

Family: *Crassulaceae*

Taxon: *Sedum pachyphyllum*

Synonym:

Common Name: buskfetknopp
jelly beans

Questionnaire : current 20090513 **Assessor:** Patti Clifford **Designation:** EVALUATE
Status: Assessor Approved **Data Entry Person:** Patti Clifford **WRA Score 3**

101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?	y=1, n=-1	
103	Does the species have weedy races?	y=1, n=-1	
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	n
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)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic	y=1, n=0	
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens	y=1, n=0	
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
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	
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	
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	
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	
705	Propagules water dispersed	y=1, n=-1	
706	Propagules bird dispersed	y=1, n=-1	
707	Propagules dispersed by other animals (externally)	y=1, n=-1	
708	Propagules survive passage through the gut	y=1, n=-1	
801	Prolific seed production (>1000/m ²)	y=1, n=-1	
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	
803	Well controlled by herbicides	y=-1, n=1	
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: EVALUATE

WRA Score 3

Supporting Data:

101	2012. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No] No evidence of domestication that reduces invasive traits.
102	2012. WRA Specialist. Personal Communication.	[Has the species become naturalized where grown? NA]
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"? 2- high] Native distribution: Mexico - Oaxaca.
202	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Quality of climate match data? 2 - high] Native distribution: Mexico - Oaxaca.
203	2012. Dave's Garden. PlantFiles: Sedum pachyphyllum [Accessed October 12 2012]. http://davesgarden.com/guides/pf/go/93053/	[Broad climate suitability (environmental versatility)? No] Hardiness: USDA Zone 8b: to -9.4 °C (15 °F) USDA Zone 9a: to -6.6 °C (20 °F) 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)
203	2012. www.planthis.com. Sedum pachyphyllum [Accessed October 12 2012]. http://plantthis.com.au/plant-information.asp?gardener=22456	[Broad climate suitability (environmental versatility)? No] USDA Hardiness Zones 9-11.
204	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Native or naturalized in regions with tropical or subtropical climates? Yes] Native distribution: Mexico - Oaxaca.
205	2012. Dave's Garden. PlantFiles: Sedum pachyphyllum [Accessed October 12 2012]. http://davesgarden.com/guides/pf/go/93053/	[Does the species have a history of repeated introductions outside its natural range? No] Dave's Garden has members with Sedum for sale or trade. [one of few websites with S. pachyphyllum available]
205	2012. San Marcos Growers. Sedum pachyphyllum - stone crop [Accessed 12 October 2012]. http://www.smgrowers.com/products/plants/plantdisplay.asp?plant_id=1493	[Does the species have a history of repeated introductions outside its natural range? No] San Marcos Growers has Sedum pachyphyllum for sale. [one of a few online sources for Sedum]
205	2012. WRA Specialist. Personal Communication.	[Does the species have a history of repeated introductions outside its natural range? No] No evidence of repeated introductions. [there are a few sites online with S. pachyphyllum available]
301	2012. WRA Specialist. Personal Communication.	[Naturalized beyond native range? No] No evidence.
302	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Garden/amenity/disturbance weed? No] No evidence of weediness.
303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No] No evidence.
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No] No evidence..
305	2000. Jones, J.. The effectiveness of hand-pulling the invasive mossy stonecrop (Sedum acre L.) from alvar pavements. The Michigan Botanist. 39: 43-50. http://hdl.handle.net/2027/spo.0497763.0039.301	[Congeneric weed? Yes] Sedum acre L. is an invasive weed on alvar ecosystems in Ontario. Manual removal methods have been used to remove the Sedum from the alvar.

401	1911. Nelson, J.N.. Studies of Mexican and Central American plants - issue 7 [Accessed 12 October 2012]. United States National Museum, http://books.google.com/books?id=Jj-bQ_emhjMC&pg=PA293&lpg=PA293&dq=sedum+pachyphyllum&source=bl&ots=iSObsdEqyJ&sig=6o	[Produces spines, thorns or burrs? No] Perennial; stems woody at base, much branched, spreading or erect, glabrous throughout, 10-30 cm high; leaves closely set.
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Parasitic? No] Crassulaceae.
403	2010. Nickrent, D.. The parasitic plant connection. Department of Plant Biology, Southern Illinois University, Carbondale http://www.parasiticplants.siu.edu/index.html	[Parasitic? No] Crassulaceae.
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Toxic to animals? No] No evidence.
405	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Toxic to animals? No] No evidence.
406	2012. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Causes allergies or is otherwise toxic to humans? No] No evidence.
407	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Causes allergies or is otherwise toxic to humans? No] No evidence.
408	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Creates a fire hazard in natural ecosystems? No] Succulent.
408	2012. www.cactus-art.biz . Sedum pachyphyllum forma cristata [Accessed 12 October 2012]. http://www.cactus-art.biz/schede/SEDUM/Sedum_pachyphyllum/Sedum_pachyphyllum_cristata/Sedum_pachyphyllum_cristata.htm	[Creates a fire hazard in natural ecosystems? No] Succulent.
409	2012. Dave's Garden. PlantFiles: Sedum pachyphyllum [Accessed October 12 2012]. http://davesgarden.com/guides/pf/go/93053/	[Is a shade tolerant plant at some stage of its life cycle? No] Full sun.
409	2012. San Marcos Growers. Sedum pachyphyllum - stone crop [Accessed 12 October 2012]. http://www.smgrowers.com/products/plants/plantdisplay.asp?plant_id=1493	[Is a shade tolerant plant at some stage of its life cycle? No] Full sun.
410	2012. www.planthis.com . Sedum pachyphyllum [Accessed October 12 2012]. http://planthis.com.au/plant-information.asp?gardener=22456	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? No] Mildly acidic to mildly alkaline soils.
411	2012. www.cactus-art.biz . Sedum pachyphyllum forma cristata [Accessed 12 October 2012]. http://www.cactus-art.biz/schede/SEDUM/Sedum_pachyphyllum/Sedum_pachyphyllum_cristata/Sedum_pachyphyllum_cristata.htm	Climbing or smothering growth habit? No] Small bush forming or ground-hugging succulent up to 30 cm tall.

412	1911. Nelson, J.N.. Studies of Mexican and Central American plants - issue 7 [Accessed 12 October 2012]. United States National Museum, http://books.google.com/books?id=Jj-bQ_emhjMC&pg=PA293&lpg=PA293&dq=sedum+pachyphyllum&source=bl&ots=iSOBsdEqyJ&sig=6o	[Forms dense thickets? No] Perennial 10-30 cm high.
501	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Aquatic? No] Terrestrial.
502	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Grass? No] Crassulaceae.
503	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Nitrogen fixing woody plant? No] Herbaceous.
504	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] No storage organs.
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence.
602	2012. WRA Specialist. Personal Communication.	[Produces viable seed? Unknown]
603	2012. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	2012. WRA Specialist. Personal Communication.	[Self-compatible or apomictic? Unknown]
605	. Landry, J.L.. Identifying "pollinator-friendly" cultivars for gardens. Pennsylvania State University,	[Requires specialist pollinators? No] "The inflorescences of <i>Sedum</i> sp. vary from yellow and white to pink. These flowers can be aesthetically pleasing to humans but they have also been found to be very attractive to different pollinating insects, especially bees."
605	2007. Priya, S.. Demography and native bee pollination of <i>Sedum laxum</i> (Crassulaceae), an endemic, clonal plant in a managed forest matrix landscape of the Siskiyou Mountains. University of California, Santa Cruz, http://gradworks.umi.com/32/65/3265695.ht	[Requires specialist pollinators? No] <i>Sedum laxum</i> is visited by a diverse community of pollinators including several bumble bee species, numerous mason bees, leaf-cutter bees, sweat bees and flies. [species in same genus]
605	2012. WRA Specialist. Personal Communication.	[Requires specialist pollinators? No] Based on other species in the genus.
606	2012. www.cactus-art.biz . <i>Sedum pachyphyllum</i> forma <i>cristata</i> [Accessed 12 October 2012]. http://www.cactus-art.biz/schede/SEDUM/Sedum_pachyphyllum/Sedum_pachyphyllum_cristata/Sedum_pachyphyllum_cristata.htm	[Reproduction by vegetative fragmentation? Yes] <i>Sedum pachyphyllum</i> spreads over time by rooting stems and fallen leaves that easily take root to form a dense ground cover.
607	2012. WRA Specialist. Personal Communication.	[Minimum generative time (years)? Unknown]
701	2012. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] No evidence.
702	2012. San Marcos Growers. <i>Sedum pachyphyllum</i> - stone crop [Accessed 12 October 2012]. http://www.smgrowers.com/products/plants/plantdisplay.asp?plant_id=1493	[Propagules dispersed intentionally by people? Yes] San Marcos Growers has <i>Sedum</i> for sale.
702	2012. WRA Specialist. Personal Communication.	[Propagules dispersed intentionally by people? Yes] Dave's Garden has members with plant's for sale or trade.
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence. [unlikely grown as an ornamental]

704	2012. WRA Specialist. Personal Communication.	[Propagules adapted to wind dispersal? Unknown]
705	2012. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown]
706	2012. WRA Specialist. Personal Communication.	[Propagules bird dispersed? Unknown]
707	2012. WRA Specialist. Personal Communication.	[Propagules dispersed by other animals (externally)? Unknown]
708	2012. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown]
801	2012. WRA Specialist. Personal Communication.	[Prolific seed production (>1000/m ²) Unknown] No mention of seed production available.
802	2012. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown]
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	2012. WRA Specialist. Personal Communication.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown]
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk:

- Native to tropical region
- Another species in the genus is invasive
- Reproduces by leaf drop (vegetative fragmentation)
- Dispersed by people as an ornamental

Low Risk:

- Does not tolerate cold temperatures (limited climate suitability)
- Not naturalized
- Is not considered a weed
- Unarmed (no spines, burrs, thorns)
- Non-toxic
- Limited soil tolerance
- Does not fix nitrogen (doesn't change soil nutrient)