



***Plant Risk Evaluator -- PRETM
Evaluation Report***

Senna artemisioides -- California

2022 Western IPM Grant Project

PRE Score: 13 -- Moderate Potential Risk

Confidence: 63 / 100

Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Private

Status: Completed

Evaluation Date: December 9, 2022

This PDF was created on June 06, 2025

This project was funded in part by the USDA National Institute of Food and Agriculture through the Western Integrated Pest Management Center, grant number 2018-70006-28881.



Plant Evaluated

Senna artemisioides



Image by Ron Vanderhoff



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Senna artemisioides*) 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

Silver senna (*Senna artemisioides*) (Gaudich. ex DC.) Randell is in the Fabaceae (pea family) and native to Australia. It was introduced as an ornamental shrub, and is described as cultivated and naturalized in southwestern United States. It may have the potential to become invasive in California, as it is easily dispersed by humans (mainly planting *Senna* species as ornamentals), and seeds germinate after boiling water or scarification treatments in cultivation settings. Plants can also withstand wide temperature ranges, hence the high concern for the species potentially becoming invasive outside of cultivation. *Senna* species can be toxic to animals (goats, livestock) and humans.

General Information

Status: Completed

Screener: Lauren Quon

Evaluation Date: December 9, 2022

Plant Information

Plant: *Senna artemisioides*

If the plant is a cultivar, how does its behavior differ from its parent's?

Senna artemisioides has been in cultivation for many years and is grown successfully in a wide range of climates, being most suited to drier areas with full sun and good drainage (Australian Native Plants Society 2022). Other cultivars of silver senna commonly seen in gardens are *Senna artemisioides* ssp. *artemisioides*, *Senna artemisioides* ssp. *oligophylla*, and *Senna artemisioides* ssp. *x coriacea* (Benth.) Randell. *Senna artemisioides* ssp. *oligophylla* has more ovate-shaped leaves compared to the pinnate leaves of *S. artemisioides* ssp. *artemisioides*. Silver senna is a shrub with pinnate leaves, about 2-4 cm long and gray green and silvery in color. In California, silver senna flowers from January through May. Shrubs are less than 2 meters tall and sparsely to densely hairy. Silver senna's bright yellow flowers, approximately 1.5 cm in diameter grow in small clusters and bloom between January through May in the United States. Jepson eFlora describes the species as being cultivated and naturalized in southwestern United States.



Regional Information

Region Name: California

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 on an article published by PLOS One, which can be found 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** point(s) to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Silver senna is native to north western Australia (specifically western New South Wales), but not native to the United States, where it is grown as an ornamental plant. Silver senna is noted as naturalized in the southwestern United States (Wojciechowski et al. 2021). On the Invasive Plant Atlas of the United States, silver senna occurrences have been reported in southern California and southern Arizona, and it is listed as exotic on the website. On the USDA PLANTS database, *Senna artemisioides* ssp. *xcoriacea* is noted as occurring in California.

Reference(s):

- Wojciechowski, M. F., & McClintock E. (2012). *Senna artemisioides*.
 - Howes, J. (2009). *Senna Artemisioides*. Journal (Australian Native Plants Society. Canberra Region). 16(2), 5.
 - Ajaib, M., Khan Z-U-D., Butt G. Yasmeen, & Ullah N. (2011). *Senna artemisioides* of family Leguminosae and *Mansoa alliacea* of family Bignoniaceae: two new records to the Flora of Pakistan. *Biologia* (Lahore, Pakistan). 7.
 - Stewart, A. (2017). Plant Profile: Silver Senna.
 - USDA Plants Database (0). USDA Plants Database.
-



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** point(s) to the total PRE score.
- The *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Silver senna is noted as being naturalized in the southwestern U.S. by the Jepson Manual and other horticultural resources. It is grown as an ornamental shrub. Silver senna occurrences are also noted in South Africa, the Mediterranean Basin, and southeastern Europe (Climate Matching Map for *Senna artemisioides*).

Reference(s):

- Wojciechowski, M. F., & McClintock E. (2012). *Senna artemisioides*.
 - Howes, J. (2009). *Senna Artemisioides*. Journal (Australian Native Plants Society. Canberra Region). 16(2), 5.
 - Ajaib, M., Khan Z-U-D., Butt G. Yasmeen, & Ullah N. (2011). *Senna artemisioides* of family Leguminosae and *Mansoa alliacea* of family Bignoniaceae: two new records to the Flora of Pakistan. *Biologia* (Lahore, Pakistan). 7.
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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** point(s) to the total PRE score.
- The *screeners* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Jepson notes silver senna as being naturalized in California. There is currently not enough information to assess the invasiveness of *Senna* in the U.S. or world in a similar climate. The Invasive Plant Atlas of the United States notes that silver senna is not on any state or national invasive species list, but lists the plant as exotic. Calflora lists silver senna as a shrub that is not native to California. The University of Arizona Desert Legume Program notes *Senna artemisioides* ssp. *petiolaris* as having the potential to become invasive, but not to the extent of other *Senna artemisioides* subspecies in cultivation. Saguaro National Park lists silver senna (aka feathery cassia) as a non-native shrub that occurs in the park.



Reference(s):

- Wojciechowski, M. F., & McClintock E. (2012). *Senna artemisioides*.
 - Ajaib, M., Khan Z-U-D., Butt G. Yasmeen, & Ullah N. (2011). *Senna artemisioides* of family Leguminosae and *Mansoa alliacea* of family Bignoniaceae: two new records to the Flora of Pakistan. *Biologia* (Lahore, Pakistan). 7.
 - Invasive Plant Atlas of the United States (0). silver senna, *Senna artemisioides* (Gaudich. ex DC.) Randell.
 - Service, S. National P. (0). What's an invasive plant? - Saguaro National Park (U.S. National Park Service).
 - Calflora (0). *Senna artemisioides* Calflora.
-

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** point(s) to the total PRE score.
- The *screeners* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

There is currently not enough information to assess the invasiveness of *Senna* in the U.S. or world in a similar climate. The Invasive Plant Atlas of the United States notes that silver senna is exotic, but not on any state or national invasive species list. Calflora lists silver senna as not native to California, and Saguaro National Park lists silver senna as a non-native shrub found in the park, but there is a lack of evidence that lists the plant as invasive. However, there is speculation that silver senna has the potential to become invasive.

Reference(s):

- Wojciechowski, M. F., & McClintock E. (2012). *Senna artemisioides*.
 - Service, S. National P. (0). What's an invasive plant? - Saguaro National Park (U.S. National Park Service).
 - Calflora (0). *Senna artemisioides* Calflora.
 - Invasive Plant Atlas of the United States (0). silver senna, *Senna artemisioides* (Gaudich. ex DC.) Randell.
-



5. Are other species of the same genus (or closely related genera) invasive in a similar climate?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Senna spectabilis, an exotic tree of the same genus, is noted as invasive in a similar climate. *Senna pendula* is noted as invasive in Florida, but have not shown to be in California. *Senna didymobotrya* may be another species yet deemed to be invasive in California, as it is already invasive in Eastern Africa, and has the potential to become invasive in South Africa and Australia, which have similar climates to southern California.

Reference(s):

- Manoj, E. M. (2023). Rapid growth of *Senna spectabilis* poses serious threat to NBR, says study. *The Hindu*.
 - Weldemariam, E. Ch., & Dejene S. W. (2021). Predicting invasion potential of *Senna didymobotrya* (Fresen.) Irwin & Barneby under the changing climate in Africa. *Ecological Processes*. 10, 5.
-

6. Is the species (or cultivar or variety) found predominately in a climate matching the region of concern?

- Answer: **Yes**, which contributes **2** point(s) to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Silver senna is found in the southwestern United States, in a climate that matches that of its native range. Plants are also found in southwestern Asia, southwestern Europe, and north and south Africa.



Reference(s):

- Wojciechowski, M. F., & McClintock E. (2012). *Senna artemisioides*.
 - Ajaib, M., Khan Z-U-D., Butt G. Yasmeen, & Ullah N. (2011). *Senna artemisioides* of family Leguminosae and *Mansoa alliacea* of family Bignoniaceae: two new records to the Flora of Pakistan. *Biologia* (Lahore, Pakistan). 7.
 - Landscape, X. Nature's C. (0). *Senna* (Cassia).
-

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** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Silver senna has the potential to become invasive, but not to the extent as other *Senna* species (University of Arizona 2021). Silver senna is listed as an invasive plant by Saguaro National Park.

Reference(s):

- Arizona, U. of (2021). *Senna artemisioides* subsp. *petiolaris*.
 - Service, S. National P. (0). What's an invasive plant? - Saguaro National Park (U.S. National Park Service).
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8. Is the plant noted as promoting fire and/or changing fire regimes?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **Very Low** confidence in this answer based on the available literature.



Answer / Justification:

Most sources suggest that silver senna is mostly grown as ornamental, but silver senna is listed as an invasive plant to Saguaro National Park. It is implied that invasive plants such as silver senna may contribute to promoting changes fire regimes where it displaces native vegetation. Silver senna is listed as a "fire retardant" plant by the Indigenous Landscape Design Australia website, where it is encouraged to be planted as an ornamental plant.

Reference(s):

- Williams, R. J., A Gill M., & Bradstock R. A. (2012). Flammable Australia: Fire Regimes, Biodiversity and Ecosystems in a Changing World.
 - Australia, I. Landscape (0). Australian Garden Design with Native Plants Sydney New South Wales - Fire retardant plants.
 - Service, S. National P. (0). What's an invasive plant? - Saguaro National Park (U.S. National Park Service).
-

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** point(s) to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

The University of Arizona's Desert Legume Program notes that cattle graze on *Senna artemisioides* in Australia, where it is native, and grows in inland desert, grassland, and woodland habitats. Other *Senna* species may affect humans or animals/fish: *Senna occidentalis* is toxic to humans, causing liver failure (Ish et al. 2019). *Senna occidentalis*, *Senna roemariana*, *Senna lindheimeriana*, and *Senna obtusifolia* are noted as toxic to livestock and goats (Fannin 2015, Pfeifer 2018, Ish 2019, Texas A & M 2023).

Reference(s):

- Arizona, U. of (2021). *Senna artemisioides* subsp. *petiolaris*.
- Pfeifer, M. (2018). Multiple goats diagnosed with senna plant toxicosis.
- Texas A&M AgriLife Extension (0). Plants of Texas Rangelands » Twinleaf senna, Twoleaf senna.
- Fannin, B. (2015). Livestock producers urged to watch for toxic plants.
- Ish, P., Rathi S., Singh H., & Anuradha S. (2019). *Senna Occidentalis* Poisoning: An Uncommon Cause of Liver Failure. ACG Case Reports Journal. 6, e00035.



10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screeners* has a **Very Low** confidence in this answer based on the available literature.

Answer / Justification:

There is not enough information available to answer this question accurately. However, it is noted that silver senna will grow fast and large when excessively irrigated.

Reference(s):

- Arizona, U. of (2021). *Senna artemisioides* subsp. *petiolaris*.
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Reproductive Strategies (Questions 11 - 17)

11. Does this species (or cultivar or variety) reproduce and spread vegetatively?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screeners* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

There is not much evidence showing that this species reproduces and spreads vegetatively. Silver senna mostly grows from seed.



Reference(s):

- Baskin, J. M., Nan X., & Baskin C. C. (1998). A comparative study of seed dormancy and germination in an annual and a perennial species of *Senna* (Fabaceae). *Seed Science Research*. 8, 501–512.
 - Pound, L. M., Ainsley P. J., Facelli J. M., Pound L. M., Ainsley P. J., & Facelli J. M. (2015). Dormancy-breaking and germination requirements for seeds of *Acacia papyrocarpa*, *Acacia oswaldii* and *Senna artemisioides* ssp. \times *coriacea*, three Australian arid-zone Fabaceae species. *Australian Journal of Botany*. 62, 546–557.
 - Howes, J. (2009). *Senna Artemisioides*. *Journal (Australian Native Plants Society. Canberra Region)*. 16(2), 5.
 - Landscape, X. Nature's C. (0). *Senna (Cassia)*.
 - Wojciechowski, M. F., & McClintock E. (2012). *Senna artemisioides*.
-

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** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Most sources suggest that silver senna mainly produces new plants from seeds, but does not naturally reproduce from plant fragments. Cuttings may continue to grow in a greenhouse before being planted in the ground, but not in natural settings (Secuianu 2019).

Reference(s):

- Secuianu, M. (2021). *Feathery Cassia Guide: How to Grow & Care for “Senna Artemisioides”*. *Feathery Cassia Guide: How to Grow & Care for “Senna Artemisioides”*. 2022,
-

13. Does the species (or cultivar or variety) commonly produce viable seed?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.



Answer / Justification:

Silver senna mainly reproduces and grows from viable seed. Seeds can readily germinate after being treated with boiling water (Australian Native Plants Society 2022). Seeds can also germinate after scarification treatments.

Reference(s):

- Secuianu, M. (2021). Feathery Cassia Guide: How to Grow & Care for “Senna Artemisioides”. Feathery Cassia Guide: How to Grow & Care for “Senna Artemisioides”. 2022,
 - Landscape, X. Nature's C. (0). Senna (Cassia).
 - Howes, J. (2009). Senna Artemisioides. Journal (Australian Native Plants Society. Canberra Region). 16(2), 5.
-

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

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Silver senna produces abundant seedpods and hundreds of viable seeds, according to one source, the Australian Native Plants Society (Howes 2009).

Reference(s):

- Landscape, X. Nature's C. (0). Senna (Cassia).
 - Secuianu, M. (2021). Feathery Cassia Guide: How to Grow & Care for “Senna Artemisioides”. Feathery Cassia Guide: How to Grow & Care for “Senna Artemisioides”. 2022,
 - Arizona, U. of (2021). Senna artemisioides subsp. petiolaris.
 - Howes, J. (2009). Senna Artemisioides. Journal (Australian Native Plants Society. Canberra Region). 16(2), 5.
-



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: **No**, which contributes **0** point(s) to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Seeds can germinate after scarification treatments, but *Senna artemisioides* ssp. *x coriacea* (Benth.) Randell scarified seeds germinate at a slower rate in cooler temperatures (Pound et al 2015).

Reference(s):

- Pound, L. M., Ainsley P. J., Facelli J. M., Pound L. M., Ainsley P. J., & Facelli J. M. (2015). Dormancy-breaking and germination requirements for seeds of *Acacia papyrocarpa*, *Acacia oswaldii* and *Senna artemisioides* ssp. *x coriacea*, three Australian arid-zone Fabaceae species. *Australian Journal of Botany*. 62, 546–557.
-

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** point(s) to the total PRE score.
- The *screeners* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Silver senna flowers January through May, and may produce seed after flowering. It is unknown whether seeds are viable within the first 3 to 5 years.



Reference(s):

- Pound, L. M., Ainsley P. J., Facelli J. M., Pound L. M., Ainsley P. J., & Facelli J. M. (2015). Dormancy-breaking and germination requirements for seeds of *Acacia papyrocarpa*, *Acacia oswaldii* and *Senna artemisioides* ssp. \times *coriacea*, three Australian arid-zone Fabaceae species. *Australian Journal of Botany*. 62, 546–557.
 - Secuianu, M. (2021). *Feathery Cassia Guide: How to Grow & Care for “Senna Artemisioides”*. 2022, *Feathery Cassia Guide: How to Grow & Care for “Senna Artemisioides”*.
-

17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Silver senna flowers January through May, potentially producing seed through those months. It may be uncommon for silver senna to produce seed outside of its flowering period, but it may be possible in irrigated garden settings.

Reference(s):

- Wojciechowski, M. F., & McClintock E. (2012). *Senna artemisioides*.
 - Calflora (2021). *Calflora: Senna artemisioides*.
-

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** point(s) to the total PRE score.
- The *screeener* has a **Low** confidence in this answer based on the available literature.



Answer / Justification:

Seeds may be dispersed by cattle (stuck on hooves) in natural settings, where plants are growing in or nearby grazed pastures/grasslands in their native range.

Reference(s):

- Pound, L. M., Ainsley P. J., Facelli J. M., Pound L. M., Ainsley P. J., & Facelli J. M. (2015). Dormancy-breaking and germination requirements for seeds of *Acacia papyrocarpa*, *Acacia oswaldii* and *Senna artemisioides* ssp. \times *coriacea*, three Australian arid-zone Fabaceae species. *Australian Journal of Botany*. 62, 546–557.
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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** point(s) to the total PRE score.
- The *screeener* has a **Very Low** confidence in this answer based on the available literature.

Answer / Justification:

Seeds may be dispersed by wind or water, but it is not confirmed how often or frequent seeds are dispersed long distance. With large flooding events, it can be estimated that once or twice a year seeds may be dispersed great distances.

Reference(s):

- Landscape, X. Nature's C. (0). *Senna* (Cassia).
 - Pound, L. M., Ainsley P. J., Facelli J. M., Pound L. M., Ainsley P. J., & Facelli J. M. (2015). Dormancy-breaking and germination requirements for seeds of *Acacia papyrocarpa*, *Acacia oswaldii* and *Senna artemisioides* ssp. \times *coriacea*, three Australian arid-zone Fabaceae species. *Australian Journal of Botany*. 62, 546–557.
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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** point(s) to the total PRE score.
- The *screeener* has a **Very Low** confidence in this answer based on the available literature.



Answer / Justification:

Sources suggest that silver senna seed is dispersed by people (planting in gardens) and wind, water, and some animals in natural settings.

Reference(s):

- Landscape, X. Nature's C. (0). *Senna* (Cassia).
 - Pound, L. M., Ainsley P. J., Facelli J. M., Pound L. M., Ainsley P. J., & Facelli J. M. (2015). Dormancy-breaking and germination requirements for seeds of *Acacia papyrocarpa*, *Acacia oswaldii* and *Senna artemisioides* ssp. \times *coriacea*, three Australian arid-zone Fabaceae species. *Australian Journal of Botany*. 62, 546–557.
 - Ajaib, M., Khan Z-U-D., Butt G. Yasmeen, & Ullah N. (2011). *Senna artemisioides* of family Leguminosae and *Mansoa alliacea* of family Bignoniaceae: two new records to the Flora of Pakistan. *Biologia* (Lahore, Pakistan). 7.
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Evaluation Notes

There was not much information found assessing how invasive *Senna artemisioides* may be in areas across the world where it is not native.

Total PRE Score

PRE Score: 13 -- Moderate Potential Risk

Confidence: 63 / 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 : Low Potential Risk

13 - 15 : Moderate Potential Risk

> 15 : High Potential Risk



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: 2022 Western IPM Grant Project

Content Privacy: Private



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:

- | | |
|------------------|-------------------|
| • Chris McDonald | March 6, 2023 |
| • Ron Vanderhoff | February 23, 2023 |
| • Jutta Burger | February 9, 2023 |

This evaluation has a total of 3 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 info@plantright.org if additional action is required to resolve open issues.

Issue ID # 8941

Date Created: March 6, 2023 - 12:18pm

Date Updated: March 13, 2023 - 9:05pm

Submitted by: Chris McDonald

Status: Fixed

Type: Suggestion

Severity: Major

Scope: Evaluation as a whole

Issue Description

The confidence levels between questions should be double checked. Some do not seem to follow the PRE guidelines for standardization, especially given the variety of sources used for this species (peer-reviewed to inference to limited evidence). Granted some of the other comments specifically address confidence levels, but I put this in as a major comment, just to ensure attention is paid to all of them. <https://pretool.org/help/how-choose-confidence-levels>

Issue Resolution

No resolution has been entered for this issue.

Issue ID # 8939

Date Created: March 6, 2023 - 12:06pm

Date Updated: March 16, 2023 - 5:38pm



Submitted by: Chris McDonald

Status: Fixed

Type: Suggestion

Severity: Major

Scope: Q09. Is the plant a health risk to humans or animals/fish? Has the species been noted as impacting grazing systems?

Issue Description

Q9 - Many Senna's are toxic to livestock and humans. Please change to at least Yes and at least medium or high confidence. If you can find a source for this species then it would be

high. <https://rangeplants.tamu.edu/plant/sicklepod-senna/>, <https://agrilifetoday.tamu.edu/2015/08/19/livestock-producers-urged-to-watch-for-toxic-plants/>,

and humans as well (but not this species) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6658039/>,
(Chris)

Issue Resolution (Screener's Response to Issue)

edited, changed to "yes" and high confidence. sources added too.

Issue ID # 8938

Date Created: March 6, 2023 - 10:54am

Date Updated: March 16, 2023 - 6:36pm

Submitted by: Chris McDonald

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q04. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar climate?



Issue Description

Add CalFlora link to Q4 as well, <https://www.calflora.org/app/taxon?crn=8576> --Chris

Issue Resolution (Screener's Response to Issue) added calflora reference.

Issue ID # 8937

Date Created: March 6, 2023 - 10:53am

Date Updated: March 16, 2023 - 6:36pm

Submitted by: Chris McDonald

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

Add the CalFlora link to the species page to Q3 for this species

<https://www.calflora.org/app/taxon?crn=8576>

--Chris

Issue Resolution (Screener's Response to Issue) added calflora reference.

Issue ID # 8885

Date Created: February 23, 2023 - 9:48pm

Date Updated: March 16, 2023 - 6:35pm

Submitted by: Ron Vanderhoff



Status: Fixed

Type: Suggestion

Severity: Minor

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

If your reference indicates "Jan through May", you have five months of flowering. This would be a YES answer and with at least a MEDIUM confident. You could probably bump it to HIGH or VERY HIGH with a reference to records on Calflora or iNaturalist, which both also seems to document flowering well beyond three months each year.

Issue Resolution (Screener's Response to Issue) changed answer to yes and adjusted confidence level to very high

Issue ID # 8884

Date Created: February 23, 2023 - 9:41pm

Date Updated: March 16, 2023 - 7:10pm

Submitted by: Ron Vanderhoff

Status: Fixed

Type: Suggestion

Severity: Minor

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

Flowering time does not necessarily imply that the plant produces seed in its first three years. Without evidence and documentation of this I don't believe this could be given a "Yes". Unless there is documentation one way or the other, which it doesn't sound like there is, it would be best left unanswered.

Issue Resolution (Screener's Response to Issue) changed answer- plant produces seed within 3-5 years, but viability of seed is not well known...



Issue ID # 8883

Date Created: February 23, 2023 - 9:36pm

Date Updated: March 16, 2023 - 6:43pm

Submitted by: Ron Vanderhoff

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q14. Does this plant produce copious viable seeds each year (>1000)?

Issue Description

I suggest expanding on your comment. Although you appear to be correct you should include some specifics from your references within your comment, so that you don't force the reader to have to click through to each reference to find the supporting documentation. Paraphrase or direct-quote to supporting information in your comments.

Chris here tagging onto (Ron's?) comment -- I agree on the specifics mentioned above. Also, if you do not have specific data on seed production you can use inferences from seeds per fruit or branch and then the size of the plant. Or even pictures showing that. In this case *S. artemoides* produces hundreds of fruits (which it does), and produces 10+ seeds per fruit, and produces 1,000's of seeds per mature shrub.

Issue Resolution (Screener's Response to Issue) made suggested edits and provided references.

Issue ID # 8882

Date Created: February 23, 2023 - 9:32pm

Date Updated: March 16, 2023 - 6:56pm

Submitted by: Ron Vanderhoff

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q12. If naturally detached fragments from this plant are capable of producing new plants, is this a common method of reproduction for the plant?



Issue Description

I would suggest raising the confidence level to High on this question. Horticultural propagation is probably of little consequence in a natural environment. Unless there is documentation of vegetative/clonal reproduction I would feel very good about a High confidence score here.

Chris here tagging onto (Ron's?) comment. For this question it would be much easier to say "it reproduces from seed and it not does not naturally reproduce from plant fragments" (and leave out the part about cuttings and rooting hormone). The answer should revolve around if naturally detached fragments can reproduce, and as far as I know Senna's don't naturally root and your source suggest the same (Yes responses would for Arundo, Bermuda grass, or the Senecio vines, and you correctly answered this question "no"). I'd suggest high confidence.

Issue Resolution (Screener's Response to Issue) made suggested edits, changed confidence to high

Issue ID # 8881

Date Created: February 23, 2023 - 9:27pm

Date Updated: March 16, 2023 - 6:54pm

Submitted by: Ron Vanderhoff

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q06. Is the species found predominately in a climate matching the region of concern?

Issue Description

Needs a reference to support the comments.

Issue Resolution (Screener's Response to Issue)

reference added.



Issue ID # 8880

Date Created: February 23, 2023 - 9:25pm

Date Updated: March 16, 2023 - 6:42pm

Submitted by: Ron Vanderhoff

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q05. Are other species of the same genus invasive in a similar climate?

Issue Description

Although not yet deemed invasive in CA, *Senna didymobotrya* might be another example. I think you will find references to the sp. invasiveness in part of S. Africa and Australia with pretty good climate matches. It would be nice to have more than one species mentioned here.

Issue Resolution (Screener's Response to Issue) added more species.

Issue ID # 8879

Date Created: February 23, 2023 - 9:02pm

Date Updated: March 16, 2023 - 6:39pm

Submitted by: Ron Vanderhoff

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q04. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar climate?

Issue Description

On this question you do make mention of the Invasive Plant Atlas, but did not include it in your



References.

Issue Resolution (Screener's Response to Issue) reference was added.

Issue ID # 8877

Date Created: February 23, 2023 - 8:56pm

Date Updated: March 16, 2023 - 7:25pm

Submitted by: Ron Vanderhoff

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q02. Is the species (or cultivar or variety) noted as being naturalized elsewhere in the US or world in a similar climate?

Issue Description

Same comment as in Q1. I noticed that you have included three different citations in at least Q1 and Q2, but neither are mentioned in your written comments. I suggest either including a brief comment about these two citations or omitting them, since they may be unnecessary given that you already have the Jepson reference. Since you have already done the research, and the more support the better, I suggest the former (mention them in your comments).

Issue Resolution (Screener's Response to Issue)

added references.

Issue ID # 8876

Date Created: February 23, 2023 - 8:50pm

Date Updated: March 16, 2023 - 6:34pm



Submitted by: Ron Vanderhoff

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q01. Has the species (or cultivar or variety, if applicable) become naturalized where it is not native?

Issue Description

Please add a citation to support the comment of the plant being listed as "naturalized" in the Jepson Manual.

Ah-ha, I now see how you did this - you do have a citation to Jepson in your References, it is just a bit hard to connect it to the comment. I suggest you might do two things on all these. 1) edit the citation text at put "Jepson," at the beginning (or whatever quickly describes the reference, then 2) also put the word "Jepson" in parentheses directly after the sentence with your comment. Doing this will help the reader connect the statement with the reference.

Hope that makes sense.

Issue Resolution (Screener's Response to Issue)

whoops, sorry rookie mistake on my part- fixed!

Issue ID # 8780

Date Created: February 7, 2023 - 5:33pm

Date Updated: March 16, 2023 - 7:08pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q20. Are the plant's propagules frequently dispersed via contaminated seed, equipment, vehicles, boats or clothing/shoes?

Issue Description



Provide more justification and clearly state if you found no documentation of seeds being dispersed by equipment, seed, etc. "Sources" is vague especially if only one source is provided. - Jutta

Issue Resolution (Screener's Response to Issue) fixed and provided justification.

Issue ID # 8779

Date Created: February 7, 2023 - 5:28pm

Date Updated: March 16, 2023 - 6:34pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Major

Scope: Q19. Are the plant's propagules frequently dispersed long distance (>100 m) by wind or water?

Issue Description

The justification statement does not match the level of confidence provided. Add a more rigorous justification for the answer. If it is deduced by inference (e.g., seeds float or something like that), then that needs to be stated. How could these seeds be moved by wind or water? - Jutta.

Chris jumping in here - There is sufficient evidence in the Pound et al. 2014 study that scarification is a primary precursor to germination. Which would imply the seeds are adapted to water (flash flood) dispersal. Whether that matches the "frequently dispersed" part of the question, I don't know. Many of these desert shrubs have long-lived seeds that germinate after a flood scarifies the seeds, I'd suspect this species included (but haven't read up on these references enough).

Issue Resolution (Screener's Response to Issue) seeds on the ground can be moved by mostly water-some seed may be moved by wind, and I am not sure how frequently seed is moved...but adjusted confidence level to very low.

Issue ID # 8778



Date Created: February 7, 2023 - 5:24pm

Date Updated: March 13, 2023 - 8:21pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Major

Scope: Q18. Are the plant's propagules dispersed long distance (>100 m) by mammals or birds or via domestic animals?

Issue Description

Does your reference specifically mention that seeds were moved by livestock? If so, then this would be yes with higher confidence. If not, then consider a 'no' answer. This is also a good place to describe the seed propagules and mention that they don't have any appendages for animal dispersal (if that is the case). - Jutta

Issue Resolution

No resolution has been entered for this issue.

Issue ID # 8777

Date Created: February 7, 2023 - 5:20pm

Date Updated: March 16, 2023 - 6:30pm

Submitted by: Jutta Burger

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

A flowering period from January through May is >3 months, which would be a "yes" here. If there is still debate on whether seeds are produced and are viable that could be grounds for assuming yes by inference,



aka a "medium" confidence. - Jutta

Issue Resolution (Screener's Response to Issue)

changed answer to yes, with medium confidence.

Issue ID # 8776

Date Created: February 7, 2023 - 5:17pm

Date Updated: March 16, 2023 - 6:31pm

Submitted by: Jutta Burger

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

If you have documentation that the species flowers and produces fruit within first five years of germinating and that seeds have high viability (regardless of dormancy) then the answer to this question would be "yes" with a minimum of "medium" confidence (or higher depending on the type of reference found). The Jepson reference is not relevant to this justification because it doesn't provide any information on this topic. - Jutta

Issue Resolution (Screener's Response to Issue)

changed answer to yes with medium confidence, checked references.

Issue ID # 8775

Date Created: February 7, 2023 - 4:47pm



Date Updated: March 16, 2023 - 5:51pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Major

Scope: Q15. 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?

Issue Description

You should only answer yes to this question if you have references that show high (>25%) germination *without* dormancy-breaking treatments. It's fine to keep the dormancy-breaking information in the justification, but you will need to add something about how "control" treatments germinated. - Jutta.

Chris adding in here - The control germination for the linked reference was less than 25%. I'd give high confidence on this "no" and then tell the reader that the untreated seed had low germination in the study (FYI, this is small, the year in the reference is off)

Issue Resolution (Screener's Response to Issue)

changed to No answer with high confidence and fixed reference.

Issue ID # 8774

Date Created: February 7, 2023 - 4:43pm

Date Updated: March 16, 2023 - 7:04pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q13. Does the species (or cultivar or variety) commonly produce viable seed?



Issue Description

Confidence should be higher, especially if you cite a reference that reports on seed production and germination. - Jutta

Issue Resolution (Screener's Response to Issue) confidence level changed to high

Issue ID # 8773

Date Created: February 7, 2023 - 4:40pm

Date Updated: March 16, 2023 - 6:51pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q09. Is the plant a health risk to humans or animals/fish? Has the species been noted as impacting grazing systems?

Issue Description

Strike "However" and consider increasing your confidence, since you have pretty solid support for your "no" answer. - Jutta

Issue Resolution (Screener's Response to Issue) fixed wording.

Issue ID # 8772

Date Created: February 7, 2023 - 4:38pm

Date Updated: March 16, 2023 - 7:03pm

Submitted by: Jutta Burger



Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q07. Does this plant displace native plants and dominate the plant community in areas where it has been established?

Issue Description

Do your references specifically say that "Silver senna may displace native plants/shrubs where it exists in places where it is outside of its native range (where it may be naturalized)"? If not, relay what they do say. If you do not have evidence that Silver Senna displaces natives then you will have to back off of that.
- Jutta

Issue Resolution (Screener's Response to Issue)

fixed wording.

Issue ID # 8771

Date Created: February 7, 2023 - 4:22pm

Date Updated: March 16, 2023 - 6:54pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q06. Is the species found predominately in a climate matching the region of concern?

Issue Description

Reference GBIF and the climate matching map. Not sure why you have very low confidence here because you have the data to compare (which typically would give you a medium confidence). If you can't quite be sure that most of its distribution is in CA-type climate, then a low confidence makes sense. - Jutta

Issue Resolution (Screener's Response to Issue) referenced climate changing map and changed confidence to medium



Issue ID # 8770

Date Created: February 7, 2023 - 4:15pm

Date Updated: March 16, 2023 - 5:37pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Major

Scope: Q05. Are other species of the same genus invasive in a similar climate?

Issue Description

Needs more justification and with justification the confidence should go up (depending on the reference, this would probably be 'high'). Cite the references you used for *Senna spectabilis*. It's also not a bad idea to mention that there are other *Senna* species (e.g., *S. pendula* in Florida, <https://plants.ifas.ufl.edu/plant-directory/senna-pendula/>) that are considered invasive but have not yet been shown to be so in our climate. - Jutta

Issue Resolution (Screener's Response to Issue)

additional justification was added to support high ranking.

additional references cited.

Issue ID # 8769

Date Created: February 7, 2023 - 4:10pm

Date Updated: March 16, 2023 - 5:37pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Major

Scope: Q04. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar



climate?

Issue Description

The question of invasiveness should be answered more rigorously to support a "no" answer. The Jepson reference is not so relevant. Refer to and cite instead some of the various web resources as well as Randall 2017 (see PRE Help page for common resources used) that you have checked and not found this species referenced. - Jutta

Issue Resolution (Screener's Response to Issue)

answer was changed to no, and additional sources were cited.

Issue ID # 8768

Date Created: February 7, 2023 - 3:44pm

Date Updated: March 16, 2023 - 6:40pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q02. Is the species (or cultivar or variety) noted as being naturalized elsewhere in the US or world in a similar climate?

Issue Description

Elaborate on whether the species has naturalized anywhere else in a similar climate. - Jutta

Issue Resolution (Screener's Response to Issue) added more information on naturalization.

Issue ID # 8767



Date Created: February 7, 2023 - 3:42pm

Date Updated: March 16, 2023 - 6:35pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q01. Has the species (or cultivar or variety, if applicable) become naturalized where it is not native?

Issue Description

Has *S. artemisioides* naturalized anywhere else? - Jutta

Issue Resolution (Screener's Response to Issue)

i haven't read that it's naturalized anywhere else other than southern California and southern Arizona.

Issue ID # 8766

Date Created: February 7, 2023 - 3:32pm

Date Updated: March 16, 2023 - 6:36pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q01. Has the species (or cultivar or variety, if applicable) become naturalized where it is not native?

Issue Description

Rephrase to not imply that the Jepson Manual cultivated the plant and specify where exactly in Australia it is native to. - Jutta

Issue Resolution (Screener's Response to Issue)

suggested edit made.



Issue ID # 8765

Date Created: February 7, 2023 - 3:27pm

Date Updated: March 16, 2023 - 6:52pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Regional Information

Issue Description

Add web link to PRE climate match map for *S. artemisioides* and CA climate. -Jutta

Issue Resolution (Screener's Response to Issue)

added weblink to PRE climate match map for sp.

Issue ID # 8762

Date Created: February 7, 2023 - 3:10pm

Date Updated: March 16, 2023 - 7:18pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Plant Information

Issue Description



Remember that the summary should be a summary of the evaluation, not of the plant. Add summary information from the PRE questions so that they reader can get a sense of what the evaluation was based on. Note that this does not typically include reference to the exact score or final status because that can change. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

summary edited.



About PRE and this Plant Evaluation Report

The Plant Risk Evaluator (PRE) is an online database and platform designed to assess the risk of a plant becoming invasive in a given region. This tool offers many benefits, and we encourage you to visit the PRE website (<https://pretool.org>) for more information.

If you would like to learn more about PRE, please email us at info@plantright.org, requesting a PRE Account.

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