Eucalyptus gardneri (Blue Mallet, Blue-Leaf Mallet, Gardner's Mallet) -- FLORIDA		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 FL climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high)	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	y	1
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?	n	
3.01	Naturalized beyond native range	n	0
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	y	2
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	?	
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	?	
4.09	Is a shade tolerant plant at some stage of its life cycle	?	
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	y	1
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	y	1
6.03	Hybridizes naturally		
6.04	Self-compatible or apomictic	y	1
6.05	Requires specialist pollinators	y	-1
6.06	Reproduction by vegetative propagation		
6.07	Minimum generative time (years)		

7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
7.02	Propagules dispersed intentionally by people	y	1
7.03	Propagules likely to disperse as a produce contaminant		
7.04	Propagules adapted to wind dispersal	n	-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		
8.05	Effective natural enemies present in U.S.		
	Total Score	**1**	
	Implemented Pacific Second Screening	**Yes**	
	Risk Assessment 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%20Global%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: 8 May 2012]). 3. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	**No computer analysis was performed**. 1. Global plant hardiness zones 9-10; equivalent to USDA Hardiness zones 8b-10a (north, central, and south zones of Florida). 2. Native distribution: southwest Western Australia, Australia. 3. Occurs mainly in the west central wheat belt of Western Australia.
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. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	1. Native distribution appears to be in three climatic groups (BSk, Csa, Csb). 2. Altitudinal range: 200 m-380 m (656'-1246.7').
2.04	1. Australia's Virtual Herbarium. 2009. http://chah.gov.au/avh/index.jsp. Accessed: 9 May 2012. 2. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	1. 200 mm-600 mm (7.9"-23.6"). 2. Rainfall: 320 mm-420 mm (12.6"-16.5")
2.05		No evidence.
3.01		No evidence.
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* . John Wiley and Sons, New York. 1979.	1. The following *eucalypts* are considered principal weeds 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		No evidence.

4.02	1. Anonymous. 2009. "Focus on Eucalypts." SAPIA NEWS No. 12. ARC-Plant Protection Research Institute, South Africa. 2. Anonymous. October 2010. Scotland, Forestry Commission. Interim Guidance on the Grant Aiding and Planting of Eucalypts in Scotland. Accessed: 1 June 2012. 3. 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 is likely that most Eucalypts are allelopathic-having the potential to suppress understory plants through chemical inhibitors that leach into the soil. 2. There are many reports in global literature of toxic inhibition of germination and growth of other plant species (allelopathic effects), which inhibits the growth of an understory. 3. Concerns expressed about suppression of ground vegetation due to possible allelopathic effects. Allelopathic effects are widely 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		No evidence.
4.04	1. United States Department of Agriculture Permit applications 08-11-106rm and 08-014-101rm received from ArborGen LLC. Field testing of genetically engineered E. grandis X E. urophylla (http://www.aphis.usda.gov/brs/aphisdocs/08_014101rm_ea2.pdf [Accessed: 8/19/2010]).	1. Eucalyptus species are known to produce chemical compounds that are required by the plant for defense against herbivores and pathogens.
4.05	1. *Medicinal Plants for Livestock: Eucalyptus spp* . Cornell University, Department of Animal Science. http://www.ansci.cornell.edu/plants/medicinal/eucalyp.html. 1 June 2012.	1. "*Eucalyptus spp* . contain high levels of phenolics and terpenoids which can be toxic. Animals such as the koala which eat Eucalyptus have developed methods for detoxifying the compounds in the liver. In addition, they have bacteria that degrade tannin-protein complexes. Most animals do not have this ability."
4.06		
4.07		
4.08	1. Gill, A.M. "Eucalypts and fires: interdependent or independent?" In: *Eucalypt ecology: individuals to ecosystems* . Ed. J.E. Williams & J. Woinarski. Cambridge, New York: Cambridge University Press, 1997. 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. Eucalypts often are the major source of fuel for fires, but not always. 2. 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.
4.09	1. 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. Shade-tolerant sub-canopy [Eucalyptus] species are not known.

4.10	1. *Eucalyptus gardneri* Maiden. FloraBase: Flora of Western Australia. Accessed 1 June 2012. http://florabase.dec.wa.gov.au/browse/profile/5656. 2. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	1. "Gravelly soils, laterite." 2. Occurs only on lateritic breakaways; soil sandy with ironstone gravel component and light clay.
4.11	1. *Eucalyptus gardneri* Maiden. FloraBase: Flora of Western Australia. Accessed 1 June 2012. http://florabase.dec.wa.gov.au/browse/profile/5656	1. "Tree, 5-10 m high"
4.12	1. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	1. Erect tree up to 10 m tall.
5.01	1. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	1. Grows in low woodlands.
5.02	1. USDA/ARS-GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?15948 [Accessed: 8 May 2012]).	1. Family: *Myrtaceae.*
5.03	1. USDA/ARS-GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?15948 [Accessed: 8 May 2012]).	1. Family: *Myrtaceae.*
5.04	1. *Eucalyptus gardneri* Maiden. FloraBase: Flora of Western Australia. Accessed 1 June 2012. http://florabase.dec.wa.gov.au/browse/profile/5656	1. "Tree, 5-10 m high"
6.01		
6.02	1. Pacific Island Ecosystems at Risk (PIER). http://www.hear.org. Via: Chippendale, G.M. 1973. Eucalypts of the Western Australian goldfields : (and the adjacent wheatbelt). Australian Government Publishing Service for the Minister for Primary Industry, Canberra 1973. 218 pp. p.73	1. Produces viable seeds; seeds should germinate in one to three weeks.
6.03		
6.04	1. Pacific Island Ecosystems at Risk (PIER). http://www.hear.org. Via: Freebairn, A. 1999. Honors Thesis. *Pollination of Eucalyptus gardneri: implications for revegetation* . Department of Zoology, University of Adelaide. http://www.aibiol.org.au/abstracts/honours/1999/anthony_freebairn.html.	1. Flowers pollinated with additional cross-pollen (56%) matured significantly more fruit than both self-pollen (21%) and natural pollination (30%).

6.05	1. Pacific Island Ecosystems at Risk (PIER). http://www.hear.org. Via: Freebairn, A. 1999. Honors Thesis. *Pollination of Eucalyptus gardneri: implications for revegetation* . Department of Zoology, University of Adelaide. http://www.aibiol.org.au/abstracts/honours/1999/anthony_freebairn.html.	Floral structure suggests that it would need a specialized pollinator, e.g., birds with long beaks, due to Pedicellate, elongated-barrel-shaped. 1. Pollinated by birds. Honeyeater visitation to *E. gardneri* during October was high (19 visits/hour) and was greatest in the morning when pollen accumulation on flowers was highest. Honeyeaters preferentially foraged in the upper canopies of both *E. gardneri* and *E. platypus* (observed in December 1998), although bout lengths did not vary significantly between canopy heights. Preference for upper parts of trees was not explained by the distribution of flowers or nectar production, which ranged from 0.44 to 3.17mg sucrose/day/flower in the upper canopy and 0.33 to 3.65mg sucrose/day/flower in the lower canopy. Pollen-limitation in *E. gardneri* appears to be caused by low access to pollen, rather than poor pollinator service. Conspecifics are planted too far apart to disperse pollen effectively. Variation in the response to additional cross-pollination suggests that both the quality of pollen and also the timing of pollination will affect the ability of flowers to set seed.
6.06		
6.07		
7.01		
7.02		Species is being considered for introduction as a biomass crop.
7.03		
7.04	1. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print. 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.	No adaptions for wind dispersal (i.e., lacks wings). 1. Seeds almost sperical, light grey-brown, hilum ventral. 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	1. 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. 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. *Australian Forestry* , 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	1. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	1. No adaptations that would suggest that it could attach itself externally to animals. Seeds almost sperical, light grey-brown, hilum ventral..
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. *Australian Forestry* , 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).
8.01		
8.02	1. 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. 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). *In* : D. Simberloff & M. Rejmánek, eds. *Encyclopedia of Biological Invasions* . Berkeley: University of California Press.	1. Triclopyr or glyphosate applied to freshly cut stumps can greatly reduce resprouting.
8.04		
8.05		