

Key Words: Evaluate, Naturalized, Ornamental Tree, Cold-tolerant, Wind-dispersed

Family: *Myrtaceae*

Taxon: *Eucalyptus gunnii*

Synonym: NA

Common Name: Cider gum

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation:	EVALUATE
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score	2
101	Is the species highly domesticated?		y=-3, n=0		n
102	Has the species become naturalized where grown?		y=1, n=-1		
103	Does the species have weedy races?		y=1, n=-1		
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		n=0, y = 1*multiplier (see Appendix 2)		n
303	Agricultural/forestry/horticultural weed		n=0, y = 2*multiplier (see Appendix 2)		n
304	Environmental weed		n=0, y = 2*multiplier (see Appendix 2)		n
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		y=1, n=0		
403	Parasitic		y=1, n=0		n
404	Unpalatable to grazing animals		y=1, n=-1		n
405	Toxic to animals		y=1, n=0		n
406	Host for recognized pests and pathogens		y=1, n=0		
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		
409	Is a shade tolerant plant at some stage of its life cycle		y=1, n=0		
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	y
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	y=1, n=-1	y
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	>3
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	
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	
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)	y=1, n=-1	
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides	y=-1, n=1	
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)	y=-1, n=1	

Designation: EVALUATE

WRA Score 2

Supporting Data:

101	2012. Department of Primary Industries, Parks, Water and Environment. Tasmanian Threatened Species Listing Statement - <i>Eucalyptus gunnii</i> subsp. <i>Divaricata</i> . http://www.dpiw.tas.gov.au/inter.nsf/WebPages/LEN-5P3ACA?open	[Is the species highly domesticated?? No, but cultivars have been developed] " <i>Eucalyptus gunnii</i> subsp. <i>divaricata</i> is of iconic significance due to its extreme frost resistance, popularity with florists, tapping of sap by Aborigines and early European settlers (stands at Cider Marsh and Jacks Marsh were sap producers) and as a subject of ongoing study of evolutionary processes in Tasmania (Potts et al. 2001). It has also been used in breeding programs because of its frost resistance (Potts & Potts 1986)."
102	2012. WRA Specialist. Personal Communication.	NA
103	2012. WRA Specialist. Personal Communication.	NA
201	2006. Boland, D.J./Brooker, M.I.H./Chippendale, G.M./William McDonald, M.. Forest trees of Australia. CSIRO Publishing, Collingwood, Australia	[Species suited to tropical or subtropical climate(s) 0-Low] "The cider gums are endemic to Tasmania." ... "Cider gums are adapted to some of the coldest conditions experienced by any eucalypt."
202	2006. Boland, D.J./Brooker, M.I.H./Chippendale, G.M./William McDonald, M.. Forest trees of Australia. CSIRO Publishing, Collingwood, Australia	[Quality of climate match data 2-High]
203	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Broad climate suitability (environmental versatility)? No] "This Tasmanian eucalypt is a subalpine species growing on poorly drained, frost prone plateaux, flats and hollows. Its distribution lies in the cold humid to wet climatic zone, with the icy winter conditions amongst the most severe experienced by any eucalypt. The soils are alpine humus with large rocks covering most of the ground surface. <i>Eucalyptus gunnii</i> , with its high level of frost tolerance, is the subject of a selection and cloning programme in southern France, where the species is planted for production of short fibred pulpwood on a coppice rotation. It is a useful windbreak and erosion control species on cold, drought-prone sites."
203	2008. Calder, J.A./Kirkpatrick, J.B.. Climate change and other factors influencing the decline of the Tasmanian cider gum (<i>Eucalyptus gunnii</i>). <i>Australian Journal of Botany</i> . 56: 684-692.	[Broad climate suitability (environmental versatility)? No] " <i>Eucalyptus gunnii</i> is a tree species putatively threatened by climate change. It has a wide distribution across Tasmania (Fig. 1), to which it is endemic (Williams and Potts 1996)." ... "It has a high tolerance of both frost and waterlogging, and slow growth rates (Kirkpatrick and Gibson 1998, 1999). Thus, it is mainly found in cold, waterlogged habitats, such as lake edges, or poorly drained valley flats in the subalpine zone (Williams and Potts 1996)."
204	2006. Boland, D.J./Brooker, M.I.H./Chippendale, G.M./William McDonald, M.. Forest trees of Australia. CSIRO Publishing, Collingwood, Australia	[Native or naturalized in regions with tropical or subtropical climates? No] "The cider gums are endemic to Tasmania." ... "Cider gums are adapted to some of the coldest conditions experienced by any eucalypt."
205	1911. Hosmer, R.S., Superintendent. Report of the Division of Forestry For the Biennial Period Ending December 31st, 1910. Territory of Hawaii Board of Agriculture and Forestry, Honolulu	[Does the species have a history of repeated introductions outside its natural range? Yes] " <i>E. gunnii</i> , Hook. Cider gum. Maui. Makawao. At an elevation of between 2,500 and 3,000 feet trees 3 years old are growing quite well. The seedlings are difficult to raise in the nursery. At elevations of 2,000 feet and higher trees are growing very rapidly. Kauai. Kalaheo. Trees planted at an elevation of between 900 and 1,000 feet."
205	2008. Forrest, M./Moore, T.. <i>Eucalyptus gunnii</i> : A possible source of bioenergy?. <i>Biomass and Bioenergy</i> . 32(10): 978-980.	[Does the species have a history of repeated introductions outside its natural range? No] "Native to Tasmania, <i>E. gunnii</i> Hook.f. is one of the widely planted <i>Eucalyptus</i> species in Britain [2] and is widely planted in Ireland [3]."
205	2012. Online Atlas of the British and Irish flora. <i>Eucalyptus gunnii</i> (Cider Gum). http://www.brc.ac.uk/plantatlas/index.php?q=plant/eucalyptus-gunnii	[Does the species have a history of repeated introductions outside its natural range? Yes] "This is one of the hardest <i>Eucalyptus</i> species in our area, and is very popular in gardens for its silvery-blue juvenile foliage. It was introduced into Britain not long after 1840 and trees planted in the wild in 1887 in N. Essex still survive."
301	1982. Sykes, W.R.. Checklist of dicotyledons naturalised in New Zealand 12. Haloragales, Myrtales, Proteales, Theales, Violales (excluding Violaceae). <i>New Zealand Journal of Botany</i> . 20(1): 73-80.	[Naturalized beyond native range? Yes] "Occasional cultivation escape near plantations in North & South Is"
301	2006. Howell, C.J./Sawyer, J.W.D.. New Zealand naturalised vascular plant checklist. New Zealand Plant Conservation Network, Wellington, NZ www.nzpcn.org.nz	[Naturalized beyond native range? Yes] " <i>Eucalyptus gunnii</i> " ... "Fully naturalised"

301	2012. Online Atlas of the British and Irish flora. <i>Eucalyptus gunnii</i> (Cider Gum). http://www.brc.ac.uk/plantatlas/index.php?q=plant/eucalyptus-gunnii	[Naturalized beyond native range? Yes] "A fast-growing evergreen tree widely planted in gardens, parks, amenity areas and, rarely, for forestry. It has become naturalised in woodland and on roadsides in S.E. England. It occasionally regenerates from seed. Lowland."
302	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Garden/amenity/disturbance weed? No] No evidence
303	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Agricultural/forestry/horticultural weed? No] No evidence
304	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Environmental weed? No] No evidence
305	2003. Weber, E.. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[Congeneric weed? Yes] " <i>Eucalyptus cladocalyx</i> " ... "Where invasive, the tree recruits dense cohorts of seedlings following fires, threatening native plants by shading them out."
401	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Produces spines, thorns or burrs? No] " <i>Eucalyptus gunnii</i> , known as cider gum, is a small to medium-sized woodland tree up to 25 m tall and with diameters at breast height of up to 1 m. The species is generally of poor form and branches are held low down on the trunk. The proportions of rough to smooth bark vary between individuals. The rough bark often persists as a thin greyish stocking or decorticates in strips from the trunk and branches to reveal a smooth, at first yellowish patchy surface that weathers to whitish, greenish and pinkish grey."
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Parasitic? No] " <i>Eucalyptus gunnii</i> , known as cider gum, is a small to medium-sized woodland tree up to 25 m tall and with diameters at breast height of up to 1 m." [Myrtaceae]
404	2008. Calder, J.A./Kirkpatrick, J.B.. Climate change and other factors influencing the decline of the Tasmanian cider gum (<i>Eucalyptus gunnii</i>). Australian Journal of Botany. 56: 684-692.	[Unpalatable to grazing animals? No] "Brush-tailed possum populations have strongly increased in rural areas in Tasmania since the collapse of the fur trade in the early 1980s (Jetson 1989; Neyland 1999). Possums feed on both eucalypt foliage and herbs. They have been shown to find <i>E. gunnii</i> foliage highly palatable (Dungey and Potts 2002)." ... "We have some strong temporal and weaker spatial evidence for tree decline caused by climatic change, circumstantial evidence for a role of possum and invertebrate browsing in the dieback process, and, strong evidence for an impact of stock grazing through its elimination of juveniles across many decades. Our results are therefore consistent with the hypotheses of Potts et al. (2001)." ... "In the case of <i>E. gunnii</i> , exclusion of stock may lead to the establishment of a new generation in populations with a canopy seed store, and the control of brush-tailed possum populations is likely to reduce morbidity and mortality in adult trees."
404	2011. McKay, H. (ed.). Short Rotation Forestry: review of growth and environmental impacts. Forest Research Monograph, 2.. Forest Research, Surrey	[Unpalatable to grazing animals? No] "Eucalyptus trials in Oregon by Hunt (1983) have revealed the <i>E. gunnii</i> is very susceptible to damage by deer (84.6% trees severely browsed by black-tailed deer - <i>Odocoileus hemionus</i>) but <i>E. nitens</i> and <i>E. glaucescens</i> in contrast were relatively undamaged (95% and 69% undamaged respectively)."
404	2012. Department of Primary Industries, Parks, Water and Environment. Tasmanian Threatened Species Listing Statement - <i>Eucalyptus gunnii</i> subsp. <i>Divaricata</i> . http://www.dpiw.tas.gov.au/inter.nsf/WebPages/SLLEN-5P3ACA?open	[Unpalatable to grazing animals? No] "Browsing: Lacking marked oil glands in the juvenile leaves in particular, <i>Eucalyptus gunnii</i> subsp. <i>divaricata</i> is highly palatable, with selective browsing by sheep, brushtail possums, wallabies, deer and rabbits, as well as leaf eating and sap sucking insects (including the introduced European wasp). Possums in particular appear to have a preference for browsing this species, with congregation in cider gums stands well recognised by farmers and shooters."
405	2012. Department of Primary Industries, Parks, Water and Environment. Tasmanian Threatened Species Listing Statement - <i>Eucalyptus gunnii</i> subsp. <i>Divaricata</i> . http://www.dpiw.tas.gov.au/inter.nsf/WebPages/SLLEN-5P3ACA?open	[Toxic to animals? No evidence] "Browsing: Lacking marked oil glands in the juvenile leaves in particular, <i>Eucalyptus gunnii</i> subsp. <i>divaricata</i> is highly palatable, with selective browsing by sheep, brushtail possums, wallabies, deer and rabbits, as well as leaf eating and sap sucking insects (including the introduced European wasp)."
406	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Host for recognized pests and pathogens? Possibly] "Pests recorded Insects: <i>Gonipterus gibberus</i> (snout beetle, eucalyptus) <i>Gonipterus scutellatus</i> (eucalyptus snout beetle) <i>Paropsis charybdis</i> (eucalyptus tortoise beetle) Fungus diseases: <i>Mycosphaerella nubilosa</i> <i>Septoria pulcherrima</i> "

407	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Causes allergies or is otherwise toxic to humans? No evidence] "E. gunnii is used as an ornamental, and the orbicular, greyish-green, juvenile coppice foliage is used in the cut-foilage trade. The sugary sap from the trunk of some populations was reputedly used by the local Aboriginal peoples for the production of an alcoholic drink, and thus the common name of 'cider gum'."
407	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Causes allergies or is otherwise toxic to humans? No evidence]
408	2005. Pyrke, A.F./Marsden-Smedley, J.B.. Fire-attributes categories, fire sensitivity, and flammability of Tasmanian vegetation communities. Tasforests. 16: 35-46.	[Creates a fire hazard in natural ecosystems? Possibly] "Table 1. Fire-attributes category, fire sensitivity and flammability codes for TASVEG communities, listed in decreasing order of fire sensitivity. (F-A Cat = fire attributes category, FS = fire sensitivity, FI = flammability; for fire-attributes category codes, see Table 2; fire sensitivity and flammability codes—E = extreme, VH = very high, H = high, M = moderate, L = low, N = not rated)" [Eucalyptus gunnii woodland listed as highly fire sensitive and moderately flammable]
409	2012. Australian Native Plants Nursery. Eucalyptus gunnii. http://www.australianplants.com/plants.aspx?id=1453	[Is a shade tolerant plant at some stage of its life cycle? Possibly] "Exposure: Full Sun to Partial Shade"
410	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Tolerates a wide range of soil conditions? No] "Soil descriptors - Soil texture: heavy - Soil drainage: impeded - Soil reaction: acid; neutral"
410	2008. Calder, J.A./Kirkpatrick, J.B.. Climate change and other factors influencing the decline of the Tasmanian cider gum (Eucalyptus gunnii). Australian Journal of Botany. 56: 684-692.	[Tolerates a wide range of soil conditions? No] "The species occurs as a dominant of woodland or open forest, with understoreys varying from temperate rainforest to hummock sedgeland on less fertile soils and from rainforest to tussock grassland on more fertile soils."
411	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Climbing or smothering growth habit? No] "Eucalyptus gunnii, known as cider gum, is a small to medium-sized woodland tree up to 25 m tall and with diameters at breast height of up to 1 m."
412	1876. Cooper, E.. Forest culture and eucalyptus trees. Cubery & Company, Steam Book & Ornamental Job Printers, San Francisco	[Forms dense thickets? Yes] "At five thousand feet the vegetation of shrubs generally commences, and up to this height ascend two Eucalypts, Eucalyptus coriacea and Gunnii, forming dense and extensive thickets"
412	2006. Boland, D.J./Brooker, M.I.H./Chippendale, G.M./William McDonald, M.. Forest trees of Australia. CSIRO Publishing, Collingwood, Australia	[Forms dense thickets? Yes] "Cider gum, at its lower elevations, may be found in open pure stands or in association with E. coccifera, blue leaf (E. delegatensis), swamp peppermint (E. rodwayi) and mountain gum (E. dalrympleana."
412	2006. Wellington Park Management Trust. Fire Management Strategy For Wellington Park. AVK Environmental Management, Sandford, Tasmania	[Forms dense thickets? Yes] "Eucalyptus gunnii is scattered through some of the patches and often forms a dense stand on the margins of the heath."
501	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Aquatic? No] Terrestrial
502	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Grass? No] Myrtaceae
503	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Nitrogen fixing woody plant? No] Myrtaceae
504	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Eucalyptus gunnii, known as cider gum, is a small to medium-sized woodland tree up to 25 m tall and with diameters at breast height of up to 1 m."
601	2006. Boland, D.J./Brooker, M.I.H./Chippendale, G.M./William McDonald, M.. Forest trees of Australia. CSIRO Publishing, Collingwood, Australia	[Evidence of substantial reproductive failure in native habitat? No] "Cider gum, at its lower elevations, may be found in open pure stands or in association with E. coccifera, blue leaf (E. delegatensis), swamp peppermint (E. rodwayi) and mountain gum (E. dalrympleana." [No evidence]
602	2012. GB Non-natives Factsheet Editor. Eucalyptus (genus). http://www.brc.ac.uk/gbnn_admin/index.php?q=no de/294	[Produces viable seed? Yes] "Eucalyptus gunnii and E. pulchella are reported to reproduce by seed in the Channel Isles and southern England. Distances involved are small."
602	2012. Online Atlas of the British and Irish flora. Eucalyptus gunnii (Cider Gum). http://www.brc.ac.uk/plantatlas/index.php?q=plant/eucalyptus-gunnii	[Produces viable seed? Yes] "It occasionally regenerates from seed."

603	2005. Armstrong, T.T./Fitzjohn, R.G./Newstrom, L.E./Wilton, A.D./Lee, W.G. Transgene escape: what potential for crop-wild hybridization?. <i>Molecular Ecology</i> 14, 14: 2111-2132.	[Hybridizes naturally? Yes] "Table 1 The potential for hybridization between crops (common names given in brackets) and their indigenous and naturalized close relatives (indented) in New Zealand. The biostatus of each taxon is indicated in the second column using the following abbreviations: indigenous to New Zealand (ind.); naturalized exotic (nat.); casual (cas.), cultivated only (cult.). Naturalized crops are also considered as wild relatives in relation to other congeneric crops. The potential for hybridization (HP) is indicated in the third column by the following four categories: 1 Evidence exists of substantial reproductive compatibility between the crop and at least one other indigenous or naturalized species (including naturalized crops)." [The following hybrids were documented in this paper: <i>E. gunnii</i> × <i>E. ovata</i> ; <i>E. nitens</i> × <i>E. gunnii</i>
603	2012. Department of Primary Industries, Parks, Water and Environment. Tasmanian Threatened Species Listing Statement - <i>Eucalyptus gunnii</i> subsp. <i>Divaricata</i> . http://www.dpiw.tas.gov.au/inter.nsf/WebPages/SLEN-5P3ACA?open	[Hybridizes naturally? Yes] "It may be necessary to consider controlled pollination in these plantings when they reach maturity in order to obtain seed uncontaminated by pollen of other eucalypts, though hybrids can be culled at the seedling stage as they are generally easily distinguished."
604	1987. Potts, B.M./Potts, C./Cauvin, B. Inbreeding and Interspecific Hybridization in <i>Eucalyptus gunnii</i> . <i>Silvae Genetica</i> . 36(5-6): 194-199.	[Self-compatible or apomictic? Yes] "Seedlings from open-pollination of <i>E. gunnii</i> were, on the average, intermediate in vigour and survival between self and wide intraspecific crosses" [But plants are less vigorous than cross pollinated individuals]
604	2012. Department of Primary Industries, Parks, Water and Environment. Tasmanian Threatened Species Listing Statement - <i>Eucalyptus gunnii</i> subsp. <i>Divaricata</i> . http://www.dpiw.tas.gov.au/inter.nsf/WebPages/SLEN-5P3ACA?open	[Self-compatible or apomictic? Yes, but vigor is reduced] " <i>Eucalyptus gunnii</i> displays inbreeding depression, reducing the quality of seed produced in declining stands as fewer trees flower. Seedlings grown from self-pollinated seed have stunted growth and high mortality (Potts et al. 1987)."
605	2012. Department of Primary Industries, Parks, Water and Environment. Tasmanian Threatened Species Listing Statement - <i>Eucalyptus gunnii</i> subsp. <i>Divaricata</i> . http://www.dpiw.tas.gov.au/inter.nsf/WebPages/SLEN-5P3ACA?open	[Requires specialist pollinators? No evidence] "There is increasing isolation of mature <i>Eucalyptus gunnii</i> subsp. <i>divaricata</i> trees as plants die and are not replaced. This reduces the likelihood that bird and insect pollinators will travel between distant individuals leading to an increased rate of self-pollination and inbreeding."
606	2012. Department of Primary Industries, Parks, Water and Environment. Tasmanian Threatened Species Listing Statement - <i>Eucalyptus gunnii</i> subsp. <i>Divaricata</i> . http://www.dpiw.tas.gov.au/inter.nsf/WebPages/SLEN-5P3ACA?open	[Reproduction by vegetative fragmentation? No] "Recruitment is from seed stored in woody capsules in its canopy." ... "Often seedlings, repressed through continual browsing, persist amongst the dead trees. Pertinent to recovery, the taxon strikes relatively easily from cuttings taken from seedlings or ground-level coppice regrowth (Potts & Potts 1986)."
606	2012. GB Non-natives Factsheet Editor. <i>Eucalyptus</i> (genus). http://www.brc.ac.uk/gbnn_admin/index.php?q=no de/294	[Reproduction by vegetative fragmentation? No] "Reproduction - Only by seed; they do not generally produce suckers. Trees that are pollarded for juvenile foliage are less likely to flower."
607	2010. Forestry Commission Scotland. Interim Guidance on the Grant Aiding and Planting of <i>Eucalypts</i> in Scotland. http://www.forestry.gov.uk/pdf/InterimEucalyptusGuidance.pdf/\$FILE/InterimEucalyptusGuidance.pdf	[Minimum generative time (years)? 4+] " <i>Eucalypts</i> begin to set viable seed from around age 5, which can be held on the tree within woody seedpods (gumnuts) for several years." ... "While the seed of some species requires pre-chilling before germination e.g. <i>E. nitens</i> , others do not e.g. <i>E. gunnii</i> , and most will germinate readily at ~15°C. Incidences of natural eucalypt regeneration are rare in Scotland and where it does occur it is in close proximity to existing trees, which suggests that most seeds do not find suitable germination sites or that they are predated either as seeds or very young seedlings."
701	2012. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Unknown] Possible that small seeds may be inadvertently dispersed, but no direct evidence was found
702	2005. CAB International. <i>Forestry Compendium</i> . CAB International, Wallingford, UK	[Propagules dispersed intentionally by people? Yes] " <i>E. gunnii</i> is used as an ornamental, and the orbicular, greyish-green, juvenile coppice foliage is used in the cut-foliage trade. The sugary sap from the trunk of some populations was reputedly used by the local Aboriginal peoples for the production of an alcoholic drink, and thus the common name of 'cider gum'."
703	1997. Williams, J.E./Woinarski, J. <i>Eucalypt Ecology: Individuals to Ecosystems</i> . Cambridge University Press, Cambridge, UK	[Propagules likely to disperse as a produce contaminant? No] "Seed is mainly dispersed by wind and gravity following release from canopy-stored capsules (Cremer 1977)."
704	1995. Potts, B./Gore, P. Reproductive biology and controlled pollination of <i>Eucalyptus</i> - a review. School of Plant Science, University of Tasmania, Hobart, Tasmania	[Propagules adapted to wind dispersal? Yes] "Seed dispersal in most eucalypt species is mainly by wind and gravity (Cremer 1965b, 1977)..."

705	1997. Williams, J.E./Woinarski, J.. Eucalypt Ecology: Individuals to Ecosystems. Cambridge University Press, Cambridge, UK	[Propagules water dispersed? Unknown] "Seed is mainly dispersed by wind and gravity following release from canopy-stored capsules (Cremer 1977)." [Possible that small seeds could be moved by water, but no direct evidence was found]
706	2012. Department of Primary Industries, Parks, Water and Environment. Tasmanian Threatened Species Listing Statement - Eucalyptus gunnii subsp. Divaricata. http://www.dpiw.tas.gov.au/inter.nsf/WebPages/LEN-5P3ACA?open	[Propagules bird dispersed? No] "The fruit is an often glaucous capsule 7 to 9 mm long by 6 mm wide (description from Potts et al. 2001)." [Not fleshy-fruited]
707	1997. Williams, J.E./Woinarski, J.. Eucalypt Ecology: Individuals to Ecosystems. Cambridge University Press, Cambridge, UK	[Propagules dispersed by other animals (externally)? No] "Seed is mainly dispersed by wind and gravity following release from canopy-stored capsules (Cremer 1977)." [No evidence that E. gunnii is dispersed by external attachment to mammals]
708	1997. Williams, J.E./Woinarski, J.. Eucalypt Ecology: Individuals to Ecosystems. Cambridge University Press, Cambridge, UK	[Propagules survive passage through the gut? Unlikely] "Seed is mainly dispersed by wind and gravity following release from canopy-stored capsules (Cremer 1977)."
801	2012. GB Non-natives Factsheet Editor. Eucalyptus (genus). http://www.brc.ac.uk/gbnn_admin/index.php?q=no de/294	[Prolific seed production (>1000/m2)? Unknown] "Parks and gardens. Eucalyptus gunnii is sometimes recorded as self-sown in woods."
802	2012. Department of Primary Industries, Parks, Water and Environment. Tasmanian Threatened Species Listing Statement - Eucalyptus gunnii subsp. Divaricata. http://www.dpiw.tas.gov.au/inter.nsf/WebPages/LEN-5P3ACA?open	[Evidence that a persistent propagule bank is formed (>1 yr)? Yes. Canopy seed bank] "Recruitment is from seed stored in woody capsules in its canopy. Capsules generally take one to two years to mature following flowering. As capsules dry out following damage or fire, seed is released through valves, though valves of capsules that have been mature for longer than two years tend to fail to open."
803	2012. GB Non-natives Factsheet Editor. Eucalyptus (genus). http://www.brc.ac.uk/gbnn_admin/index.php?q=no de/294	[Well controlled by herbicides? Unknown for E. gunnii] "Chemical - Stump treatment can be used if necessary."
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Ability to coppice"
804	2012. Department of Primary Industries, Parks, Water and Environment. Tasmanian Threatened Species Listing Statement - Eucalyptus gunnii subsp. Divaricata. http://www.dpiw.tas.gov.au/inter.nsf/WebPages/LEN-5P3ACA?open	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Eucalyptus gunnii subsp. divaricata can resprout from lignotubers following fire or damage."
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk / Undesirable Traits

- Naturalized in England and New Zealand
- Genus has a reputation for naturalizing & invasiveness
- Forms dense thickets in native range of Tasmania
- Able to hybridize with other *Eucalyptus* species
- Self-compatible (although vigor is reduced)
- Wind-dispersed seeds
- Seeds persist in capsules on tree for several years
- Resprouts from lignotubers following damage fire or other damage

Low Risk / Desirable Traits

- Despite ability to spread, no negative impacts have been documented in introduced range
- Cold climatic requirements may limit the ability to spread in high elevation areas of the tropics
- Palatable to browsing animals (would require protection from ungulates to establish)
- Landscaping and ornamental value
- Juvenile coppice foliage is used in the cut-foliage trade