

<i>Melaleuca alternifolia</i> (Narrow-leaf paperbark/teatree, teatree)		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?	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	y	1
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	y	1
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		
6.05	Requires specialist pollinators		
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)	y	1
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	y	1
7.05	Propagules water dispersed		
7.06	Propagules bird dispersed		
7.07	Propagules dispersed by other animals (externally)		
7.08	Propagules dispersed by other animals (internally)		

8.01	Prolific seed production		
8.02	Evidence that a persistent propagule bank is formed (>1 yr)		
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.		
Total Score		12	
Implemented Pacific Second Screening		No	
Risk Assessment Results		High Risk	

section	# questions answered	satisfy minimum?
A	11	yes
B	6	yes
C	9	yes
total	26	yes

completed 9/17/2014

	Reference	Source data
1.01		No evidence found.
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%20lgn.tif). 2. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (4 September 2014).	No computer analysis was performed. 1. Global plant hardiness zones 9-13; equivalent to USDA Hardiness zones (8b/9a?-) 9b-11b+. 2. Distribution range: native to Australia (New South Wales, Queensland).
2.02		No computer analysis was performed. 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. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. Distribution range occurs in 3 or more climatic groups. 2. Up to 300 m above sea level and not frost-tolerant.
2.04	1. World Climate Maps. http://www.climate-charts.com/World-Climate-Maps.html . Accessed 4 September 2014. 2. Jansen, P.C.M., 1999. <i>Melaleuca alternifolia</i> (Maiden & Betche) Cheel [Internet] Record from Proseabase. L.P.A. Oyen and Nguyen Xuan Dung (Editors). PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia. http://www.proseanet.org . Accessed from Internet: 4-Sep-2014. 3. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. Mean annual precipitation 475 mm-2474 mm + (18.8"-97.4"+). 2. Average annual rainfall is 1000—1600 mm. 3. Tea trees are drought-tolerant and can survive flooding
2.05	1. Jansen, P.C.M., 1999. <i>Melaleuca alternifolia</i> (Maiden & Betche) Cheel [Internet] Record from Proseabase. L.P.A. Oyen and Nguyen Xuan Dung (Editors). PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia. http://www.proseanet.org . Accessed from Internet: 4-Sep-2014.	1. It is only occasionally cultivated outside this region, mainly in botanical gardens.
3.01		No evidence found.
3.02		No evidence found.
3.03		No evidence found.
3.04		No evidence found.
3.05	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (4 September 2014).	1. <i>Melaleuca quinquenervia</i> is a declared noxious weed by USDA-APHIS. It is a declared aquatic or terrestrial noxious weed in these U.S. states: AL, FL (terrestrial); MA, NC, OK, SC, TX (aquatic).
4.01		These structures are not included in the description of this species.
4.02	1. Amri I, Mancini E, De Martino L, Marandino A, Lamia H, Mohsen H, et al. 2012. Chemical composition and biological activities of the essential oils from three <i>Melaleuca</i> species grown in Tunisia. <i>Int J Mol Sci.</i> 13(12): 16580–16591.	1. Certain <i>Melaleuca</i> species may have allelopathic properties, resulting in an inhibition of other species in the same ecosystem. The bare ground in <i>Melaleuca</i> forests was reported as an example of allelopathy in this genus.

4.03	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (4 September 2014).	Family: Myrtaceae (not a parasitic family).
4.04		No evidence found.
4.05		No evidence found.
4.06	1. Southwell, I. Tea Tree: Crop and Productivity Improvement. IFEAT International Conference 'Australia and New Zealand: Essential Oils and Aroma Chemicals - Production and Markets'; Sydney, 2-6 Nov. 2003.	1. The biggest insect pest for tea tree is the herbaceous pyrgo beetle, <i>Paropsisterna tigrina</i> , which can rapidly devastate a plantation by both adult and larval herbivory.
4.07	1. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. Pure tea tree oil should not be ingested, and should be kept out of the reach of children; several cases of tea tree oil poisoning have been recorded. The oil can also cause contact dermatitis.
4.08	1. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	Fire tolerant similar to the noxious weed <i>Melaleuca quinquenervia</i> , and therefore may alter the fire regime.
4.09	1. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. Performs best in well-drained but moist soil in full sun.
4.10	1. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. Can be grown in a wide range of soils in sub-tropical climates, but performs best in well-drained but moist soil.
4.11	1. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. A tall shrub or small tree up to 7 m high with a bushy crown and papery bark.
4.12	1. Jansen, P.C.M., 1999. <i>Melaleuca alternifolia</i> (Maiden & Betche) Cheel [Internet] Record from Proseabase. L.P.A. Oyen and Nguyen Xuan Dung (Editors). PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia. http://www.proseanet.org . Accessed from Internet: 4-Sep-2014.	1. Occurs in the warm, wet east coast of Australia, often in swampy circumstances in dense impenetrable thickets.
5.01	1. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. Along streams and on swampy flats, on the coast and adjacent ranges.
5.02	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (4 September 2014).	Family: Myrtaceae.
5.03	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (4 September 2014).	Family: Myrtaceae.
5.04	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (4 September 2014).	Family: Myrtaceae.
6.01		No evidence found.

6.02	1. Jansen, P.C.M., 1999. <i>Melaleuca alternifolia</i> (Maiden & Betche) Cheel [Internet] Record from Proseabase. L.P.A. Oyen and Nguyen Xuan Dung (Editors). PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia. http://www.proseanet.org . Accessed from Internet: 4-Sep-2014.	1. For cultivation, seed is sown in nursery beds. Wild stands have been regularly harvested for 70 years.
6.03		No evidence found.
6.04		No evidence found.
6.05		No evidence found.
6.06		No evidence found.
6.07		No evidence found.
7.01	1. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. The fruit is cup-shaped and 2-3 mm in diameter, with a hole 1.5-2.5 mm in diameter, enabling the release and dispersal of the seeds by wind.
7.02	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (4 September 2014). 2. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. Economic importance: materials (essential oils), medicines (folklore). 2. Ornamental; makes an excellent hedge and windbreak, and is also planted to stabilize embankments. Its wood is used in construction, and its branches are used for fencing.
7.03		No evidence found.
7.04	1. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. The fruit is cup-shaped and 2-3 mm in diameter, with a hole 1.5-2.5 mm in diameter, enabling the release and dispersal of the seeds by wind.
7.05	1. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. Water dispersal of seed is possible based on the habitat it occurs in, along streams and on swampy flats, on the coast and adjacent ranges.
7.06		No evidence found.
7.07		No evidence found.
7.08		No evidence found.
8.01		No evidence found.
8.02		No evidence found.
8.03	1. Global Invasive Species Database (ISSG). Available: http://www.issg.org/database/species/ecology.asp?si=440&fr=1st [4 September 2014].	1. Chemical control methods may be similar to the noxious weed <i>Melaleuca quinquenervia</i> . Current chemical control recommendations for melaleuca include low volume applications of glyphosate for control of saplings, and aerial or individual stem (girdle) applications of imazapyr alone, or in combination with glyphosate for mature trees.
8.04	1. Kew Gardens. http://www.kew.org/science-conservation/plants-fungi/melaleuca-alternifolia-tea-tree . Accessed: 4 September 2014.	1. It responds well to heavy pruning. Commercial cultivation involves planting seed at high densities and then cutting back the whole plant close to ground level (coppicing) every 6-18 months to harvest the essential oil.
8.05		No evidence found.