Plant Risk Evaluator -- PRE™
Evaluation Report

Washingtonia robusta -- Nevada

2023-2024 Western IPM Project

PRE Score: 16 -- High Potential Risk
Confidence: 87 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: June 3, 2024

This PDF was created on April 01, 2025

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Plant Evaluated

Washingtonia robusta

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Washingtonia robusta*) 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

Washingtonia robusta, or the Mexican fan palm, is a species of palm tree native to semi-arid parts of northwest Mexico that is valued as an ornamental for its striking height (up to greater than 30m) and ease of growing in landscaped areas. Its unique qualities have resulted in it becoming a popular ornamental plant in many parts of the world, where it has subsequently escaped cultivation and occasionally naturalized in riparian areas and landscaping-adjacent disturbed sites. Naturalized populations can now be found in a number of countries, including the US (California, Arizona, Nevada, Hawaii), Australia, New Zealand, and likely many places elsewhere. Washingtonia robusta is currently considered invasive in California, Hawaii, and Florida. This palm has the capacity to produce huge amounts (upwards of 600,000) of fleshy fruits per year, which are sweet, nutritious, and readily dispersed long distances by vertebrates, including coyotes, foxes, and birds. However, records of naturalized individuals are rarely found in a climate matching Nevada, likely due to the need for permanently wet soils. This species cannot reproduce vegetatively, and seedlings can be easily controlled by hand-pulling. This palm grows rapidly and produces copious seeds that germinate readily under the right conditions, is very popular as an ornamental in arid areas such as Nevada, and is frequently dispersed long distances by animals due to the nutritious, highly sought-after fruits, which results in Washingtonia robusta receiving a "High" risk score of 16.

General Information

Status: Completed
Screener: Scott Heacox
Evaluation Date: June 3, 2024

Plant Information

Plant: *Washingtonia robusta*

Regional Information

Region Name: Nevada

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:

Washingtonia robusta (Mexican fan palm) is native to semi-arid landscapes of northwest Mexico including southern Baja California (Martin 2009, Martínez-Ballesté and Ezcurra 2018, Spennemann 2018). In its native range, it is primarily restricted to habitats providing permanently wet soil, such as oases and riparian areas (Martínez-Ballesté and Ezcurra 2018, Spennemann 2018). The striking height, fast growth, and ease of planting has led to this palm becoming a popular ornamental plant in many parts of the world, where it has subsequently escaped cultivation and occasionally naturalized in riparian areas and landscaping-adjacent disturbed sites (Bursati 2005, Martus 2008, Martin 2009, Hodel 2015, Spennemann 2018). Naturalized populations can now be found in a number of countries, including the US (California, Arizona, Nevada, Hawaii), Australia, New Zealand, and likely many places elsewhere (Cornett et al. 1986, Martin 2009, Martus 2014, Spennemann 2018, Brusati 2005).

Reference(s):

- Martin, T. (2009). Naturalisation of Mexican fan palm (Washingtonia robusta) in Auckland. Auckand Botanical Society Journal. 64, 145–148.
- Martínez-Ballesté, A., & Ezcurra E. (2018). Reconstruction of past climatic events using oxygen isotopes in Washingtonia robusta growing in three anthropic oases in Baja California Sur. Boletín de la Sociedad Geológica Mexicana. 70, 79–94.
- Brusati, E. (2005). CALIPC Plant Assessment Report: Washingtonia robusta.
- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,
- Cornett, J. W., Stewart J., & Glenn T. (1986). Washingtonia robusta naturalized in southeastern California. Bulletin, Southern California Academy of Sciences. 85, 56–57.
- Spennemann, D. (2018). Washingtonia robusta (Mexican Fan Palm) as a coloniser in an artificial wetland at Albury, New South Wales. Cunninghamia. 18, 109–122.

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:

Within the US, Washingtonia robusta has naturalized in climates similar to Nevada in Arizona, California, and Texas. Naturalized populations outside the US are essentially unreported in areas matching Nevada climate (see Climate Match map, GBIF).

Reference(s):

- GBIF Backbone Taxonomy (2023). Washingtonia robusta H. Wendl..

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:

Washingtonia robusta is considered an invasive plant in California, Hawaii, and Florida due to its ability to overtake native riparian vegetation, alter environmental variables such as shade and soil temperature, and increase risk of fire due to prolific production of dead frond skirts, and genetically contaminate native palms, such as the California fan palm (Washingtonia filifera) through hybridization (Brusati 2005, Martus 2014, Hodel 2015).

Reference(s):

- Plant Pono (0). Washingtonia robusta (Mexican fan palm, thread palm).
- Brusati, E. (2005). CALIPC Plant Assessment Report: Washingtonia robusta.
- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,
- Hodel, DR., Greby K., Ohara LM., & Ohara ET. (2015). Infructescence and fruit characteristics of Washingtonia (Arecaceae: Coryphoideae). PalmArbor. 2, 1–7.

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

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

Answer / Justification:

Washingtonia robusta is considered an invasive plant in California, Hawaii, and Florida due to its ability to overtake native riparian vegetation, alter environmental variables such as shade and soil temperature, and increase risk of fire due to prolific production of dead frond skirts, and genetically contaminate native palms, such as the California fan palm (Washingtonia filifera) through hybridization (Brusati 2005, Martus 2014, Hodel 2015). The Climate Match map (GBIF) indicates the presence of some Washingtonia robusta populations in the Mojave Desert of California which has a similar climate to Nevada.

Reference(s):

- Hodel, DR., Greby K., Ohara LM., & Ohara ET. (2015). Infructescence and fruit characteristics of Washingtonia (Arecaceae: Coryphoideae). PalmArbor. 2, 1–7.
- Brusati, E. (2005). CALIPC Plant Assessment Report: Washingtonia robusta.
- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,
- GBIF Backbone Taxonomy (2023). Washingtonia robusta H. Wendl..

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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:

The genus Washingtonia contains only one other species -- Washingtonia filifera (California fan palm). While the California fan palm is also widely cultivated as an ornamental and similarly can naturalize in nonnative areas, I found no evidence of invasiveness of this species in an area climatically similar to Nevada.

Reference(s):

- Spennemann, D. H. R. (2018). Geographical distribution of four key ornamental and production palm species Phoenix canariensis, P. dactylifera, Washingtonia filifera and W. robusta. Institute for Land, Water and Society, Charles Sturt University, Albury, NSW.

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

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

Answer / Justification:

According to the Climate Match map (GBIF), nonnative records of Washingtonia robusta rarely occur in climates matching Nevada. The most significant overlap occurs in portions of neighboring states such as California and Arizona, which represents a small fraction of the total range of this species.

Reference(s):

- GBIF Backbone Taxonomy (2023). Washingtonia robusta H. Wendl..

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

Answer / Justification:

Mexican fan palms have the ability to alter environmental variables such as shade and soil temperature and and may crowd out native plants in riparian areas over time, thus altering riparian plant communities where it is found (Brusati 2005, Daehler 2005, Martus 2014, Spennemann 2018).

Reference(s):

- Spennemann, D. (2018). Washingtonia robusta (Mexican Fan Palm) as a coloniser in an artificial wetland at Albury, New South Wales. Cunninghamia. 18, 109–122.
- Brusati, E. (2005). CALIPC Plant Assessment Report: Washingtonia robusta.
- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,
- Daehler, C. (2005). Risk Assessment Report: Washingtonia robusta.

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

Answer / Justification:

Multiple sources imply that the dry, dead fronds (called a skirt), which often remain attached to the truck of the plant as it grows and accumulate into a dense mass, pose a fire hazard (Brusati 2005, Lambert et al. 2010, Scoll 2018, plantpono.org, Escondido Fire Department).

Reference(s):

- Scoll, J. P. (2018). A FAREWELL TO PALMS. Natural Resources & Environment. 33, 64–64.
- Lambert, A. M., D'antonio C. M., & Dudley T. L. (2010). Invasive species and fire in California ecosystems. Fremontia. 38, 29–36.
- Brusati, E. (2005). CALIPC Plant Assessment Report: Washingtonia robusta.
- Escondido Fire Department (0). Palm Trees as Fire Hazards.
- Plant Pono (0). Washingtonia robusta (Mexican fan palm, thread palm).

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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:

I found no evidence that this plant poses a significant health risk to humans or wildlife. On the contrary, it is consumed by a great deal of wildlife species as well as humans (Martus 2014, Spennemann 2018, Gomaa 2019, Spennemann 2020).

Reference(s):

- Spennemann, D. H. R. (2020). Palms fanning out: a review of the ecological provisioning services provided by Washingtonia filifera and W. robusta in their native and exotic settings. Plant ecology & diversity. 13, 289–324.
- Gomaa, R. A. (2019). Physico-chemical Characteristics of Washingtonia robusta Fruit Oil. Suez Canal University Journal of Food Sciences. 6, 19–25.
- Spennemann, D. (2018). Washingtonia robusta (Mexican Fan Palm) as a coloniser in an artificial wetland at Albury, New South Wales. Cunninghamia. 18, 109–122.
- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,

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

Answer / Justification:

The usual lack of foliage/skirts near the ground on mature individuals (see descriptions in Martin 2009, Spennemann 2018) indicates that this species may not impede movement in the same way Washingtonia filifera might (when unburned), however, it is occasionally noted that it may still form dense thickets in areas of high infestation (Brusati 2005, Chimera 2017).

Reference(s):

- Martin, T. (2009). Naturalisation of Mexican fan palm (Washingtonia robusta) in Auckland. Auckand Botanical Society Journal. 64, 145–148.
- Spennemann, D. (2018). Washingtonia robusta (Mexican Fan Palm) as a coloniser in an artificial wetland at Albury, New South Wales. Cunninghamia. 18, 109–122.
- Brusati, E. (2005). CALIPC Plant Assessment Report: Washingtonia robusta.
- Chimera, C. (2017). TAXON: Washingtonia robusta H. Wendl..

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

Answer / Justification:

I found no evidence that Washingtonia robusta spreads vegetatively. This species reproduces via copious seed production and is noted as not producing vegetatively (Daehler 2005, Martin 2009, Martus 2014, Spennemann 2018, Hodel et al. 2015).

Reference(s):

- Hodel, DR., Greby K., Ohara LM., & Ohara ET. (2015). Infructescence and fruit characteristics of Washingtonia (Arecaceae: Coryphoideae). PalmArbor. 2, 1–7.
- Martin, T. (2009). Naturalisation of Mexican fan palm (Washingtonia robusta) in Auckland. Auckand Botanical Society Journal. 64, 145–148.
- Spennemann, D. (2018). Washingtonia robusta (Mexican Fan Palm) as a coloniser in an artificial wetland at Albury, New South Wales. Cunninghamia. 18, 109–122.
- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,

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

Answer / Justification:

I could find no evidence that this species is able to reproduce vegetatively. This species reproduces via copious seed production and is noted as not producing vegetatively (Daehler 2005, Martin 2009, Martus 2014, Spennemann 2018, Hodel et al. 2015).

Reference(s):

- Hodel, DR., Greby K., Ohara LM., & Ohara ET. (2015). Infructescence and fruit characteristics of Washingtonia (Arecaceae: Coryphoideae). PalmArbor. 2, 1–7.
- Martin, T. (2009). Naturalisation of Mexican fan palm (Washingtonia robusta) in Auckland. Auckand Botanical Society Journal. 64, 145–148.
- Spennemann, D. (2018). Washingtonia robusta (Mexican Fan Palm) as a coloniser in an artificial wetland at Albury, New South Wales. Cunninghamia. 18, 109–122.
- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,
- Daehler, C. (2005). Risk Assessment Report: Washingtonia robusta.

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

Answer / Justification:

Washingtonia robusta reproduction is accomplished only by seed, and the seeds are known to germinate easily in areas where it is both native and non-native (Martus 2014, Hodel et al. 2015).

Reference(s):

- Hodel, DR., Greby K., Ohara LM., & Ohara ET. (2015). Infructescence and fruit characteristics of Washingtonia (Arecaceae: Coryphoideae). PalmArbor. 2, 1–7.
- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,

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

Answer / Justification:

Hodel and others (2015) provided detailed notes on the seed production of Washingtonia robusta and found that a single plant could produce nearly 600,000 seeds over approximately 13 inflorescences each year.

Reference(s):

- Hodel, DR., Greby K., Ohara LM., & Ohara ET. (2015). Infructescence and fruit characteristics of Washingtonia (Arecaceae: Coryphoideae). PalmArbor. 2, 1–7.

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

Answer / Justification:

Alasasfa (2020) found that Washingtonia robusta seeds germinated only at a rate of 23.12-26.25% with no pretreatment. However, Armenta-Méndez et al. (2020) found an untreated germination rate of 55%. Both sources demonstrate that certain treatments (water soaking and digestion by foxes and coyotes) can increase the germination rate to nearly 100%, suggesting certain environmental conditions are ideal, but not necessary, for seed germination.

Reference(s):

- Alasasfa, M. (2020). Effect of stratification and sulphuric acid scarification for breaking seed dormancy on different genotypes of Arecaceae family; Phoenix dactylifera and Washingtonia robusta.. Natural and Applied Sciences Series. 35,
- Armenta-Méndez, L., Gallo-Reynoso J. P., Wilder B. T., Gardea A. A., Ortega-Nieblas M. M., & Barba-Acuña I. (2020). The role of wild canids in the seed dispersal of Washingtonia robusta (Arecaceae) in Sonoran Desert oases. Revista mexicana de biodiversidad. 91,

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16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

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

Answer / Justification:

Species of Washingtonia are noted as reaching sexual maturity after 5-15 years (Martus 2014), and W. robusta specifically is noted as reaching maturity after more than four years, with a report of 12 years needed before cultivated individuals reach sexual maturity (Plant Pono). Brown and Brooks (2003) list W. filifera, a closely related species, as reaching first flowering at nine or more years of age. This variability in time to maturity is likely an effect of different growing conditions; optimal growing conditions are probably rarely achieved by chance. The "moderate" confidence level reflects this ambiguity in time to maturity. However, the 5-year qualifier for this question lies at the lowest extreme of estimated times to maturity, so fruit production within 5 years of germination is likely not common.

Reference(s):

- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,
- Plant Pono (0). Washingtonia robusta (Mexican fan palm, thread palm).
- Brown, K., & Brooks K. (2003). Bushland weeds: a practical guide to their management.. Bushland weeds: a practical guide to their management..

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

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

Answer / Justification:

Washingtonia robusta flowers only for a couple months in the summer between April to June (at least in California, but likely elsewhere as well), producing an infrutescence with fruits ripening around winter (Jepson eFlora, Brusati 2005, Spennemann 2018).

Reference(s):

- Spennemann, D. (2018). Washingtonia robusta (Mexican Fan Palm) as a coloniser in an artificial wetland at Albury, New South Wales. Cunninghamia. 18, 109–122.
- Brusati, E. (2005). CALIPC Plant Assessment Report: Washingtonia robusta.
- Simono, S. (2012). Washingtonia robusta. Jepson Flora Project.

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

Answer / Justification:

Fruits of Washingtonia robusta are nutritious and readily consumed by a variety of vertebrates, including gray foxes, coyotes, and birds (Martin 2009, Martus 2014, Spennemann 2018, Armenta-Méndez et al. 2020). Armenta-Méndez and others (2020) demonstrated the importance of fruit consumption by canids not only as a critical factor in promoting dispersal between distant isolated fan palm oases, but also in colonization of new sites. This study also characterized the usefulness of weak digestion acid scarification in increasing germination rates.

Reference(s):

- Martin, T. (2009). Naturalisation of Mexican fan palm (Washingtonia robusta) in Auckland. Auckand Botanical Society Journal. 64, 145–148.
- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,
- Armenta-Méndez, L., Gallo-Reynoso J. P., Wilder B. T., Gardea A. A., Ortega-Nieblas M. M., & Barba-Acuña I. (2020). The role of wild canids in the seed dispersal of Washingtonia robusta (Arecaceae) in Sonoran Desert oases. Revista mexicana de biodiversidad. 91,
- Spennemann, D. (2018). Washingtonia robusta (Mexican Fan Palm) as a coloniser in an artificial wetland at Albury, New South Wales. Cunninghamia. 18, 109–122.

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

Answer / Justification:

It is possible for the seeds of this species to be transported downstream by flooding following both natural flood channels and manmade features such as gutters (see Martus 2014, Spennemann 2018). However, the body of research appears to indicate that the typical mode of dispersal is via zoochory. The fruits are globular, fleshy, relatively heavy, and lack any special morphological adaptations that would promote dispersal by wind.

Reference(s):

- Martus, C. (2014). The establishment and impact of non-native Mexican fan palms (Washingtonia robusta) on native riparian habitats in San Diego County, California. Biological Sciences. Masters,
- Spennemann, D. (2018). Washingtonia robusta (Mexican Fan Palm) as a coloniser in an artificial wetland at Albury, New South Wales. Cunninghamia. 18, 109–122.

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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:

I found no evidence that this species is frequently dispersed accidentally via contamination of agricultural products, vehicles, or equipment. The seeds lack any specialized morphological features such as hooks or burrs that would facilitate dispersal by attachment.

Reference(s):

- [Anonymous] .

Total PRE Score

PRE Score: 16 -- High Potential Risk
Confidence: 87 / 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: 2023-2024 Western IPM Project
Content Privacy: Public

Evaluation Reviewers

The PRE approach is to base decisions on science and make decisions by consensus of diverse horticultural stakeholders. The literature review and process of answering PRE's questions are based on science; the decisions of which plants to prioritize are based on consensus. To ensure this process is in place and that PRE is collaborative, volunteer stakeholders are recruited from each region to review evaluations. The following experts in their profession (plant science, conservation, or horticultural trade) have participated as volunteer PRE reviewers for this evaluation:

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.

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.