

<b>Taxon:</b> <i>Rubus niveus</i> Thunb.	<b>Family:</b> Rosaceae
<b>Common Name(s):</b> Ceylon raspberry hill raspberry Mysore raspberry	<b>Synonym(s):</b> <i>Rubus albescens</i> Roxb. <i>Rubus foliolosus</i> D. Don <i>Rubus horsfieldii</i> Miq. <i>Rubus lasiocarpus</i> Sm. <i>Rubus micranthus</i> D. Don <i>Rubus pedunculatus</i> D. Don

<b>Assessor:</b> Chuck Chimera	<b>Status:</b> Assessor Approved	<b>End Date:</b> 8 Aug 2018
<b>WRA Score:</b> 23.0	<b>Designation:</b> H(Hawai'i)	<b>Rating:</b> High Risk

**Keywords:** Prickly Shrub, Environmental Weed, Dense Stands, Bird-Dispersed, Seed Bank

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	y
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		
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	y
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	y
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	y
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		

Qsn #	Question	Answer Option	Answer
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	y
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	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		
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	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		
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed		
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 <sup>2</sup> )	y=1, n=-1	y
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
	Morton, J. 1987. Mysore Raspberry. p. 109–110. In: Fruits of warm climates. Julia F. Morton, Miami, FL. <a href="https://www.hort.purdue.edu">https://www.hort.purdue.edu</a> . [Accessed ]	[Not domesticated] "The species is native to Burma and India, particularly the lower Himalayas, from Punjab to Assam, the Deccan peninsula, and the Western Ghats; and is common in the evergreen forests of Mahabaleshwar. The more hairy var. <i>horsfieldii</i> Focke extends south through Malaya to Indonesia and Bontoc and Benguet in the Philippines. From India, the Mysore raspberry was introduced into Kenya, East Africa, and has been grown in the mountains there for many years. Seeds from Kenya were obtained by F. B. Harrington of Natal, South Africa, in 1947. In 1948, he supplied seeds to the University of Florida's Agricultural Research and Education Center, Homestead. The resulting seedlings were planted out in 1949 and fruited so well the following winter that plants were distributed to many experimenters throughout south and central Florida. By 1952, many nurseries were offering the plants for sale and had difficulty filling the demand. By 1955, a major supermarket in Lake Worth was selling the fruits by the pint. In 1955, the University of Puerto Rico received planting material from Florida and established plantings in the central-western mountains of that island."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2018. 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. 2018. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 8 Aug 2018]	"Native Asia-Temperate WESTERN ASIA: Afghanistan CHINA: China [Gansu, Guizhou, Shaanxi, Sichuan, Yunnan, Guangxi, Xizang] Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, Nepal, Sri Lanka INDO-CHINA: Laos, Myanmar, Thailand, Vietnam MALESIA: Indonesia, Malaysia, Philippines"

202	Quality of climate match data	High
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 8 Aug 2018]	

203	Broad climate suitability (environmental versatility)	y
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Thickets on slopes, sparse forests, montane valleys, stream sides, flood plains; 500-2800 m." [Elevation range of ca. 2300 m]
	Morton, J. 1987. Mysore Raspberry. p. 109–110. In: Fruits of warm climates. Julia F. Morton, Miami, FL. <a href="https://www.hort.purdue.edu">https://www.hort.purdue.edu</a> . [Accessed ]	"This raspberry has a remarkable climatic range in Asia, from the relatively warm altitude of 1,500 ft (450 m) to the temperate environment at 10,000 ft (3,000 m). In Florida, brief drops in temperature to 35° F (1.67° C) have done the plants no harm but 20° F (-1.67° C) has killed young, tender growth, and prolonged freezing weather has killed the plants to the ground or outright."

204	Native or naturalized in regions with tropical or subtropical climates	y
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 8 Aug 2018]	"Native Asia-Temperate WESTERN ASIA: Afghanistan CHINA: China [Gansu, Guizhou, Shaanxi, Sichuan, Yunnan, Guangxi, Xizang] Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, Nepal, Sri Lanka INDO-CHINA: Laos, Myanmar, Thailand, Vietnam MALESIA: Indonesia, Malaysia, Philippines Naturalized Africa SOUTH TROPICAL AFRICA: Zimbabwe Australasia AUSTRALIA: Australia [New South Wales, Queensland] Pacific NORTH-CENTRAL PACIFIC: United States [Hawaii] Southern America WESTERN SOUTH AMERICA: Ecuador [Galapagos Islands]"

205	Does the species have a history of repeated introductions outside its natural range?	y
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 8 Aug 2018]	"Cultivated (widely cult.) Naturalized Africa SOUTH TROPICAL AFRICA: Zimbabwe Australasia AUSTRALIA: Australia [New South Wales, Queensland] Pacific NORTH-CENTRAL PACIFIC: United States [Hawaii] Southern America WESTERN SOUTH AMERICA: Ecuador [Galapagos Islands]"

301	Naturalized beyond native range	y
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Native from India 'to southeastern Asia, the Philippines, and Indonesia; in Hawai'i cultivated and now naturalized at least in the Kula area, Maui (Hobdy 2610, BISH), and at the Volcano transfer dump, Hawai'i (K. Nagata 2939, HLA). Cultivated on Hawai'i as early as 1965 (Krauss 966, BISH)."
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 8 Aug 2018]	"Naturalized Africa SOUTH TROPICAL AFRICA: Zimbabwe Australasia AUSTRALIA: Australia [New South Wales, Queensland] Pacific NORTH-CENTRAL PACIFIC: United States [Hawaii] Southern America WESTERN SOUTH AMERICA: Ecuador [Galapagos Islands]"
	Flynn, T. & Lorence, D. H. 1998. New naturalized plant records for the Hawaiian Islands. Bishop Museum Occasional Papers 56: 5-6	" <i>Rubus niveus</i> Thunb." ... "The following collection represents a new island record for this species, which was previously known from Maui and Hawai'i. State Forester Galen Kawakami discovered a population of 3 plants near the South corner of the Kukui Trail shelter below the Iliau Loop Trail. These plants were subsequently removed by Kawakami and Guy Nagai of the State Department of Agriculture. Material examined: KAUA'I: Waimea District, Waimea Canyon State Park, Kukui Trail shelter, three plants seen at South corner of shelter, 840 m, 18 Aug 1997, Galen Kawakami s. n. (PTBG)."
	Nagata, Kenneth M. 1995. New Hawaiian plant records IV. Bishop Museum Occasional Papers. 42: 10-13	"This species has been previously reported from the Kula area on Maui and at Volcano Transfer Station on the E side of Hawaii island (Wagner et al. 1990: 1110). It now occurs in the mesic open scrub at 4800 ft (1463 m) in N Kona on the W side of Hawaii, Nagata 4233, 25 Jan 1992 (BISH, HLA, US). As its seeds are bird dispersed, this species probably occurs in other mesic mid-elevation sites as well."

Qsn #	Question	Answer
302	Garden/amenity/disturbance weed	
	Source(s)	Notes
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[Invades disturbed habitats. Impacts agriculture & native ecosystems. See 3.03 & 3.04] "Invaded Habitats - Forests and forest edges, woodland, riparian habitats, disturbed sites. "

303	Agricultural/forestry/horticultural weed	y
	Source(s)	Notes
	Rentería, J. L., Gardener, M. R., Panetta, F. D., Atkinson, R., & Crawley, M. J. (2012). Possible impacts of the invasive plant <i>Rubus niveus</i> on the native vegetation of the Scalesia forest in the Galapagos Islands. PLoS One, 7(10), e48106	"In the agricultural zone, <i>R. niveus</i> has spread aggressively and as a result the land is useless for agriculture, causing serious economic problems for the farmers. It is already a widespread and serious problem on Santa Cruz and San Cristobal islands."
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. Invasive Plant Science and Management, 5(1), 37-46	[Renders farmland useless] "In Galapagos, hill raspberry grows in a wide range of habitats, mainly in the humid highlands. It forms dense thickets, replacing native vegetation and threatening many rare endemic plants. Hill raspberry renders farmland useless and is difficult and expensive to control. It is estimated that 30,000 ha are already invaded by this weed, and its potential distribution in the Galapagos archipelago could be as large as 90,000 ha (Atkinson et al. 2008)."

304	Environmental weed	y
	Source(s)	Notes
	Magee, J., et al. (2001). Green Invaders of the Galápagos Islands. Science, 294(5545), 1279-1280	"About 600 species of alien plants have been detected in the Galapagos archipelago." ... "Cinchona pubescens (quinine tree), Bryophyllum pinnatum (air plant), Lantana camara (multicolored lantana), Pennisetum purpureum (elephant grass), Psidium guajava (guava), and <i>Rubus niveus</i> (hill raspberry) are among the worst invaders, and the four human-inhabited islands are the most significantly affected (7)."
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Environmental impact: Smothers smaller plants and impedes passage."
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. Invasive Plant Science and Management, 5(1), 37-46	"In Galapagos, hill raspberry grows in a wide range of habitats, mainly in the humid highlands. It forms dense thickets, replacing native vegetation and threatening many rare endemic plants. Hill raspberry renders farmland useless and is difficult and expensive to control. It is estimated that 30,000 ha are already invaded by this weed, and its potential distribution in the Galapagos archipelago could be as large as 90,000 ha (Atkinson et al. 2008)."

Qsn #	Question	Answer
	Rentería, J. L., Gardener, M. R., Panetta, F. D., Atkinson, R., & Crawley, M. J. (2012). Possible impacts of the invasive plant <i>Rubus niveus</i> on the native vegetation of the <i>Scalesia</i> forest in the Galapagos Islands. PLoS One, 7(10), e48106	"Originally from Asia, <i>Rubus niveus</i> has become one of the most widespread invasive plant species in the Galapagos Islands. It has invaded open vegetation, shrubland and forest alike. It forms dense thickets up to 4 m high, appearing to displace native vegetation, and threaten the integrity of several native communities. This study used correlation analysis between a <i>R. niveus</i> cover gradient and a number of biotic (vascular plant species richness, cover and vegetation structure) and abiotic (light and soil properties) parameters to help understand possible impacts in one of the last remaining fragments of the <i>Scalesia</i> forest in Santa Cruz Island, Galapagos. Higher cover of <i>R. niveus</i> was associated with significantly lower native species richness and cover, and a different forest structure. Results illustrated that 60% <i>R. niveus</i> cover could be considered a threshold for these impacts. We suggest that a maximum of 40% <i>R. niveus</i> cover could be a suitable management target."
	Heleno, R., Olesen, J., Nogales, M., Vargas, P., & Traveset, A. (2013). Seed dispersal networks in the Galápagos and the consequences of alien plant invasions. Proceedings: Biological Sciences, 280(1750), 1-9	[Environmental weed of the Galapagos] "According to the Charles Darwin Foundation checklist [341, the Galapagos flora consists of 557 native vascular plant species (of which 32% are endemic), and more than 825 alien species. Among the most problematic invasive plants are the fleshy-fruited <i>Psidium guajava</i> (guava) and <i>Rubus niveus</i> (blackberry), which have severely altered the composition and structure of some of the natural ecosystems, particularly in the humid zone [33J."
	USDA Natural Resources Conservation Service. 2018. Hawaii State-listed Noxious Weeds. <a href="http://plants.usda.gov/java/noxious?rptType=State&amp;statefips=15">http://plants.usda.gov/java/noxious?rptType=State&amp;statefips=15</a> . [Accessed 8 Aug 2018]	<i>Rubus niveus</i> designated as a Hawaii state noxious weed

305	Congeneric weed	y
	Source(s)	Notes
	Rentería, J. L., Gardener, M. R., Panetta, F. D., Atkinson, R., & Crawley, M. J. (2012). Possible impacts of the invasive plant <i>Rubus niveus</i> on the native vegetation of the <i>Scalesia</i> forest in the Galapagos Islands. PLoS One, 7(10), e48106	"Seventy nine species of <i>Rubus</i> are known to be a problem in at least one country in the world [26,27,28]. There is anecdotal and quantitative evidence that these species have negative long term impacts on natural ecosystems, preventing the regeneration of native species [29,30,31], due to high competitive abilities for resources (such as water, nutrients, space and light), high growth rate, rapid maturity and multiple modes of reproduction [26,28]. For example, the dense canopy produced by <i>R. fruticosus</i> excludes light from the soil surface, effectively dominating other species in the ground stratum [27]. In the early stages of invasion <i>Rubus</i> spp. will grow over, or occupy gaps within native vegetation and in later stages they can severely restrict regeneration in native forests [26,27,32,33]."
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	Several <i>Rubus</i> species are weeds of natural areas in Hawaii and around the world.

401	Produces spines, thorns or burrs	y
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Prickles on stems, petioles & rachises] "stems up to 20 dm long, tomentulose when young or glabrous and glaucous, covered with stout, hooked prickles 3-7 mm long" ... "Leaves pinnately compound ... petioles and rachis usually with curved prickles"

402	Allelopathic	
	<b>Source(s)</b>	<b>Notes</b>
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	No evidence
	WRA Specialist. 2018. Personal Communication	Unknown. No evidence found

403	Parasitic	n
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Shrubs; stems up to 20 dm long, tomentulose when young or glabrous and glaucous, covered with stout, hooked prickles 3-7 mm long, their bases usually longitudinally elongated, bark of older stems not shredding." [Rosaceae. No evidence]

404	Unpalatable to grazing animals	n
	<b>Source(s)</b>	<b>Notes</b>
	Atkinson, R., Renteria, J. L., & Simbaña, W. (2008). The consequences of herbivore eradication on Santiago: are we in time to prevent ecosystem degradation again? Pp 121–124 in L. J. Cayot and M. V. Toral, eds. Galapagos Report 2007–2008. Puerto Ayora, Galapagos, Ecuador: Charles Darwin Foundation, Galapagos National Park, INGALA	[Palatable to goats] "The release of the introduced blackberry from herbivory clearly shows that the use of single-species eradications for ecosystem restoration is only a first step in a long-term process."

405	Toxic to animals	n
	<b>Source(s)</b>	<b>Notes</b>
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"juicy sweet fruits eaten raw or cooked" [Medicinal uses reported. No reports of toxicity]
	Atkinson, R., Renteria, J. L., & Simbaña, W. (2008). The consequences of herbivore eradication on Santiago: are we in time to prevent ecosystem degradation again? Pp 121–124 in L. J. Cayot and M. V. Toral, eds. Galapagos Report 2007–2008. Puerto Ayora, Galapagos, Ecuador: Charles Darwin Foundation, Galapagos National Park, INGALA	[No evidence. Palatable to goats] "The release of the introduced blackberry from herbivory clearly shows that the use of single-species eradications for ecosystem restoration is only a first step in a long-term process."
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	No evidence



Qsn #	Question	Answer
406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Zasada, I. A., & Moore, P. P. (2014). Host status of <i>Rubus</i> species and hybrids for the root lesion nematode, <i>Pratylenchus penetrans</i> . <i>HortScience</i> , 49(9), 1128-1131	"The root lesion nematode, <i>Pratylenchus penetrans</i> , is a production-limiting pest in red raspberry, <i>Rubus idaeus</i> ." ... "Across trials, <i>R. niveus</i> and <i>R. leucodermis</i> were identified as poor hosts for <i>P. penetrans</i> . In addition, when another selection of <i>R. niveus</i> was evaluated in the final year of this study, it was also a poor host for <i>P. penetrans</i> ." ... "Our research demonstrates that some sources of <i>R. niveus</i> and <i>R. leucodermis</i> are poor hosts for <i>P. penetrans</i> and may provide a source of resistance genes that can be transferred to red raspberry."
	Morton, J. 1987. Mysore Raspberry. p. 109–110. In: <i>Fruits of warm climates</i> . Julia F. Morton, Miami, FL. <a href="https://www.hort.purdue.edu">https://www.hort.purdue.edu</a> . [Accessed 8 Aug 2018]	[Importance as alternate host unknown] "Pests and Diseases - The 2-spotted mite, <i>Tetranychus bimaculatus</i> , congregates on the underside of the leaves of shade-grown seedlings, turning them yellow. Occasionally, flower buds and fruits are attacked by the greer stink bug, <i>Nezara viridula</i> , also called pumpkin or squash bug. Anthracnose ( <i>Elsinoe veneta</i> ) causes spotting and scabbing of the canes toward the end of the fruiting season. Affected canes should be cut off and destroyed to prevent further infection. Damping-off of seedlings can be avoided by planting seeds in a mixture of peat moss and vermiculite, or in sphagnum moss."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	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. Used medicinally] "(Hallucinogenic drink from the root extract. Crushed leaves decoction febrifuge. Root extract/juice antiseptic, for wounds, cuts, stomachache, as an antidote in snakebite; root part applied on swellings. Berries laxative and diuretic; fruit eaten raw to treat headache; fruits a remedy to cure children suffering of bedwetting at night; fruit extract given in dismenorrhea; crushed fruits applied on skin diseases and itching. Young shoots and roots antioxidant, radical scavenging activity, used for the treatment of diabetes mellitus, eaten for stomachache. Stem used for cooling. Magico-religious beliefs, ritual, ceremonial, anti-witchcraft medicine; leafy twigs as an antidote to snakebite.)"
	Morton, J. 1987. Mysore Raspberry. p. 109–110. In: <i>Fruits of warm climates</i> . Julia F. Morton, Miami, FL. <a href="https://www.hort.purdue.edu">https://www.hort.purdue.edu</a> . [Accessed 8 Aug 2018]	[No evidence] "The fruits are enjoyed fresh, alone or served with sugar and cream or ice cream. They are excellent for making pie, tarts, jam and jelly. The fresh fruits can be quick-frozen for future use."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes

Qsn #	Question	Answer
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	[Increased fire risk not among negative impacts] "Hill raspberry has been reported as an invasive species in the Galapagos Islands and Hawaii (Itow 2003; Motooka et al. 2003) and is an emerging threat in Central America, the United States, Australia, and South Africa (FCD and DPNG 2009). In Galapagos, hill raspberry grows in a wide range of habitats, mainly in the humid highlands. It forms dense thickets, replacing native vegetation and threatening many rare endemic plants. Hill raspberry renders farmland useless and is difficult and expensive to control. It is estimated that 30,000 ha are already invaded by this weed, and its potential distribution in the Galapagos archipelago could be as large as 90,000 ha (Atkinson et al. 2008)."
	Weber, E. 2017. <i>Invasive Plant Species of the World</i> , 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	Not listed among impacts
	CABI. 2018. <i>Invasive Species Compendium</i> . Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	Not listed among impacts

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	"Seedlings are shade tolerant and can reach maturity at 6 to 8 mo."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Morton, J. 1987. Mysore Raspberry. p. 109–110. In: <i>Fruits of warm climates</i> . Julia F. Morton, Miami, FL. <a href="https://www.hort.purdue.edu">https://www.hort.purdue.edu</a> . [Accessed 8 Aug 2018]	"In Florida, the plant flourishes on limestone or acid sand. In Puerto Rico it is grown on lateritic Alonso clay with a pH of 5.0. Good drainage is essential."
	Plants for a Future. (2018). <i>Rubus niveus</i> . <a href="https://pfaf.org/user/Plant.aspx?LatinName=Rubus+niveus">https://pfaf.org/user/Plant.aspx?LatinName=Rubus+niveus</a> . [Accessed 8 Aug 2018]	"Suitable for: light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils. It can grow in semi-shade (light woodland) or no shade. It prefers moist soil." ... "Easily grown in a good well-drained loamy soil in sun or semi-shade"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. <i>Manual of the flowering plants of Hawaii</i> . Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Shrubs; stems up to 20 dm long, tomentulose when young or glabrous and glaucous, covered with stout, hooked prickles 3-7 mm long, their bases usually longitudinally elongated, bark of older stems not shredding."

412	Forms dense thickets	y
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	" <i>Rubus niveus</i> ... invasive, forms dense thorny impenetrable thickets, spread by animals and by fruit-eating birds"
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	" <i>Rubus niveus</i> forms dense and impenetrable thickets in naturally open or disturbed vegetation, displacing native plants and impeding wildlife."

501	Aquatic	n
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Terrestrial] "Shrubs 12.5 m tall." ... "Thickets on slopes, sparse forests, montane valleys, stream sides, flood plains; 500-2800 m."

502	Grass	n
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 8 Aug 2018]	Family: Rosaceae Subfamily: Rosoideae Tribe: Rubeae

503	Nitrogen fixing woody plant	n
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 8 Aug 2018]	Family: Rosaceae Subfamily: Rosoideae Tribe: Rubeae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Shrubs; stems up to 20 dm long, tomentulose when young or glabrous and glaucous, covered with stout, hooked prickles 3-7 mm long, their bases usually longitudinally elongated, bark of older stems not shredding."

Qsn #	Question	Answer
601	<b>Evidence of substantial reproductive failure in native habitat</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence. Widely distributed] "Thickets on slopes, sparse forests, montane valleys, stream sides, flood plains; 5002800 m. Gansu, Guangxi, Guizhou, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan [Afghanistan, Bhutan, India, Indonesia, Kashmir, Laos, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Sri Lanka, Thailand, Vietnam"

602	<b>Produces viable seed</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	"Hill raspberry can form a large seed bank, with up to 7,000 seeds m <sup>-2</sup> , that persists for several years (Landazuri 2002; Ruiz Cevallos 1992; Soria 2006). It grows rapidly from seed and produces root suckers and daughter plants from stem tips."
	Morton, J. 1987. Mysore Raspberry. p. 109–110. In: <i>Fruits of warm climates</i> . Julia F. Morton, Miami, FL. <a href="https://www.hort.purdue.edu">https://www.hort.purdue.edu</a> . [Accessed 8 Aug 2018]	"The Mysore raspberry is often grown from seed but germination is slow and irregular (from 3 weeks to several months), and the seedlings are subject to damping-off. Germination can be expedited by pre-treatment with concentrated sulphuric acid."

603	<b>Hybridizes naturally</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Zasada, I. A., & Moore, P. P. (2014). Host status of <i>Rubus</i> species and hybrids for the root lesion nematode, <i>Pratylenchus penetrans</i> . <i>HortScience</i> , 49(9), 1128-1131	[Artificial hybrids possible. Unknown if natural hybrids occur] "a hybrid between <i>R. niveus</i> and <i>R. idaeus</i> 'Tulameen' did not consistently support fewer <i>P. penetrans</i> than the 'Meeker' control."
	Randell, R. A., Howarth, D. G., & Morden, C. W. (2004). Genetic analysis of natural hybrids between endemic and alien <i>Rubus</i> (Rosaceae) species in Hawaii. <i>Conservation Genetics</i> , 5(2): 217- 230	[Hybridization documented in genus] "A population of putative hybrids between the endemic <i>Rubus hawaiiensis</i> and naturalized <i>R. rosifolius</i> was discovered in Kipahulu Valley, on the island of Maui in the Hawaiian archipelago."

604	<b>Self-compatible or apomictic</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Renteria Bustamante, J. L. (2011). Towards an optimal management of the invasive plant <i>Rubus niveus</i> in the Galapagos Islands. PhD Dissertation. Imperial College London	"Self pollination suspected."

605	<b>Requires specialist pollinators</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Gaur, R. D., Tiwari, P., Tiwari, J. K., Rawat, D. S., & Ballabha, R. (2014). Bee forage potential of Garhwal Himalaya, India. <i>Indian Journal of Fundamental and Applied Life Sciences</i> , 4, 196-204	"A total of 521 bee forage plant species belonging to 377 genera and 117 families have been documented as bee forage plants in the area" [Includes <i>Rubus niveus</i> ]
	CABI. 2018. <i>Invasive Species Compendium</i> . Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"Flowers are hermaphrodite and pollinated by insects. "

Qsn #	Question	Answer
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Flowers adapted for unspecialized pollinators] "Flowers in short, terminal, cymose panicles, densely tomentose and with scattered prickles, pedicels 6-12 mm long; petals rose purple, broadly obovate to suborbicular, ca. 4-5 mm long."

606	Reproduction by vegetative fragmentation	y
	Source(s)	Notes
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	"It grows rapidly from seed and produces root suckers and daughter plants from stem tips."

607	Minimum generative time (years)	1
	Source(s)	Notes
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	"Seedlings are shade tolerant and can reach maturity at 6 to 8 mo."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Animals, Escapee"
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. <i>Flora of China</i> . Vol. 9 (Pittosporaceae through Connaraceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Adapted for frugivory] "Aggregate fruit dark red when immature, black at maturity, semiglobose, 0.81.2 cm in diam., densely gray tomentose; pyrenes shallowly rugose."

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 8 Aug 2018]	"widely cult."
	Morton, J. 1987. Mysore Raspberry. p. 109–110. In: <i>Fruits of warm climates</i> . Julia F. Morton, Miami, FL. <a href="https://www.hort.purdue.edu">https://www.hort.purdue.edu</a> . [Accessed 8 Aug 2018]	[Cultivated for its fruit] "The fruits are enjoyed fresh, alone or served with sugar and cream or ice cream. They are excellent for making pie, tarts, jam and jelly. The fresh fruits can be quick-frozen for future use."

703	Propagules likely to disperse as a produce contaminant	
	Source(s)	Notes

Qsn #	Question	Answer
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Contaminant, Crop, Herbal, Ornamental"
	Wiersema, J.H. & León, B. (2013). World Economic Plants: A Standard Reference. Second Edition. CRC Press, Boca Raton, FL	[Listed as a possible seed contaminant] "Rubus niveus ... ECON: Food (fruit); Weed (also poss. seed contam.)"

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	[Fleshy-fruited] "It is known to be dispersed by rats and both introduced and native birds in Galapagos (Buddenhagen and Jewell 2006; Guerrero and Tye 2009; Landazuri 2002; Soria 2006)."

705	Propagules water dispersed	
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Fleshy fruit adapted for dispersal by birds & animals, but occurrence along streams and flood plains suggest possible movement by water as well] "Aggregate fruit dark red when immature, black at maturity, semiglobose, 0.81.2 cm in diam., densely gray tomentose; pyrenes shallowly rugose." ... "Thickets on slopes, sparse forests, montane valleys, stream sides, flood plains; 5002800 m."

706	Propagules bird dispersed	y
	Source(s)	Notes
	Heleno, R., Olesen, J., Nogales, M., Vargas, P., & Traveset, A. (2013). Seed dispersal networks in the Galápagos and the consequences of alien plant invasions. <i>Proceedings: Biological Sciences</i> , 280(1750), 1-9	"Alien plants are a growing threat to the Galapagos unique biota. We evaluated the impact of alien plants on eight seed dispersal networks from two islands of the archipelago. Nearly 10 000 intact seeds from 58 species were recovered from the droppings of 18 bird and reptile dispersers. The most dispersed invaders were <i>Lantana camara</i> , <i>Rubus niveus</i> and <i>Psidium guajava</i> , the latter two likely benefiting from an asynchronous fruit production with most native plants, which facilitate their consumption and spread." ... "intact alien seeds were found in droppings of 15 of the 18 seed dispersers. Among the serious invasive species, seeds of <i>R. niveus</i> were dispersed. by six bird species (mainly <i>Myiarchus magnirostris</i> and <i>Mimus melanotis</i> )" ... "the asynchronous fruit production of <i>R. niveus</i> and <i>P. guajava</i> in relation to most native species is likely to offer a competitive advantage to these aliens, as the abundance of seed dispersers in periods of native fruit shortage might be an important mechanism assisting alien expansion."
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Fruit dark red, becoming reddish black, subglobose, ca. 1 cm long, white tomentulose."

Qsn #	Question	Answer
	Buddenhagen, C. E. & Jewell, K. J. (2006). Invasive plant seed viability after processing by some endemic Galapagos birds. <i>Ornitología Neotropical</i> , 17, 73-80	"Guerrero (2002) documented internal dispersal of seeds of a few introduced plant species. She found intact seeds of <i>Rubus niveus</i> , <i>Capsicum frutescens</i> and <i>Lantana camara</i> in the stomach of Smooth-billed Anis, <i>Rubus niveus</i> in the feces of Galapagos Flycatchers, and <i>Adenostemma platyphyllum</i> in the feces of Small Ground Finches. The seeds of <i>Rubus niveus</i> and <i>Capsicum frutescens</i> from Smooth-billed Anis were shown to be viable, but these data were not sufficient to draw broad conclusions about the effect of digestion by these birds on the viability of seeds, or whether common invasive plants are dispersed by birds in Galapagos."
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	"It is known to be dispersed by rats and both introduced and native birds in Galapagos (Buddenhagen and Jewell 2006; Guerrero and Tye 2009; Landazuri 2002; Soria 2006)."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Adapted for internal dispersal] "Fruit dark red, becoming reddish black, subglobose, ca. 1 cm long, white tomentulose."

708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	"Guerrero (2002) documented internal dispersal of seeds of a few introduced plant species. She found intact seeds of <i>Rubus niveus</i> , <i>Capsicum frutescens</i> and <i>Lantana camara</i> in the stomach of Smooth-billed Anis, <i>Rubus niveus</i> in the feces of Galapagos Flycatchers, and <i>Adenostemma platyphyllum</i> in the feces of Small Ground Finches. The seeds of <i>Rubus niveus</i> and <i>Capsicum frutescens</i> from Smooth-billed Anis were shown to be viable"
	Blake, S., Wikelski, M., Cabrera, F., Guezou, A., Silva, M., Sadeghayobi, E., Yackulic, C. & Jaramillo, P. (2012). Seed dispersal by Galápagos tortoises. <i>Journal of Biogeography</i> , 39(11): 1961-1972	"Table 1 Summary data indicating the frequency of occurrence of intact seeds in dung piles of tortoises ( <i>Chelonoidis nigra</i> ) found in farmland and in the Galapagos National Park on the island of Santa Cruz." [Includes <i>Rubus niveus</i> ]

801	Prolific seed production (>1000/m2)	y
	Source(s)	Notes
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	"Hill raspberry can form a large seed bank, with up to 7,000 seeds m <sup>-2</sup> , that persists for several years (Landazuri 2002; Ruiz Cevallos 1992; Soria 2006)."

802	Evidence that a persistent propagule bank is formed (>1 yr)	y



Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	"Hill raspberry can form a large seed bank, with up to 7,000 seeds m <sup>-2</sup> , that persists for several years (Landazuri 2002; Ruiz Cevallos 1992; Soria 2006)."
	Atkinson, R., Renteria, J. L., & Simbaña, W. (2008). The consequences of herbivore eradication on Santiago: are we in time to prevent ecosystem degradation again? Pp 121–124 in L. J. Cayot and M. V. Toral, eds. <i>Galapagos Report 2007–2008</i> . Puerto Ayora, Galapagos, Ecuador: Charles Darwin Foundation, Galapagos National Park, INGALA	"Seeds can remain in a dormant phase in the soil for at least 10 years, and although germination is stimulated by light, the species can also tolerate shade"

803	Well controlled by herbicides	
	<b>Source(s)</b>	<b>Notes</b>
	Renteria, J. L., Gardener, M. R., Panetta, F. D., & Crawley, M. J. (2012). Management of the invasive hill raspberry ( <i>Rubus niveus</i> ) on Santiago Island, Galapagos: eradication or indefinite control?. <i>Invasive Plant Science and Management</i> , 5(1), 37-46	"Additionally, although herbicide control successfully kills individual plants, it has also affected natural vegetation, and opening a tight network of tracks would also cause concomitant disturbance." ... "Until 2007, Roundup (glyphosate) at 2% was the main herbicide used. In 2008, a switch was made to a chemical with a longer residual time in the soil, thus aiding in the control of plants arising from the seed bank (Truper [picloram] at 1%) (Santos et al. 1991)."
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. 2003. <i>Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide</i> . CTAHR, UH Manoa, Honolulu, HI	"Management: Sensitive to drizzle application of triclopyr ester in a crop oil carrier at 1 lb/acre, and to very-low-volume basal bark applications of triclopyr ester at 15% product in a crop oil carrier. Reportedly tolerant of triclopyr with water as the carrier (Glenn Shishido, DOFAW)."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	<b>Source(s)</b>	<b>Notes</b>
	Weber, E. 2017. <i>Invasive Plant Species of the World</i> , 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Control is difficult due to the shrub's ability to resprout."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. 2018. Personal Communication	Unknown. Seven <i>Rubus</i> species naturalized in the Hawaiian Islands. No biological control releases to date



**Summary of Risk Traits:**

## High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Thrives in tropical climates
- Naturalized on Kauai, Maui, & Hawaii (Hawaiian Islands) & widely naturalized elsewhere
- A weed of agriculture & the natural environment in the Galapagos; a potentially serious environmental weed in the Hawaiian Islands
- Other *Rubus* species are invasive
- Prickles on stems, leaf petioles and rachises
- Seedlings are shade tolerant
- Tolerates many soil types
- Forms dense stands, crowding out other vegetation
- Reproduces by seeds, & vegetatively by suckers, & daughter plants from stem tips
- Able to reach maturity in 6 to 8 months
- Seeds dispersed by birds, or frugivorous animals & intentionally by people
- Prolific seed production (7000/m<sup>2</sup>)
- Forms a persistent seed bank (up to 10 years)
- May have some herbicide tolerance
- Able to resprout after cutting

## Low Risk Traits

- Palatable to goats (despite prickles)
- Edible fruit
- Medicinal uses
- Some herbicides may provide effective control