Taxon: Grevillea hookeriana Meisn. **Family:** Proteaceae

Common Name(s): Hooker's grevillea
red hooks
red toothbrushes

Synonym(s): Grevillea pritzelii Diels

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 11 Aug 2020

WRA Score: **-5.0** **Designation:** L **Rating:** Low Risk

Keywords: Shrub, Ornamental, Unarmed, Non-toxic, Fire Resprouter

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)	Intermediate
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	n
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		
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems		
409	Is a shade tolerant plant at some stage of its life cycle		

Qsn #	Question	Answer Option	Answer
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	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally		
604	Self-compatible or apomictic		
605	Requires specialist pollinators		
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)		
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m2)	y=1, n=-1	n
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	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**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[No evidence of domestication] "Grevillea hookeriana is a superspecies with several inadequately resolved elements, differing mainly in leaf morphology and to some extent in habit and fruit indumentum; these generally have coherent geographical distributions. Some of these elements have been regarded as separate species in the past but there are several intergrades and the morphological diagnoses usually advanced are not sufficiently consistent to maintain species status at this time. The complex would repay closer research."

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"**	**Intermediate**
	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 10 Aug 2020]	"Native Australasia AUSTRALIA: Australia [Western Australia (s.w.)]"
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	"Occurs in south-western W.A., where widespread throughout much of the wheatbelt in the area bounded by Three Springs, Mt Churchman, Coolgardie and Katanning. Grows in heath or shrubland in sandy soils."

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 10 Aug 2020]	

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

Qsn #	Question	Answer
	Source(s)	**Notes**
	GardensOnline. (2020). Grevillea hookeriana. https://www.gardensonline.com.au. [Accessed 10 Aug 2020]	"Climate Zone Zone: 8 Zone: 9 Zone: 10 Zone: 11"
	Australian Native Plant Society. (2020). Grevillea hookeriana. http://anpsa.org.au/g-hoo.html. [Accessed 10 Aug 2020]	"The true G. hookeriana is mainly cultivated by enthusiasts and is less hardy than the hybrid plant, particularly in areas with humid summer climates. It requires well drained soils in sunny or semi shaded situations. It tolerates extended dry periods once established and is tolerant of at least moderate frosts."

204	Native or naturalized in regions with tropical or subtropical climates	n
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	"Occurs in south-western W.A., where widespread throughout much of the wheatbelt in the area bounded by Three Springs, Mt Churchman, Coolgardie and Katanning."
	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

205	Does the species have a history of repeated introductions outside its natural range?	?
	Source(s)	**Notes**
	Australian Native Plant Society. (2020). Grevillea hookeriana. http://anpsa.org.au/g-hoo.html. [Accessed 10 Aug 2020]	"The true G. hookeriana is mainly cultivated by enthusiasts"
	Marriott, N. (2003). Grevilleas for Cultivation. Australian Plants online. http://anpsa.org.au/APOL29/mar03-5.html. [Accessed 11 Aug 2020]	[Unclear how widespread "true" G. hookeriana has been cultivated] "G. hookeriana has jet black to dull red, toothbrush flowers. What has commonly been sold as G. hookeriana is a hybrid, and should be called 'Red Hooks'. Recently a beautiful, yellow flowered form has been introduced into cultivation."

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

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

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

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

305	Congeneric weed	y
	Source(s)	**Notes**
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Grevillea banksii ... Declared noxious in Regulations 2 and NW 10. Can spread rapidly, replacing forage plants. Poisonous flowers and fruit cause a skin reaction like that of poison ivy or mango."
	Smith, C.W. 1985. Impact of Alien Plants on Hawaii's Native Biota. Pp. 180-250 in Stone & Scott (eds.). Hawaii's terrestrial ecosystems: preservation & management. CPSU, Honolulu, HI	"Grevillea banksii ... This noxious, medium-sized, evergreen tree is similar to silky oak in most features. There is a major infestation in the Ka'u District, Hawaii."
	Santos, G.L., Kageler, D., Gardner, D.E., Cuddihy, L.W. & Stone, C.P. (1992). Herbicidal Control of Selected Alien Plant Species in Hawai`i Volcanoes National Park. Pp. 341-375 in Stone, C.P. et al. (eds.) Alien Plant Invasions in Native Ecosystems of Hawai`i. University of Hawaii CPSU, Honolulu, HI	"Two species of silk oak (Grevillea robusta and G. banksii) are currently invading the Park's southwestern boundary. Grevillea robusta, a robust, partly deciduous tree native to Australia, was introduced to the State of Hawai`i for reforestation purposes in 1938 (Skolmen 1979). It is found in a wide variety of habitats and from sea level to over 4,265 ft (1,300 m) elevation. Grevillea banksii, also native to Australia, is a small tree to 20 ft (6 m) tall and was officially designated a noxious weed by the Hawai`i Department of Agriculture in 1978 (Regulation NW 10, updated by Title 4, Chapter 68 Administrative Rules, 1981). Both species of Grevillea are aggressive, drought-tolerant, have the ability to establish in little or no soil, and may form dense, monotypic stands. If unmanaged, these trees may eventually displace dry forest and shrubland in Hawai`i Volcanoes National Park."

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

Qsn #	Question	Answer
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[No evidence] "Shrub 0.5–2.5 m high, to 4 m across. Leaves 1–13.5 cm long, sometimes entire and linear and 0.6–2.6 mm across, and/or variously divided, usually either deeply 2–9-partite or -sect with ascending linear lobes 0.8–1.9 mm across and basal lobes rarely again 2- or 3-partite, or narrowly cuneate and apically digitate, to c. 10 mm wide (at base of lobes) with –10 (–23) short ascending apical lobes or teeth; apices ±pungent; margins smoothly revolute; lower surface usually enclosed except for midvein, densely tomentose with flexuose and/or curled hairs in grooves especially near lobe sinuses. Unit conflorescence erect, secund; floral rachis 25–80 mm long. Perianth subsericeous to villous. Pistil 18–21.5 (–23) mm long; ovary ±sessile; style usually glabrous, rarely a few papillae or minute simple erect hairs near middle of ventral side. Follicle 12–18 mm long, tomentose with biramous hairs and sometimes also simple erect glandular hairs."

402	Allelopathic	
	Source(s)	**Notes**
	Smith, C.W. 1985. Impact of Alien Plants on Hawaii's Native Biota. Pp. 180-250 in Stone & Scott (eds.). Hawaii's terrestrial ecosystems: preservation & management. CPSU, Honolulu, HI	[Unknown. Other species reported to be allelopathic] "Grevillea robusta … This large, evergreen tree has been used extensively in reforestation programs. The leaves produce an allelopathic substance which inhibits the establishment of all species, including itself."

403	Parasitic	n
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	"Shrub 0.5–2.5 m high, to 4 m across." [Proteaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	**Notes**
	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	[Unknown. Grevillea robusta browsed by goats] "Goats will control silver oak (An Peischel)."

405	Toxic to animals	n
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	"A few species are known to be cyanogenic. Smith & White (1920) record strong positive HCN reactions from flowers and fruits of G. banksii and G. robusta." [No evidence for Grevillea hookeriana]
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

Qsn #	Question	Answer
406	**Host for recognized pests and pathogens**	
	Source(s)	**Notes**
	GardensOnline. (2020). Grevillea hookeriana. https://www.gardensonline.com.au. [Accessed 10 Aug 2020]	"Diseases: None of note."

407	**Causes allergies or is otherwise toxic to humans**	**n**
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[No evidence for Grevillea hookeriana] "Some Grevillea species and hybrids are known to cause contact dermatitis in susceptible individuals, the severity of the reaction varying widely. Apart from mechanical irritation by hairs, a minor problem, the main cause appears to be the presence in at least some grevilleas of resorcinols and related phenolic compounds, which have irritant or allergenic properties. The same class of compounds occurs in Toxicodendron species. Dermatological or allergic reactions are most commonly reported for G. banksii and G. pteridifolia, or species related to them or hybrids based on them, although this may be partly an artifact of the popularity of these species and hybrids in cultivation; Cirigottis et al. (1974) document the occurrence of phenolics in the two above-named species."
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

408	**Creates a fire hazard in natural ecosystems**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Contribution to fuel load or fire risk unknown. No evidence found

409	**Is a shade tolerant plant at some stage of its life cycle**	
	Source(s)	**Notes**
	Australian Native Plants. (2020). Grevillea hookeriana. https://www.australianplants.com/plants.aspx?id=1241. [Accessed 11 Aug 2020]	"Exposure: Full Sun to Partial Shade"
	Australian Native Plant Society. (2020). Grevillea hookeriana. http://anpsa.org.au/g-hoo.html. [Accessed 10 Aug 2020]	"It requires well drained soils in sunny or semi-shaded situations."
	GardensOnline. (2020). Grevillea hookeriana. https://www.gardensonline.com.au. [Accessed 10 Aug 2020]	"Light: Full sun"

410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	"Grows in heath or shrubland in sandy soils."
	Australian Native Plant Society. (2020). Grevillea hookeriana. http://anpsa.org.au/g-hoo.html. [Accessed 10 Aug 2020]	"It requires well drained soils in sunny or semi-shaded situations."
	Vibrant Earth. (2020). Grevillea hookeriana 'Robin Hood'. https://www.vibrantearth.nz. [Accessed 11 Aug 2020]	"Soil Type Avoid fertilisers with phosphate / Grows in most soil types / Needs well drained soil Moisture Tolerates dry soils"
	GardensOnline. (2020). Grevillea hookeriana. https://www.gardensonline.com.au. [Accessed 10 Aug 2020]	"Soil: Well drained, not too moist, slightly acid soils with lots of leaf matter and mulch around roots."

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	"Shrub 0.5–2.5 m high, to 4 m across."

412	Forms dense thickets	n
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[No evidence from native range] "Occurs in south-western W.A., where widespread throughout much of the wheatbelt in the area bounded by Three Springs, Mt Churchman, Coolgardie and Katanning. Grows in heath or shrubland in sandy soils."

501	Aquatic	n
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[Terrestrial] "Occurs in south-western W.A., where widespread throughout much of the wheatbelt in the area bounded by Three Springs, Mt Churchman, Coolgardie and Katanning. Grows in heath or shrubland in sandy soils."

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 10 Aug 2020]	Family: Proteaceae

503	Nitrogen fixing woody plant	n

Qsn #	Question	Answer
	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 10 Aug 2020]	Family: Proteaceae

504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**n**
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	"Shrub 0.5–2.5 m high, to 4 m across."

601	**Evidence of substantial reproductive failure in native habitat**	**n**
	Source(s)	**Notes**
	Australian Native Plant Society. (2020). Grevillea hookeriana. http://anpsa.org.au/g-hoo.html. [Accessed 10 Aug 2020]	"Conservation Status: Not considered to be at risk in the wild."
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	"Occurs in south-western W.A., where widespread throughout much of the wheatbelt in the area bounded by Three Springs, Mt Churchman, Coolgardie and Katanning."

602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	Australian Native Plant Society. (2020). Grevillea hookeriana. http://anpsa.org.au/g-hoo.html. [Accessed 10 Aug 2020]	"Propagation is best carried out from cuttings of firm, current seasons growth which strike reasonably reliably. Seed may be successful but is not readily available."
	Sweedman, L. & Merritt, D. 2006. Australian seeds: a guide to their collection, identification and biology. Csiro Publishing, Collingwood, Australia	Grevillea hookeriana M Mean time to germinate = 45 days Q Quickest time to germinate = 19 days L Longest time to germinate = 71 days T Times sown = 8 samples R Recommended pre-treatment = SMK (Soak in smoke water at 1:10, 1:100 or 1:1000 dilution for 24 hours)

603	**Hybridizes naturally**	
	Source(s)	**Notes**
	Australian Native Plant Society. (2020). Grevillea hookeriana. http://anpsa.org.au/g-hoo.html. [Accessed 10 Aug 2020]	"There is some confusion regarding G. hookeriana in the horticultural trade. A plant with bright red toothbrush flowers has been sold under this name for many years. However, it has been established that this is a plant of hybrid origin which may or may not have G. hookerana in its parentage."

604	**Self-compatible or apomictic**	

Qsn #	Question	Answer
	Source(s)	**Notes**
	Hermanutz, L., Innes, D., Denham, A., & Whelan, R. (1998). Very low fruit: flower ratios in Grevillea (Proteaceae) are independent of breeding system. Australian Journal of Botany, 46(4), 465-478	[Unknown. Other species display a range of breeding systems, from self-incompatible to self-compatible] "Members of the family Proteaceae have extremely low mature fruit : flower (FR : FL) ratios (range 0.001–0.163) compared with other temperate, hermaphroditic, woody perennials. Sutherland's (1986) survey of FR : FL ratios indicated that compatibility was an important factor explaining levels of fruit set. The role of compatibility in regulating FR : FL ratios was tested in five closely related species of Grevillea (Proteaceae). Species-specific compatibility was compared using the self-compatibility index (SI = ratio of selfed fruit set to crossed fruit set) calculated at fruit initiation to minimise the confounding effect of other post-fertilisation fruit losses, such as inbreeding depression and pre-dispersal predation. Fruit : flower ratios at initiation ranged from 0.041–0.249, and at maturity 0.015–0.096. Grevillea species showed highly variable breeding systems: G. linearifolia was self-incompatible (SI = 0.003), G. sphacelata, G. mucronulata, and G. oleoides were partially self-compatible (SI = 0.07–0.28) and G. longifolia was self-compatible (SI = 0.61). Intrapopulation variability in the level of self incompatibility was high in all species but G. linearifolia. The correlation between SI and FR: FL ratios was non-significant, indicating that compatibility has a minimal effect on fruit set in the Grevillea species studied, and that these data, together with other data on proteaceous species do not support trends observed in Sutherland's survey. Low FR : FL ratios resulted from of a combination of pollen limitation, and high levels of flower and fruit predation."

605	Requires specialist pollinators	
	Source(s)	**Notes**
	Vibrant Earth. (2020). Grevillea hookeriana 'Robin Hood'. https://www.vibrantearth.nz. [Accessed 11 Aug 2020]	"Insects and birds love the nectar."
	Hermanutz, L., Innes, D., Denham, A., & Whelan, R. (1998). Very low fruit: flower ratios in Grevillea (Proteaceae) are independent of breeding system. Australian Journal of Botany, 46(4), 465-478	"Pollination syndromes in Grevillea include both insect- and bird-pollinated species (Grey 1985; Collins and Rebelo 1987; Olde and Marriott 1994; Vaughton 1996), although vertebrate-pollinated proteaceous species have received most attention (Bernhardt and Weston 1996)."
	Blerick Tree Farm. (2020). Grevillea hookeriana - Toothbrush Grevillea - Red Hooks. http://www.onlinetrees.com.au. [Accessed 11 Aug 2020]	"Toothbrush-shaped flowers are red and appear from May to November. The blooms are rich in nectar and attract honeyeaters."
	Dell, J. & Johnstone, R. E. (1976). Birds of Tarin Rock and North Tarin Rock Reserves. Records of the Western Australian Museum Supplement No. 2: 69-84	[Honeyeater a potential pollinator] "Tawny-crowned Honeyeater (Gliciphila melanops). Common in heath and heath below mallee at both NTR and TR Reserves during all visits. Feeding on flowers of Grevillea hookeriana at NTR loc. 3.1 in September 1972."

606	Reproduction by vegetative fragmentation	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Australian Native Plant Society. (2020). Grevillea hookeriana. http://anpsa.org.au/g-hoo.html. [Accessed 11 Aug 2020]	"Propagation is best carried out from cuttings of firm, current seasons growth which strike reasonably reliably. Seed may be successful but is not readily available." [No reports of natural vegetative spread]
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[No evidence for Grevillea hookeriana] "Generative habit form refers to the mode of vegetative growth, particularly in response to fire or mechanical damage. A majority of species are fire-sensitive and reproduce from seed only, but numerous taxa (scattered across most of the larger groups) show a capability for developing wandering horizontal subsurface axes from which daughter ramets may arise at distances from the parent ramet ranging from 10 cm to (rarely) several metres. In most Grevillea literature to date, the term root-suckering has been used for this condition, but here the term rhizomatous is preferred."
	Marriott, N. (2003). Grevilleas for Cultivation. Australian Plants online. http://anpsa.org.au/APOL29/mar03-5.html. [Accessed 11 Aug 2020]	Several species are described as having the ability to sucker. G. hookeriana, mentioned on this site, has not been identified as a suckering species

607	Minimum generative time (years)	
	Source(s)	**Notes**
	Blerick Tree Farm. (2020). Grevillea hookeriana - Toothbrush Grevillea - Red Hooks. http://www.onlinetrees.com.au. [Accessed 11 Aug 2020]	"Growth rate: Moderate" [Unknown]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[No means of external attachment] "For the most part, however, Grevillea species are likely to be slow dispersers. Most taxa have relatively large, heavy, unwinged seeds, suitable for only local dispersal (by gravity, ants, |and fresh water). There is, however, a strong trend in the tropics and (?consequently) to some extent in the south-west, for seeds to be flatter, lighter, and winged, although the wing is rarely robust and is unlikely to facilitate wind-dispersal over very long distances." … "Aspleniifolia/Hookeriana Subgroup … Seeds unwinged, usually ellipsoidal, usually with a terminal elaiosome, sometimes waxy-bordered or ornamented along one or both margins, rarely (G. nana) hemispherical with a thick spongy testa."

Qsn #	Question	Answer
702	**Propagules dispersed intentionally by people**	**y**
	Source(s)	**Notes**
	Australian Native Plant Society. (2020). Grevillea hookeriana. http://anpsa.org.au/g-hoo.html. [Accessed 10 Aug 2020]	"There is some confusion regarding G.hookeriana in the horticultural trade. A plant with bright red toothbrush flowers has been sold under this name for many years. However, it has been established that this is a plant of hybrid origin which may or may not have G.hookerana in its parentage. This plant is now more commonly available as Grevillea 'Red Hooks'. The true G.hookeriana is mainly cultivated by enthusiasts and is less hardy than the hybrid plant, particularly in areas with humid summer climates."

703	**Propagules likely to disperse as a produce contaminant**	**n**
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[No evidence] "For the most part, however, Grevillea species are likely to be slow dispersers. Most taxa have relatively large, heavy, unwinged seeds, suitable for only local dispersal (by gravity, ants, | and fresh water). There is, however, a strong trend in the tropics and (?consequently) to some extent in the south-west, for seeds to be flatter, lighter, and winged, although the wing is rarely robust and is unlikely to facilitate wind-dispersal over very long distances." … "Aspleniifolia/Hookeriana Subgroup … Seeds unwinged, usually ellipsoidal, usually with a terminal elaiosome, sometimes waxy-bordered or ornamented along one or both margins, rarely (G. nana) hemispherical with a thick spongy testa."

704	**Propagules adapted to wind dispersal**	**n**
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[No evidence. Seeds unwinged] "For the most part, however, Grevillea species are likely to be slow dispersers. Most taxa have relatively large, heavy, unwinged seeds, suitable for only local dispersal (by gravity, ants, |and fresh water). There is, however, a strong trend in the tropics and (?consequently) to some extent in the south-west, for seeds to be flatter, lighter, and winged, although the wing is rarely robust and is unlikely to facilitate wind-dispersal over very long distances." … "Aspleniifolia/Hookeriana Subgroup … Seeds unwinged, usually ellipsoidal, usually with a terminal elaiosome, sometimes waxy-bordered or ornamented along one or both margins, rarely (G. nana) hemispherical with a thick spongy testa."

705	**Propagules water dispersed**	**n**
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[No evidence. Not a riparian species] "Occurs in south-western W.A., where widespread throughout much of the wheatbelt in the area bounded by Three Springs, Mt Churchman, Coolgardie and Katanning. Grows in heath or shrubland in sandy soils."

706	**Propagules bird dispersed**	**n**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Valentine, L. E., & Stock, W. (2008). Food resources of Carnaby's black-cockatoo (Calyptorhynchus latirostris) in the Gnangara sustainability strategy study area. Western Australian Department of Environment and Conservation	"Grevillea hookeriana - Part consumed = seed, flower" [Cockatoos are seed predators, and are unlikely to disperse intact seeds]
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[No evidence] "For the most part, however, Grevillea species are likely to be slow dispersers. Most taxa have relatively large, heavy, unwinged seeds, suitable for only local dispersal (by gravity, ants, | and fresh water). There is, however, a strong trend in the tropics and (?consequently) to some extent in the south-west, for seeds to be flatter, lighter, and winged, although the wing is rarely robust and is unlikely to facilitate wind-dispersal over very long distances."

707	Propagules dispersed by other animals (externally)	
	Source(s)	**Notes**
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	"Aspleniifolia/Hookeriana Subgroup … Seeds unwinged, usually ellipsoidal, usually with a terminal elaiosome, sometimes waxy-bordered or ornamented along one or both margins," [Unknown. Elaiosome may facilitate dispersal by ants]
	Auld, T. D., & Denham, A. J. (1999). The role of ants and mammals in dispersal and post-dispersal seed predation of the shrubs Grevillea (Proteaceae). Plant Ecology, 144 (2), 201-213	[Unknown. Possibly ant-dispersed] "The role seed predators play in influencing the dynamics of plant populations has been little studied in Australia. The interaction of ant dispersal and seed predation on the soil seedbank in six shrubby species of Grevillea from the Sydney region of southeastern Australia was examined in selective exclusion experiments, seed array trials and placement of single seeds on the ground. Two distinct seed types in Grevillea were examined and different seed dispersal and post dispersal seed predation patterns were associated with each: (a) seeds lacking an elaiosome were not attractive to ants and annual seed losses of between 82 and 95% were found in vegetation unburnt for greater than 8 years. Native rodents, Rattus fuscipes, and macropods, Wallabia bicolor, were responsible for these seed losses; (b) seeds with an elaiosome were rapidly handled by ants. Two functional types of ants were recognised. Most encounters were by ants that were small (Local) relative to seed size and these ants simply removed the elaiosome in situ or moved seeds only small distances (<20 cm). Some 0–24% of ant/seed encounters were by large (Removalist) ant species that were capable of moving seeds back to nests. In addition, Rattus fuscipes and Wallabia bicolor consumed at least 32–68% of seeds of Grevillea species with an elaiosome. Ants may reduce the overall levels of seed predation where seeds moved by Removalist ant species escape predation and are deposited in safe sites, hence allowing more seeds to reach the persistent soil seedbank. Mammals do not consume all seeds when ants are excluded, allowing for the potential for some seed escape from predation after seeds are discarded by Local ant species."

708	Propagules survive passage through the gut	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Gordon, D. R., Mitterdorfer, B., Pheloung, P. C., Ansari, S., Buddenhagen, C., Chimera, C., ... & Williams, P. A. 2010). Guidance for addressing the Australian Weed Risk Assessment questions. Plant Protection Quarterly, 25(2): 56-74	"Answer 'no' where the taxon is unlikely to be eaten by animals or if seeds are not viable following passage through the gut."
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	"For the most part, however, Grevillea species are likely to be slow dispersers. Most taxa have relatively large, heavy, unwinged seeds, suitable for only local dispersal (by gravity, ants, |and fresh water). There is, however, a strong trend in the tropics and (?consequently) to some extent in the south-west, for seeds to be flatter, lighter, and winged, although the wing is rarely robust and is unlikely to facilitate wind-dispersal over very long distances."

801	Prolific seed production (>1000/m2)	n
	Source(s)	**Notes**
	Australian Native Plant Society. (2020). Grevillea hookeriana. http://anpsa.org.au/g-hoo.html. [Accessed 10 Aug 2020]	"Seed may be successful but is not readily available."
	Australian Biological Resources Study. (2000). Flora of Australia Volume 17A, Proteaceae 2, Grevillea. CSIRO Publishing, Melbourne	[Seed numbers and densities unspecified, but unlikely to reach such high densities given relative fruit (follicle) size and size of shrubs] "Shrub 0.5–2.5 m high, to 4 m across." … "Follicle 12–18 mm long, tomentose with biramous hairs and sometimes also simple erect glandular hairs."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	**Notes**
	Harris, R. J., Mioduszewski, P., & Molony, L. N. (2010). Vegetation responses to chaining in an isolated remnant in Western Australia's wheatbelt. Journal of the Royal Society of Western Australia, 93: 1–11	[Longevity in seed bank unknown] "Appendix 1" [Grevillea hookeriana subsp. apiciloba - Mode of regeneration = Soil seed bank]

803	Well controlled by herbicides	y
	Source(s)	**Notes**
	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	[Herbicides to control Grevillea robusta would likely be effective if needed] "Management: Has value as timber. Sensitive to triclopyr ester (2.5% product in diesel oil) applied to frill cuts(66). HAVO staff reported control with triclopyr Grevillea robusta ester at 5% product in diesel oil applied to basal bark (Zimmer, HAVO). Susceptible to cut-surface and continuous frill applications of picloram and glyphosate and tolerant of 2,4-D and dicamba(45). Applications of glyphosate and triclopyr to drilled holes in unreplicated demonstrations were very effective."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Vibrant Earth. (2020). Grevillea hookeriana 'Robin Hood'. https://www.vibrantearth.nz. [Accessed 11 Aug 2020]	"Prune back after flowering for the best shape."
	Marriott, N. (2016). Further notes on the effect of fire on Grevillea species. Grevillea Study Group No. 103: 8-9	[Resprouts after fire] "As most members would remember, in January 2006 nearly the entire Grevillea Living Collection was burnt out in a large bushfire that engulfed the Black Ranges. Following that bushfire, at least one third of all cultivated species recovered by way of seedling recruitment, while another third recovered by way of re-shooting of epicormic buds on the trunks and/or branches, from basal lignotubers or from epicormic buds on underground roots. The final third of species failed to recover in any way, resulting in the loss of many rare and endangered species and subspecies as well as a large number of species sadly not replicated in any other GSG collection!" … "Grevillea hookeriana – yellow flowered form: one plant re-shooting from root 3 metres from burnt and dead plant"

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	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.	[Unknown. Other species naturalized in the Hawaiian Islands with no evidence of limiting factors] "Grevillea banksia … in Hawai'i cultivated on all of the main islands and naturalized in disturbed, dry to wet forest, 75-400 m, on all of the main islands except Lana'i and Kaho'olawe." … "Grevillea robusta … in Hawai'i over 2.2 million trees were planted between 1919 and 1959 on all of the main islands except Kaho'olawe for timber. Probably naturalized on all of the islands where planted"

Summary of Risk Traits:

High Risk / Undesirable Traits
• Other species in genus are invasive
• Tolerates many soil types
• Reproduces by seeds
• Able to resprout after fire and tolerates pruning

Low Risk Traits
• No reports of invasiveness or naturalization, but limited evidence of introduction outside native range
• Unarmed (no spines, thorns, or burrs)
• Non-toxic
• Not reported to spread vegetatively
• Seeds unlikely to be dispersed long distances