Plant Risk Evaluator -- PRE™
Evaluation Report

Acacia longifolia -- California

PlantRight

PRE Score: 18 -- High Potential Risk
Confidence: 75 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Submitted

Evaluation Date: January 1, 2020

This PDF was created on March 04, 2024

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

Acacia longifolia

Image by Scott Loarie

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Acacia longifolia*) 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

Acacia longifolia (Sydney golden wattle) is a plant native to eastern Australia that has become invasive in several areas worldwide, including California. The plant is a shrubby tree that can form thickets that may be problematic. Though the seeds are not adapted for long-distance dispersal, they are plentiful and have some dormancy that allows the plant to form massive seedbanks, making long-term control difficult unless early eradication is possible.

General Information

Status: Submitted
Screener: Lynn Sweet
Evaluation Date: January 1, 2020

Plant Information

Plant: *Acacia longifolia*

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

Answer / Justification:

Yes, the species has naturalized in South Africa, Australia (Western Australia), New Zealand, Europe (France), the southwestern US, and South America (Brazil, Argentina, Uruguay). [USDA GRIN]

Reference(s):

- U.S. National Plant Germplasm Network (0). Taxonomy - GRIN-Global Web v 1.9.8.2.

---

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:

The following areas where the species has naturalized are similar to the climate of the focal area (California, USA): USA (California), South Africa, Southern Europe (Spain, Portugal, southern France, Italy), Western Australia (disjunct from native range). (GBIF) The following areas where the species has naturalized are dissimilar in climate: New Zealand (North Island), South America (east coast of Argentina, Uruguay, Colombia)

Reference(s):

- GBIF (2019). Acacia longifolia.

---

3. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

- 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:

The species has "become invasive in other parts of Australia (Victoria, New South Wales), in New Zealand, South Africa, Spain, Portugal and Brazil." (Global Invasive Species Database) Several published scientific papers list the species as invasive. (Marchant et al. 2008, Rodríguez-Echeverría et al. 2009)

Reference(s):

- Rodríguez-Echeverría, S., Crisóstomo J. A., Nabais C., & Freitas H. (2009). Belowground mutualists and the invasive ability of Acacia longifolia in coastal dunes of Portugal. Biological Invasions. 11(3),
- Marchante, E., Kjøller A., Struwe S., & Freitas H. (2008). Short- and long-term impacts of Acacia longifolia invasion on the belowground processes of a Mediterranean coastal dune ecosystem. Applied Soil Ecology. 40(2),
- Global Invasive Species Database, Invasive Species Specialist Group, Global Invasive Species Programme (GISP) (2006). Global Invasive Species Database.

---

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

- Answer: **Yes**, which contributes **3** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

The species has "become invasive in other parts of Australia (Victoria, New South Wales), in New Zealand, South Africa, Spain, Portugal and Brazil." Areas in Australia (New South Wales), South Africa, Spain and Portugal are similar in climate to the focal area. (Global Invasive Species Database) Several published scientific papers list the species as invasive in the Mediterranean in areas that are similar in climate. (Marchant et al. 2008, Rodríguez-Echeverría et al. 2009)

Reference(s):

- Global Invasive Species Database, Invasive Species Specialist Group, Global Invasive Species Programme (GISP) (2006). Global Invasive Species Database.
- Rodríguez-Echeverría, S., Crisóstomo J. A., Nabais C., & Freitas H. (2009). Belowground mutualists and the invasive ability of Acacia longifolia in coastal dunes of Portugal. Biological Invasions. 11(3),
- Marchante, E., Kjøller A., Struwe S., & Freitas H. (2008). Short- and long-term impacts of Acacia longifolia invasion on the belowground processes of a Mediterranean coastal dune ecosystem. Applied Soil Ecology. 40(2),

---

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

Answer / Justification:

Acacia paradoxica is on the California noxious weed list (CDFA) 3 other Acacias are on the California Invasive Plant Council Inventory as of this writing (January 2020) (Cal-IPC, 2020)

Reference(s):

- CDFA (0). CDFA's Division of Plant Health's Pest Ratings and Proposals.
- Cal-IPC (0). California Invasive Plant Inventory.

---

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

Answer / Justification:

The following areas where the species occurs are similar to the climate of the focal area (California, USA) and make up more than 50% of the range: USA (California), South Africa, Southern Europe (Spain, Portugal, southern France, Italy), most of the Southeastern Australia (native range), central Australia, Western Australia (disjunct from native range), a small area in central Japan. (GBIF) The following areas where the species has naturalized are dissimilar in climate: New Zealand (North Island), South America (east coast of Argentina, Uruguay, Colombia),

Reference(s):

- USDA, ARS (2016). Germplasm Resources Information Network (GRIN).
- GBIF (2019). Acacia longifolia.

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

Answer / Justification:

Noted as one of the most aggressive invasive species in dunes in Portugal, causing significant ecological impacts (Marchante et al. 2008). The species was also noted changing the native species composition in Portugal, shading out native species (Marchante et al. 2003).

Reference(s):

- Marchante, E., Kjøller A., Struwe S., & Freitas H. (2008). Short- and long-term impacts of Acacia longifolia invasion on the belowground processes of a Mediterranean coastal dune ecosystem. Applied Soil Ecology. 40(2),
- Marchante, H., Marchante E., & Freitas H. (2003). Invasion of the Portuguese dune ecosystems by the exotic species Acacia longifolia (Andrews) Willd.: effects at the community level. Child, L.E., Brock, J.H., Brundu, G., Prach, K., Pys?ek, P., Wade, P.M., Williamson, M. (Eds.), Plant Invasion: Ecological Threats and Management Solutions. 75–85.

---

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:

Noted as being invasive and "often associated to fire events" in Portugal (Marchante et al. 2008). The seeds are stimulated by fire (Marchante et al. 2003). "In terms of changes in fire regimes, the presence of A. longifolia (especially thickets) increases the risk and intensity of fires." (Global Invasive Species Database)

Reference(s):

- Marchante, H., Marchante E., & Freitas H. (2003). Invasion of the Portuguese dune ecosystems by the exotic species Acacia longifolia (Andrews) Willd.: effects at the community level. Child, L.E., Brock, J.H., Brundu, G., Prach, K., Pys?ek, P., Wade, P.M., Williamson, M. (Eds.), Plant Invasion: Ecological Threats and Management Solutions. 75–85.
- Marchante, E., Kjøller A., Struwe S., & Freitas H. (2008). Short- and long-term impacts of Acacia longifolia invasion on the belowground processes of a Mediterranean coastal dune ecosystem. Applied Soil Ecology. 40(2),
- Global Invasive Species Database, Invasive Species Specialist Group, Global Invasive Species Programme (GISP) (2006). Global Invasive Species Database.

---

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

Answer / Justification:

Toxicity listed as none [USDA Plants Conservation Plant Characteristics]. No significant information found on the FDA poisonous plants database. Not listed in the Canadian Poisonous Plants Information System - Canadian Biodiversity Information Facility (CBIF).

Reference(s):

- United States Department of Agriculture (2017). Conservation Plant Characteristics for ScientificName (CommonName) - USDA PLANTS.
- Canadian Biodiversity Information Facility. (0). Canadian Poisonous Plant Information System..

---

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

Answer / Justification:

Plants grow fairly wide (San Marcos Growers). The species is noted to form thickets, growing wide on many stems (Global Invasive Species Database).

Reference(s):

- Global Invasive Species Database, Invasive Species Specialist Group, Global Invasive Species Programme (GISP) (2006). Global Invasive Species Database.
- San Marcos Growers (0). San Marcos Growers.

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

Answer / Justification:

No mention of reproducing vegetatively despite a lot of information about formation of thickets. All sources indicate reproduction by seed.

Reference(s):

- Global Invasive Species Database, Invasive Species Specialist Group, Global Invasive Species Programme (GISP) (2006). Global Invasive Species Database.

---

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

Answer / Justification:

No information found to indicate this. The species could fragment, but it is not documented as a common reproductive method.

Reference(s):

- [Anonymous] .

---

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

Answer / Justification:

Indicated that the species may be propagated by seed [USDA Plants Conservation Plant Characteristics] Kew indicates that 50 year old seed is 12% viable [Kew Seed Information Database]

Reference(s):

- United States Department of Agriculture (2017). Conservation Plant Characteristics for ScientificName (CommonName) - USDA PLANTS.
- Kew Botanic Garden (0). Kew Seed Information Database.

---

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

Answer / Justification:

Fruit/seed listed as copious (USDA Plants Conservation Plant Characteristics) "Acacia longifolia produces large quantities of seeds annually (up to 11,500 per tree), which are thought to be viable for 50 years. In Portugal often more than 90% of the seeds are viable (E. Marchante, pers. comm.)." (Global Invasive Species Database). "Acacia longifolia plants in long?invaded and recently invaded areas produced similar amounts of seeds (average under the canopy, 12000 seeds · m–2) each season..." (Marchante et al. 2010)

Reference(s):

- United States Department of Agriculture (2017). Conservation Plant Characteristics for ScientificName (CommonName) - USDA PLANTS.
- Global Invasive Species Database, Invasive Species Specialist Group, Global Invasive Species Programme (GISP) (2006). Global Invasive Species Database.
- Marchante, H., Freitas H., & Hoffmann J. H. (2010). Seed ecology of an invasive alien species, Acacia longifolia (Fabaceae), in Portuguese dune ecosystems. American Journal of Botany. 97, 1780-1790.

---

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

Answer / Justification:

Some informal information indicating very high germination in the field in Portugal. (GISD) Some research indicating high viability (95%), but some dormancy. This research also indicates that the species is fire sensitive as opposed to requiring fire (Auld & O'Connell 1991).

Reference(s):

- Auld, T. D., & O'Connell M. A. (1991). Predicting patterns of post?fire germination in 35 eastern Australian Fabaceae. Australian Journal of Ecology. 16(1),
- Global Invasive Species Database, Invasive Species Specialist Group, Global Invasive Species Programme (GISP) (2006). Global Invasive Species Database.

---

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

Answer / Justification:

The trees reach sexual maturity at 2-3 years. (Global Invasive Species Database)

Reference(s):

- Global Invasive Species Database, Invasive Species Specialist Group, Global Invasive Species Programme (GISP) (2006). Global Invasive Species Database.

---

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

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

Answer / Justification:

Calflora lists flowering for 3 months in the summer. [Calflora]

Reference(s):

- Calflora (0). Calflora: Information on California plants for education, research and conservation, with data contributed by public and private institutions and individuals, including the Consortium of California Herbaria.

Dispersal (Questions 18 - 20)

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

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

Answer / Justification:

Published study of the species in Portugal indicates that the seed has a hard seed coat, ants may disperse the seeds only short distances and that most seeds fall within a short distance of the parent plant.

Reference(s):

- Marchante, H., Freitas H., & Hoffmann J. H. (2010). Seed ecology of an invasive alien species, Acacia longifolia (Fabaceae), in Portuguese dune ecosystems. American Journal of Botany. 97, 1780-1790.

---

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

Answer / Justification:

No adaptation for this type of dispersal listed. In fact, published literature indicates the formation of a very dense, localized and persistent seed bank by the hard-coated seeds.

Reference(s):

- Marchante, H., Freitas H., & Hoffmann J. H. (2010). Seed ecology of an invasive alien species, Acacia longifolia (Fabaceae), in Portuguese dune ecosystems. American Journal of Botany. 97, 1780-1790.

---

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

Answer / Justification:

No evidence of special mechanism for dispersal this way. Not commonly a contaminant.

Reference(s):

- Marchante, H., Freitas H., & Hoffmann J. H. (2010). Seed ecology of an invasive alien species, Acacia longifolia (Fabaceae), in Portuguese dune ecosystems. American Journal of Botany. 97, 1780-1790.

Total PRE Score

PRE Score: 18 -- High Potential Risk
Confidence: 75 / 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: PlantRight
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:

This evaluation does not have any reviewers.

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.

There are currently no issues associated with this evaluation.

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.

PRE beta funding was provided by Sustainable Conservation (https://www.suscon.org/) and a USDA Farm Bill grant. Additional funding has been provided by the Western Integrated Pest Management Center.