

Australia/New Zealand Weed Risk Assessment adapted for United States.

Data used for analysis published in: Gordon, D.R. and C.A. Gantz. 2008. Potential impacts on the horticultural industry of screening new plants for invasiveness. Conservation Letters 1: 227-235. Available at: <http://www3.interscience.wiley.com/cgi-bin/fulltext/121448369/PDFSTART>

| <i>Alloxylon flammeum</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 U.S. climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high) | 1 | |
| 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 regions with an average of 11-60 inches of annual precipitation | N | 0 |
| 2.05 | Does the species have a history of repeated introductions outside its natural range? | Y | |
| 3.01 | Naturalized beyond native range | N | -2 |
| 3.02 | Garden/amenity/disturbance weed | N | 0 |
| 3.03 | Weed of agriculture | N | 0 |
| 3.04 | Environmental weed | N | 0 |
| 3.05 | Congeneric weed | N | 0 |
| 4.01 | Produces spines, thorns or burrs | N | 0 |
| 4.02 | Allelopathic | | |
| 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 | | |
| 4.09 | Is a shade tolerant plant at some stage of its life cycle | N | 0 |
| 4.1 | Grows on one or more of the following soil types: alfisols, entisols, or mollisols | Y | 1 |
| 4.11 | Climbing or smothering growth habit | N | 0 |
| 4.12 | Forms dense thickets | ? | |
| 5.01 | Aquatic | N | 0 |
| 5.02 | Grass | N | 0 |
| 5.03 | Nitrogen fixing woody plant | N | 0 |
| 5.04 | Geophyte | N | 0 |
| 6.01 | Evidence of substantial reproductive failure in native habitat | N | 0 |
| 6.02 | Produces viable seed | Y | 1 |
| 6.03 | Hybridizes naturally | | |
| 6.04 | Self-compatible or apomictic | | |
| 6.05 | Requires specialist pollinators | ? | |
| 6.06 | Reproduction by vegetative fragmentation | | |
| 6.07 | Minimum generative time (years) | 6 | -1 |
| 7.01 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | N | -1 |

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| 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 | Y | 1 |
| 7.05 | Propagules water dispersed | | |
| 7.06 | Propagules bird dispersed | | |
| 7.07 | Propagules dispersed by other animals (externally) | N | -1 |
| 7.08 | Propagules dispersed by other animals (internally) | | |
| 8.01 | Prolific seed production | | |
| 8.02 | Evidence that a persistent propagule bank is formed (>1 yr) | | |
| 8.03 | Well controlled by herbicides | | |
| 8.04 | Tolerates, or benefits from, mutilation or cultivation | | |
| 8.05 | Effective natural enemies present in U.S. | | |
| Total Score | | | -2 |

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| Outcome | Accept |
|----------------|---------------|

| section | # questions answered | satisfy minimum? |
|---------|----------------------|------------------|
| A | 11 | Yes |
| B | 7 | Yes |
| C | 12 | Yes |
| total | 30 | Yes |

Data collected 2008

| Question number | Reference | Source data |
|-----------------|--|--|
| 1.01 | | used horticulturally, but no evidence of significant modification |
| 1.02 | | |
| 1.03 | | |
| 2.01 | 1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgn d.tif). 2. Weston, PH and Crisp MD (1991) Alloxylon (Proteaceae), a new genus from New Guinea and eastern Australia. <i>Telopea</i> 4(3) 497-507. 3. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?410897). | 1. Global plant hardiness zone 12. 2. Australia; restricted to the Atherton Tableland, north-eastern Queensland, from Danbulla south to the Upper Barron River. 3. Australia: Australia - Queensland [n.e.] [tropical] |

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| 2.02 | | |
| 2.03 | 1. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf). 2. Weston, PH and Crisp MD (1991) <i>Alloxylon</i> (Proteaceae), a new genus from New Guinea and eastern Australia. <i>Telopea</i> 4(3) 497-507. 3. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?410897). | 1. 1 climatic region. 2. Australia; restricted to the Atherton Tableland, north-eastern Queensland, from Danbulla south to the Upper Barron River. 3. Australia: Australia - Queensland [n.e.] [only 1 biome] |
| 2.04 | Microsoft Encarta World Precipitation and Average Rainfall (http://uk.encarta.msn.com/encnet/RefPages/RefMedia.aspx?refid=461530746&artrefid=761554737&pn=3&sec=-1). | For Queensland, the average annual precipitation is over 80 inches/year. |
| 2.05 | B & T World Seeds (http://www.b-and-t-world-seeds.com/carth.asp?species=Alloxylon%20flammeum&sref=501889) | Seeds sold internationally. |
| 3.01 | | no evidence |
| 3.02 | | no evidence |
| 3.03 | | no evidence |
| 3.04 | | no evidence |
| 3.05 | | no evidence |
| 4.01 | Weston, PH and Crisp MD (1991) <i>Alloxylon</i> (Proteaceae), a new genus from New Guinea and eastern Australia. <i>Telopea</i> 4(3) 497-507. | no description of these traits |
| 4.02 | | |
| 4.03 | Weston, PH and Crisp MD (1991) <i>Alloxylon</i> (Proteaceae), a new genus from New Guinea and eastern Australia. <i>Telopea</i> 4(3) 497-507. | no description of parasitism |
| 4.04 | | |
| 4.05 | 1. Burke's Backyard (http://www.burkesbackyard.com.au/1999/archives/25/in_the_garden/trees_and_palms/tree_waratah2). 2. Sri Lankan Oxfam Project, Tree Waratah - <i>Alloxylon flammeum</i> (http://www.daleysfruit.com.au/newsletter/Mar2006.htm). 3. Wrigley, JW (1989) <i>Banksias, Waratahs and Grevilleas</i> . W. Collins, Sydney. | 1. "Highly bird attracting". 2. "Nectar rich blooms are highly attractive to birds". 3. Birds are attracted to the flowers. [no evidence of toxicity] |
| 4.06 | | |
| 4.07 | Weston, PH and Crisp MD (1991) <i>Alloxylon</i> (Proteaceae), a new genus from New Guinea and eastern Australia. <i>Telopea</i> 4(3) 497-507. | no evidence |
| 4.08 | | |
| 4.09 | 1. Botanic Gardens Trust (http://www.rbgsyd.nsw.gov.au/annan/the_garden/blooming_calendar/annan_blooming_template38). 2. Burke's Backyard (http://www.burkesbackyard.com.au/1999/archives/25/in_the_garden/trees_and_palms/tree_waratah2). 3. Wrigley, JW (1989) <i>Banksias, Waratahs and Grevilleas</i> . W. Collins, Sydney. | 1. "Will withstand full sun". 2. "Full sun". 3. Accepts full sun even as a young plant. |

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| 4.1 | 1. USDA, National Resources Conservation Services (NRCS), Soil Survey Division, World Soil Resources (http://soils.usda.gov/use/worldsoils/mapindex/order.html). 2. Weston, PH and Crisp MD (1991) <i>Alloxylon flammeum</i> . In <i>Flora of Australia</i> . Volume 16. Australian Govt. Pub. Service, Canberra. | 1. Australia, Queensland (NE): The region of origin contains aridisols, entisols, and ultisols (and also oxisols). 2. "Usually in basalt-derived soil." |
| 4.11 | 1. Weston, PH and Crisp MD (1991) <i>Alloxylon</i> (Proteaceae), a new genus from New Guinea and eastern Australia. <i>Telopea</i> 4(3) 497-507. 2. Association of Societies for Growing Australian Plants (ASGAP) (http://asgap.org.au/a-fla.html). 3. Harden, GJ, Hardin, DW and Godden, DC (2000) <i>Proteaceae of New South Wales</i> . University of New South Wales Press, Sydney. | 1. Trees to 33 m tall. 2. Tall tree to 25-30 metres in its native habitat. 3. Small to tall trees. |
| 4.12 | Weston, PH and Crisp MD (1991) <i>Alloxylon</i> (Proteaceae), a new genus from New Guinea and eastern Australia. <i>Telopea</i> 4(3) 497-507. | Trees to 33 m tall. |
| 5.01 | 1. Weston, PH and Crisp MD (1991) <i>Alloxylon</i> (Proteaceae), a new genus from New Guinea and eastern Australia. <i>Telopea</i> 4(3) 497-507. 2. Association of Societies for Growing Australian Plants (ASGAP) (http://asgap.org.au/a-fla.html). 3. Harden, GJ, Hardin, DW and Godden, DC (2000) <i>Proteaceae of New South Wales</i> . University of New South Wales Press, Sydney. | 1. Trees to 33 m high. 2. Tall tree to 25-30 metres in its native habitat. 3. Small to tall trees; terrestrial. |
| 5.02 | USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?410897). | Proteaceae |
| 5.03 | USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?410897). | Proteaceae |
| 5.04 | 1. Weston, PH and Crisp MD (1991) <i>Alloxylon</i> (Proteaceae), a new genus from New Guinea and eastern Australia. <i>Telopea</i> 4(3) 497-507. 2. Association of Societies for Growing Australian Plants (ASGAP) (http://asgap.org.au/a-fla.html). 3. Harden, GJ, Hardin, DW and Godden, DC (2000) <i>Proteaceae of New South Wales</i> . University of New South Wales Press, Sydney. | 1. Trees to 33 m high. 2. Tall tree to 25-30 metres in its native habitat. 3. Small to tall trees. |
| 6.01 | | no evidence |
| 6.02 | 1. Association of Societies for Growing Australian Plants (ASGAP) (http://asgap.org.au/a-fla.html). 2. Burke's Backyard (http://www.burkesbackyard.com.au/1999/archives/25/in_the_garden/trees_and_palms/tree_waratah2). 3. Wrigley, JW (1989) <i>Banksias, Waratahs and Grevilleas</i> . W. Collins, Sydney. | 1. "Propagation may be carried out from seed". 2. "Propagated from seed...grows easily from cuttings or seed". 3. May be propagated from seed. |
| 6.03 | | |
| 6.04 | | |
| 6.05 | Harden, GJ, Hardin, DW and Godden, DC (2000) <i>Proteaceae of New South Wales</i> . University of New | Bird-pollinated [genus description]. |

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| | South Wales Press, Sydney. | |
| 6.06 | | |
| 6.07 | 1. Burke's Backyard (http://www.burkesbackyard.com.au/1999/archives/25/in_the_garden/trees_and_palms/tree_waratah2). 2. Sri Lankan Oxfam Project, Tree Waratah - Alloxydon flammeum (http://www.daleysfruit.com.au/newsletter/Mar2006.htm). | 1. "The tree is fairly slow growing and may not flower for seven or eight years" 2. "it can take about six years to flower" |
| 7.01 | | large fruit/seed, no means of attachment, not growing in pastures, etc. |
| 7.02 | B & T World Seeds (http://www.b-and-t-world-seeds.com/carth.asp?species=Alloxydon%20flammeum&sref=501889) | Seeds sold internationally. |
| 7.03 | | no evidence |
| 7.04 | 1. Weston, PH and Crisp MD (1991) Alloxydon (Proteaceae), a new genus from New Guinea and eastern Australia. Telopea 4(3) 497-507. 2. Harden, GJ, Hardin, DW and Godden, DC (2000) Proteaceae of New South Wales. University of New South Wales Press, Sydney. | 1. "Seeds 6-14...wing distal to embryo...wing of basal seed nearly as long and wide as loculus of fruit but progressively shorter in distal seeds" [species description]; "winged seeds" [genus description]. 2. Seeds many, winged [genus description]. |
| 7.05 | | |
| 7.06 | | |
| 7.07 | 1. Weston, PH and Crisp MD (1991) Alloxydon (Proteaceae), a new genus from New Guinea and eastern Australia. Telopea 4(3) 497-507. 2. Weston, PH and Crisp MD (1991) Alloxydon flammeum. In Flora of Australia. Volume 16. Australian Govt. Pub. Service, Canberra. | 1. "Fruit a follicle, narrow-ellipsoid to narrow-obovoid, with woody inner mesocarp, not opening widely, canoe-like on dehiscence". 2. "Body of follicle 7-10 cm long" [species description]. [no evidence of adaptations to external dispersal] |
| 7.08 | | |
| 8.01 | | |
| 8.02 | | |
| 8.03 | | |
| 8.04 | | |
| 8.05 | | |