Plant Risk Evaluator -- PRE™
Evaluation Report

Forsythia 'Sunrise' -- Illinois

2017 Farm Bill PRE Project

PRE Score: 12 -- Accept (low risk of invasiveness)
Confidence: 56 / 100
Questions answered: 19 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: August 30, 2017

This PDF was created on June 15, 2018

Plant Evaluated

Forsythia 'Sunrise'

Image by Nature Hills Nursery

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Forsythia 'Sunrise'*) 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: August 30, 2017

Plant Information

Plant: *Forsythia 'Sunrise'*

If the plant is a cultivar, how does its behavior differs from its parent's?
The habit of 'Sunrise' is more compact and dense than other forsythias. It blooms earlier and the flower buds have increased cold hardiness. These traits are common to Forsythia ovata which is one of the parents of 'Sunrise', though the exact parentage of this hybrid is unknown. Sometimes listed as F. x intermedia 'Sunrise' or F. ovata 'Sunrise'. This cultivar was introduced by Iowa State University for its excellent cold hardiness: flower buds can withstand -20 degrees F. There is no evidence that 'Sunrise' behaves differently than other Forsythia hybrids in reproductive traits.

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:

Forsythia is naturalized in parts of the United States, Canada, and Europe. The confidence level for this answer is lowered to medium because there is not information specific to the cultivar 'Sunrise.'

Reference(s):

- USDA NRCS (2017). USDA PLANTS Database: Forsythia (forsythia).
- Randall, R. (2012). A Global Compendium of Weeds. 2nd Edition..

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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:

Forsythia is naturalized in parts of the United States, Canada, and Europe with a similar climate to Illinois. The confidence level for this answer is lowered to medium because there is not information specific to the cultivar 'Sunrise.'

Reference(s):

- Randall, R. (2012). A Global Compendium of Weeds. 2nd Edition..
- USDA NRCS (2017). USDA PLANTS Database: Forsythia (forsythia).

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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:

Forsythia is not noted as being invasive. Though naturalized in many places, there are not reports of significant damage.

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:

Forsythia is not noted as being invasive. Though naturalized in many places, there are not reports of significant damage.

Reference(s):

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

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

Answer / Justification:

Other species within the genus are not noted as being invasive. Though naturalized in many places, there are not reports of significant damage.

Reference(s):

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

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

Answer / Justification:

Forsythia is widely grown, mostly in the northern hemisphere. Distributions in central and southern Europe, the Western United States and China do not match the climate in Illinois. GBIF also shows scattered occurrences in Australia and New Zealand which are not a match. However, distributions in eastern and northern Europe, the midwestern and mid-Atlantic United States, and Korea are a climate match. Additionally, F. ovata (one of the parents of Forsythia 'Sunrise') is endemic to the Korean peninsula, which does match the climate of Illinois.

Reference(s):

- IUCN (2017). Forsythia ovata.
- GBIF Secretariat (2017). GBIF Backbone Taxonomy: Forsythia Vahl.

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:

"Plants covered by forsythia's arching branches are quickly shaded out. A close inspection beneath forsythia usually reveals large patches of bare soil and little else."

Reference(s):

- Summers, C. (2010). Designing Gardens with Flora of the American East.

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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:

Forsythia x intermedia has a flammability ranking of "low" in the study below. According to John Taft of the Illinois Natural History Survey: "this taxon can shade the ground layer. Any shrub that displaces herbarous ground layer species in fire-adapted ecosystems likely could alter the fire regime in specific habitats that require fire. By reducing fuel load, this species could reduce the flammability of fire-dependent natural communities" (see issues).

Reference(s):

- Long, A. J., Behm A., Zipperer W. C., Hermansen A., Maranghides A., & Mell W. (2006). Quantifying and ranking the flammability of ornamental shrubs in the southern United States. 2006 Fire Ecology and Management Congress Proceedings.

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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 documentation of health risks to humans, animals, or grazing systems.

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

Answer / Justification:

As a vigorous suckering shrub, Forsythia has potential to produce dense thickets.

Reference(s):

- Summers, C. (2010). Designing Gardens with Flora of the American East.
- Dirr, M. A. (1998). Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses.

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:

Forsythia spreads vegetatively through root suckers and layering.

Reference(s):

- Summers, C. (2010). Designing Gardens with Flora of the American East.
- Dirr, M. A. (1998). Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses.

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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:

Forsythia branch tips root easily where they touch the ground.

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

Answer / Justification:

"Two-celled, dehiscent, brown capsule, 1/3" long, often housing many winged seeds, not ornamental; have collected and germinated seeds of F. x intermedia but never kept the seedlings until flowering."

Reference(s):

- Dirr, M. A. (1998). Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses.

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

Answer / Justification:

No estimates of seed quantity could be found.

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:

"Seeds will germinate without a pretreatment but one to two months at 41 degrees F appears to improve and unify germination"

Reference(s):

- Dirr, M. A. (1998). Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses.

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

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:

Forsythia flowers for 2-3 weeks in early spring.

Reference(s):

- Dirr, M. A. (1998). Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses.

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

Answer / Justification:

No reports of 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 *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Seeds are slightly winged so wind may aid in dispersal but is unlikely to carry seeds long distances. Forsythia seeds are non-buoyant.

Reference(s):

- Kadereit, J. W. (2012). Flowering Plants · Dicotyledons: Lamiales (except Acanthaceae including Avicenniaceae).
- Yang, H., Lu Q., Wu B., & Zhang J. (2012). Seed dispersal of East Asian coastal dune plants via seawater – short and long distance dispersal. Flora - Morphology, Distribution, Functional Ecology of Plants. 207, 701–706.

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

Answer / Justification:

No reports of accidental dispersal by humans were found in the literature.

Reference(s):

- [Anonymous] .

Total PRE Score

PRE Score: 12 -- Accept (low risk of invasiveness)
Confidence: 56 / 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:

• Steve Worth	December 22, 2017
• John Taft	September 25, 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 # 5031

Date Created: September 25, 2017 - 12:25pm
Date Updated: December 10, 2017 - 1:06pm

Submitted by: John Taft

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q08. Is the plant noted as promoting fire and/or changing fire regimes?

Issue Description

As noted in response to Q7, this taxon can shade the ground layer. Any shrub that displaces herbarous ground layer species in fire-adapted ecosystems likely could alter the fire regime in specific habitats that require fire. By reducing fuel load, this species could reduce the flammability of fire-dependent natural communities.

Issue Resolution (Screener's Response to Issue)

Added this information to the answer. However did not change the answer from No to Yes, since this is described as a potential problem and has not been documented as a significant impact on fire-dependent plant communities. It's unclear if naturalized Forsythia is invading such habitats in great enough density to alter the fire regimes. Thank you for adding to the depth of the discussion!

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.