Taxon: Eucalyptus pulchella Desf. **Family:** Myrtaceae

Common Name(s): narrow-leaf peppermint
white peppermint
white peppermint gum

Synonym(s): Eucalyptus linearis Dehnh.

Assessor: Chuck Chimera **Status:** In Progress **End Date:** 18 Jul 2018

WRA Score: 1.0 **Designation:** EVALUATE **Rating:** Evaluate

Keywords: Temperate, Tree, Naturalized, Flammable, Wind-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	(0-low; 1-intermediate; 2-high) (See Appendix 2)	Low
202	Quality of climate match data	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y=1, n=0	n
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	n
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed		
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed		
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	y
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens	y=1, n=0	n
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems	y=1, n=0	y
409	Is a shade tolerant plant at some stage of its life cycle		

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	n
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	y
604	Self-compatible or apomictic		
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	**Is the species highly domesticated?**	**n**
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	[No evidence of domestication] "A few species are endemic to Tasmania and the fine-leaved white peppermint (E. pulchella) is a popular ornamental." … "White peppermint is a fairly common eucalypt of the lower country of south-eastern Tasmania where it is endemic, extending no farther north than Bothwell, Oatlands and Swansea. It also occurs on the Tasman Peninsula and to about 50 km south of Hobart."

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	NA

201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**Low**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 17 Jul 2018]	"Native Australasia AUSTRALIA: Australia [Tasmania]" [Tasmania has a cool temperate climate with four distinct seasons.]

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 17 Jul 2018]	

203	**Broad climate suitability (environmental versatility)**	**n**
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"Climate: Altitudinal range: 150–450 m; Hottest/coldest months: 20–24°C/0–5°C; Frost incidence: moderate to high (up to 50 each year and some snow at high elevations); Rainfall: 500–1000 mm per year, slight winter max."

Qsn #	Question	Answer
	Williams, K. J., & Potts, B. M. (1996). The natural distribution of Eucalyptus species in Tasmania. Tasforests, 8, 39-165	"Eucalyptus pulchella is predominantly a lowland species of the mid-altitude range between 100 m and 500 m but extends from near sea-level (10 m) to about 740 m (Figure 57), where it may hybridise with E. coccifera (Davidson et al. 1987)."
	SelecTree. (2018). "Eucalyptus pulchella Tree Record." 1995-2018. https://selectree.calpoly.edu/tree-detail/eucalyptus-pulchella. [Accessed 17 Jul 2018]	"USDA Hardiness Zones 8 - 11."

204	Native or naturalized in regions with tropical or subtropical climates	n
	Source(s)	**Notes**
	Oppenheimer, H. 2016. New Hawaiian Plant Records for 2015. Bishop Museum Occasional Papers 118: 23–28	[Naturalized in high elevation site of a tropical island; ca. 6700 ft] "Endemic to Tasmania and known as white peppermint or narrow-leaved peppermint, this tree was not previously documented from Hawai'i. This population was previously identified as E. amygdalina Labill. (Medeiros et al. 1998:113), which may or may not also occur in this area. Material examined. MAUI: east Maui, Makawao Distr., kalialinui, growing in forestry plantings along road between Hosmer Grove and Waikamoi, 2042 m, 29 Nov 2001, Oppenheimer H110159."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	**Notes**
	Oppenheimer, H. 2016. New Hawaiian Plant Records for 2015. Bishop Museum Occasional Papers 118: 23–28	"Endemic to Tasmania and known as white peppermint or narrow-leaved peppermint, this tree was not previously documented from Hawai'i. This population was previously identified as E. amygdalina Labill. (Medeiros et al. 1998:113), which may or may not also occur in this area."
	Howell, C. J., & Sawyer, J. W. (2006). New Zealand naturalised vascular plant checklist. New Zealand Plant Conservation Network, Wellington, NZ	"Eucalyptus pulchella … Fully naturalized"
	Ritter, M., & Yost, J. (2009). Diversity, reproduction, and potential for invasiveness of Eucalyptus in California. Madroño, 56(3), 155-167	"Rarely planted in California, extensive reproduction in Joaquin Miller Park, Alameda Co."

301	Naturalized beyond native range	y
	Source(s)	**Notes**
	Oppenheimer, H. 2016. New Hawaiian Plant Records for 2015. Bishop Museum Occasional Papers 118: 23–28	"Endemic to Tasmania and known as white peppermint or narrow-leaved peppermint, this tree was not previously documented from Hawai'i. This population was previously identified as E. amygdalina Labill. (Medeiros et al. 1998:113), which may or may not also occur in this area. Material examined. MAUI: east Maui, Makawao Distr., kalialinui, growing in forestry plantings along road between Hosmer Grove and Waikamoi, 2042 m, 29 Nov 2001, Oppenheimer H110159."

Qsn #	Question	Answer
	Howell, C. J., & Sawyer, J. W. (2006). New Zealand naturalised vascular plant checklist. New Zealand Plant Conservation Network, Wellington, NZ	"Eucalyptus pulchella … Fully naturalized"
	Ritter, M., & Yost, J. (2009). Diversity, reproduction, and potential for invasiveness of Eucalyptus in California. Madroño, 56(3), 155-167	"Eucalyptus pulchella Desf. (Fig. 2D). Kawahara 800 (CAS 485858); Keil 24454 (OBI 53723). Bark gray, completely smooth or occasionally rough to 1 m above ground level; leaves linear, peppermint scented; inflorescences axillary, buds 9 to .15 per umbel; bud cap scar absent. Rarely planted in California, extensive reproduction in Joaquin Miller Park, Alameda Co. (37u48949.400N, 122u10957.430W)."
	Ritter, M. (2014). Field Guide to the Cultivated Eucalypts (Myrtaceae) and How to Identify Them. Annals of the Missouri Botanical Garden, 99(4), 642-687	"Native to: Tasmania. Naturalized: California, New Zealand."

302	Garden/amenity/disturbance weed	
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Designated as a weed. Impacts unverified

303	Agricultural/forestry/horticultural weed	n
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

304	Environmental weed	
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Cited as an environmental weed. A review of the cited reference did not provide evidence of detrimental environmental impacts] "References: United Kingdom-N-40, New Zealand-N-280, United Kingdom-C-314, Australia-E-380, United Kingdom-N-519, New Zealand-N-534, United Kingdom-CN- 812, New Zealand-N-919, United Kingdom-N-1006, Europe-N-819, Global- CD-1611, New Zealand-N-2048, Australia- W-1977, United Kingdom-W-1977."

305	Congeneric weed	y
	Source(s)	**Notes**
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Eucalyptus globulus … The tree invades neighbouring plant communities from initial plantings. By building dense bushes and forests, it displaces native plant species and their associated wildlife with extremely species-poor stands of blue gum. The trees produce a thick litter layer consisting of leaves, bark strips and branch lees, preventing germination and establishment of understorey plants. This is aided by allelochemicals released from leaves (Bossard et ai., 2000). Litter of blue gum is highly flammable and the trees accumulate large amounts of litter, increasing fire hazards. Drifting burning ma-terial is common in eucalyptus stands, thus the potential to ignite spot fires is very high"

Qsn #	Question	Answer
	Forsyth, G. G., Richardson, D. M., Brown, P. J., & Van Wilgen, B. W. (2004). A rapid assessment of the invasive status of Eucalyptus species in two South African provinces: working for water. South African Journal of Science, 100(1-2), 75-77	"Gum trees, or eucalypts (Eucalyptus species), have been targeted for invasive alien plant clearing programmes in many parts of South Africa. This has caused some dissatisfaction where the species concerned also have useful characteristics, and stakeholders contend that some of these useful species are not invasive. A rapid assessment of the invasive status of Eucalyptus species at 82 sites in South Africa (54 in the Western Cape and 28 in Mpumalanga) indicated that only Red River gum (E. camaldulensis) and flooded gum (E. grandis) are clearly invasive."
	Simberloff, D. & Rejmánek, M. (2011). Encyclopedia of Biological Invasions. University of California Press, Berkeley & Los Angeles	"Over 800 species of eucalypts (Angophora, Corymbia, and Eucalyptus) are native to Australia and a few Pacific islands. These genera include some of the most important solid timber and paper pulp forestry trees in the world. Besides pines, eucalypts are the most commonly and widely cultivated exotic trees. Almost 20 million ha (200,000 km2) of eucalyptus plantations exist in tropical, subtropical, and temperate countries. In many countries, eucalypts are the most common and conspicuous nonnative trees. Over 70 species are naturalized (reproduce and maintain their populations) outside their native ranges. However, given the extent of cultivation, eucalypts are markedly less invasive than many other widely cultivated trees and shrubs. Reasons for this relatively low invasiveness are still not completely understood. Conclusions about positive or negative environmental and economic impacts of eucalypts are often anecdotal, highly controversial, and context-dependent."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	A large number of species are cited as naturalized and/or weeds

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	[No evidence] "White peppermint is a small to medium-sized tree 9–21 m high and with dbh up to 0.8 m. The trunks of open-growing specimens may divide at less than one-quarter of the tree height, but in forest formation they may extend to three-quarters tree height. The very fine ultimate branchlets and twigs, and the very narrow, pendulous adult leaves give this species a graceful appearance."

402	Allelopathic	
	Source(s)	**Notes**
	Coppen, J.J.W. (2002). Eucalyptus: The Genus Eucalyptus. Taylor and Francis, London	[Potentially] "Trees of the genus Eucalyptus are frequently surrounded by a grass-free zone and this has led to a search for possible allelochemicals in Eucalyptus species. The results to date indicate that eucalypts may well be a practical, commercial source of such chemicals in the future. In its simplest form this might entail use of the powdered leaves as a natural herbicide. Alternatively, and with a greater understanding of their mode of action, the allelochemicals themselves or suitable derivatives could be used as selective herbicides."

Qsn #	Question	Answer
403	**Parasitic**	**n**
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"White peppermint is a small to medium-sized tree 9– 21 m high and with dbh up to 0.8 m." [Myrtaceae. No evidence]

404	**Unpalatable to grazing animals**	**y**
	Source(s)	**Notes**
	SelecTree. (2018). "Eucalyptus pulchella Tree Record." 1995-2018. https://selectree.calpoly.edu/tree-detail/eucalyptus-pulchella. [Accessed 17 Jul 2018]	"Not Deer Palatable"

405	**Toxic to animals**	**n**
	Source(s)	**Notes**
	Southern Woods Nursery. (2018). Eucalyptus pulchella - White Peppermint Gum. https://www.southernwoods.co.nz/shop/eucalyptus-pulchella/. [Accessed 17 Jul 2018]	"Non-poisonous to Animals Non-poisonous to Humans"
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

406	**Host for recognized pests and pathogens**	**n**
	Source(s)	**Notes**
	Backyard Gardener. (2018). Eucalyptus pulchella (White Peppermint). https://www.backyardgardener.com. [Accessed 17 Jul 2018]	"Important Info : Most Eucalyptus are drought tolerant and have very few pests. The eucalyptus beetle poses the greatest threat with oval-shaped holes being one of the signs of infestation."
	Keane, P.J., Kile, G.A. & Podger, F.D. (2000). Diseases and Pathogens of Eucalypts. CSIRO Publishing, Collingwood, Australia	"Junghuhnia vincta (Berk.) Hood & M.Dick [syn. Poria vincta (Berk.) Cooke, Rigidoporus vinctus (Berk.) Ryvarden] has caused localised root disease (white crown canker) in shelter belts and farm plantings in New Zealand (Taylor and Sale 1980; Taylor 1984)."… "In pathogenicity tests, E. regnans was infected but not E. delegatensis, E. nitens and E. saligna (Hood and Dick 1988). Eucalyptus pulchella was reported to be field-resistant (Taylor and Sale 1980)."
	SelecTree. (2018). "Eucalyptus pulchella Tree Record." 1995-2018. https://selectree.calpoly.edu/tree-detail/eucalyptus-pulchella. [Accessed 17 Jul 2018]	"Pests & Disease Information - Resistant to Texas Root Rot and Verticillium. Susceptible to Beetle Borers, Armillaria, Phytophthora and Root Rot."

407	**Causes allergies or is otherwise toxic to humans**	**n**
	Source(s)	**Notes**

Qsn #	Question	Answer
	Southern Woods Nursery. (2018). Eucalyptus pulchella - White Peppermint Gum. https://www.southernwoods.co.nz/shop/eucalyptus-pulchella/. [Accessed 17 Jul 2018]	"Non-poisonous to Animals Non-poisonous to Humans"
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	y
	Source(s)	**Notes**
	Dickinson, K., & Kirkpatrick, J. (1985). The Flammability and Energy Content of Some Important Plant Species and Fuel Components in the Forests of Southeastern Tasmania. Journal of Biogeography, 12(2), 121-134	"Conversely, the most flammable and self-propagating species were Eucalyptus viminalis adult leaves, Banksia marginata, E. pulchella and Acacia stricta, all characteristic of dry forest." … "Not all the dry sclerophyll species exhibited high rates of flame spread in live material. However, Banksia marginata. Acacia stricta, Eucalyptus pulchella and Poa emerged as the four most flammable species."
	Pyrke, A. F., & Marsden-Smedley, J. B. (2005). Fire-attributes categories, fire sensitivity, and flammability of Tasmanian vegetation communities. Tasforests, 16, 35-46	"Table 1. Fire-attributes category, fi re sensitivity and flammability codes for TASVEG communities, listed in decreasing order of fi re sensitivity." [Eucalyptus pulchella forest and woodland - FS = fire sensitivity - L = low; Fl = flammability - H = high]

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	**Notes**
	SelecTree. (2018). "Eucalyptus pulchella Tree Record." 1995-2018. https://selectree.calpoly.edu/tree-detail/eucalyptus-pulchella. [Accessed 17 Jul 2018]	"Exposure Full Sun to Partial Shade."
	Backyard Gardener. (2018). Eucalyptus pulchella (White Peppermint). https://www.backyardgardener.com. [Accessed 17 Jul 2018]	"Light Range: Part Sun to Full Sun"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	**Notes**
	Williams, K. J., & Potts, B. M. (1996). The natural distribution of Eucalyptus species in Tasmania. Tasforests, 8, 39-165	"The altitude range and topographic position are likely to coincide, to some extent, with the availability of suitable habitats on lowland dolerite substrates."
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"This species is restricted to dolerite-derived soils. Where there is a juxtaposition with sedimentary rocks there is a notable and sudden change of species."

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"White peppermint is a small to medium-sized tree 9– 21 m high and with dbh up to 0.8 m. The trunks of open-growing specimens may divide at less than one-quarter of the tree height, but in forest formation they may extend to three-quarters tree height. The very fine ultimate branchlets and twigs, and the very narrow, pendulous adult leaves give this species a graceful appearance."

412	Forms dense thickets	n
	Source(s)	**Notes**
	Williams, K. J., & Potts, B. M. (1996). The natural distribution of Eucalyptus species in Tasmania. Tasforests, 8, 39-165	"It frequently forms mixed stands with other eucalypts such as E. viminalis, E. globulus or E. rubida, depending on local site conditions."
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"White peppermint occurs in open forests often associated with manna gum (E. viminalis), swamp gum (E. ovata), Tasmanian blue gum (E. globulus), messmate (E. obliqua) and silver wattle (Acacia dealbata)."

501	Aquatic	n
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	[Terrestrial] "White peppermint is a tree occurring on hilly to undulating terrain, usually with good surface drainage, but the sites vary from somewhat poor, rounded ridge tops to the more fertile, lower slopes of small valleys."

502	Grass	n
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 17 Jul 2018]	Family: Myrtaceae Subfamily: Myrtoideae Tribe: Eucalypteae

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 17 Jul 2018]	Family: Myrtaceae Subfamily: Myrtoideae Tribe: Eucalypteae

Qsn #	Question	Answer
504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**n**
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"White peppermint is a small to medium-sized tree 9–21 m high and with dbh up to 0.8 m. The trunks of open-growing specimens may divide at less than one-quarter of the tree height, but in forest formation they may extend to three-quarters tree height."

601	**Evidence of substantial reproductive failure in native habitat**	**n**
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	[No evidence] "White peppermint is a fairly common eucalypt of the lower country of south-eastern Tasmania where it is endemic, extending no farther north than Bothwell, Oatlands and Swansea. It also occurs on the Tasman Peninsula and to about 50 km south of Hobart."

602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"Fruits: Shortly to distinctly pedicellate, cupular to truncate-globose, crowded, 0.5–0.6 × 0.5–0.7 cm; disc relatively broad, more or less level to slightly descending; valves 4, about rim level. Seeds pyramidal or obliquely pyramidal, brown to red-brown, hilum terminal."
	NZ Seeds. (2018). Eucalyptus pulchella. http://www.nzseeds.co.nz/shop/Eucalyptus-pulchella. [Accessed 17 Jul 2018]	[Viable seeds for sale at this & other websites] "Recommended pre germination seed treatment: Seed germinates without pre treatment. 4 weeks cold stratification will help speed up and even out germination time." … "Price: Packets of 100 seeds $12 25 grams $38"

603	**Hybridizes naturally**	**y**
	Source(s)	**Notes**
	Williams, K. J., & Potts, B. M. (1996). The natural distribution of Eucalyptus species in Tasmania. Tasforests, 8, 39-165	"Eucalyptus pulchella is predominantly a lowland species of the mid-altitude range between 100 m and 500 m but extends from near sea-level (10 m) to about 740 m (Figure 57), where it may hybridise with E. coccifera (Davidson et al. 1987)."

604	**Self-compatible or apomictic**	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Potts, B. M., & Gore, P. L. (1995). Reproductive biology and controlled pollination of Eucalyptus-a review. School of Plant Science, University of Tasmania, Hobart, Tasmania	[Unknown for E. pulchella] "Eucalypts are generally preferentially outcrossing (Pryor 1976; Griffin et al1987), with high outcrossing rates (e.g. 0.69- 0.84 Moran and Bell 1983; Prober et al. 1990) maintained by varying degrees of self-fertility (Pryor 1976), aided by protandry (Griffin and Hand 1979; Fig. 3.2) and reinforced by selection against the products of self-fertilization in later stages of the life cycle (Potts et at. 1987; Hardner and Potts 1995). Self fertility Most species exhibit a marked reduction in seed yield following self-pollination compared to outcrossing, although within species there is considerable variation in the level of self-fertility (Pryor 1957; Pryor 1976; Table 4.2). In most of the species examined to date, the majority of individuals are partially self-fertile, but individuals range from fully self incompatible to fully self-fertile. Post-mating barriers to self-fertilization are thus rarely complete, and (Eldridge 1976) notes that "persistent attempts at artificial self-pollination have been successful to some degree on almost every tree tested".

605	Requires specialist pollinators	n
	Source(s)	**Notes**
	Hingston, A. B., & Mc Quillan, P. B. (2000). Are pollination syndromes useful predictors of floral visitors in Tasmania?. Austral Ecology, 25(6), 600-609	"Table 2. Flowering plants, their floral characteristics, and the numbers of anthophile species which they supported" [Eucalyptus pulchella visited by Bees, Flies & Beetles]
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	[Unspecialized flowers] "Inflorescences: Simple, axillary, more than 15-flowered; peduncles angular, 0.3–0.8 cm long; pedicels 0.1–0.3 cm long; buds clavate, 0.3–0.5 × 0.2–0.3 cm, opercula hemispherical"

606	Reproduction by vegetative fragmentation	n
	Source(s)	**Notes**
	Online Atlas of the British and Irish flora. (2018). Eucalyptus pulchella. http://www.brc.ac.uk/plantatlas/plant/eucalyptus-pulchella. [Accessed 17 Jul 2018]	"An evergreen tree that is grown in gardens in S.W. England and which occurs as a naturalised garden escape in Abbey Wood, Tresco (Isles of Scilly). Reproduction is by seed. Lowland."

607	Minimum generative time (years)	
	Source(s)	**Notes**
	SelecTree. (2018). "Eucalyptus pulchella Tree Record." 1995-2018. https://selectree.calpoly.edu/tree-detail/eucalyptus-pulchella. [Accessed 17 Jul 2018]	"Growth Rate: 36 Inches per Year."
	Southern Woods Nursery. (2018). Eucalyptus pulchella - White Peppermint Gum. https://www.southernwoods.co.nz/shop/eucalyptus-pulchella/. [Accessed 17 Jul 2018]	"Growth Rate: Rapid Height after 5 years: 6 m Height when mature: 12 m" [Time to maturity unspecified]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"Fruits: Shortly to distinctly pedicellate, cupular to truncate-globose, crowded, 0.5–0.6 × 0.5–0.7 cm; disc relatively broad, more or less level to slightly descending; valves 4, about rim level. Seeds pyramidal or obliquely pyramidal, brown to red-brown, hilum terminal." [No evidence & no means of external attachment[

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**
	NZ Seeds. (2018). Eucalyptus pulchella. http://www.nzseeds.co.nz/shop/Eucalyptus-pulchella. [Accessed 17 Jul 2018]	[Viable seeds for sale at this & other websites] "Recommended pre germination seed treatment: Seed germinates without pre treatment. 4 weeks cold stratification will help speed up and even out germination time." … "Price: Packets of 100 seeds $12 25 grams $38"

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"White peppermint is a small to medium-sized tree 9–21 m high and with dbh up to 0.8 m." [Cultivated as a forestry tree & ornamental. Unlikely to become a produce contaminant]

704	Propagules adapted to wind dispersal	y
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"Fruits: Shortly to distinctly pedicellate, cupular to truncate-globose, crowded, 0.5–0.6 × 0.5–0.7 cm; disc relatively broad, more or less level to slightly descending; valves 4, about rim level. Seeds pyramidal or obliquely pyramidal, brown to redbrown, hilum terminal."
	Simberloff, D. & Rejmánek, M. (2011). Encyclopedia of Biological Invasions. University of California Press, Berkeley & Los Angeles	"Seeds of planted eucalypts are very small, but they have no adaptations for dispersal (wings or fleshy tissues) that would help them to proceed from local establishment (naturalization) to invasion. The passive release of seeds is undoubtedly aided by wind. However, all rigorous studies of eucalypt seed dispersal and seedling spatial distribution show that in general, seeds are dispersed over quite short distances."

Qsn #	Question	Answer
705	**Propagules water dispersed**	**n**
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"White peppermint is a tree occurring on hilly to undulating terrain, usually with good surface drainage, but the sites vary from somewhat poor, rounded ridge tops to the more fertile, lower slopes of small valleys." … "Fruits: Shortly to distinctly pedicellate, cupular to truncate-globose, crowded, 0.5–0.6 × 0.5–0.7 cm; disc relatively broad, more or less level to slightly descending; valves 4, about rim level. Seeds pyramidal or obliquely pyramidal, brown to red-brown, hilum terminal." [Buoyancy of seeds unknown, but not naturally occurring in riparian areas]

706	Propagules bird dispersed	n
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"Fruits: Shortly to distinctly pedicellate, cupular to truncate-globose, crowded, 0.5–0.6 × 0.5–0.7 cm; disc relatively broad, more or less level to slightly descending; valves 4, about rim level. Seeds pyramidal or obliquely pyramidal, brown to redbrown, hilum terminal." [Not fleshy fruited]
	Simberloff, D. & Rejmánek, M. (2011). Encyclopedia of Biological Invasions. University of California Press, Berkeley & Los Angeles	"Seeds of planted eucalypts are very small, but they have no adaptations for dispersal (wings or fleshy tissues) that would help them to proceed from local establishment (naturalization) to invasion. The passive release of seeds is undoubtedly aided by wind. However, all rigorous studies of eucalypt seed dispersal and seedling spatial distribution show that in general, seeds are dispersed over quite short distances."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"Fruits: Shortly to distinctly pedicellate, cupular to truncate-globose, crowded, 0.5–0.6 × 0.5–0.7 cm; disc relatively broad, more or less level to slightly descending; valves 4, about rim level. Seeds pyramidal or obliquely pyramidal, brown to red-brown, hilum terminal." [No evidence & no means of external attachment[

708	Propagules survive passage through the gut	n
	Source(s)	**Notes**
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	"Fruits: Shortly to distinctly pedicellate, cupular to truncate-globose, crowded, 0.5–0.6 × 0.5–0.7 cm; disc relatively broad, more or less level to slightly descending; valves 4, about rim level. Seeds pyramidal or obliquely pyramidal, brown to red-brown, hilum terminal." [No evidence of consumption or internal dispersal]

801	Prolific seed production (>1000/m2)	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Boland, D.J. , Brooker, M.I.H., Chippendale, G.M., Hall, N., Hyland, B.P.M., Johnston, R.D., Kleinig, D.A., McDonald, M.W. & Turner, J.D. 2006. Forest Trees of Australia. CSIRO Publishing, Collingwood, Australia	[Densities unknown] "Fruits: Shortly to distinctly pedicellate, cupular to truncate-globose, crowded, 0.5–0.6 × 0.5–0.7 cm; disc relatively broad, more or less level to slightly descending; valves 4, about rim level. Seeds pyramidal or obliquely pyramidal, brown to red-brown, hilum terminal."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	**Notes**
	Baskin, C.C. & Baskin, J.M. 2014. Seeds Ecology, Biogeography, and Evolution of Dormancy and Germination. Second Edition. Academic Press, San Francisco, CA	[Possibly no. Longevity in soil seed bank unspecified] "TABLE 10.10 Dormancy in seeds of trees of moist warm temperature woodlands." [E. pulchella - ND* = non-dormant]

803	Well controlled by herbicides	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	**Notes**
	Southern Woods Nursery. (2018). Eucalyptus pulchella - White Peppermint Gum. https://www.southernwoods.co.nz/shop/eucalyptus-pulchella/. [Accessed 17 Jul 2018]	"Coppicing"
	Ritter, M. (2014). Field Guide to the Cultivated Eucalypts (Myrtaceae) and How to Identify Them. Annals of the Missouri Botanical Garden, 99(4), 642-687	"Social engineers, planners, and entrepreneurs have promoted worldwide eucalypt planting for the last 150 years because of their many valuable characteristics-they are readily propagated from seed, grow fast, thrive in degraded soils and dry climates, can sustain regular coppicing, and are generally pest free."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits
• Naturalized in high elevation area of Maui (Hawaiian Islands), California, New Zealand, & the UK
• Other Eucalyptus species are invasive
• Unpalatable to deer & probably other browsing animals
• Flammable; may increase fire risk in natural areas
• Reproduces by seeds
• Hybridizes with other Eucalyptus species
• Dispersed by wind & intentionally by people
• Able to coppice & resprout after cutting

Low Risk Traits
• Native to regions with temperate climate; may only pose risk to high elevations of tropical islands
• Naturalized, but no negative impacts documented to date
• Unarmed (no spines, thorns, or burrs)
• Non-toxic
• In native range, restricted to dolerite-derived soils
• Not reported to spread vegetatively

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> Possibly. Tolerates partial shade to full sun. Not known to form dense stands.
(B) Bird or clearly wind-dispersed?> Dispersed by wind
(C) Life cycle <4 years? Unknown. A fast-growing tree; time to maturity unknown
Outcome = Evaluate further