Plant Risk Evaluator -- PRE™
Evaluation Report

Wisteria sinensis -- Georgia

2017 Farm Bill PRE Project

PRE Score: 19 -- Reject (high risk of invasiveness)
Confidence: 81 / 100
Questions answered: 19 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: November 20, 2017

This PDF was created on August 13, 2018

Plant Evaluated

Wisteria sinensis

Image by RedCoat, Wikipedia user

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Wisteria sinensis*) 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

Wisteria sinensis is already listed as an invasive plant in Georgia and five other states. In Georgia, it is listed as, "Category 1 - Exotic plant that is a serious problem in Georgia natural areas by extensively invading native plant communities and displacing native species."

General Information

Status: Completed
Screener: Lila Uzzell
Evaluation Date: November 20, 2017

Plant Information

Plant: *Wisteria sinensis*

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

Answer / Justification:

"In the USA, W. sinensis is naturalized from Vermont and Massachusetts south to Florida and west into Illinois and Texas (BONAP, 2013). It is also noted as occurring in Hawaii (PIER, 2013). Other countries list occasional naturalized populations of W. sinensis, including New Zealand (Webb et al., 1988), Spain (Campos and Herrera, 2009) and Argentina (Hurrell et al., 2011)."

Reference(s):

- USDA, & NRCS (2017). The Plants Database.
- CABI (0). Wisteria sinensis (Chinese wisteria) - CABI.

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

Answer / Justification:

Wisteria sinensis grows in zones 5-8, and according to GBIF is found across similar climate ranges of: the Eastern US, Argentina, Australia, New Zealand, China (native), and Europe.

Reference(s):

- Missouri Botanical Garden (0). Wisteria sinensis 'Prolific' - Plant Finder.
- CABI (0). Wisteria sinensis (Chinese wisteria) - CABI.
- GBIF (0). Wisteria sinensis (Sims) Sweet (GBIF).

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

Answer / Justification:

This species has been reported as invasive in Georgia, Illinois, Tennessee, Alabama, South Carolina, and Florida.

Reference(s):

- FLEPPC (2017). List of Invasive Plant Species.
- Invasive Plant Atlas of the United States (0). Chinese wisteria: Wisteria sinensis (Fabales: Fabaceae (Leguminosae)): Invasive Plant Atlas of the United States.
- 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 *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

In the US W. sinensis is invasive to the similar climate areas of Alabama, South Carolina, Georgia, and Florida. It is listed as a category 1 invasive by the GA EPPC, "Exotic plant that is a serious problem in Georgia natural areas by extensively invading native plant communities and displacing native species."

Reference(s):

- Georgia Invasive Species Task Force (2017). List of Non-native Invasive Plants in Georgia - Georgia Invasive Species Task Force.
- Invasive Plant Atlas of the United States (0). Chinese wisteria: Wisteria sinensis (Fabales: Fabaceae (Leguminosae)): Invasive Plant Atlas of the United States.

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

Answer / Justification:

Wisteria floribunda has also been recorded as invasive to Georgia, Tennessee, and South Carolina.

Reference(s):

- Invasive Plant Atlas of the United States (0). Japanese wisteria: Wisteria floribunda (Fabales: Fabaceae (Leguminosae)): Invasive Plant Atlas of the United States.
- Georgia Invasive Species Task Force (2017). List of Non-native Invasive Plants in Georgia - Georgia Invasive Species Task Force.

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

Answer / Justification:

Wisteria sinesis appears to be present in >50% of the areas matching Georgia's climate. It can be found in SE Australia, across the Eastern US, Argentina, Europe (note: also grows beyond areas where climate matches Georgias in Europe), New Zealand, and China (native).

Reference(s):

- Randall, R. Peter (2017). A Global Compendium of Weeds. Third Edition..
- Invasive Plant Atlas of the United States (0). Chinese wisteria: Wisteria sinensis (Fabales: Fabaceae (Leguminosae)): Invasive Plant Atlas of the United States.
- USDA, & NRCS (2017). The Plants Database.
- CABI (0). Wisteria sinensis (Chinese wisteria) - CABI.
- GBIF (0). Wisteria sinensis (Sims) Sweet (GBIF).

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

Answer / Justification:

"It climbs by twining around its support which it can kill it by girdling it or overgrowing it. W. sinensis vines can also grow over the ground reducing light availability to plants on the ground."

Reference(s):

- CABI (0). Wisteria sinensis (Chinese wisteria) - CABI.

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8. Is the plant noted as promoting fire and/or changing fire regimes?

- 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:

This species has not been specifically addressed to its affects on fuel characteristics/fire regimes. However, its vine-like growth heavily suggests that it does alters fuel characteristics. The USDA states: " One review suggests that Chinese wisteria, along with a number of other invasive vines, has the potential to alter the fuel characteristics of invaded communities. Specifically, invasive vines could increase fuel loading and continuity, and contribute to the likelihood of crown fire by acting as a ladder fuel [7]. The density, spatial extent, and climbing nature of wisteria populations suggest that they may alter fuel characteristics in invaded communities."

Reference(s):

- Stone, K. R. (2009). Wisteria floribunda, W. sinensis. 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: **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:

All parts of this plant are poisonous. "The seed of all members of this genus is poisonous[200]. The bark contains a glycoside and a resin that are both poisonous[218]. The seed and seedpod contains a resin and a glycoside called wisterin. They have caused poisoning in children of many countries, producing mild to severe gastro-enteritis[249]."

Reference(s):

- Stone, K. R. (2009). Wisteria floribunda, W. sinensis. In: Fire Effects Information System.
- Plants For A Future (PFAF) (0). Wisteria sinensis Chinese Wisteria PFAF Plant Database.

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

Answer / Justification:

Though this species is invasive to many US sates and smothers other native plant/tree species, there is no evidence that this plant produces impenetrable thickets to livestock or humans.

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

Answer / Justification:

This vine typically spreads vegetatively. It can produce new roots and shoots from stolons and stems.

Reference(s):

- Texas Invasives (0). Texas Invasives Wisteria sinensis.
- Stone, K. R. (2009). Wisteria floribunda, W. sinensis. In: Fire Effects Information System.
- CABI (0). Wisteria sinensis (Chinese wisteria) - CABI.

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

Answer / Justification:

"Although seeds are produced in favorable conditions, vegetative growth is the main method of wisteria spread."

Reference(s):

- Stone, K. R. (2009). Wisteria floribunda, W. sinensis. 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 *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Though seed production is not the most common method of dispersal for this plant, "Abundant seeds may also be produced if conditions are favorable"

Reference(s):

- Texas Invasives (0). Texas Invasives Wisteria sinensis.

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

Answer / Justification:

Lack of information.

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

Answer / Justification:

"The seed does not exhibit any dormancy habits. It can be sown as soon as it is ripe in a cold frame and should germinate in the spring. "

Reference(s):

- Plants For A Future (PFAF) (0). Wisteria sinensis Chinese Wisteria PFAF Plant Database.

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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: **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:

Since this question specifically refers to germination from viable seed, I have answered "No" to this question since this species typically reproduces vegetatively and does not have much information on viable seed. It takes 2-3 years for this species to produce flowers if it spreads by vegetative means, but it takes much longer to reach reproductive age if grown by seed. "It can be slow to establish. Although vines may produce flowers by the second or third year after planting, it may take much longer (sometimes up to 15 years). Plants grown from seed may take up to 20 years to flower."

Reference(s):

- Missouri Botanical Garden (0). Wisteria sinensis 'Prolific' - Plant Finder.

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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:

"Fl. Apr-May, fr. May-Aug."

Reference(s):

- eflora.org (0). Wisteria sinensis in Flora of China @ efloras.org.

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

Answer / Justification:

This species has large seeds that deter animal dispersal. It typically spreads seeds via water.

Reference(s):

- Texas Invasives (0). Texas Invasives Wisteria sinensis.

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

Answer / Justification:

The method of seed dispersal for this species is by water.

Reference(s):

- Texas Invasives (0). Texas Invasives Wisteria sinensis.
- Stone, K. R. (2009). Wisteria floribunda, W. sinensis. In: Fire Effects Information System.
- Missouri Botanical Garden (0). Wisteria sinensis - Plant Finder.

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

Answer / Justification:

There is no evidence that this plants propagules are dispersed this way.

Reference(s):

- [Anonymous] .

Total PRE Score

PRE Score: 19 -- Reject (high risk of invasiveness)
Confidence: 81 / 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:

- Professor Allan Armitage December 21, 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.