

Taxon: <i>Crassula arborescens</i> (Mill.) Willd.	Family: Crassulaceae
Common Name(s): silver dollar plant tree crassula	Synonym(s): <i>Cotyledon arborescens</i> Mill. <i>Crassula arborescens</i> subsp. <i>Crassula arborescens</i> subsp.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 12 Aug 2016
WRA Score: 9.0	Designation:	Rating:

Keywords: Naturalized, Succulent, Shade-Tolerant, Spreads Vegetatively, Wind-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	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	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)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals		
405	Toxic to animals	y=1, n=0	y
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans		
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	y

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets		
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	y
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	2
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	y
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant		
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	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)		
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
	Eggl, U. (ed.). 2003. Illustrated Handbook of Succulent Plants: Crassulaceae. Springer-Verlag, Berlin - Heidelberg - New York	No evidence of domestication

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2016. 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
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 11 Aug 2016]	"Native: Africa Southern Africa: South Africa - Eastern Cape, - Western Cape"
	SouthAfrica.com. 2016. Climate of the Eastern Cape. http://www.southafrica.com/eastern-cape/climate/ . [Accessed 11 Aug 2016]	"The Eastern Cape is situated between KwaZulu Natal and the Western Cape and its climate is a bit of a mixture of the two. Its coastal cities enjoy both a subtropical and Mediterranean climate while inland things get a bit hotter. The area itself is quite large and it stretches from the coast to more mountainous escarpment regions inland, resulting in a climate that varies quite a bit."

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 11 Aug 2016]	

Qsn #	Question	Answer
203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Dave's Garden. 2016. Silver Jade, Silver Dollar Plant, Beestebul, Chinese Jade, Money Plant, Round-leaved Crassula - <i>Crassula arborescens</i> . davesgarden.com/guides/pf/go/338/	"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)"

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 11 Aug 2016]	"Native: Africa Southern Africa: South Africa - Eastern Cape"
	Bishop, E.. 2016. OISC Outreach Specialist. Pers. Comm. 10 August	"Oahu Invasive Species Committee rec'd report of possible <i>Crassula arborescens</i> ssp. <i>undulatifolia</i> through report a pest online. The sample was sent to Bishop Museum and still waiting on confirmation of the species. The plant has been seen naturalizing on a remote ridgeline in the Waianae range"

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	"Horticulturally the plants are very popular in rock gardens, on rocky embankments, slopes and as container plants."
	Heenan, P. B., de Lange, P. J., Cameron, E. K., & Parris, B. S. 2008. Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 2004–06. <i>New Zealand Journal of Botany</i> , 46(2): 257-283	Cultivated and naturalized in New Zealand
	Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI	Cultivated as an ornamental In the Hawaiian Islands

301	Naturalized beyond native range	y
	Source(s)	Notes
	Heenan, P. B., de Lange, P. J., Cameron, E. K., & Parris, B. S. 2008. Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 2004–06. <i>New Zealand Journal of Botany</i> , 46(2): 257-283	" <i>Crassula arborescens</i> " ... "NOTES: garden Discard. established from broken pieces of stem. although recorded by de Lange et al. (2005a) as <i>C. arborescens</i> subsp. <i>arborescens</i> , the freely flowering habit of these wild occurrences is more typical of <i>C. arborescens</i> subsp. <i>undulatifolia</i> Toelken (Sykes 2004). Clear morphological distinctions between both subspecies is not evident in New Zealand material, so we treat the wild occurrences at species rank only."

Qsn #	Question	Answer
	de Lange, P. J., de Lange, T. J. P., & de Lang, F. J. T. (2005). New exotic plant records, and range in the northern North. Auckland Botanical Society Journal 60: 130-147	[Identified by Heenan et al. 2008 as subsp. undulatifolia] "Garden Discard. The first gathering came from what is clearly <i>C. arborescens</i> subsp. <i>arborescens</i> , and occurred in the immediate vicinity of two planted specimens. The plants and the wildlings were found growing in a street side car park area within the industrial portion of Morningside, Auckland. Naturalisation had been effected by at least one vehicle (if not more) having driven over the plant specimens, thereby scattering vegetative pieces which have then rooted and established themselves."

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

305	Congeneric weed	y
	Source(s)	Notes
	Hussner, A. (2009). Growth and photosynthesis of four invasive aquatic plant species in Europe. Weed Research, 49(5), 506-515	" <i>Crassula helmsii</i> , <i>Hydrocotyle ranunculoides</i> , <i>Ludwigia grandiflora</i> and <i>Myriophyllum aquaticum</i> are four well known invasive aquatic plants in European waters."
	Wotherspoon, S.H. & Wotherspoon, J.A. (2002). The evolution & execution of a plan for invasive weed eradication & control, Rangitoto Island, Hauraki Gulf, New Zealand. Pp. 381-288 in Turning the Tide: The Eradication of Invasive Species. IUCN, Gland	[<i>Crassula multicava</i>] "The degree to which an invasive species impacts on native vegetation processes was accorded the most influence in setting priorities for control. We considered invasive species to have a high impact on native vegetation processes if they were: ... able to form a dense ground cover that prevents the regeneration of native species, such as <i>Crassula multicava</i> (Crassulaceae)."

401	Produces spines, thorns or burrs	n
	Source(s)	Notes

Qsn #	Question	Answer
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrika.com/plantcd/crassarbor.htm	" <i>Crassula arborescens</i> is a large and impressive looking single-stemmed, many branched shrub or small tree, easily reaching a height of up to 3 m. The trunk is thick and fleshy and has a smooth, green-grey bark. " ... "The leaves show very little variation and are thick and fleshy, with a blue-grey, waxy bloom, apex (tip) rounded with an obscure, sharp tip, the base may be tapering (narrowing towards one end), the margins are entire often with a reddish rim, and the petiole is very short or absent."

402	Allelopathic	
	Source(s)	Notes
	Ferreira, M. I., & Reinhardt, C. F. (2010). Field assessment of crop residues for allelopathic effects on both crops and weeds. <i>Agronomy Journal</i> , 102(6), 1593-1600	[Unknown. Other <i>Crassula</i> species may have allelopathic properties] "An acceptable production practice using allelopathic crops for weed control will likely consist of combining continued limited amounts of herbicides with leguminous crop residues."

403	Parasitic	n
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrika.com/plantcd/crassarbor.htm	" <i>Crassula arborescens</i> is a large and impressive looking single-stemmed, many branched shrub or small tree, easily reaching a height of up to 3 m." [Crassulaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	Blanch, E. 2008. Husbandry Guidelines for Hog deer (<i>Axis porcinus</i>). Western Sydney Institute of TAFE, Richmond, Australia	[Unknown. Other species palatable to deer] "Table 5. Plant species used by Hog deer (<i>Axis porcinus</i>) in Australia" [Includes <i>Crassula multicava</i>]

405	Toxic to animals	y
	Source(s)	Notes
	Fuller, T.C. & McClintock, E.M. 1986. Poisonous plants of California: Issue 53 of California natural history guides. University of California Press, Berkeley and Los Angeles, CA	" <i>Crassula arborescens</i> ... Plants contain an unknown toxin that acts as an intestinal irritant causing colic and diarrhea."
	ASPCA. 2016. Chinese Jade. http://www.aspc.org/pet-care/animal-poison-control/toxic-and-non-toxic-plants/chinese-jade . [Accessed 11 Aug 2016]	"Toxicity: Toxic to Dogs, Toxic to Cats Toxic Principles: Unknown Clinical Signs: Nausea, retching"

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	World of Succulents. 2016. <i>Crassula arborescens</i> – Silver Dollar Plant. http://worldofsucculents.com/crassula-arborescens-silver-dollar-plant-chinese-jade/ . [Accessed 11 Aug 2016]	" <i>Crassula</i> are easy to grow, but they are susceptible to mealy bugs and fungal diseases."

Qsn #	Question	Answer
	Grow Plants. 2016. <i>Crassula arborescens</i> . http://www.growplants.org/growing/crassula-arborescens . [Accessed 12 Aug 2016]	"Pests and diseases in <i>Crassula arborescens</i> : Aphids, slugs, snails"

407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes
	Fuller, T.C. & McClintock, E.M. 1986. Poisonous plants of California: Issue 53 of California natural history guides. University of California Press, Berkeley and Los Angeles, CA	" <i>Crassula arborescens</i> ... Plants contain an unknown toxin that acts as an intestinal irritant causing colic and diarrhea."
	Dave's Garden. 2016. Silver Jade, Silver Dollar Plant, Beestebul, Chinese Jade, Money Plant, Round-leaved <i>Crassula</i> - <i>Crassula arborescens</i> . davesgarden.com/guides/pf/go/338/	"Danger: N/A"
	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
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	" <i>Crassula arborescens</i> is an outstanding, squat, succulent tree" [Succulent. Unlikely to carry fire]
	Kent, D. (2005). Firescaping: creating fire-resistant landscapes, gardens, and properties in California's diverse environments. Wilderness Press, Berkeley, CA	<i>Crassula arborescens</i> recommended as a plant for use in fire-resistant landscapes

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Grow Plants. 2016. <i>Crassula arborescens</i> . http://www.growplants.org/growing/crassula-arborescens . [Accessed 12 Aug 2016]	"Light conditions in optimal condition for growing <i>Crassula arborescens</i> : Full Sun / Half Shade / Full Shade"
	Eggle, U. (ed.). 2003. Illustrated Handbook of Succulent Plants: Crassulaceae. Springer-Verlag, Berlin - Heidelberg - New York	"rock outcrops on shady slopes"
	Dave's Garden. 2016. Silver Jade, Silver Dollar Plant, Beestebul, Chinese Jade, Money Plant, Round-leaved <i>Crassula</i> - <i>Crassula arborescens</i> . davesgarden.com/guides/pf/go/338/	"Sun Exposure: Full Sun" ... "On Jul 16, 2006, palmbob from Acton, CA (Zone 8b) wrote:...This species does not seem to be that happy in shade, but will grow." ... "On Nov 1, 2004, jkom51 from Oakland, CA (Zone 9b) wrote: Jade plants don't need full sun to grow. They will grow in partial shade or even full shade."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes

Qsn #	Question	Answer
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	"Plants typically grow in sandstone and shale-derived soils in rocky to gravel-like conditions."
	Grow Plants. 2016. <i>Crassula arborescens</i> . http://www.growplants.org/growing/crassula-arborescens . [Accessed 12 Aug 2016]	"Requirements for growing <i>Crassula arborescens</i> : Well-drained soil, slightly acid"
	Dave's Garden. 2016. Silver Jade, Silver Dollar Plant, Beestebul, Chinese Jade, Money Plant, Round-leaved <i>Crassula</i> - <i>Crassula arborescens</i> . davesgarden.com/guides/pf/go/338/	"Soil pH requirements: 6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral) 7.6 to 7.8 (mildly alkaline)"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	" <i>Crassula arborescens</i> is a large and impressive looking single-stemmed, many branched shrub or small tree, easily reaching a height of up to 3 m. The trunk is thick and fleshy and has a smooth, green-grey bark. "

412	Forms dense thickets	n
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	[Possibly. Forms dense populations] "Plants that occur on slopes or cliffs easily lose parts of their branches and these can root freely and develop into separate colonies. It is not uncommon therefore to see dense populations of <i>Crassula arborescens</i> along its distribution range."

501	Aquatic	n
	Source(s)	Notes
	Eggl, U. (ed.). 2003. Illustrated Handbook of Succulent Plants: Crassulaceae. Springer-Verlag, Berlin - Heidelberg - New York	[Terrestrial] "rock outcrops on shady slopes"

502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 11 Aug 2016]	Family: Crassulaceae Subfamily: Crassuloideae

Qsn #	Question	Answer
503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 11 Aug 2016]	Family: Crassulaceae Subfamily: Crassuloideae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	" <i>Crassula arborescens</i> has a shallow root system and is evergreen to deciduous (mostly old leaves fall off, and uses the succulent leaves and stems to store water. Shallow roots permit the plant to fully utilize light rain showers."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	" <i>Crassula arborescens</i> is not endangered and due to its free seeding and easy rooting nature, it generally occurs in abundance in its natural habitat."

602	Produces viable seed	y
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	"The seeds are very fine and must be harvested as soon as the inflorescence turns brown as the fruit ripens. Seeds should be sown in a damp, sandy medium and be kept shaded and moist while cuttings are inserted into coarse river sand and later transplanted into ordinary garden soil. "

603	Hybridizes naturally	
	Source(s)	Notes
	Tolken, H. R. (1974). Taxonomic studies on the genus <i>Crassula</i> L. PhD Dissertation, University of Cape Town, South Africa	[Unknown, but possible] "Although hybridization occurs in a few cases, it is not common in the genus <i>Crassula</i> . These hybrids can usually be distinguished in the field by the wide variation the two putative parents develop in a limited space. Hybridization and introgression are recorded in the taxonomic part, but it is beyond the scope of this work to provide detailed field studies."

Qsn #	Question	Answer
604	Self-compatible or apomictic	
	Source(s)	Notes
	Kubitzki, K., Bayer, C. 7 Stevens, P.F. 2007. The families and genera of vascular plants: Volume IX. Flowering Plants. Eudicots. Springer-Verlag, Berlin, Heidelberg, New York	[Unknown, but probably no] "Crassulaceae appear to be usually self-incompatible..."

605	Requires specialist pollinators	n
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrika.com/plantcd/crassarbor.htm	"The colourful white to pink flowers produces nectar which is usually an indication of pollination by birds. The stamens and styles are positioned at or slightly beyond the corolla opening, another feature of bird-pollinating plants (Van Jaarsveld & Koutnik 2004). Bees and other flying insects are also attracted to the flowers."

606	Reproduction by vegetative fragmentation	y
	Source(s)	Notes
	Heenan, P. B., de Lange, P. J., Cameron, E. K., & Parris, B. S. 2008. Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 2004–06. <i>New Zealand Journal of Botany</i> , 46(2): 257-283	"garden Discard. established from broken pieces of stem."
	de Lange, P. J., de Lange, T. J. P., & de Lang, F. J. T. (2005). New exotic plant records, and range in the northern North. <i>Auckland Botanical Society Journal</i> 60: 130-147	"Naturalisation had been effected by at least one vehicle (if not more) having driven over the plant specimens, thereby scattering vegetative pieces which have then rooted and established themselves."
	SouthAfrica.com. 2016. Climate of the Eastern Cape. http://www.southafrica.com/eastern-cape/climate/ . [Accessed 11 Aug 2016]	"Plants that occur on slopes or cliffs easily lose parts of their branches and these can root freely and develop into separate colonies."
	Hodgkiss, R.J. 2016. The Succulent Plant Page - The Crassula Page. http://succulent-plant.com/families/crassulaceae/crassula.html . [Accessed 11 Aug 2016]	"This succulent shrub from the Eastern Cape has a thick, freely branching 6ft trunk of soft wood with thin, peeling bark. Branches are quite brittle but the fleshy, jointed stems root easily where they touch the ground."

607	Minimum generative time (years)	2
	Source(s)	Notes
	Grow Plants. 2016. <i>Crassula arborescens</i> . http://www.growplants.org/growing/crassula-arborescens . [Accessed 12 Aug 2016]	"Growth speed in <i>Crassula arborescens</i> : Slow growing"
	Plants Rescue. 2016. <i>Crassula arborescens</i> . http://www.plantsrescue.com/tag/crassula-arborescens/ . [Accessed 19 Aug 2016]	"Propagation: Individual leaves of <i>Crassula arborescens</i> will root readily..." [Time to sexual maturity unknown, but probably able to reproduce vegetatively in 1- 2 years]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
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Qsn #	Question	Answer
	Source(s)	Notes
	de Lange, P. J., de Lange, T. J. P., & de Lang, F. J. T. (2005). New exotic plant records, and range in the northern North. Auckland Botanical Society Journal 60: 130-147	"Naturalisation had been effected by at least one vehicle (if not more) having driven over the plant specimens, thereby scattering vegetative pieces which have then rooted and established themselves."
	Heenan, P. B., de Lange, P. J., Cameron, E. K., & Parris, B. S. 2008. Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 2004–06. New Zealand Journal of Botany, 46(2): 257-283	[Able to be dispersed accidentally from garden cuttings] "garden Discard. established from broken pieces of stem."

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Llamas, K.A. 2003. Tropical Flowering Plants. Timber Press, Portland, OR	[Grown as an ornamental] "South Africa (Cape provinces). Succulent shrub, 3-8 ft; zones 9-11. Blooms fall, winter. Moderate moisture to dry. Average to poor, well-drained soil. Full sun. Flowers: small, creamy white; stamens red. Leaves: obovate, silver-blue; margins purple-pink. Salt tolerant."
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrika.com/plantcd/crassarbor.htm	[Ornamental] "Unlike most crassulas which are relatively small succulent plants, <i>Crassula arborescens</i> is an outstanding, squat, succulent tree that is easily recognizable by its unmistakable blue-grey foliage that contrasts well with the other plants on hillsides in the karroid scrub. It has a very attractive appearance in both its natural habitat and cultivated gardens. "
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	Cultivated as an ornamental in the Hawaiian Islands

703	Propagules likely to disperse as a produce contaminant	
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrika.com/plantcd/crassarbor.htm	[Unknown. Small, wind-dispersed seeds could become a contaminant of potted plants if grown in proximity] "Mature fruits dehisce to release the numerous, very small seeds which are easily carried away by the wind. Flowers and fruits of <i>C. arborescens</i> are carried slightly above or at foliage level to simplify firstly pollination by means of visibility and secondly seed dispersal by means of wind."

Qsn #	Question	Answer
704	Propagules adapted to wind dispersal	y
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	"Fruits are small, 6 mm long, with 3-5 separate, oval, sharply tipped follicles (simple dry fruits splitting along one suture) and remaining among the dried remains of persistent petals. Fruits ripen from Nov.-Jan. Seeds are very small and are dispersed by wind. " ... "Mature fruits dehisce to release the numerous, very small seeds which are easily carried away by the wind. Flowers and fruits of <i>C. arborescens</i> are carried slightly above or at foliage level to simplify firstly pollination by means of visibility and secondly seed dispersal by means of wind. "

705	Propagules water dispersed	n
	Source(s)	Notes
	World of Succulents. 2016. <i>Crassula arborescens</i> – Silver Dollar Plant. http://worldofsucculents.com/crassula-arborescens-silver-dollar-plant-chinese-jade/ . [Accessed 11 Aug 2016]	"Plants can be easily propagated from a single leaf: sprout leaves by placing them into a succulent or cacti mix, then covering the dish until they sprout." [Possible that leaves may be carried by water if growing in riparian areas, or during heavy rains, but generally grows in drier areas]

706	Propagules bird dispersed	n
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	"Fruits are small, 6 mm long, with 3-5 separate, oval, sharply tipped follicles (simple dry fruits splitting along one suture) and remaining among the dried remains of persistent petals. Fruits ripen from Nov.-Jan. Seeds are very small and are dispersed by wind. "

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrica.com/plantcd/crassarbor.htm	[Unlikely. Small seeds could potentially adhere to animals, but seeds lack means of external attachment] "Mature fruits dehisce to release the numerous, very small seeds which are easily carried away by the wind. Flowers and fruits of <i>C. arborescens</i> are carried slightly above or at foliage level to simplify firstly pollination by means of visibility and secondly seed dispersal by means of wind."

Qsn #	Question	Answer
708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Gordon, D. R., Mitterdorfer, B., Pheloung, P. C., Ansari, S., Buddenhagen, C., Chimera, C., ... & Williams, P. A. 2010). Guidance for addressing the Australian Weed Risk Assessment questions. Plant Protection Quarterly, 25(2): 56-74	"Answer 'no' where the taxon is unlikely to be eaten by animals or if seeds are not viable following passage through the gut."
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrika.com/plantcd/crassarbor.htm	[Unlikely to be consumed] "Fruits are small, 6 mm long, with 3-5 separate, oval, sharply tipped follicles (simple dry fruits splitting along one suture) and remaining among the dried remains of persistent petals. Fruits ripen from Nov.-Jan. Seeds are very small and are dispersed by wind. "

801	Prolific seed production (>1000/m ²)	
	Source(s)	Notes
	South African National Biodiversity Institute. (2007). PlantzAfrica.com - <i>Crassula arborescens</i> . www.plantzafrika.com/plantcd/crassarbor.htm	"Mature fruits dehisce to release the numerous, very small seeds which are easily carried away by the wind." [Densities and numbers unknown]

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Royal Botanic Gardens Kew. (2016) Seed Information Database (SID). Version 7.1. http://data.kew.org/sid/ . [Accessed 12 Aug 2016]	"Storage Behaviour: Orthodox Storage Conditions: 94 % viability following drying to mc's in equilibrium with 15 % RH and freezing for 3 months at -20°C at RBG Kew, WP."

803	Well controlled by herbicides	
	Source(s)	Notes
	Auckland Council. 2010. Biosecurity - Pest Plant - pitted crassula - <i>Crassula multicava</i> . http://www.arc.govt.nz/albany/index.cfm?63E0F20E-14C2-3D2D-B905-50098EBBE4B9&plantcode=Cramul . [Accessed]	[Related species controlled by herbicides] "Recommended approaches: Spray (200ml glyphosate + 20ml penetrant/10L)."
	Brooke, G. & McMaster, C. 2016. Weed control in winter crops 2016. NSW Department of Primary Industries, Orange, NSW	A number of different herbicides are recommended for control of <i>Crassula</i> spp. (although not specifically <i>C. arborescens</i>)

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	Hodgkiss, R.J. 2016. The Succulent Plant Page - The <i>Crassula</i> Page. http://succulent-plant.com/families/crassulaceae/crassula.html . [Accessed 11 Aug 2016]	"This succulent shrub from the Eastern Cape has a thick, freely branching 6ft trunk of soft wood with thin, peeling bark. Branches are quite brittle but the fleshy, jointed stems root easily where they touch the ground." [Cutting branches would result in propagation of new plants]

Qsn #	Question	Answer
	Dave's Garden. 2016. Silver Jade, Silver Dollar Plant, Beestebul, Chinese Jade, Money Plant, Round-leaved Crassula - <i>Crassula arborescens</i> . davesgarden.com/guides/pf/go/338/	[Tolerates and requires pruning] "On Jul 16, 2006, palmbob from Acton, CA (Zone 8b) wrote: ... This plant has much heavier leaves and branches, that will, with time, collapse themselves if not pruned. "

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Able to grow in tropical climates
- Possibly naturalizing on Oahu, Hawaiian Islands (confirmation needed); naturalized in New Zealand
- Other *Crassula* species have become invasive
- Toxic to dogs, cats & potentially other animals; possibly toxic to people
- Shade tolerant, but prefers full sun
- Forms dense populations in native range
- Reproduces by seeds & by vegetative fragments (one leaf able to form a new plant)
- Seeds dispersed by wind & intentionally by people
- Vegetative fragments can be dispersed as garden refuse
- Able to resprout after pruning or cutting

Low Risk Traits

- Unarmed (no spines, thorns or burrs)
- Ornamental
- Possibly self-incompatible (which may limit seed production)