

Australia/New Zealand Weed Risk Assessment adapted for Florida.

Data used for analysis published in: Gordon, D.R., D.A. Onderdonk, A.M. Fox, R.K. Stocker, and C. Gantz. 2008. Predicting Invasive Plants in Florida using the Australian Weed Risk Assessment. Invasive Plant Science and Management 1: 178-195.

| <i>Washingtonia robusta (Mexican Washington palm)</i> | | | |
|--|--|---------------|--------------|
| Question number | Question | Answer | Score |
| 1.01 | Is the species highly domesticated? | n | 0 |
| 1.02 | Has the species become naturalised where grown? | | |
| 1.03 | Does the species have weedy races? | | |
| 2.01 | Species suited to Florida's USDA climate zones (0-low; 1-intermediate; 2-high) | 2 | |
| 2.02 | Quality of climate match data (0-low; 1-intermediate; 2-high) | 2 | |
| 2.03 | Broad climate suitability (environmental versatility) | n | 0 |
| 2.04 | Native or naturalized in habitats with periodic inundation | | |
| 2.05 | Does the species have a history of repeated introductions outside its natural range? | y | |
| 3.01 | Naturalized beyond native range | y | 0 |
| 3.02 | Garden/amenity/disturbance weed | n | 0 |
| 3.03 | Weed of agriculture | n | 0 |
| 3.04 | Environmental weed | y | 0 |
| 3.05 | Congeneric weed | ? | |
| 4.01 | Produces spines, thorns or burrs | y | 1 |
| 4.02 | Allelopathic | n | 0 |
| 4.03 | Parasitic | n | 0 |
| 4.04 | Unpalatable to grazing animals | | |
| 4.05 | Toxic to animals | n | 0 |
| 4.06 | Host for recognised pests and pathogens | | |
| 4.07 | Causes allergies or is otherwise toxic to humans | n | 0 |
| 4.08 | Creates a fire hazard in natural ecosystems | y | 1 |
| 4.09 | Is a shade tolerant plant at some stage of its life cycle | ? | |
| 4.1 | Grows on infertile soils (oligotrophic, limerock, or excessively draining soils) | y | 1 |
| 4.11 | Climbing or smothering growth habit | n | 0 |
| 4.12 | Forms dense thickets | y | 1 |
| 5.01 | Aquatic | n | 0 |

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| 5.02 | Grass | n | 0 |
| 5.03 | Nitrogen fixing woody plant | n | 0 |
| 5.04 | Geophyte | | |
| 6.01 | Evidence of substantial reproductive failure in native habitat | | |
| 6.02 | Produces viable seed | y | 1 |
| 6.03 | Hybridizes naturally | y | 1 |
| 6.04 | Self-compatible or apomictic | | |
| 6.05 | Requires specialist pollinators | n | 0 |
| 6.06 | Reproduction by vegetative fragmentation | | |
| 6.07 | Minimum generative time (years) | 3 | 0 |
| 7.01 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | | |
| 7.02 | Propagules dispersed intentionally by people | y | 1 |
| 7.03 | Propagules likely to disperse as a produce contaminant | n | -1 |
| 7.04 | Propagules adapted to wind dispersal | n | -1 |
| 7.05 | Propagules water dispersed | n | -1 |
| 7.06 | Propagules bird dispersed | y | 1 |
| 7.07 | Propagules dispersed by other animals (externally) | n | -1 |
| 7.08 | Propagules dispersed by other animals (internally) | y | 1 |
| 8.01 | Prolific seed production | y | 1 |
| 8.02 | Evidence that a persistent propagule bank is formed (>1 yr) | n? | -1 |
| 8.03 | Well controlled by herbicides | y | -1 |
| 8.04 | Tolerates, or benefits from, mutilation or cultivation | | |
| 8.05 | Effective natural enemies present in Florida, or east of the continental divide | | |
| Total Score | | | 10 |

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| Outcome | Reject* |
|----------------|----------------|

*Used secondary screen from: Daehler, C. C., J.L. Denslow, S. Ansari, and H. Kuo. 2004. A risk assessment system for screening out harmful invasive pest plants from Hawaii's and other Pacific islands. *Conserv. Biol.* 18: 360-368.

| section | # questions answered | satisfy minimum? |
|---------|----------------------|------------------|
| A | 6 | yes |
| B | 9 | yes |
| C | 17 | yes |
| total | 32 | yes |

Data collected 2006-2007

| Question number | Reference | Source data |
|-----------------|--|---|
| 1.01 | | cultivated, but no evidence of selection for reduced weediness |
| 1.02 | | |
| 1.03 | | |
| 2.01 | | |
| 2.02 | | |
| 2.03 | 1. Morton (1989) The Mexican Washington palm is not an asset in Florida landscaping. Proceedings of the Florida State Horticultural Society 102: 101-106. 2. Starr, Starr, and Loope (2003) <i>Washingtonia</i> spp. Plants of Hawaii, Reports. USGS, Biological Resources Division (http://www.hear.org/pier/pdf/pohreports/washingtonia_spp.pdf). | 1. " <i>W. robusta</i> grows wild only in Mexico - the southern 3/4 of Baja California and in Sonora". 2. naturalized in Maui |
| 2.04 | | |
| 2.05 | Starr, Starr, and Loope (2003) <i>Washingtonia</i> spp. Plants of Hawaii, Reports. USGS, Biological Resources Division (http://www.hear.org/pier/pdf/pohreports/washingtonia_spp.pdf). | " <i>Washingtonia</i> spp. are tall palms that are commonly cultivated as ornamental street and landscape trees in Hawaii and other warm areas of the world." |
| 3.01 | Oppenheimer and Bartlett (2002) New plant records from the main Hawaiian Islands. Bishop Museum Occasional Papers 69: 1-14. | Naturalized on the island of Maui. |
| 3.02 | | no evidence |
| 3.03 | | no evidence |
| 3.04 | Starr, Starr, and Loope (2003) <i>Washingtonia</i> spp. Plants of Hawaii, Reports. USGS, Biological Resources Division (http://www.hear.org/pier/pdf/pohreports/washingtonia_spp.pdf). | "Plants spread rapidly from cultivation, invade wetland areas, and crowd out native species...Wetland area managers near infestations should be familiar with these palms and try to remove them as early as possible to avoid major infestations." |
| 3.05 | Loope (1992) An overview of problems with introduced plant species in National Parks and Biosphere Reserves of the United States. Pp. 3-28 in Stone, Smith, and Tunison (eds.) Alien Plant Invasions in Native Ecosystems of Hawaii. | <i>W. filifera</i> is considered a minor problem needing localized control in the Mojave and Colorado Deserts Biosphere Reserve. |

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| | University of Hawaii Press, Honolulu. | |
| 4.01 | Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. | "petiole...armed, spines pointing in both directions...Armed petioles on falling leaves are dangerous." |
| 4.02 | | no evidence |
| 4.03 | Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. | no description of this |
| 4.04 | | |
| 4.05 | Morton (1989) The Mexican Washington palm is not an asset in Florida landscaping. Proceedings of the Florida State Horticultural Society 102: 101-106. | "The ripe fruits are eaten by birds and other animals." [and no mention of toxicity in horticultural or toxicity references] |
| 4.06 | | |
| 4.07 | 1. Hortocopia 4.0 2. Oppenheimer and Bartlett (2002) New plant records from the main Hawaiian Islands. Bishop Museum Occasional Papers 69: 1-14. | 1. "This plant is considered mostly allergy free and causes little or no allergy problems in most people." 2. Fruits of <i>Washingtonia</i> spp. are edible raw or cooked. |
| 4.08 | Starr, Starr, and Loope (2003) <i>Washingtonia</i> spp. Plants of Hawaii, Reports. USGS, Biological Resources Division (http://www.hear.org/pier/pdf/pohreports/washingtonia_spp.pdf). | "The shaggy thatch of dead leaves that is left on the trunk is a fire hazard." |
| 4.09 | 1. Hortocopia 4.0 2. Scheper (2004) <i>Washingtonia robusta</i> . Floridata (http://www.floridata.com/main_fr.cfm?state=ref_master&viewsrc=lists/typelist.cfm?planttype=3). 3. Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. | 1. "Mexican Washington palm needs full sun for best growth but grows well in partial shade." 2. "It does best in bright sunny conditions but Washington palm will tolerate some shade." BUT 3. full sun |
| 4.1 | 1. Hortocopia 4.0 2. Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. | 1. "It will tolerate poor soil and drought" 2. various well-drained soils |
| 4.11 | USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA. | growth habit: tree |
| 4.12 | Starr, Starr, and Loope (2003) <i>Washingtonia</i> spp. Plants of Hawaii, Reports. USGS, Biological Resources Division (http://www.hear.org/pier/pdf/pohreports/washingtonia_spp.pdf). | "form dense thickets" |
| 5.01 | | terrestrial |
| 5.02 | USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA. | Areaceae |
| 5.03 | USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 | Areaceae |

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| | USA. | |
| 5.04 | | |
| 6.01 | | |
| 6.02 | 1. Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. 2. Scheper (2004) <i>Washingtonia robusta</i> . Floridata (http://www.floridata.com/main_fr.cfm?state=ref_master&viewsrc=lists/typelist.cfm?planttype=3). | 1. propagation by seed 2. "easy (for a palm) to germinate" |
| 6.03 | Morton (1989) The Mexican Washington palm is not an asset in Florida landscaping. Proceedings of the Florida State Horticultural Society 102: 101-106. | " <i>W. filifera</i> and <i>W. robusta</i> readily hybridize without human assistance" |
| 6.04 | | |
| 6.05 | California Rare Fruit Growers, Inc. (http://www.crfg.org/pubs/ff/edible-palms.html#calfan) | "Pollination is by wind and various insects." [of congener <i>W. filifera</i> , with which <i>W. robusta</i> can hybridize] |
| 6.06 | | |
| 6.07 | 1. Morton (1989) The Mexican Washington palm is not an asset in Florida landscaping. Proceedings of the Florida State Horticultural Society 102: 101-106. 2. Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. 3. Hortocopia 4.0 | 1. "Nurserymen favor it for its fast growth." 2. rapid growth 3. fast growth rate |
| 7.01 | | |
| 7.02 | Starr, Starr, and Loope (2003) <i>Washingtonia</i> spp. Plants of Hawaii, Reports. USGS, Biological Resources Division (http://www.hear.org/pier/pdf/pohreports/washingtonia_spp.pdf). | " <i>Washingtonia</i> spp. are tall palms that are commonly cultivated as ornamental street and landscape trees in Hawaii and other warm areas of the world." |
| 7.03 | | no evidence |
| 7.04 | Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. | fruit is an ovoid drupe, to .33 in long |
| 7.05 | | no evidence |
| 7.06 | Starr, Starr, and Loope (2003) <i>Washingtonia</i> spp. Plants of Hawaii, Reports. USGS, Biological Resources Division (http://www.hear.org/pier/pdf/pohreports/washingtonia_spp.pdf). | "On Maui, plants escape cultivation by seeds that are consumed and dispersed by fruit-eating birds and possibly other animals." |
| 7.07 | Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. | fruit is an ovoid drupe, to .33 in long - no evidence of any means of attachment |
| 7.08 | Zona (2005) Additions to "A review of animal-mediated seed dispersal of palms" (http://www.virtualherbarium.org/palms/psdispersal.html). | <i>Washingtonia robusta</i> dispersed by badgers, coyotes, and racoons. |
| 8.01 | 1. Starr, Starr, and Loope (2003) <i>Washingtonia</i> spp. Plants of Hawaii, Reports. USGS, Biological Resources Division (http://www.hear.org/pier/pdf/pohreports/washingtonia_spp.pdf). 2. Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. | 1. "produce abundant seeds" 2. one seed per fruit (drupe) |
| 8.02 | von Fintel, Berjak, and Pammenter (2004) Seed | "It is generally recommended that |

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| | behaviour in <i>Phoenix reclinata</i> Jacquin, the wild date palm. Seed Science Research 14: 197-204. | palm seeds should be planted fresh, as viability is lost within a relatively short time." [probably dry storage...] |
| 8.03 | Langeland and Stocker (2001) Control of non-native plants in natural areas of Florida. University of Florida, IFAS Extension, SP 242 (http://edis.ifas.ufl.edu/pdffiles/WG/WG20900.pdf). | "Treatment: Hand pull seedlings; cut young specimens at ground level or spray Garlon 4 into apical bud. Large, mature trees in natural areas will need to be cut down...All methods listed have been found effective under certain circumstances." |
| 8.04 | | |
| 8.05 | | |