying vegetation in fall/spring prevent other plant species from growing, by shading them out. Studies done by Cornell University have found that knotweed negatively affects the diversity of vegetation, reducing native species groundcover within knotweed stands to 0%." Using parent species information for this answer so confidence level is medium.

Reference(s):

- Anderson, H. (2012). Invasive Japanese Knotweed (Fallopia japonica (Houtt.)) Best Management Practices in Ontario.
- IUCN (2010). Global Invasive Species Database (2017) Species profile: Polygonum cuspidatum.

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

Answer / Justification:

"It has been suggested that Japanese knotweed (Polygonum cuspidatum) populations pose a fire hazard during the dormant season due to dense accumulations of dead plant material (Ahrens 1975). However, tissues of Japanese knotweed have relatively low heat content (Dibble and others 2004), so fires in these populations may be of relatively low intensity and severity. More research is needed to determine whether knotweed populations may influence fire behavior, severity, or frequency."

Reference(s):

- Anzinger, D., & Radosevich S. R. (2008). Chapter 10: Fire and nonnative invasive plants in the Northwest Coastal bioregion. USDA Forest Service Gen. Tech. Rep. RMRS-GTR-42. 6, 197-224.

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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:

No evidence of health impacts to humans or animals. Rhizomes and new shoots are edible. Plant is palatable for grazing.

Reference(s):

- [Anonymous] .

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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:

"Japanese Knotweed can block or interfere with access to water for activities such as canoeing, boating, angling and swimming."

Reference(s):

- Anderson, H. (2012). Invasive Japanese Knotweed (Fallopia japonica (Houtt.)) Best Management Practices in Ontario.

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:

Reynoutria japonica 'Devon Cream' spreads via rhizomes. For the species: "Rhizomes can regenerate when buried up to 1 metre deep and have been observed growing through 5cm of asphalt."

Reference(s):

- IUCN (2010). Global Invasive Species Database (2017) Species profile: Polygonum cuspidatum.
- Dave's Garden (2004). PlantFiles: 'Devon Cream' Fallopia, Japanese Knotweed 'Devon Cream' (Fallopia japonica).

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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:

"Vegetative spread is normally through tiny pieces of rhizome, stems and even internodal sections of stem capable of establishing roots even in water. Rhizome fragments weighing as little as 0.7 g are capable of regenerating into a new plant."

Reference(s):

- Anderson, H. (2012). Invasive Japanese Knotweed (Fallopia japonica (Houtt.)) Best Management Practices in Ontario.
- Shultz, R. (2010). FACT SHEET: KNOTWEED “ALLIANCE”.
- Shaw, D. (2017). Fallopia japonica (Japanese knotweed) Datasheet In: Invasive Species Compendium.

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

Answer / Justification:

No references could be found confirming that 'Devon Cream' produces viable seed. However: "there are several Japanese knotweed cultivars developed for the ornamental market included in this designation since they can contribute to the Japanese knotweed invasion by providing pollen necessary for Japanese knotweed to produce viable seed."

Reference(s):

- Shultz, R. (2010). FACT SHEET: KNOTWEED “ALLIANCE”.

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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:

There is no evidence of copious seed production.

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 the species and other cultivars, seed germinates readily.

Reference(s):

- Forman, J., & Kesseli R. V. (2003). Sexual reproduction in the invasive species Fallopia japonica (Polygonaceae). American Journal of Botany. 90, 586–592.

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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:

For the species and other cultivars: "Under optimal conditions, seedlings grew quickly and flowered within a single growing season."

Reference(s):

- Forman, J., & Kesseli R. V. (2003). Sexual reproduction in the invasive species Fallopia japonica (Polygonaceae). American Journal of Botany. 90, 586–592.

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

Answer / Justification:

Reynoutria japonica 'Devon Cream' flowers in late summer in Illinois.

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: **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 are no reports of animals disseminating propagules in the introduced range, though means of seed dispersal in the native range has not been investigated. It is possible that hooved animals could redistribute small pieces of rhizome in much the same way as vehicle tyres can."

Reference(s):

- Shaw, D. (2017). Fallopia japonica (Japanese knotweed) Datasheet In: Invasive Species Compendium.

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19. Are the plant's propagules frequently dispersed long distance (>100 m) by wind or water?

- 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 spreads primarily along riparian areas or ditches where plant and rhizome fragments can be dispersed in moving water (i.e. along canals, beaches, streams and rivers)." "Flooding events can facilitate the spread of F. japonica, as whole plants and/or stem parts can be dislodged and transported to new areas downstream, where they can establish easily."

Reference(s):

- Anderson, H. (2012). Invasive Japanese Knotweed (Fallopia japonica (Houtt.)) Best Management Practices in Ontario.
- Shaw, D. (2017). Fallopia japonica (Japanese knotweed) Datasheet In: Invasive Species Compendium.

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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: **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:

"Road and railroad rights of way and waterways are the main geographic pathways for spread within Ontario. It is not known how prevalent it is in the horticultural industry. Road maintenance, forestry operations and construction activities may spread these plants further."

Reference(s):

- Anderson, H. (2012). Invasive Japanese Knotweed (Fallopia japonica (Houtt.)) Best Management Practices in Ontario.
- Shaw, D. (2017). Fallopia japonica (Japanese knotweed) Datasheet In: Invasive Species Compendium.

Total PRE Score

PRE Score: 18 -- Reject (high risk of invasiveness)
Confidence: 66 / 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:

• Christopher Evans	October 31, 2017
• Richard Hawke	October 30, 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 # 5587

Date Created: October 31, 2017 - 10:49am
Date Updated: December 10, 2017 - 2:02pm

Submitted by: Christopher Evans

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q03. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

Issue Description

Just a minor note here, but this species, including all cultivars, is all listed as prohibited in Illinois through its inclusion on the Illinois Exotic Weed Act List

Issue Resolution (Screener's Response to Issue)

Added the Illinois Exotic Weed Act as a citation for this answer.

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.