Taxon: Melaleuca densa R. Br. **Family:** Myrtaceae

Common Name(s): honey-myrtle **Synonym(s):** Melaleuca dorrien-smithii Domin
Melaleuca epacridioides Turcz.
Myrtoleucodendron densum (R.Br.)

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 7 May 2020

WRA Score: 1.0 **Designation:** EVALUATE **Rating:** Evaluate

Keywords: Shrub, Potential Environmental Weed, Unarmed, Wind-Dispersed, Water-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
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)	Intermediate
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	n
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)	y
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed		
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		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals		
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems		
409	Is a shade tolerant plant at some stage of its life cycle		

Qsn #	Question	Answer Option	Answer
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	n
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		
604	Self-compatible or apomictic		
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant		
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	y
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)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	**Is the species highly domesticated?**	**n**
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	[No evidence] "Western Australia: from the Augusta district eastwards to the Albany district and the Stirling Range."

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	NA

201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**Intermediate**
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 6 May 2020]	"Native Australasia AUSTRALIA: Australia [Western Australia (s.w.)]"
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Western Australia: from the Augusta district eastwards to the Albany district and the Stirling Range."

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 6 May 2020]	

203	**Broad climate suitability (environmental versatility)**	**n**
	Source(s)	**Notes**

Qsn #	Question	Answer
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Natural occurrence: Western Australia: from the Augusta district eastwards to the Albany district and the Stirling Range. Ecology: Recorded as occurring in heathland, tall shrubland, eucalypt woodland, sand plain, on sandy loam, clay, and gravelly sand." [No evidence based on distribution]
	Ole Lantana's Seed Store. (2020). Lemon Honey-Myrtle - Melaleuca densa. https://www.olelantanaseeds.com.au. [Accessed 6 May 2020]	"Plant Hardiness Zone (°C): 4 (-5°C to 0°C)"

204	Native or naturalized in regions with tropical or subtropical climates	n
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Western Australia: from the Augusta district eastwards to the Albany district and the Stirling Range." [Native to regions with a temperate climate]

205	Does the species have a history of repeated introductions outside its natural range?	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 6 May 2020]	No evidence of widespread cultivation outside native range

301	Naturalized beyond native range	y
	Source(s)	**Notes**
	White, M., Cheal, D., Carr, G. W., Adair, R., Blood, K. and Meagher, D. (2018). Advisory list of environmental weeds in Victoria. Arthur Rylah Institute for Environmental Research Technical Report Series No. 287. Department of Environment, Land, Water and Planning, Heidelberg, Victoria	[Presumably naturalized outside native range in Australia] "Advisory list of environmental weeds in Victoria" [Melaleuca densa - Area of potential distribution remaining = Early stage of invasion]
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence in Hawaiian Islands to date

302	Garden/amenity/disturbance weed	y
	Source(s)	**Notes**
	White, M., Cheal, D., Carr, G. W., Adair, R., Blood, K. and Meagher, D. (2018). Advisory list of environmental weeds in Victoria. Arthur Rylah Institute for Environmental Research Technical Report Series No. 287. Department of Environment, Land, Water and Planning, Heidelberg, Victoria	"Advisory list of environmental weeds in Victoria (abridged version April 2018)" [Melaleuca densa classified as an Environmental weed with "Impact on natural systems" described as "Occasionally significant"]

Qsn #	Question	Answer
	WRA Specialist. (2020). Personal Communication	Classified as an environmental weed in Victoria, Australia, with impacts that are "Occasionally significant". No further information was found or provided, Here classified conservatively as a weed of unspecified impacts

303	Agricultural/forestry/horticultural weed	n
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

304	Environmental weed	
	Source(s)	**Notes**
	White, M., Cheal, D., Carr, G. W., Adair, R., Blood, K. and Meagher, D. (2018). Advisory list of environmental weeds in Victoria. Arthur Rylah Institute for Environmental Research Technical Report Series No. 287. Department of Environment, Land, Water and Planning, Heidelberg, Victoria	"Advisory list of environmental weeds in Victoria (abridged version April 2018)" [Melaleuca densa classified as an Environmental weed with "Impact on natural systems" described as "Occasionally significant"]

305	Congeneric weed	y
	Source(s)	**Notes**
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Melaleuca quinquenervia … In Florida, melaleuca invades pine flatwoods, sawgrass marshes, cypress swamps and disturbed wet sites. It is considered as a transformer species and is especially threatening the sawgrass marshes of the Florida Everglades (Dray et al., 2006). Native plants are crowded out and the tree diminishes habitat for wildlife; the tree provides little food for birds and mammals (Langeland and Craddock Burks, 1998; Julian et al., 2012). Once established, tree islands are built and it transforms sawgrass marshes into forest habitats with a strongly impoverished species diversity of plants and animals (Center et al., 2012). The same mechanisms lead to reduced species richness in wetlands of Puerto Rico and the Bahamas (Pratt et al., 2005, 2007)."
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Melaleuca species can seed profusely and there are instances in Australia where they have escaped cultivation and naturalised to become invasive and troublesome weeds, especially where periodic fires provide a suitable seedbed. Species that are reported to have naturalised include M. armillaris, M. bracteata, M. decussata, M diosmifolia, M. ericifolia (per root suckers), M. halmaturorum, M. hypericifolia, M. incana, M. lanceolata, M. leucadendra, M. linariifolia, M. microphylla, M. nesophila, M. parvistaminea, M. pentagona, M. quinquenervia, M. styphelioides, M. viminalis and M. viminea (Lazarides et al. 1997; Randall 2002; Richardson et al. 2011; Wiersema and León 2013)."

401	Produces spines, thorns or burrs	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	[No evidence] "Shrub 0.5–3 m tall; bark fibrous, grey or whitish. Branchlets hairy to glabrescent, lanuginosepubescent or pubescent to puberulous. Leaves usually ternate or sometimes alternate, 2–9 mm long, 1–6.7 mm wide, 1–4.5 times as long as wide, subsessile or shortpetiolate; blade glabrous to hairy (when present, the hairs lanuginose-pubescent or pubescent to puberulous), ovate, broadly ovate, elliptic, obovate, broadly obovate, rarely subcircular, narrowly ovate or oblong, in transverse section sublunate or transversely narrowly oblong, the base cuneate or rounded, the apex acute or broadly acute to obtusely shortly acuminate, the veins longitudinal, 3, oil glands moderately dense to sparse, distinct, more or less in rows."

402	Allelopathic	
	Source(s)	**Notes**
	Ojha, S., & Bhattacharjee, A. (2013). Evaluation of allelopathic potential of an aromatic exotic tree, Melaleuca leucadendron L. African Journal of Plant Science, 7(11), 558-560	Unknown. No evidence found, but allelopathy documented in genus

403	Parasitic	n
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Shrub 0.5–3 m tall; bark fibrous, grey or whitish." [Myrtaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	**Notes**
	Knight, A. 2007. A Guide to Poisonous House and Garden Plants. CRC Press, Boca Raton, FL	[Generic description. Other members of genus unpalatable] "Animals are unlikely to eat the leaves of the plant because of the strong pungent odor of the leaves. Most animal poisoning from Melaleuca arises from the application of the oil to the skin and hair coat as a means of cleaning the hair or as a treatment for various dermatologic diseases including ectoparasites."

Qsn #	Question	Answer
405	**Toxic to animals**	**n**
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	No evidence
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

406	**Host for recognized pests and pathogens**	
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	[Susceptibility of Melaleuca densa not specified] "A wide range of insects causing damage to leaves, stems and roots of various Melaleuca species- including suckers (e.g. bugs, psyllids, froghoppers, scales, galls and thrips) and chewing pests (e.g. sawflies, caterpillars, beetles and borers) - has been described by Elliot and Jones (1982, 1983), Elliot et al. (1998) and Jones and Elliot (1986), who also give methods of control."
	WRA Specialist. (2020). Personal Communication	Unknown if Melaleuca densa could serve as a host to the fungus Austropuccinia psidii, but this pathogen is already present in the Hawaiian Islands and has been documented on a fairly wide host range of native and non-native plants. The cultivation of Melaleuca glomerata is therefore unlikely to significantly affect the distribution of Austropuccinia psidii.

407	**Causes allergies or is otherwise toxic to humans**	**n**
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	No evidence
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

Qsn #	Question	Answer
408	**Creates a fire hazard in natural ecosystems**	
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	[Unknown if Melaleuca densa increases fire risk, but no direct evidence found] "Many melaleucas are highly fire-tolerant during all but the early seedling stages before a thick protective layer of bark has formed. Fire-ravaged individuals regenerate through stimulation of epicormic buds under the thick bark to sprout vigorously after fire in a process called coppicing (Figure 14). Populations may expand through fire-induced release of seed from Serotinous capsules on the trees and stimulation of germination of seed in soil seedbanks."

409	**Is a shade tolerant plant at some stage of its life cycle**	
	Source(s)	**Notes**
	Australian Native Plants. (2020). Melaleuca densa. https://www.australianplants.com/plants.aspx?id=1628. [Accessed 7 May 2020]	"Exposure: Full Sun to Partial Shade"
	Ole Lantana's Seed Store. (2020). Lemon Honey-Myrtle - Melaleuca densa. https://www.olelantanaseeds.com.au. [Accessed 7 May 2020]	"Sunlight: Full Sun, Part Shade"

410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**n**
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Recorded as occurring in heathland, tall shrubland, eucalypt woodland, sand plain, on sandy loam, clay, and gravelly sand."
	Australian Native Plants. (2020). Melaleuca densa. https://www.australianplants.com/plants.aspx?id=1628. [Accessed 7 May 2020]	"Soil: Well-drained to poorly drained soils"

411	**Climbing or smothering growth habit**	**n**
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Shrub 0.5–3 m tall; bark fibrous, grey or whitish."

412	**Forms dense thickets**	**n**
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Recorded as occurring in heathland, tall shrubland, eucalypt woodland, sand plain, on sandy loam, clay, and gravelly sand."

Qsn #	Question	Answer
501	**Aquatic**	**n**
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	[Terrestrial] "Shrub 0.5–3 m tall; bark fibrous, grey or whitish." … "Recorded as occurring in heathland, tall shrubland, eucalypt woodland, sand plain, on sandy loam, clay, and gravelly sand."

502	**Grass**	**n**
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 6 May 2020]	Family: Myrtaceae Subfamily: Myrtoideae Tribe: Melaleuceae

503	**Nitrogen fixing woody plant**	**n**
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 6 May 2020]	Family: Myrtaceae Subfamily: Myrtoideae Tribe: Melaleuceae

504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**n**
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Shrub 0.5–3 m tall; bark fibrous, grey or whitish."

601	**Evidence of substantial reproductive failure in native habitat**	**n**
	Source(s)	**Notes**
	Western Australian Herbarium (1998–2020). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. https://florabase.dpaw.wa.gov.au/. [Accessed 6 May 2020]	"Conservation Code: Not threatened"
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	[No evidence] "Natural occurrence: Western Australia: from the Augusta district eastwards to the Albany district and the Stirling Range. Ecology: Recorded as occurring in heathland, tall shrubland, eucalypt woodland, sand plain, on sandy loam, clay, and gravelly sand. Flowering time: Recorded as flowering from August to December."

Qsn #	Question	Answer
602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	Ole Lantana's Seed Store. (2020). Lemon Honey-Myrtle - Melaleuca densa. https://www.olelantanaseeds.com.au. [Accessed 7 May 2020]	"Propagation by seed occurs readily. Offered is a packet of 200 seeds (includes chaff) with propagation notes."
	Sweedman, L. & Merritt, D. 2006. Australian seeds: a guide to their collection, identification and biology. Csiro Publishing, Collingwood, Australia	Melaleuca densa - M Mean time to germinate = 13 days

603	**Hybridizes naturally**	
	Source(s)	**Notes**
	Craven, L. A. (2006). New combinations in Melaleuca for Australian species of Callistemon (Myrtaceae). Novon: A Journal for Botanical Nomenclature, 16(4), 468-475	[Unknown. Documented in other species] "Hybridization in nature has been noted in Melaleuca and Callistemon in the following instances: in the M. leucadendra species group (Blake, 1968; Cumming, pers. comm.); between M. bracteate F. Mueller and M. styphelioides Smith (Lepschi, pers. comm.); between diverse species of the M. scabra R. Brown group, i.e., M. leuropoma Craven and M. systena Craven (Craven, pers. obs.); between several species of the M. uncinata R. Brown complex (Broadhurst et al., in prep.); between M. aspalathoides Schauer and M. holosericea Schauer (Lepschi, pers. comm.); between M. barlowii Craven and M. nematophylla F. Mueller ex Craven (Craven, pers. obs.); between diverse species of the M. laxiflora Turczaninow group (Craven, pers. obs.); between C. citrinus (Curtis) Skeels and C. subulatus Cheel (Craven, pers. obs.); and is suggested between M. alternifolia (Maiden & Betche) Cheel and M. linariifolia Smith (Butcher et al., 1994, 1995)."

604	**Self-compatible or apomictic**	
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	[Unknown. Possibly No] "Barlow and Forrester (1984) also studied self-incompatibility in various Melaleuca species, although not in M. alternifolia, and found that self-pollen tubes do not penetrate past the base of the style."

605	**Requires specialist pollinators**	**n**
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Melaleucas are mostly insect-pollinated." … "Inflorescences spicate or capitate, pseudoterminal, with 15–37 monads, up to 20 mm wide. Hypanthium hairy, 1.1–1.8 mm long. Calyx lobes abaxially glabrous, 0.6–0.8 mm long, herbaceous to the margin. Petals deciduous, 1.3–2 mm long. Stamens 3–6 per bundle; filaments yellow, cream, white or greenish, 4.8–6.5 mm long, the bundle claw 1.9–3.8 mm long, 0.2–0.6 times as long as the filaments. Style 5.5–5.9 mm long. Ovules 25–30 per locule."

606	**Reproduction by vegetative fragmentation**	**n**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Some melaleuca species have the ability to root sucker, and through root extension and interconnectivity form dense clumps of single clones." [Several species mentioned, but no evidence for M. densa]

607	**Minimum generative time (years)**	
	Source(s)	**Notes**
	Landscaper's Companion. (2020). Melaleuca densa. https://landscaperscompanion.com/simple_plants/9663-melaleuca-densa. [Accessed 7 May 2020]	"Growth Rate Fast"
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	[Possibly 2-4+ years] "Flowering starts early in many species. For example, M. alternifolia planted in breeding populations in northern New South Wales set the first flower buds as early as 2 years after planting. However, the first 'reasonable' flowering (defined as 45% of trees) did not occur until almost 4 years from plantings within the species' natural range (Doran et al. 2002). In M. alternifolia, a cold winter (minimum temperatures below 5 °C) appears to stimulate floral bud formation while good spring rains are needed to support a good flowering and retention of the developing fruit (Baskorowati et al. 2010a, c)."

701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**n**
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Melaleuca seeds are small but lack means of external attachment. They could hypothetically be transported in soil attached to vehicles, footwear or equipment, but evidence is lacking at this time

702	**Propagules dispersed intentionally by people**	**y**
	Source(s)	**Notes**
	Ole Lantana's Seed Store. (2020). Lemon Honey-Myrtle - Melaleuca densa. https://www.olelantanaseeds.com.au. [Accessed]	"Propagation by seed occurs readily. Offered is a packet of 200 seeds (includes chaff) with propagation notes." [Seeds sold commercially]

703	**Propagules likely to disperse as a produce contaminant**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	No evidence found, but not widely cultivated outside native range. Wind-dispersed seeds could potentially become a contaminant if grown in proximity to other plants or crops

704	**Propagules adapted to wind dispersal**	**y**
	Source(s)	**Notes**

Qsn #	Question	Answer
	Carrick, J., & Chorney, K. (1979). A review of Melaleuca L. (Myrtaceae) in South Australia. Journal of the Adelaide Botanic Garden, 1(5), 281-319	"Fruit small, sessile, sometimes embedded in the thickened stem; capsule enclosed in the enlarged woody calyx tube, opening loculicidally at the summit in three valves; perfect seeds few." [Generic description. Small seeds likely dispersed by wind]
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	[Presumably Wind-Dispersed] "High on the list of undesirable traits, particularly when introducing melaleucas to a new environment, is the potential for their spread from cultivation to become noxious weeds. This occurs through distribution of seed by wind and water from canopies that hold a store of mature fruit, often for many years, awaiting the right conditions to stimulate release (e.g. fire)"

705	Propagules water dispersed	y
	Source(s)	**Notes**
	Western Australian Herbarium (1998–2020). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. https://florabase.dpaw.wa.gov.au/. [Accessed 6 May 2020]	"Seasonally wet flats, swamps, along rivers." [Distribution suggests seeds would be secondarily dispersed by water]

706	Propagules bird dispersed	n
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	[No evidence] "Fruit 1.8–2.6 mm long, with sepaline teeth or the calyx lobes weathering away; cotyledons planoconvex."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Melaleuca seeds are small but lack means of external attachment. They could hypothetically be transported in soil attached to animals, but evidence is lacking at this time

708	Propagules survive passage through the gut	n
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Fruit 1.8–2.6 mm long, with sepaline teeth or the calyx lobes weathering away; cotyledons planoconvex." [Fruiting capsules unlikely to be consumed, or seeds to survive gut passage]

801	Prolific seed production (>1000/m2)	
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Fruit 1.8–2.6 mm long, with sepaline teeth or the calyx lobes weathering away; cotyledons planoconvex." [Densities unknown]

Qsn #	Question	Answer
802	**Evidence that a persistent propagule bank is formed (>1 yr)**	
	Source(s)	**Notes**
	Royal Botanic Gardens Kew. (2020) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/. [Accessed 7 May 2020]	"Storage Behaviour: Orthodox Storage Conditions: 98 % viability following drying to mc's in equilibrium with 15 % RH and freezing for approx. 1.4 years at -20°C at RBG Kew, WP"
	WRA Specialist. (2020). Personal Communication	Longevity of seeds under natural conditions unknown

803	**Well controlled by herbicides**	**y**
	Source(s)	**Notes**
	Munger, G. T. (2005). Melaleuca quinquenervia. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/tree/maggra/all.html. [Accessed 7 May 2020]	[Melaleuca quinquenervia effectively controlled by herbicides] "Chemical: Herbicides are among the most effective and widely used tools for controlling melaleuca in peninsular Florida [40]. Herbicides are most effective when integrated within a suite of control measures and strategies."
	WRA Specialist. (2020). Personal Communication	No information on herbicide efficacy and chemical control of this species. However, methods to control the invasive Melaleuca quinquenervia would presumably be effective for controlling Melaleuca densa if required

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	
	Source(s)	**Notes**
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"Many melaleucas are highly fire-tolerant during all but the early seedling stages before a thick protective layer of bark has formed. Fire-ravaged individuals regenerate through stimulation of epicormic buds under the thick bark to sprout vigorously after fire in a process called coppicing" [Ability of M. densa to coppice unknown]
	Foster, A. (Undated). Melaleuca and Allied Genera Study Group. Newsletter No.1. http://anpsa.org.au/melaleu5.html. [Accessed]	"These are dense to the ground and respond well to pruning, they include: Melaleuca densa"

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Brophy J.J., Craven L.A. and Doran J.C. (2013). Melaleucas: their botany, essential oils and uses. ACIAR Monograph No. 156. Australian Centre for International Agricultural Research, Canberra	"A threat to the future health and genetic diversity of a substantial number of Melaleuca species in eastern Australia is from Puccinia psidii sensu lato (synonym Uredo rangelii). This exotic pathogen has the common name of myrtle rust in Australia but it is known as guava or eucalyptus rust elsewhere, with origins in Brazil. Myrtle rust targets species of the family Myrtaceae, including Melaleuca. First observed in Australia on the central coast of New South Wales in 2010, it has now spread from Victoria to northern Queensland. In susceptible plants, young spore-covered leaves and shoots become curled and distorted and severe infection can cause shoots to die, causing these plants to become stunted after repeated infections. In the worst cases, death of the whole plant can occur after repeated destruction of new growth. As this book goes to press, this disease is of concern to all with an interest in the conservation and sustainable use of Australian plants of the family Myrtaceae."
	WRA Specialist. (2020). Personal Communication	Unknown. Austropuccinia psidii is present in the Hawaiian Islands, and may affect Melaleuca densa, as it does other Melaleuca species

Summary of Risk Traits:

High Risk / Undesirable Traits
• Grows in temperate to Mediterranean climates
• Naturalized, and potentially an environmental weed in Victoria, Australia (outside its natural range of Western Australia)
• Other Melaleuca species are invasive
• Reproduces by seeds
• Seeds dispersed by wind, water and intentionally by people
• Gaps in biological and ecological information may reduce accuracy of assessment

Low Risk Traits
• Unarmed (no spines, thorns, or burrs)
• Not reported to spread vegetatively
• Herbicides may provide effective control

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> Possibly shade tolerant. Not known to form dense stands.
(B) Bird or clearly wind-dispersed?> Dispersed by wind
(C) Life cycle <4 years? Time to maturity unknown
Outcome = Evaluate