Taxon: Rhododendron laetum J. J. Sm. **Family:** Ericaceae

Common Name(s): Vireya Rhododendron **Synonym(s):**

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 3 Nov 2020

WRA Score: **-1.0** **Designation:** L **Rating:** Low Risk

Keywords: Tropical Shrub, Unarmed, Possible Toxicity, Ornamental, 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	?
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		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
405	Toxic to animals		
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans		
408	Creates a fire hazard in natural ecosystems		
409	Is a shade tolerant plant at some stage of its life cycle		
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		

Qsn #	Question	Answer Option	Answer
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	y
604	Self-compatible or apomictic		
605	Requires specialist pollinators		
606	Reproduction by vegetative fragmentation		
607	Minimum generative time (years)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed		
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	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	**Is the species highly domesticated?**	**n**
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[No evidence] "Distr. Malesia: NW. New Guinea (Anggi Lakes area in Arfak Mis). Ecol. On edge of primary and secondary forest, and in open marsh, often in swamps near lake shore, 1800-2300 m."
	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	[Not domesticated] "Although several members of section Vireya have been introduced to the Hawaiian Islands by Lyon Arboretum, only one species-Rhododendron laetum J. J. Smith-is grown to any appreciable extent in private gardens. Native to northwestern New Guinea, where it often grows in marshes and on the edges of swampy forests and lake shores"

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. (2020). 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**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Distr. Malesia: NW. New Guinea (Anggi Lakes area in Arfak Mis)."
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 2 Nov 2020]	"Native Asia-Tropical PAPUASIA: Indonesia [Papua]"

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed]	

203	**Broad climate suitability (environmental versatility)**	**n**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Dave's Garden. (2020). Vireya Rhododendron - Rhododendron laetum. https://davesgarden.com/guides/pf/go/117854/. [Accessed 3 Nov 2020]	"Hardiness: 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)"
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[Mid to higher elevation tropical climates] "Distr. Malesia: NW. New Guinea (Anggi Lakes area in Arfak Mis). Ecol. On edge of primary and secondary forest, and in open marsh, often in swamps near lake shore, 1800-2300 m."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[Mid to higher elevation tropical climates] "Distr. Malesia: NW. New Guinea (Anggi Lakes area in Arfak Mis). Ecol. On edge of primary and secondary forest, and in open marsh, often in swamps near lake shore, 1800-2300 m."
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence

205	Does the species have a history of repeated introductions outside its natural range?	?
	Source(s)	**Notes**
	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	"Although several members of section Vireya have been introduced to the Hawaiian Islands by Lyon Arboretum, only one species-Rhododendron laetum J. J. Smith-is grown to any appreciable extent in private gardens."

301	Naturalized beyond native range	n
	Source(s)	**Notes**
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

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

Qsn #	Question	Answer
303	**Agricultural/forestry/horticultural weed**	**n**
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

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

305	**Congeneric weed**	**y**
	Source(s)	**Notes**
	CABI. (2020). Rhododendron ponticum (rhododendron). In: Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"R. ponticum has become established in the UK and other parts of Europe where it is threatening natural and semi-native habitats and the associated flora and fauna. In its native range, R. ponticum is also spreading and causing problems in the forests of Turkey where again it displaces native vegetation. It smothers the forest floor when it becomes established and shades out all other vegetation. Present control methods are expensive and labour intensive and classical biological control is not really an option due to the many associated species in the genus. A proposed method of biocontrol would be to use a native wood-rotting pathogen formulated as a stump treatment, but more research and work is needed. "

401	**Produces spines, thorns or burrs**	**n**
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[No evidence] "Terrestrial shrub, 0.5-1. 5(-3) m. Branchlets obtusangular and laxly lepidote at young shoots, 3-5 (-6) mm 0, terete and practically glabrous later; internodes (2.5-)3-16 cm. Leaves in 4-5(-7)- merous pseudowhorls at the upper 1-2 nodes, broadly elliptic or subovate-elliptic, apex mostly very shortly acuminate or subcuspidate, more rarely broadly attenuate, subacute or bluntish, sometimes rounded, base mostly rounded, rarely very broadly attenuate or subcordate, coriaceous, dark green and glossy above, paler beneath, subdensely lepidote on both faces initially, glabrous above at full age, ± persistently and rather laxly lepidote beneath (scales small, marginal zone irregularly substellate-lobed or -dented, early dissolved, minute centre shallowly impressed), finally glabrescent, but remaining punctate beneath, margin ± flat, (4-)5-9.5 by (2.5-)3-5.3 cm, midrib narrow and grooved above, as stout as the petiole and obtusely prominent at the base beneath, nerves 6-8 pairs, spreading, rather obscurely anastomosing before the edge, faintly impressed, or not rarely inconspicuous above, slightly to distinctly raised beneath, reticulation lax, a little prominent beneath, or often ± obsolete; petiole depressed and grooved dorsally, 2-5 (-7) by 2-3 mm."

Qsn #	Question	Answer
402	**Allelopathic**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown. No evidence found

403	**Parasitic**	**n**
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Terrestrial shrub, 0.5-1. 5(-3) m." [Ericaceae. No evidence]

404	**Unpalatable to grazing animals**	**n**
	Source(s)	**Notes**
	ASPCA. (2020). Toxic and Non-Toxic Plants - Rhododendron. https://www.aspca.org/pet-care/animal-poison-control/toxic-and-non-toxic-plants/rhododendron. [Accessed 3 Nov 2020]	"Rhododendron is typically not very palatable to horses unless it is the only forage available, but sheep and goats may graze readily on the plant."

405	**Toxic to animals**	
	Source(s)	**Notes**
	ASPCA. (2020). Toxic and Non-Toxic Plants - Rhododendron. https://www.aspca.org/pet-care/animal-poison-control/toxic-and-non-toxic-plants/rhododendron. [Accessed 3 Nov 2020]	[General description of Rhododendron species. Unknown for Rhododendron laetum] "Toxicity: Toxic to Dogs, Toxic to Cats, Toxic to Horses Toxic Principles: Grayantoxin Clinical Signs: Vomiting, diarrhea, hypersalivation, weakness, coma, hypotension, CNS depression, cardiovascular collapse and death. Ingestion of a few leaves can cause serious problems. Rhododendron is typically not very palatable to horses unless it is the only forage available, but sheep and goats may graze readily on the plant. The toxic principle interferes with normal skeletal muscle, cardiac muscle and nerve function. Clinical effects typically occur within a few hours after ingestion, and can include acute digestive upset, excessive drooling, loss of appetite, frequent bowel movements/diarrhea, colic, depression, weakness, loss of coordination, stupor, leg paralysis, weak heart rate and recumbency for 2 or more days; at this point, improvement may be seen or the animal may become comatose and die."
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[Possibly] "The well known toxic constituents of the family are diterpenes. Andromedotoxin (= rhodotoxin = grayanotoxin-I), desacetylandromedotoxin (= grayanotoxin-III) and desacetylanhydroandromedotoxin (= grayanotoxin-II) are the best known representatives of these principles. They have been demonstrated to be present in members of the genera Kalmia, Rhododendron, Andromeda, Chamaedaphne, Leucothoe, Lyonia, Pernettya and Pieris, but have not been detected in Pyroleae and in Vaccinioideae."

406	**Host for recognized pests and pathogens**	

Qsn #	Question	Answer
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown

407	**Causes allergies or is otherwise toxic to humans**	
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[Possibly. General description] "The well known toxic constituents of the family are diterpenes. Andromedotoxin (= rhodotoxin = grayanotoxin-I), desacetylandromedotoxin (= grayanotoxin-III) and desacetylanhydroandromedotoxin (= grayanotoxin-II) are the best known representatives of these principles. They have been demonstrated to be present in members of the genera Kalmia, Rhododendron, Andromeda, Chamaedaphne, Leucothoe, Lyonia, Pernettya and Pieris, but have not been detected in Pyroleae and in Vaccinioideae."
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	Unknown. Several other Rhododendron species are toxic

408	**Creates a fire hazard in natural ecosystems**	
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[Possibly no. Some species reported to be fire-resistant] "To a certain extent Ericaceae may also be fire-resistant as described by Junghuhn from Mt Lawu, where he found a pyrogenous grassland thinly set with Vaccinium varingiaefoUum. On the west slope of the Latimodjong Range, SW. Central Celebes, near Rante Lemo, the large-flowered, Z-A m high Rhododendron vanvuurenii forms pure stands in pyrogenous grassland, at c. 1000 m; also near Rante Pao. Lane-Poole reported Vaccinium striicaule to be able to stand fire in the grasslands of Mt Saruwaged, associated with tree ferns and Rhododendron; this Vaccinium originally grows below Dacrydium and Libocedrus, and after these have been burned it stays in the open grassland between 3300 and 4000 m (For. Res. Papua, 1925, 179-180)."

Qsn #	Question	Answer
409	**Is a shade tolerant plant at some stage of its life cycle**	
	Source(s)	**Notes**
	Nurseries Online. (2020). Rhododendron laetum. https://www.nurseriesonline.com.au. [Accessed 3 Nov 2020]	"Best in dappled shade and a frost free position"
	Dave's Garden. (2020). Vireya Rhododendron - Rhododendron laetum. https://davesgarden.com/guides/pf/go/117854/. [Accessed 3 Nov 2020]	"Sun Exposure: Light Shade"
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[Forest edges and open marsh habitat suggests this plant thrives in high light environments] "Ecol. On edge of primary and secondary forest, and in open marsh, often in swamps near lake shore, 1800-2300 m."

410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	
	Source(s)	**Notes**
	Nurseries Online. (2020). Rhododendron laetum. https://www.nurseriesonline.com.au. [Accessed 3 Nov 2020]	"Well drained humus rich moist soil"
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[Soil type unspecified] "Ecol. On edge of primary and secondary forest, and in open marsh, often in swamps near lake shore, 1800-2300 m."

411	**Climbing or smothering growth habit**	**n**
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Terrestrial shrub, 0.5-1. 5(-3) m."

412	**Forms dense thickets**	**n**
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[Two species reported to form pure stands, but not Rhododendron laetum] "Rhododendron christianae locally forming pure stands well recognizable at flowering time from the air."... "Rhododendron vanvuurenii forms pure stands in pyrogenous grassland, at c. 1000 m; also near Rante Pao." ... "Rhododendron laetum ... Ecol. On edge of primary and secondary forest, and in open marsh, often in swamps near lake shore, 1800-2300 m."

501	**Aquatic**	**n**
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Terrestrial shrub, 0.5-1. 5(-3) m." ... "Ecol. On edge of primary and secondary forest, and in open marsh, often in swamps near lake shore, 1800-2300 m."

Qsn #	Question	Answer
502	**Grass**	**n**
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 2 Nov 2020]	Genus: Rhododendron Subgenus: Rhododendron Section: Vireya Family: Ericaceae Subfamily: Ericoideae Tribe: Rhodoreae

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 2 Nov 2020]	Genus: Rhododendron Subgenus: Rhododendron Section: Vireya Family: Ericaceae Subfamily: Ericoideae Tribe: Rhodoreae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Terrestrial shrub, 0.5-1. 5(-3) m."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	**Notes**
	Gibbs, D., Chamberlain, D., & Argent, G. (2011). The red list of Rhododendrons. Botanic Gardens Conservation International, Richmond, UK	No evidence

602	Produces viable seed	y
	Source(s)	**Notes**
	Hiller, R. (2013). Plant of the Week - Rhododendron laetum. Macquarie University. https://www.mq.edu.au/arboretum/Plants/. [Accessed]	"Although the type specimen was collected in 1912, R. laetum was not in cultivation until 1967. It belongs to the second great period of introduction of Malesian rhododendrons to the horticultural world. The first period of introduction was in the 19th century by the English nurseryman James Veitch, who sent the collectors Thomas Lobb and Charles Curtis to S.E Asia and then hybridized a number of species they collected. The second great period is from 1960 when Professor Herman Sleumer, not only described more than a hundred new species, but also distributed seed very widely."
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Capsule subfusiform-cylindric, curved, densely hairy and lepidote, (3.5-)4-5(-5.5) by c. 0.8 cm, on fruit-pedicel 4-5.5 cm by 2 mm. Seeds 4-6 mm including the tails."

Qsn #	Question	Answer
	Clancy, B. (1990). Rhododendron laetum - Collection and Distribution. 'The Rhododendron' Journal of the Australian Rhododendron Society, Volume 30, Spring 1990: 6 pp	"I sowed a small portion of this seed and then gave the bulk to our Foundation President, Mr. Alf Bramley. Mr. Bramley sowed half of this bulk and obtained a good germination. The remainder of the seed was held until September by a propagator who lived in a frost pocket and because of this delay the seed did not germinate."

603	Hybridizes naturally	y
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Hybridisation. From experiments with several Malesian species in the past century, it is known that not only crossing between two species, but also multiple crossing between hybrids is rather easily obtained. It can therefore be expected, that hybridisation occurs under natural conditions. Several presumable hybrids have been recognized in herbarium materials, of which one parent must have been R. malayanum of the subsect. Malayovireya which is so distinct in the peculiar type of its scales from all other subsections of the genus in Malesia. In other cases it was R. jasminiflorum of the subsect. Solenovireya with its outstanding salver-shaped corolla, which has entered as one parent in hybrids with species of other subsections. Less or almost not recognizable in dry material are hybrids between species of the same subsection or even of the same series, which, however, might be disclosed on the spot among the parental species by a combination of minor characters as colour of the leaves or flowers, which are normally lost in the drying process, or from the habit, which cannot be judged from plants cut into small herbarium samples. It is for that reason, that in this treatment probably several natural hybrids have been described from dried material as proper species, which in future might be recognized as local hybrids in the field."
	Sleumer, H. (1963). Florae Malesianae Precursores XXXV. Supplementary notes towards the knowledge of the Ericaceae in Malaysia. Blumea, 12(1), 89-144	[Two natural hybrids reported] "R. konori also forms natural hybrids with R. laetum." … "A natural hybrid between Rhododendron asperum (4479) and Rhododendron laetum (4481) was found together with the parents on the way from Mt Koëbré NE. to Mt Tembruk at 2150 m, in a devastated, rather open and partly scrub- and fern-covered place within the Nothofagus forest (Sleumer & Vink 4480) in several specimens."

604	Self-compatible or apomictic	
	Source(s)	**Notes**
	Rouse, J. L.(1985). The Propagation of Rhododendron Section Vireya from seed. Notes from the Royal Botanic Garden Edinburgh 43(1): 99-115	[Possibly Yes. Unknown for R. laetum] "Current observations support the following general conclusions: Vireya species are self-compatible, and within Vireya there are no barriers to compatibility if temperate species in subsect. Pseudovireya are excluded; apomixis does not occur within Vireya"

605	Requires specialist pollinators	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Pollination. The only observations on pollination in Malesian Rhododendron refer to R. retusum from Sumatra and Java. According to Docters van Leeuwen "the anthers in the adult bud lie close under the hood formed by the corolla lobes; they are all open, and the pollen hangs in threads from the anthers. In this stage the stigma lies at a distance of about 2 mm below the anthers, and is not yet receptive. The flowers are therefore distinctly protandrous. Not much is changed on the first flowering day; during the second and the third flowering-day the style elongates, and as the now receptive stigma brushes past the anthers, it will come in contact with the pollen-masses hanging down from the latter. Finally the stigma projects 1 or 2 mm beyond the corolla". R. retusum has been seen visited bij a honeybird (Aethopyga eximea) and bumble-bees"

606	Reproduction by vegetative fragmentation	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown. No evidence found

607	Minimum generative time (years)	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Dispersal. Each capsule contains very numerous light seeds, each in most of the Malesian species provided with a narrow wing or tail at both ends. These seeds are apparently easily carried by wind, " [Seeds small, but lack means of attachment]

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**
	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	"Although several members of section Vireya have been introduced to the Hawaiian Islands by Lyon Arboretum, only one species-Rhododendron laetum J. J. Smith-is grown to any appreciable extent in private gardens."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence from other Rhododendron species that have naturalized or have become weeds

704	Propagules adapted to wind dispersal	y

Qsn #	Question	Answer
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Dispersal. Each capsule contains very numerous light seeds, each in most of the Malesian species provided with a narrow wing or tail at both ends. These seeds are apparently easily carried by wind, especially from epiphytic specimens living in the crowns of high forest trees. The fact, that landslides, or artificially cleared ground (abandoned cultures, air strips), or sluiced areas of gold mines in Borneo and New Guinea are often quickly grown with Rhododendron species from the neighbouring forests, points to wind as the main factor in natural dispersal."

705	Propagules water dispersed	
	Source(s)	**Notes**
	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	[Grows in marshes and swampy forests, suggesting small, wind-dispersed seeds may also be dispersed by water] "Although several members of section Vireya have been introduced to the Hawaiian Islands by Lyon Arboretum, only one species-Rhododendron laetum J. J. Smith-is grown to any appreciable extent in private gardens. Native to northwestern New Guinea, where it often grows in marshes and on the edges of swampy forests and lake shores"

706	Propagules bird dispersed	n
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Dispersal. Each capsule contains very numerous light seeds, each in most of the Malesian species provided with a narrow wing or tail at both ends. These seeds are apparently easily carried by wind, "

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Dispersal. Each capsule contains very numerous light seeds, each in most of the Malesian species provided with a narrow wing or tail at both ends. These seeds are apparently easily carried by wind, "

708	Propagules survive passage through the gut	n
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	"Dispersal. Each capsule contains very numerous light seeds, each in most of the Malesian species provided with a narrow wing or tail at both ends. These seeds are apparently easily carried by wind, "

801	Prolific seed production (>1000/m2)	
	Source(s)	**Notes**
	Sleumer, H. (1960). Ericaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1), 469-914	[Unknown] "Capsule subfusiform-cylindric, curved, densely hairy and lepidote, (3.5-)4-5(-5.5) by c. 0.8 cm, on fruit-pedicel 4-5.5 cm by 2 mm. Seeds 4-6 mm including the tails."

Qsn #	Question	Answer
802	**Evidence that a persistent propagule bank is formed (>1 yr)**	
	Source(s)	**Notes**
	Royal Botanic Gardens Kew. (2020) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/. [Accessed 3 Nov 2020]	"Storage Behaviour: Orthodox Storage Conditions: Viability lost following 8-10 weeks storage at 50% r.h. and 20°C, but maintained for 3-5 years over calcium chloride (<5% r.h.) and -20°C (Rouse & William, 1986)"
	Rouse, J. L.(1985). The Propagation of Rhododendron Section Vireya from seed. Notes from the Royal Botanic Garden Edinburgh 43(1): 99-115	[Unknown for R. laetum] "vireya seed can be stored for 3 to 5 years; light is essential for the germination of vireya seed; the first true leaves of Vireya seedlings have juvenile scales and no hairs."

803	**Well controlled by herbicides**	**y**
	Source(s)	**Notes**
	CABI. (2020). Rhododendron ponticum (rhododendron). In: Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	[No evidence that R. laetum has been controlled with herbicide, but methods used for R. ponticum would likely be effective if needed] "Spraying cut stems with ammonium sulfamate is effective in controlling the growth of R. ponticum though surrounding vegetation may be effected. Glyphosate is commonly used to control R. ponticum in the UK after the bulk of the biomass has been removed by burning or mechanical removal, and triclopyr and imazapyr at differing concentrations have also been used with varying success (Lawrie and Clay, 1989)."

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	
	Source(s)	**Notes**
	Nurseries Online. (2020). Rhododendron laetum. https://www.nurseriesonline.com.au. [Accessed 3 Nov 2020]	"Pruning is generally not required, however you can tip prune after flowering to help maintain a bushy habit."

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**
	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	[Unknown. No mention of pests or pathogens in the Hawaiian Islands] "Although several members of section Vireya have been introduced to the Hawaiian Islands by Lyon Arboretum, only one species-Rhododendron laetum J. J. Smith-is grown to any appreciable extent in private gardens."

Summary of Risk Traits:

High Risk / Undesirable Traits
• Native to, and could potentially spread, in regions with tropical climates
• Other Rhododendron species are invasive
• Potentially toxic
• Reproduces by seeds
• Related species are self-compatible
• Seeds dispersed by wind, possibly water, and intentionally by people
• Related species have seeds which may form a persistent seed bank
• Gaps in biological and ecological information may reduce accuracy of risk prediction

Low Risk Traits
• No reports of invasiveness or naturalization, but limited evidence of widespread introduction outside native range
• Unarmed (no spines, thorns, or burrs)
• Palatable to sheep and other livestock, despite reports of possible toxicity
• Ornamental
• Not reported as invasive anywhere, but if needed, herbicides could provide effective control