

<b>Taxon:</b> <i>Verticordia plumosa</i> (Desf.) Druce	<b>Family:</b> Myrtaceae
<b>Common Name(s):</b> plume feather-flower plumed featherflower	<b>Synonym(s):</b> Chamelaucium plumosum Desf. <i>Verticordia fontanesii</i> DC.

<b>Assessor:</b> Chuck Chimera	<b>Status:</b> Assessor Approved	<b>End Date:</b> 7 Jul 2020
<b>WRA Score:</b> -3.0	<b>Designation:</b> L	<b>Rating:</b> Low Risk

**Keywords:** Ornamental Shrub, Unarmed, Non-Toxic, Hybridizes, Self Sows

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	?
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	n
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed		
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	y=1, n=-1	n
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	y=1, n=0	n
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	y
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	y=1, n=-1	y
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)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
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	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	n
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)	y=1, n=-1	n
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
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
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	No evidence in genus

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. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 2 Jul 2020]	"Native Australasia AUSTRALIA: Australia [Western Australia (s.w.)]"
	Western Australian Herbarium (1998–2020). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 2 Jul 2020]	"Naturalised Status: Native to Western Australia" "Distribution Beard's Provinces: South-West Province. IBRA Regions: Esperance Plains, Jarrah Forest, Mallee, Swan Coastal Plain, Warren. IBRA Subregions: Fitzgerald, Northern Jarrah Forest, Perth, Recherche, Southern Jarrah Forest, Warren, Western Mallee. IMCRA Regions: WA South Coast. Local Government Areas (LGAs): Albany, Armadale, Augusta Margaret River, Busselton, Dumbleyung, Esperance, Gnowangerup, Jerramungup, Manjimup, Ravensthorpe, Serpentine-Jarrahdale."

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. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed ]	

Qsn #	Question	Answer
203	<b>Broad climate suitability (environmental versatility)</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Dave's Garden. (2020). <i>Verticordia</i> , Plumed Featherflower 'Pink Lace' <i>Verticordia plumosa</i> . <a href="https://davesgarden.com">https://davesgarden.com</a> . [Accessed 6 Jul 2020]	"Hardiness: USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)"
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"Most <i>Verticordia</i> are found in areas that have a Mediterranean climate with hot dry summers and rainfall occurring mostly in winter."

204	<b>Native or naturalized in regions with tropical or subtropical climates</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"Most <i>Verticordia</i> are found in areas that have a Mediterranean climate with hot dry summers and rainfall occurring mostly in winter."
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

205	<b>Does the species have a history of repeated introductions outside its natural range?</b>	?
	<b>Source(s)</b>	<b>Notes</b>
	Dave's Garden. (2020). <i>Verticordia</i> , Plumed Featherflower 'Pink Lace' <i>Verticordia plumosa</i> . <a href="https://davesgarden.com">https://davesgarden.com</a> . [Accessed 6 Jul 2020]	Cultivated as an ornamental. Extent of cultivation outside native range unknown

301	<b>Naturalized beyond native range</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

302	<b>Garden/amenity/disturbance weed</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

303	<b>Agricultural/forestry/horticultural weed</b>	n
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

304	Environmental weed	n
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

305	Congeneric weed	
	<b>Source(s)</b>	<b>Notes</b>
	Brown, K. & Brooks, K. (2002). Bushland Weeds. A Practical Guide to Their Management with Case Studies from the Swan Coastal Plain and Beyond. Environmental Weeds Action Network, Greenwood, Australia	"Table 1. Some Western Australian natives known to have naturalised outside their native range (adapted from Keighery, G., unpublished report)." [Includes <i>Verticordia monadelpha</i> (Woolly Featherflower), but with no impacts described]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	<i>Verticordia monadelpha</i> listed as potentially weedy, although impacts have not been corroborated or verified in subsequent literature searches

401	Produces spines, thorns or burrs	n
	<b>Source(s)</b>	<b>Notes</b>
	Western Australian Herbarium (1998–2020). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 2 Jul 2020]	[No evidence] "Shrub, 0.2-1.5 m high. Fl. pink-blue-purple-red-white, Jul to Dec or Jan to Feb."

402	Allelopathic	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. (2020). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	<b>Source(s)</b>	<b>Notes</b>
	Western Australian Herbarium (1998–2020). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 2 Jul 2020]	[No evidence] "Shrub, 0.2-1.5 m high. Fl. pink-blue-purple-red-white, Jul to Dec or Jan to Feb."

404	Unpalatable to grazing animals	n
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	Phillimore, R. & Evans, R. (2003). Narrow-petalled Featherflower ( <i>Verticordia plumosa</i> var. <i>pleiobotrya</i> ) Interim Recovery Plan 2003 2008. <a href="https://www.environment.gov.au/node/16076">https://www.environment.gov.au/node/16076</a> . [Accessed 6 Jul 2020]	"Grazing by horses is a major threat to Subpopulation 7b on private property, and the plants located along the fenceline on the road reserve at Subpopulation 7a. Apart from being subject to grazing, increased nutrient levels from droppings are resulting in the proliferation of weeds, and trampling of vegetation is impacting on the habitat of the taxon. Grazing may also have an impact on the establishment of <i>Verticordia plumosa</i> var. <i>pleiobotrya</i> seedlings thereby limiting the natural recruitment of the taxon."
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	[Possibly palatable to kangaroos] "Kangaroos have several times been recorded browsing and grazing natural populations of <i>V. penicillaris</i> in WA. They have also been suspected of eating and pulling out small seedlings as well as newly planted <i>verticordias</i> in gardens, adjacent to natural vegetation. One grower suggested that the local brush-tailed wallabies and rabbits in his area do not appear to favour ' <i>verticordia salad</i> .' The wallabies do occasionally damage <i>verticordias</i> though by stepping on them thus breaking or crushing the plants."

405	Toxic to animals	n
	Source(s)	Notes
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"Species also have potential because of their non-prickly, non-toxic, aromatic foliage and perfumed flowers."
	Quattrocchi, U. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	n
	Source(s)	Notes
	Phillimore, R. & Evans, R. (2003). Narrow-petalled Featherflower ( <i>Verticordia plumosa</i> var. <i>pleiobotrya</i> ) Interim Recovery Plan 2003 2008. <a href="https://www.environment.gov.au/node/16076">https://www.environment.gov.au/node/16076</a> . [Accessed 6 Jul 2020]	"Dieback disease is a potential threat to populations of <i>Verticordia plumosa</i> var. <i>pleiobotrya</i> . Dieback caused by the plant pathogen <i>Phytophthora</i> spp. causes the roots to rot and results in susceptible plants dying of drought stress. Many species of <i>Verticordia</i> are susceptible to the disease, and it seems likely that <i>Verticordia plumosa</i> var. <i>pleiobotrya</i> is susceptible."
	Morin, L., Aveyard, R., & Lidbetter, J. (2011). Myrtle rust: host testing under controlled conditions. NSW Department of Primary Industries, West Pennant Hills, NSW, Australia	"Myrtle rust ( <i>Uredo rangelii</i> ) was first detected in Australia in April 2010. This exotic plant pathogen belongs to the guava/eucalyptus rust complex ( <i>Puccinia psidii</i> sensu lato), which is native to South and Central America and known to have a very wide host range within the Myrtaceae family." ... "Fully-developed uredinia were observed on all replicates across both experiments of 27 taxa from 8 tribes belonging to the following 17 genera: <i>Agonis</i> , <i>Austromyrtus</i> , <i>Beaufortia</i> , <i>Callistemon</i> , <i>Calothamnus</i> , <i>Chamelaucium</i> , <i>Darwinia</i> , <i>Eucalyptus</i> , <i>Gossia</i> , <i>Kunzea</i> , <i>Leptospermum</i> , <i>Melaleuca</i> , <i>Metrosideros</i> , <i>Syzygium</i> , <i>Thryptomene</i> , <i>Tristania</i> , <i>Verticordia</i> ."

407	Causes allergies or is otherwise toxic to humans	n

Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"Species also have potential because of their non-prickly, non-toxic, aromatic foliage and perfumed flowers."
	Quattrocchi, U. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	n
	<b>Source(s)</b>	<b>Notes</b>
	Phillimore, R. & Evans, R. (2003). <i>Narrow-petalled Featherflower (Verticordia plumosa var. pleiobotrya) Interim Recovery Plan 2003 2008</i> . <a href="https://www.environment.gov.au/node/16076">https://www.environment.gov.au/node/16076</a> . [Accessed 6 Jul 2020]	"Verticordias are generally considered to be fire sensitive with post-fire regeneration occurring mainly from seed. They grow relatively rapidly and are often at their most floriferous stage within five years (George 2002)."
	Taylor, H., English, V. & Webb, A. (2005). <i>Tufted Plumed Featherflower (Verticordia plumosa var. ananeotes) Interim Recovery Plan 2005-2010</i> . Department of Conservation and Land Management, Wanneroo, WA	[Can survive fires, but no indication that this species increases fire risk] "Inappropriate fire regimes threaten populations of <i>Verticordia plumosa</i> var. <i>ananeotes</i> , especially Population 2, that has been subject to regular burning. This taxon has a lignotuber, and therefore adult plants can survive fire. It is likely that the taxon requires occasional fire for recruitment from soil stored seed, but frequent fires during the flowering and seeding phase (November to February) may be detrimental to the long term survival of the taxon. Fire also promotes the introduction of weed species, and if too frequent, is likely to deplete the lignotuber."

409	Is a shade tolerant plant at some stage of its life cycle	
	<b>Source(s)</b>	<b>Notes</b>
	Australian Native Plants. (2020). <i>Verticordia plumosa</i> , <a href="https://www.australianplants.com/plants.aspx?id=1443">https://www.australianplants.com/plants.aspx?id=1443</a> . [Accessed 6 Jul 2020]	"Exposure: Full Sun to Partial Shade"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	<b>Source(s)</b>	<b>Notes</b>
	Alsip Home & Nursery. (2020). <i>Verticordia plumosa 'Pink Lace'</i> . <a href="https://plants.alsipnursery.com">https://plants.alsipnursery.com</a> . [Accessed 6 Jul 2020]	"It is not particular as to soil type or pH. It is somewhat tolerant of urban pollution."
	Australian Native Plants. (2020). <i>Verticordia plumosa</i> , <a href="https://www.australianplants.com/plants.aspx?id=1443">https://www.australianplants.com/plants.aspx?id=1443</a> . [Accessed 6 Jul 2020]	"Soil: Well-drained to poorly drained soils"
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"Verticordias are adaptable to different soil types. Many species have now been grown in a range of soils with various kinds of sand, gravel, loam and clay, sometimes with rocks, plus many different mixtures of these components."

Qsn #	Question	Answer
411	<b>Climbing or smothering growth habit</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Western Australian Herbarium (1998–2020). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 2 Jul 2020]	"Shrub, 0.2-1.5 m high. Fl. pink-blue-purple-red-white, Jul to Dec or Jan to Feb."

412	<b>Forms dense thickets</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Western Australian Herbarium (1998–2020). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 6 Jul 2020]	[No evidence] "Shrub, 0.2-1.5 m high. Fl. pink-blue-purple-red-white, Jul to Dec or Jan to Feb. Sandy or clayey soils, gravel, granite. Seasonally wet situations, rock outcrops, undulating plains, hills, road verges."
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	No evidence

501	<b>Aquatic</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Western Australian Herbarium (1998–2020). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 2 Jul 2020]	[Terrestrial] "Shrub, 0.2-1.5 m high. Fl. pink-blue-purple-red-white, Jul to Dec or Jan to Feb. Sandy or clayey soils, gravel, granite. Seasonally wet situations, rock outcrops, undulating plains, hills, road verges."

502	<b>Grass</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 2 Jul 2020]	Family: Myrtaceae Subfamily: Myrtoideae Tribe: Chamelaucieae

503	<b>Nitrogen fixing woody plant</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 2 Jul 2020]	Family: Myrtaceae Subfamily: Myrtoideae Tribe: Chamelaucieae

504	<b>Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)</b>	n
	<b>Source(s)</b>	<b>Notes</b>



Qsn #	Question	Answer
	Western Australian Herbarium (1998–2020). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 2 Jul 2020]	"Shrub, 0.2-1.5 m high. Fl. pink-blue-purple-red-white, Jul to Dec or Jan to Feb."

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. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 2 Jul 2020]	"Conservation Code: Not threatened"

602	Produces viable seed	y
	Source(s)	Notes
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"var. <i>plumosa</i> ... Seed has good viability and has been germinated in 1-5 months.. Individual flowers sometimes set two seeds." ... "var. <i>ananeotes</i> ... Viable 'wild' seed has been germinated in 3-6 weeks."
	Sweedman, L. & Merritt, D. 2006. <i>Australian seeds: a guide to their collection, identification and biology</i> . Csiro Publishing, Collingwood, Australia	<i>Verticordia plumosa</i> M - 103 days (Mean time to germinate) Q - 30 days (Quickest time to germinate) L - 151 days (Longest time to germinate) T - 3 (Times sown) R (Recommended pre-treatment) - SMK (Soak in smoke water at 1:10, 1:100 or 1:1000 dilution for 24 hours.)

603	Hybridizes naturally	y
	Source(s)	Notes
	Egerton-Warburton, L. M., Ghisalberti, E. L., & Burton, N. C. (1998). Intergeneric hybridism between <i>Chamelaucium</i> and <i>Verticordia</i> (Myrtaceae) based on analysis of essential oils and morphology. <i>Australian Journal of Botany</i> , 46(2), 201-208	"Geographic and reproductive isolation barriers generally prevent species in natural conditions from hybridising. However, a number of factors may have promoted the hybridisation between <i>C. floriferum</i> and <i>V. plumosa</i> . Firstly, in a garden setting, the geographic isolation barrier that normally exists between species is removed. Hybridisation is also facilitated by synchronous flowering periods (early spring for these species), and common pollinators (small insects) (Beardsell et al. 1993; Houston et al. 1993)."
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"Several naturally occurring populations of <i>Verticordia</i> hybrids have been recorded."

604	Self-compatible or apomictic	
	Source(s)	Notes
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"Cultivated plants have self sown prolifically and the seedlings flowered in 12-18 months." [Self sowing suggests plants may be capable of selfing]

Qsn #	Question	Answer
	Egerton-Warburton, L. M., Ghisalberti, E. L., & Burton, N. C. (1998). Intergeneric hybridism between <i>Chamelaucium</i> and <i>Verticordia</i> (Myrtaceae) based on analysis of essential oils and morphology. <i>Australian Journal of Botany</i> , 46(2), 201-208	[Unknown, but protandry may limit the possibility for selfing to occur] "Like all myrtaceous genera, <i>Chamelaucium</i> and <i>Verticordia</i> are protandrous (Beardsell et al. 1993), and as members of the <i>Chamelaucium</i> alliance (nomenclature follows Johnson and Briggs 1984), they also demonstrate secondary pollen presentation (Slater and Beardsell 1991; Tyagi et al. 1991; Howell et al. 1993). These mechanisms promote outcrossing by separating the male and female phases of the flowering period, and diminish the likelihood of self-pollination."

605	Requires specialist pollinators	n
	Source(s)	Notes
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"Little is known about the pollination of <i>Verticordia</i> ." [Birds, bees and small marsupials have all been identified as potential pollinators of various species, although none have been identified for <i>V. plumosa</i> in this publication]
	Groom, P. K., & Lamont, B. (2015). <i>Plant life of southwestern Australia: adaptations for survival</i> . De Gruyter Open Ltd, Warsaw/Berlin	" <i>Verticordia</i> (Myrtaceae) flowers have a special affinity with bees as well as flies and beetles (Hawkeswood, 1993; Houston et al., 1993; Exley, 2004), and occasionally are adapted for honeyeater pollination (e.g. <i>V. grandis</i> , <i>V. staminosa</i> )."... "Table 8.3: Australian native bees recorded as visiting <i>Verticordia</i> species. Data provided where both <i>Verticordia</i> and bees were identified to the species level." [ <i>V. plumosa</i> - Bee species & Family = <i>Thyreus waroonensis</i> (Apidae), <i>Paracolletes nigrocinctus</i> (Colletidae), <i>Leioproctus velutinellus</i> (Colletidae)]

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"Cultivated plants have self sown prolifically and the seedlings flowered in 12-18 months." [No evidence of vegetative spread]

607	Minimum generative time (years)	1
	Source(s)	Notes
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"Cultivated plants have self sown prolifically and the seedlings flowered in 12-18 months."

Qsn #	Question	Answer
701	<b>Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"The <i>Verticordia</i> fruit is dry, nut-like and indehiscent, remaining enclosed within the perianth (faded flower). It usually contains only one seed, although occasionally two seeds are set, with the other ovules withering. The level of viable seed set in the wild is usually low and frequently no seeds develop. A fresh mature seed is soft, whitish, fleshy and swollen with a thin membranous, surface that is easily damaged." [Generic description. No means of external attachment]
702	<b>Propagules dispersed intentionally by people</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. (2020). Personal Communication	Cultivated within Australia and elsewhere as an ornamental and for the cut flower/foliage industry
703	<b>Propagules likely to disperse as a produce contaminant</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"The <i>Verticordia</i> fruit is dry, nut-like and indehiscent, remaining enclosed within the perianth (faded flower). It usually contains only one seed, although occasionally two seeds are set, with the other ovules withering. The level of viable seed set in the wild is usually low and frequently no seeds develop. A fresh mature seed is soft, whitish, fleshy and swollen with a thin membranous, surface that is easily damaged." [Generic description. No evidence and unlikely given lack of obvious dispersal mechanisms]]
704	<b>Propagules adapted to wind dispersal</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Kubitzki, K. (ed.). 2011. <i>The Families and Genera of Vascular Plants. Vol. X. Flowering Plants. Eudicots: Sapindales, Cucurbitales, Myrtaceae</i> . Springer, New York	"The small, indehiscent unilocular fruits of Chamelaucieae, sometimes described as 'nuts', act as the dispersal unit. In a few genera, perianth modifications assist in dispersal. The persistent, spreading, awned sepals of <i>Calytrix</i> and the much-divided, feathery perianth of <i>Verticordia</i> are prime examples." [The feathery perianth likely aids dispersal of the indehiscent fruit by wind]
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"The <i>Verticordia</i> fruit is dry, nut-like and indehiscent, remaining enclosed within the perianth (faded flower). It usually contains only one seed, although occasionally two seeds are set, with the other ovules withering. The level of viable seed set in the wild is usually low and frequently no seeds develop. A fresh mature seed is soft, whitish, fleshy and swollen with a thin membranous, surface that is easily damaged." [Generic description. Perianth may aid in dispersal]
705	<b>Propagules water dispersed</b>	<b>n</b>

Qsn #	Question	Answer
	Source(s)	Notes
	Kubitzki, K. (ed.). 2011. The Families and Genera of Vascular Plants. Vol. X. Flowering Plants. Eudicots: Sapindales, Cucurbitales, Myrtaceae. Springer, New York	"The small, indehiscent unilocular fruits of Chamelaucieae, sometimes described as 'nuts', act as the dispersal unit. In a few genera, perianth modifications assist in dispersal. The persistent, spreading, awned sepals of Calytrix and the much-divided, feathery perianth of <i>Verticordia</i> are prime examples." [No evidence]

706	Propagules bird dispersed	n
	Source(s)	Notes
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"The small, indehiscent unilocular fruits of Chamelaucieae, sometimes described as 'nuts', act as the dispersal unit. In a few genera, perianth modifications assist in dispersal. The persistent, spreading, awned sepals of <i>Calytrix</i> and the much-divided, feathery perianth of <i>Verticordia</i> are prime examples." [No evidence. Not fleshy-fruited]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"The <i>Verticordia</i> fruit is dry, nut-like and indehiscent, remaining enclosed within the perianth (faded flower). It usually contains only one seed, although occasionally two seeds are set, with the other ovules withering. The level of viable seed set in the wild is usually low and frequently no seeds develop. A fresh mature seed is soft, whitish, fleshy and swollen with a thin membranous, surface that is easily damaged." [Generic description. No means of external attachment]

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	George, B. & George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i> . University of Western Australia Press, Crawley, WA	"The <i>Verticordia</i> fruit is dry, nut-like and indehiscent, remaining enclosed within the perianth (faded flower). It usually contains only one seed, although occasionally two seeds are set, with the other ovules withering. The level of viable seed set in the wild is usually low and frequently no seeds develop. A fresh mature seed is soft, whitish, fleshy and swollen with a thin membranous, surface that is easily damaged." [Generic description. No evidence that fruit are consumed]

801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes

Qsn #	Question	Answer
	<p>Phillimore, R. &amp; Evans, R. (2003). Narrow-petalled Featherflower (<i>Verticordia plumosa</i> var. <i>pleiobotrya</i>) Interim Recovery Plan 2003 2008. <a href="https://www.environment.gov.au/node/16076">https://www.environment.gov.au/node/16076</a>. [Accessed 6 Jul 2020]</p>	<p>"Propagation of <i>Verticordias</i> has been mainly from cuttings with a few grown from seed. In general, <i>Verticordias</i> produce only one seed per flower in the wild. Germination occurs from within old flowers that have fallen to the ground. Research by the Department's Threatened Flora Seed Centre (TFSC) has shown that seed set is generally low in <i>Verticordias</i> (less than 51%) and is variable between species, within the same species in different locations, and in different years at the same location (Cochrane and McChesney 1995). The taxon has successfully been cultivated from cuttings by local enthusiasts (personal communication N. Skade<sup>1</sup>)."</p>

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	<p>Taylor, H., English, V. &amp; Webb, A. (2005). Tufted Plumed Featherflower (<i>Verticordia plumosa</i> var. <i>ananeotes</i>) Interim Recovery Plan 2005-2010. Department of Conservation and Land Management, Wanneroo, WA</p>	<p>"It is also important that the size and viability of the soil seed bank is determined and further research is undertaken to develop techniques for stimulating germination of soil stored seed." [Plan indicates that research is needed to study seed bank dynamics]</p>
	<p>George, B. &amp; George, E. A. (2002). <i>Verticordia: The Turner of Hearts</i>. University of Western Australia Press, Crawley, WA</p>	<p>[Possibly Yes] "Seed of some species remains viable for at least five years. Recent research carried out at Kings Park tends to suggest that some taxa could remain viable, either in the soil profile or when stored correctly at very cold temperatures, for much longer than that."</p>

803	Well controlled by herbicides	
	Source(s)	Notes
	<p>WRA Specialist. (2020). Personal Communication</p>	<p>Unknown. No evidence that any species in the genus have been controlled with herbicides</p>

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	<p>Australian Native Plants. (2020). <i>Verticordia plumosa</i>, <a href="https://www.australianplants.com/plants.aspx?id=1443">https://www.australianplants.com/plants.aspx?id=1443</a>. [Accessed 6 Jul 2020]</p>	<p>"Pruning promotes compact growth habit."</p>
	<p>Taylor, H., English, V. &amp; Webb, A. (2005). Tufted Plumed Featherflower (<i>Verticordia plumosa</i> var. <i>ananeotes</i>) Interim Recovery Plan 2005-2010. Department of Conservation and Land Management, Wanneroo, WA</p>	<p>"This taxon has a lignotuber, and therefore adult plants can survive fire."</p>

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	<p>WRA Specialist. (2020). Personal Communication</p>	<p>Unknown</p>

**Summary of Risk Traits:**

## High Risk / Undesirable Traits

- Tolerates many soil types
- Reproduces by seed
- Hybridizes with other species and genera
- Possibly self-compatible
- Reaches maturity rapidly (12-18 months)
- “Fruit” (one-seeded nut) likely dispersed by wind, and intentionally by people
- Seeds in genus may form a persistent soil seed bank (unknown for *V. plumosa*)
- Resprouts after cutting and fire

## Low Risk Traits

- No reports of invasiveness or naturalization, but limited evidence of widespread introduction outside native range
- Unarmed (no spines, thorns, or burrs)
- Non-toxic
- Grows best in full sun to partial shade (dense shade may limit ability to spread)
- Not reported to spread vegetatively