Eucalyptus saligna (Blue Gum, Sydney Blue Gum) -- 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	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	y	2
3.02	Garden/amenity/disturbance weed	y	2
3.03	Weed of agriculture		
3.04	Environmental weed		
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	y	1
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally	y	1
6.04	Self-compatible or apomictic		
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation		
6.07	Minimum generative time (years)	3	0

Completed: July 2012

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	?	
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	y	1
8.05	Effective natural enemies present in U.S.	y	-1
	Total Score	**9**	
	Implemented Pacific Second Screening	**No**	
	Risk Assessment Results	**Reject**	

Completed: July 2012

	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: 19 March 2012]). 3. "*Eucalyptus saligna* ." horticopia.com. Horticopia, 2011. Web. 29 May 2012. 4. 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 (8?-)9-10; equivalent to USDA Hardiness zones 8a-10a (north, central, south zones of Florida). 2. Native distribution: east New South Wales and southeast Queensland, Australia. 3. Hardy range 8b-11. 4. Fairly common from the South Coast area of NSW to around Maryborough in southern Queensland, mostly within 120 km (74.6 mi).
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 (Csb, Cfa, Cfb). 2. Altitudinal range near sea level to 1100 m (3609').
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. 600 mm-3200 mm (23.6"- 126.0"). 2. 900 mm-1800 mm (35.4"-70.9").
2.05	1. USDA, NRCS. 2012. The PLANTS Database (http://plants.usda.gov, 2 July 2012). National Plant Data Team, Greensboro, NC 27401-4901 USA. http://plants.usda.gov. Accessed: 29 May 2012. 2. Hawaiian Ecosystems at Risk project (HEAR), The Global Compendium of Weeds. http://www.hear.org/gcw/. Accessed 29 May 2012. 3. Little, Jr., E.L. *Common Fuelwood Crops* . Morgantown, WV: Communit-Tech Associates, 1983. Print. 4. USDA Forest Service, Northeastern Area. http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/eucalyptus/saligna.htm. Accessed 29 May 2012.	1. Present in Hawaii. 2. New Zealand, China, Paraguay, Ecuador, Victoria (AU), Western Australia, South Africa. 3. It has been introduced into Florida, California, and Hawaii; Brazil, South Africa, & New Zealand. 4. Has been introduced into California, Florida, Hawaii.

3.01	1. Wagner, W.L. et al. *Manual of the Flowering Plants of Hawai'i.* Vol. 1. Honolulu, HI: Bishop Museum Press, 1990. Print. 2. Howell, C. et al. 2006. *New Zealand Naturalised Vascular Plant Checklist.* New Zealand Plant Conservation Network. 3. Pacific Island Ecosystems at Risk (PIER). Global Compendium of Weeds. http://www.hear.org. Accessed 29 May 2012.	1. "In Hawai'I extensively planted on Kaua'I, O'ahu, Moloka'I, Maui, and Hawai'I, and regenerating from seed in these areas." 2. *E. saligna* fully naturalised in New Zealand. 3. Naturalized in China, Ecuador, Paraguay.
3.02	1. Henderson, L. *Alien Weeds and Invasive Plants* . Cape Town, South Africa: Agricultural Research Council, 2001. Print.	1. "Invades: Forest gaps, plantations, watercourses, roadsides. Origin: E & NE Australia. Invasive status: Transformer. Declared invader."
3.03		
3.04		
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. 2. "*Eucalyptus saligna." horticopia.com* . Horticopia, 2011. Web. 21 May 2012.	1. Shade-tolerant sub-canopy [Eucalyptus] species are not known.
4.10	1. "*Eucalyptus saligna." horticopia.com* . Horticopia, 2011. Web. 29 May 2012. 2. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	1. "Suitable soil is well-drained/loamy, sandy or clay. The pH preference is an acidic to alkaline (less than 6.8 to more than 7.7) soil". 2. Best on good quality alluvial sandy loams; other soils include clays and volcanic loams. Soils are generally moist but well drained.
4.11	1. Wagner, W.L. et al. *Manual of the Flowering Plants of Hawai'i.* Vol. 1. Honolulu, HI: Bishop Museum Press, 1990. Print.	1. "Trees 30-55 m tall"
4.12	1. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	Tall to very tall tree, trunk with excellent form, straight and clear of branches for half to two-thirds of the total tree height.
5.01	1. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print.	1. Occurs in open or tall open eucalypt forests
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. Wagner, W.L. et al. *Manual of the Flowering Plants of Hawai'i.* Vol. 1. Honolulu, HI: Bishop Museum Press, 1990. Print.	1. "Trees 30-55 m tall"
6.01	1. The Royal Botanic Gardens and Domain Trust (29 May 2012). PlantNET - The Plant Information Network System of The Royal Botanic Gardens and Domain Trust, Sydney, Australia (version 2.0). http://plantnet.rbgsyd.nsw.gov.au.	1. All populations south of Port Jackson show some genetic influence from *E. botryoides* , typically manifested as a scattering of stomates on the upper surface of the leaves (leaves of *E. saligna* have the stomates more strictly confined to the lower surface with stomates on the upper surface only along the midrib) and some rough bark. Local introgression of these populations with *E. botryoides* has also produced a number of more recent hybrid swarms. Plants with the general appearance of *E. saligna* extend as far south as Batemans Bay, then becoming more like *E. botryoides* south into East Gippsland in Victoria.
6.02	1.a-b. USDA Forest Service, Northeastern Area. http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/eucalyptus/saligna.htm. Accessed 29 May 2012.	1.a. Fresh seeds germinate in 10-20 days without pre germination treatment. 1.b. There are 460 viable seeds per 1g (13,000/oz) of seed plus chaff.
6.03	1. Little, Jr., E.L. *Common Fuelwood Crops* . Morgantown, WV: Communit-Tech Associates, 1983. Print. 2. The Royal Botanic Gardens and Domain Trust (29 May 2012). PlantNET - The Plant Information Network System of The Royal Botanic Gardens and Domain Trust, Sydney, Australia (version 2.0). http://plantnet.rbgsyd.nsw.gov.au. 3. USDA Forest Service, Northeastern Area. http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/eucalyptus/saligna.htm. Accessed 29 May 2012.	1. Has been confused with the closely related *E. grandis* and the two species will hybridize. 2. Local introgression of *E. saligna* populations with *E. botryoides* has also produced a number of more recent hybrid swarms. 3. *E. saligna* crosses with *E. robusta* and probably with *E. tereticornis* .
6.04	1. USDA Forest Service, Northeastern Area. http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/eucalyptus/saligna.htm. Accessed 29 May 2012.	1. Pollen is generally shed before the style becomes receptive, so selfing is rare.
6.05	1. Little, Jr., E.L. *Common Fuelwood Crops* . Morgantown, WV: Communit-Tech Associates, 1983. Print. 2. USDA Forest Service, Northeastern Area. http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/eucalyptus/saligna.htm. Accessed 29 May 2012.	1. Good honey plant. 2. Flowers are insect pollinated.
6.06		
6.07	1. "*Eucalyptus saligna* ." horticopia.com. Horticopia, 2011. Web. 29 May 2012. 2. USDA Forest Service, Northeastern Area. http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/eucalyptus/saligna.htm. Accessed 29 May 2012.	1. Growth rate is fast. 2. Begins to flower at 3-4 years of age.
7.01		

7.02	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: 19 March 2012]). 2. Little, Jr., E.L. *Common Fuelwood Crops* . Morgantown, WV: Communit-Tech Associates, 1983. Print.	Species is being considered for introduction as a biomass crop. 1. Economic importance: environmental (revegetator), materials (wood). 2. A fuelwood species and general purpose hardwood used for construction, shipbuilding, railroad crossties, furniture, cabinetmaking, turnery, veneers; flooring and steps in Australia; grown as an ornamental and shade tree; good honey plant.
7.03		
7.04	1. Boland, D.J. et al. *Forest Trees of Australia* . 5th ed. Collingswood, Victoria, Australia: CSIRO, 2006. Print. 2. Little, Jr., E.L. *Common Fuelwood Crops* . Morgantown, WV: Communit-Tech Associates, 1983. Print. 3. USDA Forest Service, Northeastern Area. http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/eucalyptus/saligna.htm. Accessed 29 May 2012. 4. Potts, B. 1990. The response of eucalypt populations to a changing environment. Tasforests, December: 179-193. 5. Cremer, K.W. 1977. Distance of seed dispersal in Eucalypts estimated from seed weights. Australian Forest Research, 7(4): 225-228. 6. 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, brown, cuboid or ovoid, hilum ventral. 2. Seeds, many tiny, 1-2 mm long, dull light brown. 3. Seeds are black and irregularly shaped. Seeds are naturally dispersed by wind (although no adaptations for wind dispersal are described). 4. Seed dispersal in most eucalypt species is mainly by wind and gravity. 5. 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. 6. 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. 2. Little, Jr., E.L. *Common Fuelwood Crops* . Morgantown, WV: Communit-Tech Associates, 1983. Print.	No adaptations that would suggest that it could attach itself externally to animals. 1. Seeds, brown, cuboid or ovoid, hilum ventral. 2. Seeds, many tiny, 1-2 mm long, dull light brown.

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	1. Little, Jr., E.L. *Common Fuelwood Crops* . Morgantown, WV: Communit-Tech Associates, 1983. Print.	1. Seeds, many tiny.
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	1.a-b USDA Forest Service, Northeastern Area. http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/eucalyptus/saligna.htm. Accessed 29 May 2012.	1.a. Lignotuber will sprout if the stem is killed back by fire or other injury. 1.b. Coppicing of stumps is variable; usually about 1/2 to 2/3 of the stumps will sprout.
8.05	1. USDA Forest Service, Northeastern Area. http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/eucalyptus/saligna.htm. Accessed 29 May 2012.	1. *Saligna eucalyptus* grown in plantations in many parts of the world is susceptible to the eucalyptus canker disease, *Cryphonectria cubensis* . The disease kills young trees, deforms stems, and causes basal cankers that reduce the coppicing ability of stumps. It attacks *E. grandis* in Florida but is not causing serious damage.