Plant Risk Evaluator -- PRE™
Evaluation Report

Searsia lancea -- Arizona

The University of Arizona

PRE Score: 15 -- Moderate Potential Risk
Confidence: 64 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: June 3, 2021

This PDF was created on February 19, 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

Searsia lancea

Image by Ron Vanderhoff

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Searsia lancea*) 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

Searsia lancea draws concern about potential invasiveness due to its agressive re-seeding in urban environments. Documented occurances outside of cultivation in Arizona have been limited to sites ajacent to the urban areas where it is cultivated. The plant can establish in areas without irrigation, but usually in washes or areas which collect water.

General Information

Status: Completed
Screener: Michael Chamberland
Evaluation Date: June 3, 2021

Plant Information

Plant: *Searsia lancea*

Regional Information

Region Name: Arizona

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

Answer / Justification:

Searsia (Rhus) lancea has been documented as naturalized in sites around Phoenix and Tucson, Arizona. Flora of the Papago Park Military Reservation [Phoenix, AZ] (Walters, 2021). Lists: Rhus lancea. Rhus lancea apparently colonized the study site (Desert Laboratory, Tumamoc Hill, Tucson, AZ) after 1983 (Bowers et. al 2006). The species has a moderate to high invasive potential in urban areas and surrounding riparian habitats. Basically, seedlings can germinate anywhere there is constant or seasonal sources of water (Martin, 2021). This commonly cultivated shade tree is quite invasive and can now be found growing wild in washes and along canyon streams in the deserts around Tucson (Kinsey, 2021). Online herbarium specimen records further clarify occurrences in the Phoenix and Tucson areas: Herbarium specimen: Locality: USA, Arizona, Maricopa, Cave Creek; 'Jewel of the Creek' at Spur Cross Ranch, Desert Foothills Land Trust; just upstream of where hiking trail crosses the creek; small ephemeral wash coming in from the east. 33.8917 -111.95214 WGS84 Elevation: 710 meters Verbatim (SEINet, 2021 2021. http//:swbiodiversity.org/index.php. Accessed on June 14) Herbarium specimen: Locality: United States, Arizona, Maricopa, N side of South Mountain Park, Phoenix 33.3555 -112.065 Verbatim Coordinates (SEINet, 2021 2021. http//:swbiodiversity.org/index.php. Accessed on June 14) Herbarium specimen: Locality: U.S.A., Arizona, Pima, Major drainage running parallel to Sweetwater Trail, Tucson Mountains, Saguaro National Park 32.2700572 -111.13383241 +-5m. NAD83 Elevation: 1040 meters Verbatim Elevation: 3400 ft. Habitat: Rocky bank of drainage Substrate: Gravelly soil Associated Species: Encelia farinosa Description: One small sapling, maybe 0.75 m. tall Reproductive Condition: Non-reproductive Notes: Likely introduced by a bird. Cultivated plants noted in adjacent neighborhood. (SEINet, 2021 2021. http//:swbiodiversity.org/index.php. Accessed on June 14) Searsia lancea is documented as naturalized in California. A catalogue of 315 non-native vascular plant taxa documented as occurring spontaneously in beyond those addressed in The Jepson Manual: Higher Plants of California is presented, compiled from new collections by the authors and others, previously existing herbarium formal publications, other printed reports, and direct communications with field botanists. Rhus lancea listed as Naturalization class N: naturalized (outside of wetlands). (Hrusa et. al. 2021). Searsia lancea is documented as naturalized in India. Negi & Hajra (2007) list Rhus lancea as an exotic of the Doon Valley. Searsia lancea is documented as naturalized in Australia, in far western New South Wales (WeedWise, NSW, 2018).

Reference(s):

- Martin, C. (2021). Phoenix Virtual Library - Trees, Searsia lancea (formerly Rhus lancea).
- Kinsey, B. (2021). Rhus lancea - African Sumac, Karee, Western Karee, Willow Rhus - Southeastern Arizona Wildflowers and Plants. Southeastern Arizona Wildflowers and Plants.
- Bowers, J., Bean T., & Turner R. (2006). Two decades of change in distribution of exotic plants at the Desert laboratory, Tucson, Arizona. Madroño. 53,
- Walters, G. M. (2021). Flora of the Papago Park Military Reservation: A Desert Remnant in Phoenix, Arizona. 9.
- SEInet (2016). SEINet - Arizona Chapter Home.
- Hrusa, F., Sanders A., & Dean E. (2021). CATALOGUE OF NON-NATIVE VASCULAR PLANTS OCCURRING SPONTANEOUSLY IN CALIFORNIA BEYOND THOSE ADDRESSED IN "THE JEPSON MANUAL"—PART I. 39.
- Negi, P. S., & Hajra P. K. (2007). Alien flora of Doon Valley, Northwest Himalaya. Current Science. 92, 968-978.
- Wells, M. J. (1986). A Catalogue of problem plants in southern Africa: incorporating the National weed list of southern Africa. Memoirs of the Botanical Survey of South Africa = Memoirs van die Botaniese Opname van Suid-Afrika. 53, 658.
- WeedWise, NSW. (2018). NSW WeedWise: Willow rhus (Searsia lancea).

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

Answer / Justification:

Searsia lancea has a wide distribution across southern Africa (Stern, 2008). There is a climate match between much of Arizona and a portion of South Africa, shown by GBIF. Searsia lancea is naturalized in the Sonoran Desert region of California; Coachella Valley, Palm Springs (Hrusa et al. 2002). There is a probable PRE combined match with the Doon Vally in northern India (Negi et al. 2007), as well as western New South Wales in Australia (WeedWise, NSW, 2018).

Reference(s):

- GBIF.org (2021). Searsia Lancea GBIF Map.
- Stern, M. (2008). Searsia lancea. South Africa National Biodiversity Institute - PlantZAfrica.
- Hrusa, F., Sanders A., & Dean E. (2021). CATALOGUE OF NON-NATIVE VASCULAR PLANTS OCCURRING SPONTANEOUSLY IN CALIFORNIA BEYOND THOSE ADDRESSED IN "THE JEPSON MANUAL"—PART I. 39.
- Negi, P. S., & Hajra P. K. (2007). Alien flora of Doon Valley, Northwest Himalaya. Current Science. 92, 968-978.
- WeedWise, NSW. (2018). NSW WeedWise: Willow rhus (Searsia lancea).

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

Answer / Justification:

This species generally occurs as a weed in wildland areas of the Southwestern Region [USA] rather than as an invasive plant. (USDA, 2021). The species is not listed in the Global Invasive Species Database website (GISD).

Reference(s):

- White, M. R. (2013). African Sumac - Field Guide of Invasive Plants and Weeds in the Southwestern Region. Invasive Plants and Weeds of the National Forests and Grasslands in the Southwestern Region.
- Invasive Species Specialist Group (2017). GISD.

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

Answer / Justification:

This species generally occurs as a weed in wildland areas of the Southwestern Region [USA] rather than as an invasive plant. (USDA, 2021). The species is not listed in the Global Invasive Species Database website (GISD).

Reference(s):

- White, M. R. (2013). African Sumac - Field Guide of Invasive Plants and Weeds in the Southwestern Region. Invasive Plants and Weeds of the National Forests and Grasslands in the Southwestern Region.
- Invasive Species Specialist Group (2017). GISD.

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

Answer / Justification:

Most of the species formerly belonging to the genus Rhus native to southern Africa have been placed in Searsia. In southern Africa there are about 111 species of Searsia (Stern, 2008). No Searsia or Rhus, other than S. lancea, are known to be naturalized in the USA (USDA Plants Database, 2021). The Global Compendium of Weeds lists no Searsia, but does list various Rhus species. Rhus transvalensis is listed, with reference to Wells (1986) but it is treated as an agricultural weed in its native Africa, which does not convey invasiveness. There is no evidence of other Searsia being invasive in a similar climate.

Reference(s):

- Stern, M. (2008). Searsia lancea. South Africa National Biodiversity Institute - PlantZAfrica.
- USDA Plants Database (2021). PLANTS Database - Plant List of Accepted Nomenclature, Taxonomy, and Symbols.
- Global Compendium of Weeds (GCW) (2007). Global Compendium of Weeds: species index.
- Wells, M. J. (1986). A Catalogue of problem plants in southern Africa: incorporating the National weed list of southern Africa. Memoirs of the Botanical Survey of South Africa = Memoirs van die Botaniese Opname van Suid-Afrika. 53, 658.

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

Answer / Justification:

Searsia lancea has a wider natural range in southern Africa than the PRE Combined map shows (GBIF, 2021). Most of the naturalized occurrences shown in GBIF correspond with regions in the PRE combined map, particularly southern Arizona and southern California. Although not shown in GBIF, the documented occurrence in Doon Valley in northern India (Negi et al. 2007) appears to match the PRE combined map. Also apparently matching the PRE combined map is the western part of New South Wales, Australia (WeedWise, NSW, 2018).

Reference(s):

- GBIF.org (2021). Searsia Lancea GBIF Map.
- Negi, P. S., & Hajra P. K. (2007). Alien flora of Doon Valley, Northwest Himalaya. Current Science. 92, 968-978.
- WeedWise, NSW. (2018). NSW WeedWise: Willow rhus (Searsia lancea).

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

Answer / Justification:

It can displace mesquites (AZNPS, 2021). In New South Wales it is outcompeting native plants (WeedWise, 2018).

Reference(s):

- AZNPS (2006). African Sumac -Invasive Plant!.
- WeedWise, NSW. (2018). NSW WeedWise: Willow rhus (Searsia lancea).

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

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

Answer / Justification:

Listed as a volatile woody fuel (Goldammer & de Ronde, 2004). Searsia lancea has been investigated as a combustible biomass resource, and is observed to ignite at low temperatures (in the range 220–250 °C) (Ndou et al. 2020). The species has the ability to resprout from the base (International Dendrology Society, 2021).

Reference(s):

- Goldammer, J. G., & de Ronde C. (2004). Wildland Fire Management Handbook for Sub-Sahara Africa. 433.
- NR, N., SO B., RMS F., & IM W. (2020). Co-combustion of Searsia lancea and Tamarix usneoides with high ash coal.. Fuel. 267(117282),
- Society, I. Dendrology (2021). Rhus lancea - Trees and Shrubs Online.

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

Answer / Justification:

The species is wind-pollinated and it is reported some people find African sumac to be a source of allergies due to the pollen from male flowers during desert winters (Martin, 2021). Abundant allergy-producing pollen (Steller, 2021). However there are no reports of these allergies being severe. Listed by (Wells, 1986) as having undesirable characteristics: contaminant: seed. But the seed is not reported as poisonous. The leaves and fruit are eaten by wild animals and livestock (Stern, 2008).

Reference(s):

- Martin, C. (2021). Phoenix Virtual Library - Trees, Searsia lancea (formerly Rhus lancea).
- Steller, T. (0). Tim Steller: I went out on an African sumac limb - and fell off.
- Wells, M. J. (1986). A Catalogue of problem plants in southern Africa: incorporating the National weed list of southern Africa. Memoirs of the Botanical Survey of South Africa = Memoirs van die Botaniese Opname van Suid-Afrika. 53, 658.
- Stern, M. (2008). Searsia lancea. South Africa National Biodiversity Institute - PlantZAfrica.

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

Answer / Justification:

Searsia lancea is suitable for use as a large hedge along the boundaries of properties such as farms because of its dense growth habit. The density of the plant makes it suitable for use as a screen or barrier against wind, noise, objectionable views or to provide privacy (Stern, 2008).

Reference(s):

- Stern, M. (2008). Searsia lancea. South Africa National Biodiversity Institute - PlantZAfrica.

Reproductive Strategies (Questions 11 - 17)

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

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

Answer / Justification:

It spreads by suckers (Breen, 2021). It can sucker from the roots (WeedWise, 2018). However, the suckering habit is not mentioned in publications from its native habitat in southern Africa.

Reference(s):

- Breen, P. (2021). Rhus lancea | Landscape Plants | Oregon State University. Oregon State University - Landscape Plants.
- WeedWise, NSW. (2018). NSW WeedWise: Willow rhus (Searsia lancea).

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

Answer / Justification:

No evidence of vegetative spread other than suckering from the base. The tree may be propagated easily from seed, cuttings or layers (Stern, 2008) but this discussion of propagation makes no mention of naturally detached fragments.

Reference(s):

- Stern, M. (2008). Searsia lancea. South Africa National Biodiversity Institute - PlantZAfrica.

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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:

Searsia lancea can be propagated easily from seed, cuttings or layers. The ripe seed should be sown in seedling trays using a good seedling medium and transplanted into bigger containers when the seedlings reach the two-leaf stage (SANBI, 2021) African sumac has a moderate to high invasive potential in urban areas and surrounding riparian habitats. Basically, seedlings can germinate anywhere there is constant or seasonal sources of water (Martin, 2021).

Reference(s):

- SANBI (0). Searsia lancea - PlantZAfrica.
- Martin, C. (2021). Phoenix Virtual Library - Trees, Searsia lancea (formerly Rhus lancea).

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

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

Answer / Justification:

HEAR evaluation (2021) considers Searsia a relatively prolific seed producer and sprouts from basal stems and roots...Dense infestations produce >1,000 viable seed per square meter [answered "No"]. The "NO" rating taken to mean HEAR suggests it does not produce >1,000 viable seeds. HEAR provides a source link, but the original data could not be found from the linked site. Considering a large tree comprises many square meters of branches, however, I believe this can still be answered Yes, with low confidence.

Reference(s):

- HEAR.org (2010). HEAR Searsia lancea risk assessment for Hawaii.

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

Answer / Justification:

Searsia lancea can be propagated easily from seed, cuttings or layers. The ripe seed should be sown in seedling trays using a good seedling medium and transplanted into bigger containers when the seedlings reach the two-leaf stage (SANBI, 2021) Basically, seedlings can germinate anywhere there is constant or seasonal sources of water (Martin, 2021).

Reference(s):

- Stern, M. (2008). Searsia lancea. South Africa National Biodiversity Institute - PlantZAfrica.
- Martin, C. (2021). Phoenix Virtual Library - Trees, Searsia lancea (formerly Rhus lancea).

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

Answer / Justification:

Growth rate is said to be fast when young, to 1m per year (Carr et al. 1986). Plants might have potential to reach flowering size in five years. Plants are dioecious, which could have relevance (White, 2013).

Reference(s):

- Carr, M. E., Mason, Jr. C. T., & Bagby M. O. (1986). Renewable resources from Arizona trees and shrubs. Forest Ecology and Management. 16(1-4), 155-167.
- White, P.D. Mitchell R. (2013). Invasive Plants and Weeds of the National Forests and Grasslands in the Southwestern Region.

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

Answer / Justification:

Flowers June to September; dioecious; female plants bear small (less than 1/8 inch long), greenish-white flowers in panicles; open panicles 3/4 to 3-1/2 inches long (shorter than the leaves) (USDA, 2021).

Reference(s):

- White, M. R. (2013). African Sumac - Field Guide of Invasive Plants and Weeds in the Southwestern Region. Invasive Plants and Weeds of the National Forests and Grasslands in the Southwestern Region.

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

Answer / Justification:

The fruit is eaten by birds (Stern, 2008), which would have the potential to spread seeds over 100 m from the source.

Reference(s):

- Stern, M. (2008). Searsia lancea. South Africa National Biodiversity Institute - PlantZAfrica.

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

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

Answer / Justification:

The karee occurs naturally in Acacia woodland and along drainage lines, rivers and streams (Stern, 2008). Searsia lancea is most noticeable in arid areas near water although it roots do no not penetrate as deep. It therefore grows closer to water (Becking, 2021). Although proximity to water might facilitate the dispersal of seeds, the fruit is described as a small one-seeded drupe (Becking 2021) with no obvious adaptations for water dispersal.

Reference(s):

- Stern, M. (2008). Searsia lancea. South Africa National Biodiversity Institute - PlantZAfrica.
- Becking, D. (2021). Searsia lancea - Tree SA.

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

Answer / Justification:

Listed by (Wells, 1986) as having undesirable characteristics: contaminant: seed. However no context is stated. Fruit: Small (up to 3/16 inch diameter), round, slightly flattened yellow or red wrinkled drupes grow in clusters; fruit contains small black seeds (USDA, 2021). The fruit and seed have no obvious structures for mechanical dispersal (Becking, 2021).

Reference(s):

- Wells, M. J. (1986). A Catalogue of problem plants in southern Africa: incorporating the National weed list of southern Africa. Memoirs of the Botanical Survey of South Africa = Memoirs van die Botaniese Opname van Suid-Afrika. 53, 658.
- White, M. R. (2013). African Sumac - Field Guide of Invasive Plants and Weeds in the Southwestern Region. Invasive Plants and Weeds of the National Forests and Grasslands in the Southwestern Region.
- Becking, D. (2021). Searsia lancea - Tree SA.

Evaluation Notes

Difficult to say if plant produces "copious amounts of seeds." This plant can become a large tree and may possibly do this at large size, but might not when smaller.

Plant's seeds may move with water as the tree can occur along waterways. Perhaps not likely to transport long distance as desert waterways characteristic of this area are ephemeral with limited flow, but also subject to periodic flash-floods.

Total PRE Score

PRE Score: 15 -- Moderate Potential Risk
Confidence: 64 / 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: The University of Arizona
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:

• Rebecca Senior	September 27, 2021
• Lynn Sweet	August 26, 2021
• Ron Vanderhoff	August 25, 2021

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 # 7117

Date Created: September 27, 2021 - 3:31pm
Date Updated: April 27, 2022 - 8:26pm

Submitted by: Rebecca Senior

Status: Fixed
Type: Comment
Severity: Minor
Scope: Q13. Does the species (or cultivar or variety) commonly produce viable seed?

Issue Description

Comment for future use of Very High confidence level or High -- not sure if the two sources for this question rise to the Very High designation. Bit of a technicality as you are a highly credible expert on recognizing this species seedling form and live in a location where Sersia lancea seedlings are commonly seen, so more a comment on using the PRE guideline for three of the confidence levels. See below from the PRE help area.

- VERY HIGH = Highly credible evidence; reviewed scientific publications
- HIGH = Other published material (reports or other non-peer-reviewed documents)
- MEDIUM = Observational (unpublished information confirmed by a professional in the field); inferences

Issue Resolution (Screener's Response to Issue)

I will adjust this to High. I feel by experience it warrants Very High, but the literature support may not be there. - Michael Chamberland

Issue ID # 6944

Date Created: August 26, 2021 - 5:52pm
Date Updated: April 27, 2022 - 8:25pm

Submitted by: Lynn Sweet

Status: Fixed
Type: Comment
Severity: Minor
Scope: Q14. Does this plant produce copious viable seeds each year (>1000)?

Issue Description

The cutoff in PIER is per square meter, where here it is per organism, and as you say, their answer is not supported with documention. I believe this should be a yes but I see that would require additional support- it is a large tree, and there are reports of heavy fruiting or abundant seeds, which together could support a yes. As well, an evaluator may refer to images of mature plants in fruit to help support the answer (iNaturalist or others). I am making this minor since I'm not fully convinced we have adequate evidence, but I don't think it is a "no."

Guidance: "...However, when the data is not available or when only qualitative production of seeds are mentioned (e.g., prolific seed producer), then the screener may make a judgment based on biological characteristics. For example, if the average mature plant size is known, and the seed production/unit area is known, this may be inferred."

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

I have changed to Yes. The "NO" rating taken to mean HEAR suggests it does not produce >1,000 viable seeds. HEAR provides a source link, but the original data could not be found from the linked site. Considering a large tree comprises many square meters of branches, however, I believe this can still be answered Yes, with low confidence. - Michael Chamberland

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Issue ID # 6943

Date Created: August 26, 2021 - 5:43pm
Date Updated: April 27, 2022 - 8:08pm

Submitted by: Lynn Sweet

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

Issue Description

I believe that based on this volatile woody fuel information plus the life history of resprouting this should probably be a Yes but this seems to be a discussion point. Another evaluator quoted more information from the same source (Goldammer) that makes me lean this way. -Lynn Sweet

Issue Resolution (Screener's Response to Issue)

I have adjusted to Yes. - Michael Chamberland

Issue ID # 6908

Date Created: August 23, 2021 - 6:49pm
Date Updated: April 27, 2022 - 8:28pm

Submitted by: Ron Vanderhoff

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q19. Are the plant’s propagules frequently dispersed long distance (>100 m) by wind or water?

Issue Description

I did find some reference to likely water dispersal:

From an Arizona source: ". . . It is also spreading naturally through the action of birds, since seedlings are observed under nest or perching sites, and establishing without human action along stream channels. For example, it has been found several miles from residential areas along Skunk Creek in Maricopa County and is observed to be moving along washes in Pima County" (a PIER Assessment quoting an Arizona source, but with no other documentation).

The fruit morphology of Searsia does support buoyancy in water and the fruit is indehiscent with a fleshy

mesocarp, which almost guarantees buoyancy (Vukeya). I did my own buoyancy test a couple of weeks ago and found the fruits strongly buoyant (after 24 hours all fruit were still well above the water line).

[Anonymous] (0). PIER Risk Assessment: Searsia lancea.

Vukeya, L. R. (2021). Interspecific competition in germination of bird-dispersed seeds in a habitat with sparse tree vegetation in South Africa.

Ron Vanderhoff

Issue Resolution (Screener's Response to Issue)

Good to know, this could be an area for a simple study to publish. - Michael Chamberland

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Issue ID # 6907

Date Created: August 23, 2021 - 6:11pm
Date Updated: April 27, 2022 - 8:16pm

Submitted by: Ron Vanderhoff

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

Issue Description

I am not sure this dense/thicket habit occurs in natural stnds of the species. I think this quote is referring only to planted examples. The only references I was able to locate stated margins waes, rivercourses and espcially savannahs, all of which seems unlike impenetrable thickets". My references on this were:

Ebedes, G. (0). Plantbook: Searsia lancea

[Anonymous] (2018). Witkoppen Wildflower

SANBI (0). Searsia lancea - PlantZAfrica

If you agree, then this might become a YES score.

Ron Vanderhoff

Ron Vanderhoff

Issue Resolution (Screener's Response to Issue)

I will adjust the confidence to Low but keep it a yes. I believe the planted origin of the placement is irrelevant as the plant self-seeds abundantly and will achieve the same effect, however I don't have a reference specifically making this point. -Michael Chamberland

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Issue ID # 6902

Date Created: August 21, 2021 - 9:25pm
Date Updated: April 27, 2022 - 8:09pm

Submitted by: Ron Vanderhoff

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

Issue Description

I found the following "One reference from its native South Africa states "In contrast, many woody fuels are also volatile fuels high in fats, resins and volatile oils, which often produce enough firebrands to create great danger of igniting fuels a distance ahead of the fire. Examples of volatile woody fuels are Euclea crispa, Rhus lancea and Vitex rehmannii" (Goldammer, 2004). The species propensity to root sprout likely demonstrates a high adaptation to fire, although I can find no documentation of this." (Goldammer, J. G., & de Ronde C. (2004). Wildland Fire Management Handbook for Sub-Sahara Africa. 433.).

I was a little confused, because in the body of your answer you quoted some fuel references and an adaptation to fire, yet still answered it as a "No". Perhaps with this reference and yours it should be moved to a Yes, with a only a Medium or low confidence. Ron Vanderhoff

Issue Resolution (Screener's Response to Issue)

I have adjusted to Yes. - Michael Chamberland

Issue ID # 6901

Date Created: August 21, 2021 - 9:14pm
Date Updated: April 27, 2022 - 8:06pm

Submitted by: Ron Vanderhoff

Status: Fixed
Type: Comment
Severity: Minor
Scope: Q05. Are other species of the same genus invasive in a similar climate?

Issue Description

Well answered. Rhus typhina is well documented as an invasive elsewhere in the U.S., but not in a climate match to any Arizona portions. Ron Vanderhoff

Issue Resolution (Screener's Response to Issue)

Searsia lancea is part of the genus Searsia which has been separated from Rhus. Searsia lancea appears to be the only Searsia widely cultivated or escaped in North America. I think North American Rhus need not be involved with comparisons with Searsia lancea as these are now a different genus from a different continent. - Michael Chamberland

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Issue ID # 6730

Date Created: July 12, 2021 - 5:15pm
Date Updated: July 24, 2021 - 7:33pm

Submitted by: Jutta Burger

Status: Fixed
Type: Comment
Severity: Minor
Scope: Evaluation as a whole

Issue Description

Why does Wells describe seed as an undesirable contaminant? - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Unknown.

Issue ID # 6729

Date Created: July 12, 2021 - 5:14pm
Date Updated: July 24, 2021 - 7:31pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q19. Are the plant’s propagules frequently dispersed long distance (>100 m) by wind or water?

Issue Description

Expand on why growing close to water might (or might not) facilitate dispersal. Any evidence of fruits floating? Again some description of fruit/seed would be helpful. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Although proximity to
water might facilitate the dispersal of seeds, the fruit is described as a small one-seeded drupe (Becking 2021) with no obvious adaptations for water dispersal.

Issue ID # 6728

Date Created: July 12, 2021 - 5:13pm
Date Updated: July 24, 2021 - 1:31pm

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

If seeds are reported to be eaten and spread by birds, then this would be better off as a "yes" with only moderate confidence. Provide description of whether fruit is fleshy or seed is large. Herbarium records are not a strong way to test long distance dispersal. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Given a Yes score assuming bird consumption will defacto result in dispersal >100m.

Issue ID # 6727

Date Created: July 12, 2021 - 5:12pm
Date Updated: July 24, 2021 - 1:13pm

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

Provide botanical reference. Check anecdotal references about reaching maturity quickly. Check source: Carr, M. E., C. T Mason Jr., and M. O. Bagby. 1986. Renewable Resources from Arizona Trees and Shrubs. Forest Ecology and Management, 16: 155-167. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Growth rate is said to be fast when young, to 1m per year (Carr, 1986). Plants might have potential to reach flowering
size in five years (given low confidence). Plants are dioecious, which could have relevance (White, 2013).

Issue ID # 6726

Date Created: July 12, 2021 - 5:10pm
Date Updated: July 24, 2021 - 7:29pm

Submitted by: Jutta Burger

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

Add reference. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

No evidence of vegetative spread other than suckering from the base. The tree may be propagated easily from seed, cuttings or layers (Stern, 2008) but this discussion of propagation makes no mention of naturally detached fragments.

Issue ID # 6725

Date Created: July 12, 2021 - 5:08pm
Date Updated: July 24, 2021 - 7:28pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

Issue Description

It is helpful to know that the species is used as a screen/hedge, but is there evidence of the species producing inpenetrable thickets in the wild? - Jutta Burger

Issue Resolution (Screener's Response to Issue)

The report of dense growth and screening comes from Africa, where animals of a certain nature do not regard thickets as impenetrable. The impenetrability can be expected to be more pronounced for smaller animals in introduced sites.

Issue ID # 6724

Date Created: July 12, 2021 - 5:06pm
Date Updated: July 24, 2021 - 1:09pm

Submitted by: Jutta Burger

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

Consider reports that it is a good forage plant (PlantZAfrica), that it is not listed as poisonous, and that allergic reaction to pollen is not universal. Wells reference not relevant here unless implication is that the seeds are poisonous. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Added refrence to the edible nature of leaves and fruit for animals. De-emphaiszed allergy reports which appear anecdotal and not supported by medical reports.

Issue ID # 6723

Date Created: July 12, 2021 - 5:05pm
Date Updated: July 24, 2021 - 1:06pm

Submitted by: Jutta Burger

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

Issue Description

Check Goldammer, J. G., & de Ronde C. (2004). Wildland Fire Management Handbook for Sub-Sahara Africa. 433. Check NR, N., SO B., RMS F., & IM W. (2020). Co-combustion of Searsia lancea and Tamarix usneoides with high ash coal.. Fuel. 267(117282), - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Added reference to volatile woody fuel (Goldammer & de Ronde, 2004) and evidence of ignition at low temperatures (in the range 220–250 °C)
(Ndou et al. 2020).

Issue ID # 6722

Date Created: July 12, 2021 - 5:04pm
Date Updated: July 24, 2021 - 6:56pm

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

Check and then reference GBIF here. You will also want to list other areas that it has naturalized that match AZ climate (CA, NZ - compare climate match map to GBIF map). Also, you can only have a "very high" confidence w peer reviewed references. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

GBIF has been referenced. Other geographic areas listed. Confidence adjusted to High.

Issue ID # 6721

Date Created: July 12, 2021 - 5:01pm
Date Updated: July 24, 2021 - 5:37pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q05. Are other species of the same genus invasive in a similar climate?

Issue Description

Again add a reference. Note that the question also asks about a similar climate. Here you can check in to the Global Weed Compendium. It lists Rhus tiphina as invasive in some areas. Not sure this would be relevant. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

This species generally occurs as a weed in wildland areas of the Southwestern Region [USA] rather than as an invasive plant. (USDA, 2021). The species is not listed in the Global Invasive Species Database website (GISD).

Issue ID # 6720

Date Created: July 12, 2021 - 4:59pm
Date Updated: July 24, 2021 - 5:30pm

Submitted by: Jutta Burger

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 at least one reference documenting that (and where) you looked (can use those from Q3 since no data worldwide also by definition means no data to date for same climate). Also downweight confidence to "medium" because of lack of information. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

This species generally occurs as a weed in wildland areas of the Southwestern Region [USA] rather than as an invasive plant. (USDA, 2021). The species is not listed in the Global Invasive Species Database website (GISD). Adjusted to Medium confidence.

Issue ID # 6719

Date Created: July 12, 2021 - 4:57pm
Date Updated: July 24, 2021 - 5:28pm

Submitted by: Jutta Burger

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 mention of and references for negative data worldwide, such as that it is not listed in the Global invasive species database (http://www.iucngisd.org/gisd/). Change confidence from "high" to "medium"? - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Negative data statements added: This species generally occurs as a weed in wildland areas of the Southwestern Region [USA] rather than
as an invasive plant. (USDA, 2021). The species is not listed in the Global Invasive Species Database website (GISD).

Issue ID # 6718

Date Created: July 12, 2021 - 4:56pm

Date Updated: July 24, 2021 - 1:32pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Major
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

Rephrase a little to tie together climate similarity and occurrence, add a reference. Include reference as to where else it has naturalized that has similar climate (e.g., CA). - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Searsia lancea has a wide distribution across southern Africa (Stern, 2008). There is a climate match between much of Arizona and a portion of South Africa, shown by GBIF. Searsia lancea is naturalized in the Sonoran Desert region of California; Coachella Valley, Palm Springs (Hrusa et al. 2002). There is a probable PRE combined match with the Doon Vally in northern India (Negi et al. 2007), as well as western New South Wales in Australia (WeedWise, NSW, 2018).

Issue ID # 6717

Date Created: July 12, 2021 - 4:54pm
Date Updated: July 24, 2021 - 1:33pm

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

You have a lot of solid references for this question. Confidence should be "very high" (check definition of

confidence rankings) since you have at least 2 pier-revieved pubs referenced. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Confidence changed to "Very High."

Issue ID # 6716

Date Created: July 12, 2021 - 4:51pm
Date Updated: July 24, 2021 - 7:34pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Evaluation as a whole

Issue Description

Eliminate 1st sentence if it does not have a direct literature reference or specifically state that the species is listed as having "…." by [Source]. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

I have rephrased some material.

Issue ID # 6715

Date Created: July 12, 2021 - 4:49pm
Date Updated: July 24, 2021 - 7:32pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: General Information

Issue Description

Several references do not have dates. Can you go back and add them (under publication date) in the Source section? I updated Scott & Panetta. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Dates have been fixed.

Issue ID # 6714

Date Created: July 12, 2021 - 4:48pm
Date Updated: July 24, 2021 - 7:33pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: General Information

Issue Description

Several references do not have dates. Can you go back and add them (under publication date) in the Source section? I updated Scott & Panetta. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Dates have been fixed.

Issue ID # 6622

Date Created: July 11, 2021 - 9:29pm
Date Updated: July 24, 2021 - 7:32pm

Submitted by: Lynn Sweet

Status: Fixed
Type: Comment
Severity: Minor
Scope: Q20. Are the plant’s propagules frequently dispersed via contaminated seed, equipment, vehicles, boats or clothing/shoes?

Issue Description

This was not found by other evaluators, I wonder what the context was for Wells.

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

No greater details from Wells.

Issue ID # 6621

Date Created: July 11, 2021 - 9:29pm
Date Updated: July 24, 2021 - 7:32pm

Submitted by: Lynn Sweet

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q19. Are the plant’s propagules frequently dispersed long distance (>100 m) by wind or water?

Issue Description

From guidance, you are on to something but be as specific as you can: "For water movement, plants that have buoyant seeds structures (e.g., corky appendage, wings, porous tissues) or plants that grow in close

proximity to water would likely disperse long distance by this means. Answer no if there is no evidence that propagules are dispersed by wind or water, or if the growth form, biology, ecology or habit make this type of dispersal unlikely (e.g., hard heavy seed that sink in water, and with no morphological adaptation"

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

Although proximity to
water might facilitate the dispersal of seeds, the fruit is described as a small one-seeded drupe (Becking 2021) with no obvious adaptations for water dispersal.

Issue ID # 6620

Date Created: July 11, 2021 - 9:28pm
Date Updated: July 24, 2021 - 1:31pm

Submitted by: Lynn Sweet

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

Yes, we have to assume that flying birds are going to disperse them >100m, so "yes" if this is indicated.

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

Given a Yes score assuming bird consumption will defacto result in dispersal >100m.

Issue ID # 6619

Date Created: July 11, 2021 - 9:28pm
Date Updated: July 24, 2021 - 7:30pm

Submitted by: Lynn Sweet

Status: Fixed
Type: Comment
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

Dioecy could be relevant, keep it, but perennials range widely, even trees.

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

Mention of dioecy added.

Issue ID # 6618

Date Created: July 11, 2021 - 9:27pm
Date Updated: July 24, 2021 - 1:11pm

Submitted by: Lynn Sweet

Status: Fixed
Type: Suggestion
Severity: Major
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

Focus here is on *detached* fragments that promote spread away from the plant. Very subtle difference.

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

No evidence of vegetative spread other than suckering from the base. The tree may be propagated easily from seed, cuttings or layers (Stern, 2008) but this discussion of propagation makes no mention of naturally detached fragments.

Issue ID # 6617

Date Created: July 11, 2021 - 9:26pm
Date Updated: July 24, 2021 - 1:10pm

Submitted by: Lynn Sweet

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

This would need to be a significant health hazard to qualify. Think urgent care/doc for most.

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

De-emphasized anecdotal allergy reports which are not backed by medical evidence of severity or widespread effect.

Issue ID # 6616

Date Created: July 11, 2021 - 9:26pm
Date Updated: July 24, 2021 - 7:16pm

Submitted by: Lynn Sweet

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

Issue Description

Life history of resprouting may be evidence of adaptation.

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

Added reference to resprouting ability.

Issue ID # 6615

Date Created: July 11, 2021 - 9:25pm
Date Updated: July 24, 2021 - 6:55pm

Submitted by: Lynn Sweet

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q06. Is the species found predominately in a climate matching the region of concern?

Issue Description

Others also relied on Australian occurrences as well as the native South Africa.

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

I found and added an Australian record.

Issue ID # 6614

Date Created: July 11, 2021 - 9:24pm
Date Updated: July 24, 2021 - 6:54pm

Submitted by: Lynn Sweet

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q05. Are other species of the same genus invasive in a similar climate?

Issue Description

Add mention to "or a similar climate such as…" to fully answer the question.

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

Phrasing refering to similar climates has been added.

Issue ID # 6613

Date Created: July 11, 2021 - 9:22pm
Date Updated: July 24, 2021 - 1:34pm

Submitted by: Lynn Sweet

Status: Fixed
Type: Comment
Severity: Minor

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

Issue Description

This is incredibly thorough information! Know that most folks are a bit more general, noting the regions of the world where naturalized, and save the very detailed information for where necessary. That said, cool info!

-Lynn Sweet

Issue Resolution (Screener's Response to Issue)

Added references to Doon Valley and New South Wales.

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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