Plant Risk Evaluator -- PRE™
Evaluation Report

Sambucus tigranii -- Illinois

2017 Farm Bill PRE Project

PRE Score: 11 -- Accept (low risk of invasiveness)
Confidence: 49 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Submitted

Evaluation Date: June 13, 2017

This PDF was created on June 15, 2018

Plant Evaluated

Sambucus tigranii

Image by Ori Fragman-Sapir

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Sambucus tigranii*) 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: June 13, 2017

Plant Information

Plant: *Sambucus tigranii*

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

Answer / Justification:

There are no reports of Sambucus tigranii naturalizing where it is not native. However, the closely related (and possible synonym) S. racemosa has naturalized in Northern Europe (Finland, Denmark, Estonia, Lithuania) and Great Britain according to the Global Compendium of Weeds. The taxonomy of this genus is unclear and native distributions are difficult to ascertain, but most species of Sambucus have a tendency to naturalize.

Reference(s):

- Germplasm Resources Information Network (2017). Sambucus racemosa subsp. racemosa in: Taxonomy - GRIN-Global Web v 1.9.8.2.
- Verloove, F. (2013). Sambucus. In: Manual of the Alien Plants of Belgium.
- Randall, R. (2012). A Global Compendium of Weeds. 2nd Edition..
- Borisova, E.. A. (2011). Patterns of invasive plant species distribution in the Upper Volga basin. Russian Journal of Biological Invasions. 2, 1–5.

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

Answer / Justification:

There are no reports of Sambucus tigranii naturalizing where it is not native. However, the closely related (and possible synonym) S. racemosa has naturalized in Finland, Lithuania and Estonia, which have a similar climate to Illinois.

Reference(s):

- Randall, R. (2012). A Global Compendium of Weeds. 2nd Edition..
- Germplasm Resources Information Network (2017). Sambucus racemosa subsp. racemosa in: Taxonomy - GRIN-Global Web v 1.9.8.2.
- Verloove, F. (2013). Sambucus. In: Manual of the Alien Plants of Belgium.

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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 reports of Sambucus tigranii being invasive. Though S. racemosa has naturalized where it is not native, there is not evidence of significant economic or environmental damage.

Reference(s):

- [Anonymous] .

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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 reports of Sambucus tigranii being invasive. Though S. racemosa has naturalized where it is not native, there is not evidence of significant economic or environmental damage.

Reference(s):

- [Anonymous] .

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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:

Sambucus nigra is invasive in New Zealand and South Africa. S. canadensis is invasive in South Africa. Neither are a similar climate to Illinois.

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

Answer / Justification:

Sambucus tigranii, when considered as a distinct species, is only found in the Caucasus, which does share a climate with Illinois. However, S. racemosa and S. racemosa ssp. racemosa are widespread and will grow in many climates.

Reference(s):

- Germplasm Resources Information Network (2017). Sambucus racemosa subsp. racemosa in: Taxonomy - GRIN-Global Web v 1.9.8.2.
- IUCN (2017). Sambucus tigranii (Tigran's Elder) in: IUCN Red List of Threatened Species.

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

Answer / Justification:

There are not reports of Sambucus tigranii dominating plant communities. In the United States, "red elderberry [S. racemosa] is common in many forest communities but is rarely dominant. It typically occurs in scattered patches or as isolated individuals, although it often forms thickets in northern Utah."

Reference(s):

- Fryer, J. L. (2008). Sambucus racemosa. In: Fire Effects Information System.

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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:

Sambucus tigranii is not noted as promoting fire or changing fire regimes. In the United States, Sambucus racemosa is likewise not noted as promoting fire or changing fire regimes.

Reference(s):

- Fryer, J. L. (2008). Sambucus racemosa. 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: **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:

Sambucus plants contain cyanogenic glycosides and can be toxic to humans, though they also have a long history of medicinal and culinary usage. Many sources report Sambucus racemosa as forage for livestock and wild animals, but some sources report toxicity to animals when ingested. The berries are an important food source for many birds and mammals. Overall, there is no evidence of Sambucus being a significant health risk.

Reference(s):

- Fryer, J. L. (2008). Sambucus racemosa. In: Fire Effects Information System.

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

Answer / Justification:

There is no evidence of Sambucus tigranii producing impenetrable thickets. Sambucus racemosa "may grow as single shrubs or trees, or form clumps or thickets."

Reference(s):

- Fryer, J. L. (2008). Sambucus racemosa. In: Fire Effects Information System.

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

Answer / Justification:

Details on the reproductive traits of Sambucus tigranii are not available. S. racemosa does spread vegetatively through sprouts, layering, and sometimes suckering rhizomes.

Reference(s):

- Fryer, J. L. (2008). Sambucus racemosa. In: Fire Effects Information System.

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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:

Fragmentation does not seem to be a common method of reproduction for Sambucus tigranii or S. racemosa.

Reference(s):

- [Anonymous] .

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:

Sambucus tigranii produces abundant red berries. In the United States, "red elderberry [S. racemosa] usually produces a good seed crop every year. On the Monongahela National Forest, West Virginia, 70% to 80% of red elderberry plants bore fruit in 4 consecutive years. In northern Utah, 40% of aerial red elderberry stems produced flowers. The number of flowers/inflorescence ranged from 100 to 400, with 60% to 90% of flowers producing fruit. Approximately 30% of seeds were unfilled; filled seeds were 74% to 91% viable in the laboratory."

Reference(s):

- Fryer, J. L. (2008). Sambucus racemosa. In: Fire Effects Information System.

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

- 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:

Sambucus tigranii produces abundant red berries. In the United States, "red elderberry usually produces a good seed crop every year. On the Monongahela National Forest, West Virginia, 70% to 80% of red elderberry plants bore fruit in 4 consecutive years. In northern Utah, 40% of aerial red elderberry stems produced flowers. The number of flowers/inflorescence ranged from 100 to 400, with 60% to 90% of flowers producing fruit. Approximately 30% of seeds were unfilled; filled seeds were 74% to 91% viable in the laboratory."

Reference(s):

- Fryer, J. L. (2008). Sambucus racemosa. In: Fire Effects Information System.

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

Answer / Justification:

There are conflicting reports on germination of Sambucus seeds. "Elder seeds are difficult to germinate because of their dormant embryos and hard seedcoats....Elder seeds can be sown in the fall soon after collection, or they can be stratified and sown in the spring. In either case, germination often is not complete until the second spring" (USDA FS). "In contrast to previous reports, the endocarps (‘‘seed coats’’) of Sambucus species are not impermeable to water; thus, the seeds do not have physical dormancy. Seeds of the European species S. racemosa required a cold stratification period only for dormancy break" so germination the next growing season is possible in Illinois.

Reference(s):

- USDA Forest Service (2008). USDA FS Agriculture Handbook 727 - The Woody Plant Seed Manual.
- Hidayati, S. N., Baskin J. M., & Baskin C. C. (2000). Morphophysiological dormancy in seeds of two North American and one Eurasian species of Sambucus (Caprifoliaceae) with underdeveloped spatulate embryos. American Journal of Botany. 87, 1669–1678.

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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:

"Elderberry comes into full production after 3 to 4 years."

Reference(s):

- Strang, J. (2012). Elderberry.

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

Answer / Justification:

"Fruit is generally harvested weekly over a period of approximately three weeks"

Reference(s):

- Strang, J. (2012). Elderberry.

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: **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:

Elderberries are frequently consumed by mammals and birds.

Reference(s):

- Fryer, J. L. (2008). Sambucus racemosa. In: Fire Effects Information System.

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

Answer / Justification:

"Water- and/or gravity-dispersed seed may be unimportant to red elderberry [S. racemosa] establishment. In a study using seed from a mixed-hardwood community by Little Otter Creek in Vermont, 100% of red elderberry germinants emerging in the greenhouse came from soil samples; no red elderberry germinants emerged from floodplain debris samples or seed rain traps."

Reference(s):

- Fryer, J. L. (2008). Sambucus racemosa. 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 *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: 11 -- Accept (low risk of invasiveness)
Confidence: 49 / 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:

- Kim Shearer November 14, 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.

Issue ID # 5869

Date Created: November 14, 2017 - 1:48pm
Date Updated: December 10, 2017 - 12:23pm

Submitted by: Kim Shearer

Status: Fixed
Type: Suggestion
Severity: Major
Scope: Q17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

Issue Description

Currently, the included hyperlink does not take the reader to the cited source. The hyperlink for the cited source should be corrected to direct to the following link.

Issue Resolution (Screener's Response to Issue)

Hyperlink fixed.

Issue ID # 5868

Date Created: November 14, 2017 - 1:47pm
Date Updated: December 10, 2017 - 12:24pm

Submitted by: Kim Shearer

Status: Fixed

Type: Suggestion
Severity: Major
Scope: Q16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

Issue Description

Currently, the included hyperlink does not take the reader to the cited source. The hyperlink for the cited source should be corrected to direct to the following link.

Issue Resolution (Screener's Response to Issue)

Hyperlink fixed.

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.