

Taxon: <i>Cussonia arenicola</i> Strey	Family: Araliaceae
Common Name(s): sand cabbage	Synonym(s):

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 22 May 2017
WRA Score: -1.0	Designation: L	Rating: Low Risk

Keywords: Single-stemmed Shrub, Tropical, Unarmed, Shade-Tolerant, Bird-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)	High
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	y
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	n=0, y = 1*multiplier (see Appendix 2)	n
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	y=1, n=0	y
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	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	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	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m ²)		
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		
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
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	[No evidence of domestication] "A species mainly found on the coastal sand-dunes of northern Natal but occasionally further inland in sand forest (Fig. 3). The specific epithet <i>arenicola</i> meaning "dwelling on sand" was applied to this species, because it is the only species which is confined to sandy habitats."

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"	High
	Source(s)	Notes
	JSTOR Global Plants. 1978. Entry for <i>Cussonia arenicola</i> Strey [family ARALIACEAE]. Entry From FZ, Vol 4, Part 0, page 621, (1978) Author: J. F. M. Cannon. plants.jstor.org	"Distribution Mozambique M Inhaca I., Delagoa Bay, 1-6 km. S. of Marine Station, Inhaca, fl. & fr. 31.viii.1959, Watmough 305 (LISC; SRGH). Mozambique GI between Vilanculos and Mapinhane, fl. 1.ix.1942, Mendonça 67 (LISC). Distribution (external) northern Natal"

202	Quality of climate match data	High
	Source(s)	Notes
	JSTOR Global Plants. 1978. Entry for <i>Cussonia arenicola</i> Strey [family ARALIACEAE]. Entry From FZ, Vol 4, Part 0, page 621, (1978) Author: J. F. M. Cannon. plants.jstor.org	

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"A species mainly found on the coastal sand-dunes of northern Natal but occasionally further inland in sand forest"
	JSTOR Global Plants. 1978. Entry for <i>Cussonia arenicola</i> Strey [family ARALIACEAE]. Entry From FZ, Vol 4, Part 0, page 621, (1978) Author: J. F. M. Cannon. plants.jstor.org	"Habitat: Apparently confined to coastal sand dunes, but occasionally occurring further inland in open woodland on sandy soils." ... " Altitude range: 0-100 inferred from habitat"

Qsn #	Question	Answer
204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	JSTOR Global Plants. 1978. Entry for <i>Cussonia arenicola</i> Strey [family ARALIACEAE]. Entry From FZ, Vol 4, Part 0, page 621, (1978) Author: J. F. M. Cannon. plants.jstor.org	"Distribution Mozambique M Inhaca I., Delagoa Bay, 1-6 km. S. of Marine Station, Inhaca, fl. & fr. 31.viii.1959, Watmough 305 (LISC; SRGH).Mozambique GI between Vilanculos and Mapinhane, fl. 1.ix.1942, Mendonça 67 (LISC). Distribution (external) northern Natal"

205	Does the species have a history of repeated introductions outside its natural range?	?
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unable to find evidence of widespread or repeated introduction outside native range.

301	Naturalized beyond native range	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. 2017. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/ . [Accessed 22 May 2017]	No evidence to date

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

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

Qsn #	Question	Answer
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Cussonia arborea reported to be naturalized "Cussonia arborea Hochst. ex A. Rich. Araliaceae Total N° of Refs: 1 Preferred Climate/s: Tropical Major Pathway/s: Crop References: Senegal-N-1796"

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	[No evidence] "Single-stemmed shrubs, 1-2 m high; stems 1-2 cm thick, arising singly from a globose, ovoid or turbinate tuber; basal tubers up to 14 cm broad and up to 25 cm long often several spaced along a single root; bark smooth greenish or grey. Leaves glabrous or with scattered scale-like papillae at the articulations, twice compound, first division digitate, bearing vertebrate leaflets; petiole ribbed, terete, up to 25 cm long, 2-4 mm thick; stipules intrapetiolar, joined at the base, adnate to the base of the petiole, lobes 2-3 mm long; limb of the leaf sub-circular in outline, about 20 cm in diam.; leaflets 4-7(12) per leaf, 6-18 cm long, chartaceous, dark green above, dull green beneath, margin revolute, serrate, 1-3 times vertebrate, petiolules about 1(2) cm long, usually narrowly winged, rhachilla wings obtriangular to obhastate; pinnules up to 9 cm long and 2-4 cm wide, sessile, 1-5, obovate-oblancoolate, or trullate, base cuneate, rounded, acute or apiculate."

402	Allelopathic	n
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown

403	Parasitic	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Single-stemmed shrubs, 1-2 m high" [Araliaceae. No evidence]

Qsn #	Question	Answer
404	Unpalatable to grazing animals	
	Source(s)	Notes
	Smith, O. B. (1992). Fodder trees and shrubs in range and farming systems in tropical humid Africa. Pp. 43-59 in Legume trees and other fodder trees as protein sources for livestock.(Eds. A. Speedy and PL Pugliese). FAO. Animal Production and Health Paper, 102	[Related taxon, <i>Cussonia barterii</i> , reportedly used as fodder] "TABLE 2. Trees and shrubs of known fodder value in tropical humid Africa"
	Karanja, G. M., Nyaata, O. Z., Mureithi, J. G., & Wandera, F. P. (1996). Fodder Production Under Small-Holder Agroforestry Systems. East African Agricultural and Forestry Journal, 62(1-2), 163-177	[Related taxon, <i>Cussonia holstii</i> , used as fodder] "Table 1: Percentage dry matter (DM), organic matter digestibility (OMD). crude protein (CP) and ash, of the leaves of some potential fodder trees in Embu"

405	Toxic to animals	n
	Source(s)	Notes
	De Villiers, B. J., Van Vuuren, S. F., Van Zyl, R. L., & Van Wyk, B. E. (2010). Antimicrobial and antimalarial activity of <i>Cussonia</i> species (Araliaceae). Journal of Ethnopharmacology, 129(2), 189-196	[Used medicinally] "Ethnopharmacological relevance: <i>Cussonia</i> species are used in African traditional medicine mainly against pain, inflammation, gastro-intestinal problems, malaria and sexually transmitted diseases. Aim of the study: To summarise ethnomedicinal uses of <i>Cussonia</i> and to find scientific evidence in support of selected main uses. Materials and methods: Using the minimum inhibitory concentration (MIC) method, leaves of 13 <i>Cussonia</i> species, <i>Schefflera umbellifera</i> and <i>Seemannaralia gerrardii</i> were tested against pathogens associated with diarrhoea (<i>Enterococcus faecalis</i> and <i>Escherichia coli</i>), sexually transmitted infections (<i>Neisseria gonorrhoeae</i> and <i>Trichomonas vaginalis</i>) and general infectious diseases (<i>Staphylococcus aureus</i> and <i>Pseudomonas aeruginosa</i>). Antimalarial sensitivity was studied using <i>Plasmodium falciparum</i> and the [3H]-hypoxanthine incorporation assay. Cytotoxic effects on a T-cell leukaemia (Jurkat) cell line were determined using the tetrazolium-based cellular toxicity assay. Results: Methanolic extracts were active against <i>Pseudomonas aeruginosa</i> (MIC of 1.0–1.5 mg/mL), <i>Trichomonas vaginalis</i> (MIC of 0.8–1.3 mg/mL) and <i>Staphylococcus aureus</i> (<i>Cussonia arborea</i> , 1.8 mg/mL). All samples were active against <i>Neisseria gonorrhoeae</i> (MIC of 0.02–0.7 mg/mL). The methanol extract of <i>Cussonia arborea</i> was the most active against <i>Plasmodium falciparum</i> (13.68µg/mL) and showed anticancer properties (5.60µg/mL). Conclusions: The traditional use of <i>Cussonia</i> species to treat sexually transmitted diseases and <i>Plasmodium</i> infections appears to have a scientific basis."
	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
	WRA Specialist. 2017. Personal Communication	Unknown

Qsn #	Question	Answer
407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	De Villiers, B. J., Van Vuuren, S. F., Van Zyl, R. L., & Van Wyk, B. E. (2010). Antimicrobial and antimalarial activity of <i>Cussonia</i> species (Araliaceae). <i>Journal of Ethnopharmacology</i> , 129(2), 189-196	[Used medicinally] "Ethnopharmacological relevance: <i>Cussonia</i> species are used in African traditional medicine mainly against pain, inflammation, gastro-intestinal problems, malaria and sexually transmitted diseases. Aim of the study: To summarise ethnomedicinal uses of <i>Cussonia</i> and to find scientific evidence in support of selected main uses. Materials and methods: Using the minimum inhibitory concentration (MIC) method, leaves of 13 <i>Cussonia</i> species, <i>Schefflera umbellifera</i> and <i>Seemannaralia gerrardii</i> were tested against pathogens associated with diarrhoea (<i>Enterococcus faecalis</i> and <i>Escherichia coli</i>), sexually transmitted infections (<i>Neisseria gonorrhoeae</i> and <i>Trichomonas vaginalis</i>) and general infectious diseases (<i>Staphylococcus aureus</i> and <i>Pseudomonas aeruginosa</i>). Antimalarial sensitivity was studied using <i>Plasmodium falciparum</i> and the [3H]-hypoxanthine incorporation assay. Cytotoxic effects on a T-cell leukaemia (Jurkat) cell line were determined using the tetrazolium-based cellular toxicity assay. Results: Methanolic extracts were active against <i>Pseudomonas aeruginosa</i> (MIC of 1.0–1.5 mg/mL), <i>Trichomonas vaginalis</i> (MIC of 0.8–1.3 mg/mL) and <i>Staphylococcus aureus</i> (<i>Cussonia arborea</i> , 1.8 mg/mL). All samples were active against <i>Neisseria gonorrhoeae</i> (MIC of 0.02–0.7 mg/mL). The methanol extract of <i>Cussonia arborea</i> was the most active against <i>Plasmodium falciparum</i> (13.68 µg/mL) and showed anticancer properties (5.60 µg/mL). Conclusions: The traditional use of <i>Cussonia</i> species to treat sexually transmitted diseases and <i>Plasmodium</i> infections appears to have a scientific basis."
	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, but other taxa have medicinal uses

408	Creates a fire hazard in natural ecosystems	
	Source(s)	Notes
	Loffler, L. & Loffler, P. 2005. Swaziland Tree Atlas—including selected shrubs and climbers. Southern African Botanical Diversity Network Report No. 38. SABONET, Pretoria, S.A.	"Distribution: Isolated patches in Mtibhlati Gorge and near Shewula on the Lebombo Range. Abundance: Rare. Habitat: Shady undergrowth in Lebombo ravine forest." [Unknown. No evidence]

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Loffler, L. & Loffler, P. 2005. Swaziland Tree Atlas—including selected shrubs and climbers. Southern African Botanical Diversity Network Report No. 38. SABONET, Pretoria, S.A.	" <i>Cussonia arenicola</i> ... Habitat: Shady undergrowth in Lebombo ravine forest." [Presumably Yes]

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"A species mainly found on the coastal sand-dunes of northern Natal but occasionally further inland in sand forest"
	JSTOR Global Plants. 1978. Entry for <i>Cussonia arenicola</i> Strey [family ARALIACEAE]. Entry From FZ, Vol 4, Part 0, page 621, (1978) Author: J. F. M. Cannon. plants.jstor.org	"Apparently confined to coastal sand dunes, but occasionally occurring further inland in open woodland on sandy soils."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Single-stemmed shrubs, 1-2 m high"

412	Forms dense thickets	n
	Source(s)	Notes
	Loffler, L. & Loffler, P. 2005. Swaziland Tree Atlas—including selected shrubs and climbers. Southern African Botanical Diversity Network Report No. 38. SABONET, Pretoria, S.A.	"Distribution: Isolated patches in Mtibhlati Gorge and near Shewula on the Lebombo Range. Abundance: Rare. Habitat: Shady undergrowth in Lebombo ravine forest." [No evidence]
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	[No evidence] "A species mainly found on the coastal sand-dunes of northern Natal but occasionally further inland in sand forest"

501	Aquatic	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	[Terrestrial] "Single-stemmed shrubs ... A species mainly found on the coastal sand-dunes of northern Natal but occasionally further inland in sand forest"

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 19 May 2017]	Family: Araliaceae Subfamily: Aralioideae

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 19 May 2017]	Family: Araliaceae Subfamily: Aralioideae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Single-stemmed shrubs, 1-2 m high; stems 1-2 cm thick, arising singly from a globose, ovoid or turbinate tuber; basal tubers up to 14 cm broad and up to 25 cm long often several spaced along a single root; bark smooth greenish or grey." [Tuberous roots, but a woody shrub]

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Foden, W. & Potter, L. 2005. <i>Cussonia arenicola</i> Strey. National Assessment: Red List of South African Plants version 2017.1.	"Status and Criteria: Least Concern"

602	Produces viable seed	y
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Fruit 2 (1) seeded, barrel-shaped, about 4 x 4 mm, exocarp mauve and fleshy when ripe, calyx rim and styles persistent. Seed globose to subglobose, about 3 mm long; raphe with ovate areole; endosperm ruminant."
	Exotic Plants. 2017. <i>Cussonia arenicola</i> - Sand cabbage tree seeds. http://www.exotic-plants.de/seeds/caudiciforms/Cussonia-arenicola.php . [Accessed 22 May 2017]	"There is no pre-treatment of the seeds required. The seeds are sown in mineral-based cat litter (no clumping litter) or perlite (germ-free) in plastic-pots. Please sow the seeds on the mineral soil. Bigger seeds need to be covered with the mineral soil, small seeds should remain on the surface."

603	Hybridizes naturally	
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	Unknown. No hybrids reported in this publication

604	Self-compatible or apomictic	
	Source(s)	Notes
	Schlessmann, M. A. (2010). Major events in the evolution of sexual systems in Apiales: ancestral andromonoecy abandoned. <i>Plant Diversity and Evolution</i> , 128(1-2), 233-245	"Table 1. Terminal taxa of phylogenetic tree for Apiales (Fig. 1), their sexual systems, and sources for their positions on the tree. A = andromonoecy; D = dioecy, CD = cryptic dioecy (females have morphologically perfect flowers with non-functional pollen); H = hermaphroditism; ? = undetermined (or in <i>Centella</i> , highly variable)." [<i>Cussonia</i> - H = hermaphroditism. Potentially]

Qsn #	Question	Answer
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	[Unknown] "Inflorescence a terminal umbel consisting of (5)8- 15 (23) pedunculate, dense, cylindrical racemes arranged on the often distinctly swollen, bracteate, apex of the stems; peduncles of the racemes 3-18 cm long, (1)—2—4 mm thick; bracts subtending the peduncles binate, up to 1 cm long; racemes 3-9 cm long, 8-14 mm broad. Pedicels 1-2 mm long; bracts subtending flowers subulate, 2 mm long. Flowers loosely spirally arranged, white to greenish cream. Calyx reduced to a 4-toothed rim. Petals broadly ovate, caducous. Stamens about as long as the petals, caducous; anthers ovoid, introrse, versatile. Ovary inferior, 2-loculed; disc conical; style about 1 mm long, stigmas 2, divergent."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	[Insect-pollinated] "Newly opened flowers are greenish-cream to butter-yellow in colour, the top of the ovary green, the stigmas pale and erect and the anthers yellow. As the flower ages the petals and stamens drop, the top of the ovary becomes yellow and exudes a shiny, sticky fluid which attracts insects, the stigmas become darker and the styles recurve. It is probably at this stage that pollination is effected by the various types of insects found on the flowers, including bees, flies and beetles."

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Single-stemmed shrubs, 1-2 m high" [No evidence. Single-stemmed]
	Gavhi, P. & Harris, S. 2002. <i>Cussonia paniculata</i> Eckl. & Zeyh. <i>PlantZAfrica</i> . SANBI. http://pza.sanbi.org/cussonia-paniculata . [Accessed 22 May 2017]	[No evidence in related taxon] "The best method of propagation is by means of seed harvested from fresh ripe fruits. Detailed instructions on propagation are found in Oliver (1987). Sow seed as soon as possible as it loses much of its viability within 3 months. However, seed sown in summer months will germinate faster (in about 4 weeks) than seed sown in winter (7 weeks to germination). Make sure seed trays are at least 15 cm in depth to allow the small tubers to form. Do not allow seed to become waterlogged or dry out. Keep seed and seedlings in a semi-shaded area. Seedlings can be transplanted at about 4 months, but be very careful not to damage the fleshy roots when transplanting. One can grow <i>Cussonia paniculata</i> from a cutting, but this is not advisable because it does not make the proper, fleshy, underground rootstock that it forms when grown from seed."

607	Minimum generative time (years)	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n

Qsn #	Question	Answer
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Fruit 2 (1) seeded, barrel-shaped, about 4 x 4 mm, exocarp mauve and fleshy when ripe, calyx rim and styles persistent. Seed globose to subglobose, about 3 mm long; raphe with ovate areole; endosperm ruminant." [No evidence. Seeds small, but lack means of external attachment]

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	exoticseeds. 2017. <i>Cussonia arenicola</i> - Sand cabbage tree - 5 seeds. http://exoticseeds.ecrater.com/p/26349671/cussonia-arenicola-sand-cabbage-tree-5 . [Accessed 22 May 2017]	Seeds available for purchase online

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Single-stemmed shrubs, 1-2 m high" ... "Fruit 2 (1) seeded, barrel-shaped, about 4 x 4 mm, exocarp mauve and fleshy when ripe, calyx rim and styles persistent. Seed globose to subglobose, about 3 mm long; raphe with ovate areole; endosperm ruminant." [Unlikely. No evidence]

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Fruit 2 (1) seeded, barrel-shaped, about 4 x 4 mm, exocarp mauve and fleshy when ripe, calyx rim and styles persistent. Seed globose to subglobose, about 3 mm long; raphe with ovate areole; endosperm ruminant."

705	Propagules water dispersed	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Fruit 2 (1) seeded, barrel-shaped, about 4 x 4 mm, exocarp mauve and fleshy when ripe, calyx rim and styles persistent. Seed globose to subglobose, about 3 mm long; raphe with ovate areole; endosperm ruminant." ... "A species mainly found on the coastal sand-dunes of northern Natal but occasionally further inland in sand forest" [Unlikely given fruit morphology and habitat]
	Loffler, L. & Loffler, P. 2005. Swaziland Tree Atlas—including selected shrubs and climbers. Southern African Botanical Diversity Network Report No. 38. SABONET, Pretoria, S.A.	"Habitat: Shady undergrowth in Lebombo ravine forest."

706	Propagules bird dispersed	y
	Source(s)	Notes

Qsn #	Question	Answer
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Fruit 2 (1) seeded, barrel-shaped, about 4 x 4 mm, exocarp mauve and fleshy when ripe, calyx rim and styles persistent. Seed globose to subglobose, about 3 mm long; raphe with ovate areole; endosperm ruminant."
	Snow, D. W. (1981). Tropical frugivorous birds and their food plants: a world survey. <i>Biotropica</i> , 13(1): 1-14	"TABLE 1. Plant genera recorded" in the diets of frugivorous birds in the tropics (including subtropical South Africa and Australasia, and excluding oceanic islands and Madagascar)." [Includes the genus <i>Cussonia</i>]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Fruit 2 (1) seeded, barrel-shaped, about 4 x 4 mm, exocarp mauve and fleshy when ripe, calyx rim and styles persistent. Seed globose to subglobose, about 3 mm long; raphe with ovate areole; endosperm ruminant." [No evidence. Seeds small, but lack means of external attachment]

708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	[Presumably Yes. Fleshy-fruited] "Fruit 2 (1) seeded, barrel-shaped, about 4 x 4 mm, exocarp mauve and fleshy when ripe, calyx rim and styles persistent. Seed globose to subglobose, about 3 mm long; raphe with ovate areole; endosperm ruminant."

801	Prolific seed production (>1000/m ²)	
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	[Seed densities unknown] "Each fruit contains one to two seeds. Unfertilized and parasitized ovaries may develop but remain dry and hollow structures. Mature inflorescences are attacked by insects and the stem-apex in particular seems susceptible. When the stem-apex has decayed, the whole inflorescence breaks off and drops to the ground."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Royal Botanic Gardens Kew. (2017) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/ . [Accessed 22 May 2017]	Unknown. No information available

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

Qsn #	Question	Answer
804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	Strey, R. G. (1973). Notes on the genus <i>Cussonia</i> in South Africa. <i>Bothalia</i> , 11(1&2), 191-201	"Single-stemmed shrubs, 1-2 m high; stems 1-2 cm thick, arising singly from a globose, ovoid or turberate tuber" [Tuberous roots probably an adaptation to resprout after damage]

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

Summary of Risk Traits:

High Risk / Undesirable Traits

- Able to grow in regions with tropical climates
- Shade tolerant
- Reproduces by seeds
- Seeds dispersed by birds & intentionally by people
- Limited ecological information may lower accuracy of risk prediction

Low Risk Traits

- No reports of invasiveness or naturalization, but no evidence of widespread introduction outside native range
- Unarmed (no spines, thorns, or burrs)
- Ornamental & medicinal uses
- Not reported to spread vegetatively