Eucalyptus gunnii (Cider Gum, Silver Eucalyptus) FLORIDA			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 FL climates (USDA hardiness zones; 0-low, 1-intermediate, 2-	2	
	high)		
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	У	1
	precipitation		
2.05	Does the species have a history of repeated introductions outside its natural	У	
	range?		
3.01	Naturalized beyond native range	у	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	у	2
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	?	
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	n	-1
4.05	Toxic to animals	?	
4.06	Host for recognised pests and pathogens		
4.07	Causes allergies or is otherwise toxic to humans		
4.08	Creates a fire hazard in natural ecosystems	у	1
4.09	Is a shade tolerant plant at some stage of its life cycle	n	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils).	n	0
	North & Central Zones: infertile soils; South Zone: shallow limerock or		
	Histisols.		
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	n	0
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		
6.02	Produces viable seed	у	1
6.03	Hybridizes naturally	У	1
6.04	Self-compatible or apomictic	у	1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	n	-1
6.07	Minimum generative time (years)	5	-1

7.01	1 Propagules likely to be dispersed unintentionally (plants growing in heavily		
	trafficked areas)		
7.02	Propagules dispersed intentionally by people	У	1
7.03	Propagules likely to disperse as a produce contaminant		
7.04	Propagules adapted to wind dispersal n -1		-1
7.05	Propagules water dispersed	?	
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	n	-1
8.01	Prolific seed production		
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-1
8.03	Well controlled by herbicides	?	
8.04	Tolerates, or benefits from, mutilation or cultivation	n	-1
8.05	Effective natural enemies present in U.S.		
	Total Score 1		L
	Implemented Pacific Second Screening Yes		es
	Risk Assessment Results	ent Results Accept	

	Reference	Source data
1.01		Cultivated, but no evidence of selection for reduced weediness.
1.02		Skip to 2.01
1.03		Skip to 2.01
2.01	1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20 Global%20zones/10- year%20climate/PLANT_HARDINESS_10YR%20lgnd.tif) & USDA Plant Hardiness Zone Map, 2012. Agricultural Research Service, U.S. Department of Agriculture. Accessed from http://planthardiness.ars.usda.gov. 2. USDA/ARS- GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars- grin.gov/cgi-bin/npgs/html/taxon.pl?15948 [Accessed: 12/13/2011]). 3. The Global Compendium of Weeds: <i>Eucalyptus macarthurii</i> H. Deane & Maiden (http://hear.org/gcw/html/index.html [Accessed: 12/13/2011]). 4. Forrest, M. & T. Moore. 2008. <i>Eucalyptus gunnii</i> : A possible source of bioenergy? <i>Biomass and Bioenergy</i> , 32: 978-980. 5.a-b Kirkpatrick, J.B. & N. Gibson. 1999. Towards an explanation of the altitudinal distributions of three species of <i>Eucalyptus</i> in central Tasmania. <i>Australian Journal of Ecology</i> , 24(2): 123-131. 6. Calder, J.A. & J.B. Kirkpatrick. 2008. climate chande and other factors influencing the decline of the Tasmanian cider gum (<i>Eucalyptus gunnii</i>). <i>Australina Journal of Botany</i> , 56: 684-692.	No computer analysis was performed. 1. Global plant hardiness zones 9; equivalent to USDA Hardiness zones 8b- 9b (north, central, [south?] zones of Florida). 2. Distributional range: native to Tasmania, Australia. 3. Cultivated escape in England; casual alien in the British Isles; naturalized in New Zealand and S.E. England. 4. Native to Tasmania and is widely planted in Britain and Ireland. 5.a. <i>Eucalyptus gunnii, E. rodwayi, & E. ovata</i> occur as dominates in grassy woodlands in Tasmania on the margins of treeless, poorly drained flats. 5.b. The Tasmanian endemic <i>Eucalyptus gunnii</i> has been widely planted in frost-prone climates and has developed a reputation for frost resistance (Potts 1985; Davidson & Reid 1987). 6. <i>Eucalyptus gunnii</i> has a wide distribution range across Tasmanina.
2.02		No computer analysis was performed . 1. Native range is well known; refer to 2.01 source data.
2.03	1. Köppen-Geiger climate map (http://www.hydrol-earth- syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf). 2. Kirkpatrick, J.B. & N. Gibson. 1999. Towards an explanation of the altitudinal distributions of three species of Eucalyptus in central Tasmania. <i>Australian Journal of Ecology</i> , 24(2): 123-131. 3. Calder, J.A. & J.B. Kirkpatrick. 2008. climate chande and other factors influencing the decline of the <i>Tasmanian cider gum (Eucalyptus gunnii</i>). Australina Journal of Botany, 56: 684-692.	1. Native distribution appears to be in one, possibly two, climatic groups (Cfb, possibly Cfa) 2. Occurs at high altitudes in Tasmania. 3. Has a high tolerance of both frost and waterlogging; mainly found in cold, waterlogged habitats, such as lake edges, or poorly drained valley flats in the subalpine zone.

2.04	1. Calder, J.A. & J.B. Kirkpatrick. 2008. climate chande and	1. The distribution of E. gunnii ranges from areas in eastern
	other factors influencing the decline of the Tasmanian cider	Tasmania which receive less than 800 mm (31.5 in) of
	gum (Eucalyptus gunnii). Australina Journal of Botany , 56:	annual precipitation to areas in western Tasmania which
	684-692.	receive more than 2000 mm (78.7 in) of rainfall per year,
		with a strong winter maximum, but no months with less
		than 100 mm (3.9 in).
2.05	1. The Global Compendium of Weeds: Eucalyptus	1. Cultivated escape in England; casual alien in the British
	macarthurii H. Deane & Maiden	Isles; naturalized in New Zealand and S.E. England. 2.
	(http://hear.org/gcw/html/index.html [Accessed:	Widely planted in Britain and Ireland.
	12/13/2011]). 2. Forrest, M. & T. Moore. 2008. Eucalyptus	
	gunnii: A possible source of bioenergy? <i>Biomass and</i>	
	Bioenergy , 32: 978-980.	
3.01	1. The Global Compendium of Weeds: Eucalyptus	1. Cultivated escape in England; casual alien in the British
	macarthurii H. Deane & Maiden	Isles; naturalized in New Zealand and S.E. England.
	(http://hear.org/gcw/html/index.html [Accessed:	
	12/13/2011]).	
3.02		No evidence.
3.03		No evidence.
3.04		No evidence.
3.05	1. Holm, L. et al. A Geographical Atlas of World Weeds .	1. The following <i>eucalypts</i> are considered principal weeds
	John Wiley and Sons, New York. 1979.	in Australia (principal weed in this context is ranked
		according to the importance of the weed and is usually
		referring to about the five most troublesome species for
		the crop): E. cambageana, E. ferruginea, E. gracilis, E.
		marginata, E. miniata, E. pilularis, E. populnea, E.
		tetradonta .
4.01		Species does not possess these described morphological
		features.
4.02	1. Anonymous. 2009. "Focus on Eucalypts." SAPIA NEWS	1. It is likely that most <i>Eucalypts</i> are allelopathic-having the
	No. 12 . ARC-Plant Protection Research Institute, South	potential to suppress understory plants through chemical
	Africa. 2. Anonymous. October 2010. Scotland, Forestry	inhibitors that leach into the soil. 2. There are many
	Commission. Interim Guidance on the Grant Aiding and	reports in global literature of toxic inhibition of germination
	Planting of Eucalypts in Scotland. Accessed: 18 January	and growth of other plant species (allelopathic effects),
	2012. 3. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts	which inhibits the growth of an understory. 3. Concerns
	(203-209). In D. Simberloff & M. Rejmánek, eds.	expressed about suppression of ground vegetation due to
	Encyclopedia of Biological Invasions . Berkeley: University of	possible allelopathic effects. Allelopathic effects are widely
	California Press.	reported and these reports are largely based on laboratory
		bioassays. If not chemical inhibition then at least
		accumulation of dead material of the floor of eucalypt
		plantations hinders regeneration of native species.
4.03		

4.04	1. Leslie, A.D. et al. 2012. The potential for Eucalyptus as a wood fuel in the UK. <i>Applied Energy</i> , 89(1): 176-182. 2. Scott, S.L. et al. 2002. Possum browsing—the downside to a eucalypt hybrid developed for frost tolerance in plantation forestry. <i>Forest Ecology and Management</i> , 157(1-3): 231-245. 3. Calder, J.A. & J.B. Kirkpatrick. 2008. climate chande and other factors influencing the decline of the Tasmanian cider gum (<i>Eucalyptus gunnii</i>). <i>Australina Journal of Botany</i> , 56: 684-692.	1. The leaves are palatable to deer, rabbits and hares and so is susceptible to browsing (FICGB 1998, Purse no date). 2. <i>E. gunnii</i> is extremely susceptible to browsing by marsupial herbivores, particularly by bushtail possums (<i>Trichosurus</i> <i>vulpecula</i>) (Dungey 1996). 3. Grazing from sheep, rabbits, native marsupials and invertebrates.
4.05	1. Lucia, A. et al. 2009. Sensitivity of <i>Aedes aegypti</i> adults (<i>Diptera: Culicidae</i>) to the vapors of Eucalyptus essential oils. <i>Biosource of Technology</i> , 100(23): 6083-6087.	1. Vapors of essential oils extracted from various species of Eucalyptus (<i>E. gunnii</i> etc.) and their major components were found to be toxic to <i>Aedes aegypti</i> adults, the yellow fever mosquito. An aliquot of each oil was placed in a cylindrical test chamber and the number of knocked-down mosquitoes was recorded as function of time.
4.06		
4.07		
4.08	 Anonymous. October 2010. Scotland, Forestry Commission. Interim Guidance on the Grant Aiding and Planting of Eucalypts in Scotland. Accessed: 18 January 2012. http://www.forestry.gov.uk/pdf/InterimEucalyptusGuidanc e.pdf/\$FILE/InterimEucalyptusGuidance.pdf. 2. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203-209). In D. Simberloff & M. Rejmánek, eds. <i>Encyclopedia of Biological Invasions</i>. Berkeley: University of California Press. 	 Leaves of eucalypts are relatively slow to breakdown and have a high volatile oil content, which contributes to the severity of fire events in their native Australia. Accumulated litter in dense stands of eucalypt stands are extremely flammable.
4.09	 Lemke, C. University of Oklahoma Department of Botany & Microbiology. <u>Cal's Plant of the Week</u>. Featured January 26-February 1, 2007. Accessed: 18 January 2012. http://www.plantoftheweek.org/week393.shtml. 2. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203- 209). In D. Simberloff & M. Rejmánek, eds. <i>Encyclopedia of Biological Invasions</i>. Berkeley: University of California Press. 	 Eucalyptus gunnii need full sun to partial shade when young and full sun when in adult form. Shade-tolerant sub-canopy species are not known.
4.10	1. Boland, D.J. et al. <i>Forest Trees of Australia</i> . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	1. Grow on plateaux and mountain sides and tops where drainage is poor. The soils are peaty and weakly developed with large rocks covering much of the ground surface.

4.11	 USDA/ARS-GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars- grin.gov/cgi-bin/npgs/html/taxon.pl?15948. 15 December 2011. 2. Lemke, C. University of Oklahoma Department of Botany & Microbiology. <u>Cal's Plant of the Week</u>. Featured January 26-February 1, 2007. Accessed: 18 January 2012. http://www.plantoftheweek.org/week393.shtml. 	1. Family: <i>Myrtaceae</i> . 2. A deciduous tree, can reach up to 100 feet (30 m).
4.12	 Lemke, C. University of Oklahoma Department of Botany & Microbiology. <u>Cal's Plant of the Week</u>. Featured January 26-February 1, 2007. Accessed: 18 January 2012. http://www.plantoftheweek.org/week393.shtml. 	1. A deciduous tree, can reach up to 100 feet (30 m).
5.01	1. Kirkpatrick, J.B. & N. Gibson. 1999. Towards an explanation of the altitudinal distributions of three species of Eucalyptus in central Tasmania. <i>Australian Journal of Ecology</i> , 24(2): 123-131. 2. Boland, D.J. et al. <i>Forest Trees</i> <i>of Australia</i> . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	1. Occur as dominants in grassy woodlands in Tasmania on the margins of treeless, poorly drained flats. 2. Grows in woodlands or low woodlands. Often found in scattered clumps interspersed with marshy areas and rocky outcrops.
5.02	 USDA/ARS-GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars- grin.gov/cgi-bin/npgs/html/taxon.pl?15948. 15 December 2011. 	1. Family: <i>Myrtaceae</i> .
5.03	 USDA/ARS-GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars- grin.gov/cgi-bin/npgs/html/taxon.pl?15948. 15 December 2011. 	1. Family: <i>Myrtaceae</i> .
5.04	 Lemke, C. University of Oklahoma Department of Botany & Microbiology. <u>Cal's Plant of the Week</u>. Featured January 26-February 1, 2007. Accessed: 18 January 2012. http://www.plantoftheweek.org/week393.shtml. 	1. A deciduous tree, can reach up to 100 feet (30 m).
6.01		
6.02	 Roy, D. & K. Walker. Online Atlas of the British and Irish Flora. Accessed: 13 January 2012. http://www.brc.ac.uk/plantatlas/. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203-209). In D. Simberloff & M. Rejmánek, eds. <i>Encyclopedia of Biological Invasions</i>. Berkeley: University of California Press. 	1. It occasionally regenerates from seed. 2.a. Eucalypt breeding system is of mixed mating with preferential outcrossing. 2.b. <i>E. gunnii</i> has a regenerative strategy as a lignotuber sprouter.

6.03	 Scott, S.L. et al. 2002. Possum browsing—the downside to a eucalypt hybrid developed for frost tolerance in plantation forestry. <i>Forest Ecology and Management</i>, 157(1-3): 231-245. 2. Potts, B.M. et al. 1987. Inbreeding and Interspecific Hybridization in <i>Eucalyptus gunnii</i>. <i>Silvae Genetica</i>, 35(5-6): 194-199. a-b. Potts, B.M. et al. 1987. Inbreeding and Interspecific Hybridization in <i>Eucalyptus gunnii</i>. <i>Silvae Genetica</i>, 35(5-6): 194-199. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203-209). In D. Simberloff & M. Rejmánek, eds. <i>Encyclopedia of Biological Invasion</i> s. Berkeley: University of 	 1.a. Eucalypts are known for their natural inclination for hybridization (Griffin et al 1987). 2. At the hybridization program in Toulouse, France several clones are putative natural <i>E. gunnii</i> x <i>E. ovata</i> hybrids. 1.a. Eucalypts have a mixed mating system with relatively high outbreeding rates maintained by protrandry and varying degrees of self-incompatibility and reinforced by selection against products of self-fertilization in later stages of the life cycle. 1.b. There are strong barriers to inbredding
	California Press.	in <i>E. gunnil</i> with self and close intraspecific crosses less successful than wide intraspecific crosses and most interspecific crosses examined. Selfing does occur in the genus, but less readily than outcrossing and frequently less readily than interspecific hybridization. 2. <i>E. gunnii</i> has a regenerative strategy as a lignotuber sprouter.
6.05	 Potts, B.M. et al. 1987. Inbreeding and Interspecific Hybridization in <i>Eucalyptus gunnii</i>. <i>Silvae Genetica</i>, 35(5-6): 194-199. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203-209). In D. Simberloff & M. Rejmánek, eds. Encyclopedia of Biological Invasions. Berkeley: University of California Press. 	1. Pollen dispersal is probably greater than seed dispersal due to active bird and insect vectors. 2. Eucalypts generally don't need special pollinators. They are pollinated mostly by bees, wasps, and to lesser extents, birds, mammals, and wind.
6.06	 Anonymous. October 2010. Scotland, Forestry Commission. Interim Guidance on the Grant Aiding and Planting of Eucalypts in Scotland. Accessed: 18 January 2012. http://www.forestry.gov.uk/pdf/InterimEucalyptusGuidanc e.pdf/\$FILE/InterimEucalyptusGuidance.pdf. 2. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203-209). In D. Simberloff & M. Rejmánek, eds. <i>Encyclopedia of Biological Invasions</i>. Berkeley: University of California Press. 	1. Does not have the ability to sucker or colonize new ground by any other vegetative means. 2. <i>E. gunnii</i> has a regenerative strategy as a lignotuber sprouter.
6.07	 Anonymous. October 2010. Scotland, Forestry Commission. Interim Guidance on the Grant Aiding and Planting of Eucalypts in Scotland. Accessed: 18 January 2012. http://www.forestry.gov.uk/pdf/InterimEucalyptusGuidanc e.pdf/\$FILE/InterimEucalyptusGuidance.pdf 	 Eucalypts begin to set viable seed from around age 5, which can be held on the tree within woody seedpods (gumnuts) for several years.
7.01 7.02	 The Global Compendium of Weeds: Eucalyptus macarthurii H. Deane & Maiden (http://hear.org/gcw/html/index.html [Accessed: 12/13/2011]). 	1. Economic importance: ornamental, wood, tannin/dyestuff.

7.03		
7.04	 Anonymous. October 2010. Scotland, Forestry Commission. Interim Guidance on the Grant Aiding and Planting of Eucalypts in Scotland. Accessed: 18 January 2012. http://www.forestry.gov.uk/pdf/InterimEucalyptusGuidanc e.pdf/\$FILE/InterimEucalyptusGuidance.pdf. 2. Potts, B. 1990. The response of eucalypt populations to a changing environment. Tasforests, December: 179-193. 3. Cremer, K.W. 1977. Distance of seed dispersal in Eucalypts estimated from seed weights. Australian Forest Research, 7(4): 225-228. 4. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203-209). In: D. Simberloff & M. Rejmánek, eds. Encyclopedia of Biological Invasions. Berkeley: University of California Press. 	1. The seed drops directly to the ground from open pods. It has no specific mechanisms for wind dispersal, though its size and light weight will facilitate a degree of wind dispersal. 2. Seed dispersal in most eucalypt species is mainly by wind and gravity. 3. Wind is probably the only important agent of seed dispersal in the eucalypts, except possibly in species growing on river margins or flood plains where water could also transport the seed. 4. Relatively limited seed dispersal; planted eucalypts are very small and have no adaptions for dispersal (wings or fleshy). 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 that are in agreement with measurement of terminal descent velocity.
7.05	 Anonymous. October 2010. Scotland, Forestry Commission. Interim Guidance on the Grant Aiding and Planting of Eucalypts in Scotland. Accessed: 18 January 2012. http://www.forestry.gov.uk/pdf/InterimEucalyptusGuidanc e.pdf/\$FILE/InterimEucalyptusGuidance.pdf. 2. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203-209). In D. Simberloff & M. Rejmánek, eds. Encyclopedia of Biological Invasions. Berkeley: University of California Press. 	1. It has no specific mechanisms for water dispersal, though dry eucalypt seed will float; seed sinks after absorbing water. 2. Eucalypts should not be planted near rivers/streams. Temporarily flooded or eroded river/stream banks are suitable habitat for spontaneous establishment of seedlings. Additionally, their seeds can be dispersed for long distances by running water.
7.06	1. Southern, S.G. et al. 2004. Review of gene movement by bats and birds and its potential significance for eucalypt plantation forestry. <i>Australian Forestry</i> , 67(1): 44-53.	1. Dispersal in animal droppings does not occur, although many birds eat eucalypt seed, because the seed does not survive passage through the alimentary canal of mammals and birds (Joseph 1986).
7.07	 Anonymous. October 2010. Scotland, Forestry Commission. Interim Guidance on the Grant Aiding and Planting of Eucalypts in Scotland. Accessed: 18 January 2012. http://www.forestry.gov.uk/pdf/InterimEucalyptusGuidanc e.pdf/\$FILE/InterimEucalyptusGuidance.pdf. 2. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203-209). In D. Simberloff & M. Rejmánek, eds. <i>Encyclopedia of Biological Invasions</i>. Berkeley: University of California Press. 	No adaptations that would suggest that it could attach itself externally to animals. 1. The seed drops directly to the ground from open pods. There are no biological vectors for seed movement. 2. Relatively limited seed dispersal; planted eucalypts are very small and have no adaptions for dispersal (wings or fleshy).

7.08	1. Southern, S.G. et al. 2004. Review of gene movement by bats and birds and its potential significance for eucalypt plantation forestry. <i>Australian Forestry</i> , 67(1): 44-53.	 Dispersal in animal droppings does not occur, although many birds eat eucalypt seed, because the seed does not survive passage through the alimentary canal of mammals and birds (Joseph 1986).
8.01		
8.02	1. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203- 209). In D. Simberloff & M. Rejmánek, eds. <i>Encyclopedia of</i> <i>Biological Invasions</i> . Berkeley: University of California Press.	 Eucalypt seeds do not have dormancy and seed storage in the soil lasts less than a year.
8.03	1. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203-209). <i>In</i> : D. Simberloff & M. Rejmánek, eds. <i>Encyclopedia of Biological Invasions</i> . Berkeley: University of California Press.	1. Triclopyr or glyphosate applied to freshly cut stumps can greatly reduce resprouting.
8.04	 Anonymous. October 2010. Scotland, Forestry Commission. Interim Guidance on the Grant Aiding and Planting of Eucalypts in Scotland. Accessed: 18 January 2012. http://www.forestry.gov.uk/pdf/InterimEucalyptusGuidanc e.pdf/\$FILE/InterimEucalyptusGuidance.pdf. 2. Rejmánek, M. & D.M. Richardson. 2011. Eucalypts (203-209). In D. Simberloff & M. Rejmánek, eds. Encyclopedia of Biological Invasions. Berkeley: University of California Press. 	1. Does not have the ability to sucker or colonize new ground by any other vegetative means. 2. <i>E. gunnii</i> has a regenerative strategy as a lignotuber sprouter.
8.05		