

Taxon: <i>Leucospermum conocarpodendron</i> (L.) H. St. John	Family: Proteaceae
Common Name(s): grey tree pincushion	Synonym(s): <i>Leucospermum conocarpum</i> R. Br.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 20 Mar 2017
WRA Score: -2.0	Designation: L	Rating: Low Risk

Keywords: Tree, Mediterranean Climate, Bird-Pollinated, Ant-Dispersed, Fire-Tolerant

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		
302	Garden/amenity/disturbance weed		
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		
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	y=1, n=0	n
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	y
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	y
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	3
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	n
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	y
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m ²)	y=1, n=-1	n
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
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
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	[No evidence of domestication] "There are two subspecies of <i>Leucospermum conocarpodendron</i> : subsp. <i>conocarpodendron</i> and subsp. <i>viridum</i> , the green tree pincushion. The subsp. <i>viridum</i> can be identified by its deep green leaves that are hairless or ageing hairless-they may have a few scattered straight hairs or the margins fringed with long silky hairs but its leaves never have a dense mat of grey hairs. Their distribution ranges don't overlap, subsp. <i>viridum</i> occurs along the eastern slopes of the Cape Peninsula from Newlands and Kirstenbosch to the southern Peninsula, as well as in the Kogelberg, Franschoek, Houwhoek and Stanford. There is a naturally occurring hybrid population on the slopes of Little Lion's Head where the two subspecies almost meet up."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2017. 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, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 20 Mar 2017]	"Native: Africa Southern Africa: South Africa - Cape Province" ["Table Mountain and the mountains of the south-western Cape have a Mediterranean climate, enjoying long warm and dry summers and a cool and wet but relatively short winter." http://thefynbosguy.com/cape-mountain-environment/cape-climate/]

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 20 Mar 2017]	

203	Broad climate suitability (environmental versatility)	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Plant This. 2017. <i>Leucospermum conocarpodendron</i> ssp. <i>conocarpodendron</i> . http://plantthis.com.au/plant-information.asp?gardener=17587 . [Accessed 20 Mar 2017]	"Hardiness zones: 8-10"
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 20 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is endemic to the Cape Peninsula, where it grows on well-drained, north- or west-facing rocky slopes, from sea level to 160 m, over a limited area from the eastern slopes of Devil's Peak, along the northern and western slopes of Table Mountain and the Twelve Apostles to Llandudno."

204	Native or naturalized in regions with tropical or subtropical climates	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 20 Mar 2017]	"Native: Africa Southern Africa: South Africa - Cape Province" [Mediterranean climate]

205	Does the species have a history of repeated introductions outside its natural range?	?
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 27 Mar 2017]	". also cult."
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 20 Mar 2017]	"This species was introduced into cultivation in Holland in about 1700 and was being illustrated from specimens grown there by 1710. Masson introduced the species to cultivation in England in 1774."

301	Naturalized beyond native range	
	Source(s)	Notes
	Spear, D., McGeoch, M.A., Foxcroft, L.C. & Bezuidenhout, H., 2011. Alien species in South Africa's national parks. <i>Koedoe</i> 53(1), Art. #1032, 4 pages. doi:10.4102/koedoe.v53i1.1032	"Checklist of alien species in South Africa's 19 national parks" [<i>Leucospermum conocarpodendron</i> reported as present in Bontebok, but status as naturalized or cultivated is not specified]
	Moodley, D. (2013). Determinants of introduction and invasion success for Proteaceae. MSc Thesis. Stellenbosch University, Stellenbosch, South Africa	"Table S4. Raw data of all introduced, naturalized and invasive species and the fourteen traits that were measured. See table 1 for metadata." [No evidence for <i>Leucospermum conocarpodendron</i>]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Reported as naturalized and as a weed, but investigation of sources cited are inconclusive

302	Garden/amenity/disturbance weed	
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Qsn #	Question	Answer
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Cited as a weed. Confirmation needed [reference cited was inconclusive]

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	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

305	Congeneric weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	<i>Leucospermum cordifolium</i> , <i>Leucospermum gerrardii</i> , & <i>Leucospermum reflexum</i> cited as naturalized and weeds. Unable to confirm with references cited.

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	[No evidence] " <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is a tree-like shrub, 3-5 m tall and 3-6 m in diameter, with a dense, rounded habit and often with a gnarled and bent shape. It has a single, stout main stem, 150-400 mm in diameter, covered with 30-50 mm thick bark. Flowering stems are stout and rigid and are covered with a shaggy layer of fine, silky hairs. Leaves are stalkless (sessile) and have a rounded apex with 3-10 teeth. The leaves are grey green and covered in a dense layer of fine, short, curly hairs, which require a magnifying lens to be seen properly, and which can be rubbed off. The leaves lose this covering and become hairless after several years (glabrescent)."

402	Allelopathic	n
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. No evidence found

Qsn #	Question	Answer
403	Parasitic	n
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is a tree-like shrub, 3-5 m tall and 3-6 m in diameter, with a dense, rounded habit and often with a gnarled and bent shape." [Proteaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown

405	Toxic to animals	n
	Source(s)	Notes
	Plant This. 2017. <i>Leucospermum conocarpodendron</i> ssp. <i>conocarpodendron</i> . http://plantthis.com.au/plant-information.asp?gardener=17587 . [Accessed 20 Mar 2017]	"No hazards currently listed."
	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
	Crous, P. W., Summerell, B. A., Swart, L., Denman, S., Taylor, J. E., Bezuidenhout, C. M., Palm, M.E., Marincowitz, S. & Groenewald, J. Z. (2011). Fungal pathogens of Proteaceae. <i>Persoonia</i> , 27(1), 20-45	" <i>Aureobasidium leucospermi</i> ... leaves of <i>Leucospermum conocarpodendron</i> " [Economic importance & host range unknown]
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 20 Mar 2017]	" <i>Leucospermums</i> are not particularly prone to pests or diseases. If grown in a position with still, humid air or waterlogged soil they are prone to fungal infection. Strong fertilizer will burn the roots and kill the plant. The usual garden pests such as caterpillars and leaf miners do attack the plants, but can be combated by hand or with a suitable insecticide when an infestation occurs."

Qsn #	Question	Answer
407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Plant This. 2017. <i>Leucospermum conocarpodendron</i> ssp. <i>conocarpodendron</i> . http://plantthis.com.au/plant-information.asp?gardener=17587 . [Accessed 20 Mar 2017]	"No hazards currently listed."
	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

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 20 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is fairly fire-resistant and is known to survive some fires, thanks to its height and thick bark. Plants that have survived a fire develop an umbrella-like shape as their lower branches are burned off and new growth is produced from the surviving upper branches. Nevertheless, this species is not a resprouter and plants often die if burned." [No evidence of increased fire risk]

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	"It requires a sunny position with free air circulation, well-drained, acidic soil, and no rich manure or strong fertilizers."
	Plant This. 2017. <i>Leucospermum conocarpodendron</i> ssp. <i>conocarpodendron</i> . http://plantthis.com.au/plant-information.asp?gardener=17587 . [Accessed 20 Mar 2017]	"Sunlight: hot overhead sun"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	Notes
	Raimondo, D., Von Staden, L., Foden, W., Victor, J.E., HemeE, N.A., Turner, R.C., Kamundi, D.A. & Manyama, P.A. (eds). 2009. Red List of South African plants 2009. <i>Strelitzia</i> 25. South African National Biodiversity Institute, Pretoria	"Confined to richer soils, predominantly granites, but also occur on shales."
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is quite easy to grow as it tolerates heavier, richer soils than many other proteas, but it needs to be well drained."

Qsn #	Question	Answer
	Plant This. 2017. <i>Leucospermum conocarpodendron</i> ssp. <i>conocarpodendron</i> . http://plantthis.com.au/plant-information.asp?gardener=17587 . [Accessed 20 Mar 2017]	"Soil: ordinary soil, enriched soil, mildly acidic to mildly alkaline"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is a tree-like shrub, 3-5 m tall and 3-6 m in diameter, with a dense, rounded habit and often with a gnarled and bent shape."

412	Forms dense thickets	y
	Source(s)	Notes
	Forrester, J. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>viridum</i> . PlantZAfrica. SANBI. https://www.plantzafrica.com/plantklm/leucoconovirid.htm . [Accessed 20 Mar 2017]	"It grows mainly in the lowlands on well drained, sandstone-derived soils, often in fairly dense stands." [subsp. <i>viridum</i>]
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 20 Mar 2017]	No evidence for ssp. <i>conocarpodendron</i>

501	Aquatic	n
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	[Terrestrial] " <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is a tree-like shrub, 3-5 m tall and 3-6 m in diameter, with a dense, rounded habit and often with a gnarled and bent shape."

502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 15 Mar 2017]	Family: Proteaceae

Qsn #	Question	Answer
503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 15 Mar 2017]	Family: Proteaceae

Qsn #	Question	Answer
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 20 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is a tree-like shrub, 3-5 m tall and 3-6 m in diameter, with a dense, rounded habit and often with a gnarled and bent shape. It has a single, stout main stem, 150-400 mm in diameter, covered with 30-50 mm thick bark. Flowering stems are stout and rigid and are covered with a shaggy layer of fine, silky hairs. Leaves are stalkless (sessile) and have a rounded apex with 3-10 teeth. The leaves are grey green and covered in a dense layer of fine, short, curly hairs, which require a magnifying lens to be seen properly, and which can be rubbed off. The leaves lose this covering and become hairless after several years (glabrescent)."

Qsn #	Question	Answer
601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Raimondo, D., Von Staden, L., Foden, W., Victor, J.E., HemeE, N.A., Turner, R.C., Kamundi, D.A. & Manyama, P.A. (eds). 2009. Red List of South African plants 2009. <i>Strelitzia</i> 25. South African National Biodiversity Institute, Pretoria	"Habitat and number of mature individuals continue to decline at fewer than five locations because of urban expansion, invasion by alien plants and inappropriate fire management."
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is locally abundant and part of its range is well conserved within the Table Mountain National Park, but this subspecies is classified as Vulnerable on the Interim Red Data List (October 2007) because it has lost a significant portion of its distribution range to urbanization, gum plantations and invasive alien plants. More housing developments are planned, which will remove even more of its remaining habitat. Invasive alien ants have also disrupted the seed bank."

Qsn #	Question	Answer
602	Produces viable seed	y
	Source(s)	Notes

Qsn #	Question	Answer
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> can be propagated by seed or cuttings. Sow seed in late summer to autumn (March-May). Use a well-drained medium e.g. one of two parts coarse sand to one part leaf mould and one part loam. Cover the seeds with coarse, clean sand or milled bark and keep warm and moist. Seeds need alternating cold night and warm day temperatures to initiate germination, 4-10°C to 15-20°C, typical of autumn in the Western Cape. Germination can be induced if the seeds are soaked in a 1% solution of hydrogen peroxide for 24 hours. This oxygenates the seed and softens and loosens the seed coat, which should be rubbed off. Treatment with smoke will also enhance germination. Watering the seed tray with a fungicide will also prevent fungal disease. Germination takes 1 to 2 months and the young seedlings are ready to be potted up as soon as they have developed their first set of true leaves."

603	Hybridizes naturally	y
	Source(s)	Notes
	Raimondo, D., Von Staden, L., Foden, W., Victor, J.E., HemeE, N.A., Turner, R.C., Kamundi, D.A. & Manyama, P.A. (eds). 2009. Red List of South African plants 2009. <i>Strelitzia</i> 25. South African National Biodiversity Institute, Pretoria	"Plants also tend to hybridise with planted <i>Leucospermum</i> species from urban gardens."
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	"There are two subspecies of <i>Leucospermum conocarpodendron</i> : subsp. <i>conocarpodendron</i> and subsp. <i>viridum</i> , the green tree pincushion. The subsp. <i>viridum</i> can be identified by its deep green leaves that are hairless or ageing hairless-they may have a few scattered straight hairs or the margins fringed with long silky hairs but its leaves never have a dense mat of grey hairs. Their distribution ranges don't overlap, subsp. <i>viridum</i> occurs along the eastern slopes of the Cape Peninsula from Newlands and Kirstenbosch to the southern Peninsula, as well as in the Kogelberg, Franschoek, Houwhoek and Stanford. There is a naturally occurring hybrid population on the slopes of Little Lion's Head where the two subspecies almost meet up."

604	Self-compatible or apomictic	
	Source(s)	Notes
	Moodley, D. (2013). Determinants of introduction and invasion success for Proteaceae. MSc Thesis. Stellenbosch University, Stellenbosch, South Africa	Compatibility - NA

605	Requires specialist pollinators	y
	Source(s)	Notes

Qsn #	Question	Answer
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	"The brightly coloured and unscented flower heads of <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> are pollinated by birds, sugarbirds and sunbirds being the main pollinators. They perch on the flower heads or the stems and probe into the flower head in search of nectar, and in so doing, their heads and necks come into contact with the pollen presenters. The flower heads are also visited by bees and beetles, in particular the Protea Beetle (<i>Tricosthetha fascicularis</i>) but they do not assist in pollination as they don't come into contact with the pollen presenter."

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 20 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> can be propagated by seed or cuttings." ... "Take semi-hardwood tip cuttings or heel cuttings from the current season's growth in late summer to autumn (March-May). Treat with rooting hormone and place in a well-drained medium and place under mist with a bottom heat of 24°C. Good air circulation is required to prevent fungal infection." [No evidence]

607	Minimum generative time (years)	3
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is relatively slow growing, yet produces its first flowers in its third year."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	[No evidence] "Large, nut-like seeds fall from the flower heads about two months after flowering." ... " <i>Leucospermum conocarpodendron</i> seeds have an elaiosome that attracts ants. The ants carry the seeds away to their nests to consume the elaiosome, but disperse the seeds and keep them safe in the process. This is known as myrmecochory. After a fire, the seeds stored in the ants nests germinate."

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	"The grey tree pincushion is endemic to the Cape Peninsula where it is a conspicuous feature of the northern and western mountainsides. It makes a decorative garden shrub, often with an interesting bent shape, and it provides an unusual colour combination of greyish foliage and bright, golden yellow flowers." [Cultivated ornamental]

Qsn #	Question	Answer
703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Slingsby, P., & Bond, W. J. (1985). The influence of ants on the dispersal distance and seedling recruitment of <i>Leucospermum conocarpodendron</i> (L.) Buek (Proteaceae). <i>South African Journal of Botany</i> , 51(1), 30-34	[No evidence. Unlikely given large seed size & dispersal vector] " <i>Leucospermum conocarpodendron</i> (L.) Buek has achenes with elaiosomes covering the fruit which is typical of several genera of the Proteaceae, e.g. <i>Leucospermum</i> , <i>Diastella</i> , <i>Mimetes</i> , <i>Orothamnus</i> , <i>Paranomus</i> (Slingsby & Bond 1983). It differs from many congeners by being a small tree or tall shrub and surviving fire by sprouting from roots or, in older plants, from the crown (Rourke 1972). The fruits (hereafter referred to as seeds) are the largest in the genus (ca. 10 mm) but are discovered and transported to nests as speedily as all taxa with similar fruits (Slingsby & Bond 1981; Slingsby & Bond 1983)."

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Slingsby, P., & Bond, W. J. (1985). The influence of ants on the dispersal distance and seedling recruitment of <i>Leucospermum conocarpodendron</i> (L.) Buek (Proteaceae). <i>South African Journal of Botany</i> , 51(1), 30-34	" <i>Leucospermum conocarpodendron</i> fruits are large and heavy and, except for elaiosomes, lack any obvious structures to aid dispersal." ... "Opportunities for chance long distance dispersal of ant dispersed seed are very limited. There are no seed-cacheing rodents in fynbos and we have not observed birds feeding on myrmecochorous fruits." ... "Myrmecochorous seed is ill adapted to wind dispersal. Seed surfaces are typically smooth and rounded, minimizing surface area (e.g. Berg 1975; Bond & Slingsby 1983). Furthermore seed burial in nests anchors seeds against subsequent movement by wind or water."
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	[No evidence] "Large, nut-like seeds fall from the flower heads about two months after flowering." ... " <i>Leucospermum conocarpodendron</i> seeds have an elaiosome that attracts ants. The ants carry the seeds away to their nests to consume the elaiosome, but disperse the seeds and keep them safe in the process. This is known as myrmecochory. After a fire, the seeds stored in the ants nests germinate."

705	Propagules water dispersed	n
	Source(s)	Notes
	Slingsby, P., & Bond, W. J. (1985). The influence of ants on the dispersal distance and seedling recruitment of <i>Leucospermum conocarpodendron</i> (L.) Buek (Proteaceae). <i>South African Journal of Botany</i> , 51(1), 30-34	" <i>Leucospermum conocarpodendron</i> (L.) Buek has seeds (achenes) which are dispersed by ants." ... " <i>Leucospermum conocarpodendron</i> fruits are large and heavy and, except for elaiosomes, lack any obvious structures to aid dispersal." ... "Opportunities for chance long distance dispersal of ant dispersed seed are very limited. There are no seed-cacheing rodents in fynbos and we have not observed birds feeding on myrmecochorous fruits." ... "Myrmecochorous seed is ill adapted to wind dispersal. Seed surfaces are typically smooth and rounded, minimizing surface area (e.g. Berg 1975; Bond & Slingsby 1983). Furthermore seed burial in nests anchors seeds against subsequent movement by wind or water."

706	Propagules bird dispersed	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Slingsby, P., & Bond, W. J. (1985). The influence of ants on the dispersal distance and seedling recruitment of <i>Leucospermum conocarpodendron</i> (L.) Buek (Proteaceae). <i>South African Journal of Botany</i> , 51(1), 30-34	" <i>Leucospermum conocarpodendron</i> fruits are large and heavy and, except for elaiosomes, lack any obvious structures to aid dispersal." ... "Opportunities for chance long distance dispersal of ant dispersed seed are very limited. There are no seed-cacheing rodents in fynbos and we have not observed birds feeding on myrmecochorous fruits." [No evidence]
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	[No evidence] "Large, nut-like seeds fall from the flower heads about two months after flowering." ... " <i>Leucospermum conocarpodendron</i> seeds have an elaiosome that attracts ants. The ants carry the seeds away to their nests to consume the elaiosome, but disperse the seeds and keep them safe in the process. This is known as myrmecochory. After a fire, the seeds stored in the ants nests germinate."

707	Propagules dispersed by other animals (externally)	y
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	" <i>Leucospermum conocarpodendron</i> seeds have an elaiosome that attracts ants. The ants carry the seeds away to their nests to consume the elaiosome, but disperse the seeds and keep them safe in the process. This is known as myrmecochory. After a fire, the seeds stored in the ants nests germinate."

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Slingsby, P., & Bond, W. J. (1985). The influence of ants on the dispersal distance and seedling recruitment of <i>Leucospermum conocarpodendron</i> (L.) Buek (Proteaceae). <i>South African Journal of Botany</i> , 51(1), 30-34	" <i>Leucospermum conocarpodendron</i> fruits are large and heavy and, except for elaiosomes, lack any obvious structures to aid dispersal." ... "Opportunities for chance long distance dispersal of ant-dispersed seed are very limited. There are no seed-cacheing rodents in fynbos and we have not observed birds feeding on myrmecochorous fruits." [No evidence]

801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes
	Slingsby, P., & Bond, W. J. (1985). The influence of ants on the dispersal distance and seedling recruitment of <i>Leucospermum conocarpodendron</i> (L.) Buek (Proteaceae). <i>South African Journal of Botany</i> , 51(1), 30-34	" <i>L. conocarpodendron</i> seed set is relatively high."
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 20 Mar 2017]	"Large, nut-like seeds fall from the flower heads about two months after flowering." [Unlikely given relatively large seed size]

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
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Qsn #	Question	Answer
	Source(s)	Notes
	Baskin, C.C. & Baskin, J.M. 2014. <i>Seeds Ecology, Biogeography, and Evolution of Dormancy and Germination</i> . Second Edition. Academic Press, San Francisco, CA	"TABLE 7.6 Examples of studies in which seeds of single species have been buried in bags in the field and viability monitored." [<i>Leucospermum conocarpodendron</i> - Maximum Period of Burial (years) = 3; Percent Viable Seeds Remaining = 99]

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	Notten, A. & January, E. 2009. <i>Leucospermum conocarpodendron</i> (L.) H.Buek subsp. <i>conocarpodendron</i> . PlantZAfrica. SANBI. http://dev2.sanbi.org/leucospermum-conocarpodendron . [Accessed 16 Mar 2017]	" <i>Leucospermum conocarpodendron</i> subsp. <i>conocarpodendron</i> is fairly fire-resistant and is known to survive some fires, thanks to its height and thick bark. Plants that have survived a fire develop an umbrella-like shape as their lower branches are burned off and new growth is produced from the surviving upper branches. Nevertheless, this species is not a resprouter and plants often die if burned."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown

Summary of Risk Traits:

- Reported to be naturalized and/or a weed but evidence is inconclusive
- *Leucospermum conocarpodendron* subsp. *viridum* reported to form dense stands
- Reproduces by seeds
- Hybridizes with other *Leucospermum* species
- Reaches maturity in 3 years
- Seeds dispersed by ants & intentionally by people
- Seeds able to be stored for extended periods; May form a persistent seed bank
- Tolerates fire

Low Risk Traits

- Unarmed (no spines, thorns, or burrs)
- Non-toxic
- Ornamental
- Requires bird pollination (may limit seed set in cultivation)
- Not reported to spread vegetatively
- Relatively large, ant-dispersed seeds limit potential for long distance dispersal