Taxon: Geranium homeanum **Family:** Geraniaceae

Common Name(s): Australasian cranesbill
Australasian geranium

Synonym(s): G. carolinianum var. australe sensu

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 8 Sep 2015

WRA Score: 7.0 **Designation:** H(HPWRA) **Rating:** High Risk

Keywords: Naturalized, Perennial Herb, Unarmed, Shade Tolerant, Seed-Propagated

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	n
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		
304	Environmental weed		
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	y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	y

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	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	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
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)		
702	Propagules dispersed intentionally by people	y=1, n=-1	n
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	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut		
801	Prolific seed production (>1000/m2)		
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**
	Carolin, R. C. (1960). Geraniaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1): 445-449	[No evidence of cultivation or domestication] "Distr. New Zealand, SE. Australia, in Malesia'- East Java (Mt Tengger). Ecol. Roadsides in montane mixed and Casuarina forest, 1500-2000 m."

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. 2015. Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. 2015. 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, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/. [Accessed 18 Aug 2015]	"Native: ASIA-TROPICAL Malesia: Indonesia - Java, Lesser Sunda Islands AUSTRALASIA Australia: Australia - New South Wales, Queensland, Victoria New Zealand: New Zealand [n.]"

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/. [Accessed 18 Aug 2015]	

203	**Broad climate suitability (environmental versatility)**	**y**
	Source(s)	**Notes**
	Plant This. 2015. Geranium homeanum. http://www.plantthis.com.au/plant-information.asp?gardener=15048. [Accessed 4 Sep 2015]	"Hardiness zones: 9-10"
	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.	[Occupies an elevation range in excess of 1000 m in the Hawaiian Islands, demonstrating some environmental versatility] "occurring in disturbed areas, primarily pastures, 1,130-2,150 m,"

Qsn #	Question	Answer
204	**Native or naturalized in regions with tropical or subtropical climates**	**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.	"in Hawai'i it is the most commonly collected naturalized species, occurring in disturbed areas, primarily pastures, 1,130-2,150 m, on Kaua'i, Maui, and Hawai'i."
	USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/. [Accessed 18 Aug 2015]	"Native: ASIA-TROPICAL Malesia: Indonesia - Java, Lesser Sunda Islands AUSTRALASIA Australia: Australia - New South Wales, Queensland, Victoria New Zealand: New Zealand [n.]"

205	**Does the species have a history of repeated introductions outside its natural range?**	**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.	"on Kauai, Maui, and Hawaii."

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 to Australia and New Zealand, now naturalized in other areas; in Hawai'i it is the most commonly collected naturalized species, occurring in disturbed areas, primarily pastures, 1,130-2,150 m, on Kaua'i, Maui, and Hawai'i. First collected on Hawai'i in 1909 (Rock 3377, BISH)."

302	**Garden/amenity/disturbance weed**	
	Source(s)	**Notes**
	Medeiros, A.C., Loope, L.L. & Chimera, C.G. 1998. Flowering Plants and Gymnosperms of Haleakala National Park. Technical Report 120. Pacific Cooperative Studies Unit, Honolulu, HI	[In disturbed habitats]"East and west Kaupb Gap; Kipahulu Valley; West slope. Low herb of moist disturbed sites, 5200-7000 ft."

303	**Agricultural/forestry/horticultural weed**	
	Source(s)	**Notes**
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	Included in one reference as a weed of agriculture [Unable to confirm or find evidence of impacts]

Qsn #	Question	Answer
304	**Environmental weed**	
	Source(s)	**Notes**
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	Included in a reference compiling weeds of natural areas [No evidence was found of detrimental impacts]

305	Congeneric weed	y
	Source(s)	**Notes**
	Shirk, R. Y., & Hamrick, J. L. (2014). High but variable outcrossing rates in the invasive Geranium carolinianum (Geraniaceae). American Journal of Botany, 101(7): 1200-1206	"Geranium carolinianum (Geraniaceae), Carolina cranesbill, is native to North America and is a common weed in fields, lawns, and roadsides in the southeastern United States. Flowers are visited by generalist insect pollinators (Fiz et al., 2008). Fruits are dry, five-seeded schizocarps with explosive dispersal. It is naturalized in the eastern plains region of China, where it grows in similar habitats and is considered a minor invasive with low environmental impacts, although it is a common weed in agricultural fields (S. Qiang, Nanjing Agricultural University, personal communication)."
	Shirk, R. Y., Hamrick, J. L., Zhang, C., & Qiang, S. (2014). Patterns of genetic diversity reveal multiple introductions and recurrent founder effects during range expansion in invasive populations of Geranium carolinianum (Geraniaceae). Heredity, 112(5): 497-507	"In China, G. carolinianum is the only Geranium species listed as invasive, although to date it has had minor environmental impact (Liu et al., 2006). It is reported in 11 provinces in the eastern plains region (Weber et al., 2008) and is largely a roadside and agricultural weed."
	Spencer, E.R. 2013. All About Weeds. Dover Publications, Mineola, NY	"There are several wild geraniums, but the worst weed of the lot is the one known to the botanists as the Carolina Cranesbill." ... "The weed is at its worst in gardens, strawberry beds, and in sparsely set clover and alfalfa fields. In the well-kept gardens it serves as a fertilizer, but in the other places mentioned it crowds out and down the crop plants. It also does what all rapid-growing weeds are able to do: it filches from the soil the necessary plant foods intended for the crop plants."

401	Produces spines, thorns or burrs	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.	[No evidence] "Perennial herbs with cylindrical, irregularly tapering, branched taproots up to ca. 2 cm in diameter; flowering stems decumbent, 2-5(-7) dm long, manY-branched, sparsely covered with coarse retrorse hairs, sometimes glabrate. Leaves opposite and basal, blades sub orbicular to reniform in outline, 1.5-3 cm long, 2-6 cm wide, sparsely appressed pubescent, deeply palmately 3-7(-9)-lobed, the lobes oblongobovate, these again divided, the central lobe nearly as wide as long, petioles usually 4-10 cm long, those of basal leaves up to ca. 30 cm long, stipules linear-lanceolate, 3-6 mm long, ciliate or glabrous."

Qsn #	Question	Answer
402	**Allelopathic**	
	Source(s)	**Notes**
	WRA Specialist. 2015. Personal Communication	Unknown

403	**Parasitic**	**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.	"Perennial herbs..." [Geraniaceae. No evidence]

404	**Unpalatable to grazing animals**	
	Source(s)	**Notes**
	WRA Specialist. 2015. Personal Communication	Unknown

405	**Toxic to animals**	**n**
	Source(s)	**Notes**
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

406	**Host for recognized pests and pathogens**	
	Source(s)	**Notes**
	McKenzie, E. H. C., & Dingley, J. M. (1996). New plant disease records in New Zealand: miscellaneous fungal pathogens III. New Zealand Journal of Botany, 34(2): 263-272	[Host of fungal pathogens. Impacts on other taxa unknown] "Coleroa circinans (Fr.) G.Winter On Geranium homeanum Turcz. (Geraniaceae) Auckland, Mt Albert, J. M. Dingley, Oct 1964, PDD 23976." ... "Plasmopara geranii (Peck) Berl. et De Toni On Geranium homeanum Turcz." ... "Pseudopeziza geranii Rodway On Geranium homeanum Turcz."
	McKenzie, E. H. C. (1998). Rust fungi of New Zealand—an introduction, and list of recorded species. New Zealand Journal of Botany, 36(2): 233-271	[Host of rust fungi] "Appendix 1 Checklist of rust fungi recorded in New Zealand." ... "Uredo scariosus G.Cunn., Trans. N.Z. Inst. 58: 48, 1927 on Geranium homeanum" ... "Appendix 2 Host list for New Zealand rust fungi" ... "G. homeanum Turcz.—Puccinia geranii-pilosi"

407	**Causes allergies or is otherwise toxic to humans**	**n**
	Source(s)	**Notes**
	Yarra Ranges Shire Council. 2015. Geranium homeanum. http://fe.yarraranges.vic.gov.au. [Accessed 4 Sep 2015]	[No evidence] "Aboriginal Use: Food - taproot roasted"
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

408	**Creates a fire hazard in natural ecosystems**	**n**

Qsn #	Question	Answer
	Source(s)	**Notes**
	The Royal Botanic Gardens & Domain Trust. 2015. Geranium homeanum. http://www.rbgsyd.nsw.gov.au. [Accessed 4 Sep 2015]	[Tolerates fire. No evidence of increased fire risk] "Resprout from base after high intensity fire. Seedlings noted after fire and subsequent rain. Some seed germination possibly promoted by fire."

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	**Notes**
	Plant This. 2015. Geranium homeanum. http://www.plantthis.com.au/plant-information.asp?gardener=15048. [Accessed 18 Aug 2015]	"Sunlight: hot overhead sun to dappled light"
	Yarra Ranges Shire Council. 2015. Geranium homeanum. http://fe.yarraranges.vic.gov.au. [Accessed 4 Sep 2015]	[Full sun to full shade] "Growing Conditions: Moist soil in high rainfall areas in forests, rainforest margins, creek banks and wet gullies. Full sun to full shade."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	**Notes**
	Yarra Ranges Shire Council. 2015. Geranium homeanum. http://fe.yarraranges.vic.gov.au. [Accessed 8 Sep 2015]	"Moist soil in high rainfall areas in forests, rainforest margins, creek banks and wet gullies."
	Plant This. 2015. Geranium homeanum. http://www.plantthis.com.au/plant-information.asp?gardener=15048. [Accessed 18 Aug 2015]	"Soil Moisture: dry between watering to constantly moist. Soil: ordinary soil, enriched soil, mildly acidic to mildly alkaline"
	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.	[Probably Yes. Broad distribution in Hawaiian Islands. Presumably not limited by soil type] "in Hawai'i it is the most commonly collected naturalized species, occurring in disturbed areas, primarily pastures, 1,130-2,150 m, on Kaua'i, Maui, and Hawai'i."

411	Climbing or smothering growth habit	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.	"Perennial herbs with cylindrical, irregularly tapering, branched taproots up to ca. 2 cm in diameter;"

Qsn #	Question	Answer
412	**Forms dense thickets**	**n**
	Source(s)	**Notes**
	Scowcroft, P.G. & Conrad, C.E. 1992. Alien and Native Plant Response to Release from Feral Sheep Browsing on Mauna Kea. Pp. 625-665 in Stone, C.P., Smith, C.W. & Tunison, J.T. (eds.). Alien Plant Invasions in Native Ecosystems of Hawai`i: Management and Research. University of Hawaii Cooperative National Park Resources Studies Unit, Honolulu, HI	"Table 8. Mean aerial cover (cm2 / m 2) of herbaceous species inside and outside the Pu`u o Ka`uha exclosure and in surrounding woodland at the same elevation (2,750 m) and in woodland at a lower elevation (2,350 m) in 1986." [Geranium homeanum present at low densities]
	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.	[A low growing herbaceous species. Not reported to occur in dense cover] "Native to Australia and New Zealand, now naturalized in other areas; in Hawai'i it is the most commonly collected naturalized species, occurring in disturbed areas, primarily pastures, 1,130-2,150 m, on Kaua'i, Maui, and Hawai'i."

501	**Aquatic**	**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.	[Terrestrial herb] "Perennial herbs..." ... "occurring in disturbed areas, primarily pastures, 1,130-2,150 m"

502	**Grass**	**n**
	Source(s)	**Notes**
	USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/. [Accessed 18 Aug 2015]	"Genus: Geranium subgenus: Geranium section: Geranium"

503	**Nitrogen fixing woody plant**	**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.	"Perennial herbs..." [Geraniaceae. No evidence]

504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**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.	[With taproots. No bulbs, corms or tubers] "Perennial herbs with cylindrical, irregularly tapering, branched taproots up to ca. 2 cm in diameter;"

601	**Evidence of substantial reproductive failure in native habitat**	**n**

Qsn #	Question	Answer
	Source(s)	**Notes**
	PlantNET. 2015. New South Wales Flora Online - Geranium homeanum. National Herbarium of NSW, Royal Botanic Garden, Sydney, Australia. http://plantnet.rbgsyd.nsw.gov.au/. [Accessed 18 Aug 2015]	[No evidence] "Distribution and occurrence: Widespread in sclerophyll forest and on the margin of rainforest, usually in damper sites. NSW subdivisions: NC, CC, SC, NT, CT, ST, NWS, CWS, SWS"
	Carolin, R. C. (1960). Geraniaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1): 445-449	No evidence

602	Produces viable seed	y
	Source(s)	**Notes**
	PlantNET. 2015. New South Wales Flora Online - Geranium homeanum. National Herbarium of NSW, Royal Botanic Garden, Sydney, Australia. http://plantnet.rbgsyd.nsw.gov.au/. [Accessed 18 Aug 2015]	"Fruit 11–14 mm long; mericarps coarsely hairy; seeds dark brown, with elongated pits."
	All Things Plants. 2015. Australasian Cranesbill (Geranium homeanum) in the Geraniums Database. http://allthingsplants.com/plants/view/128331/Australasian-Cranesbill-Geranium-homeanum/. [Accessed 8 Sep 2015]	"Propagation: Seeds"
	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.	"Seeds released from carpel body, reddish brown, oblong, ca. 2 mm long, the surface conspicuously reticulate."

603	Hybridizes naturally	y
	Source(s)	**Notes**
	Royal Botanic Gardens Melbourne. 2015. VicFlora Flora of Victoria - Geranium homeanum. http://data.rbg.vic.gov.au/vicflora/. [Accessed 18 Aug 2015]	"Hybridizes with G. potentilloides var. potentilloides and G. neglectum."

604	Self-compatible or apomictic	
	Source(s)	**Notes**
	Kubitzki, K., Bayer, C. 7 Stevens, P.F. 2007. The families and genera of vascular plants: Volume IX. Flowering Plants. Eudicots. Springer-Verlag, Berlin, Heidelberg, New York	"All genera are protandrous. In Erodium and Geranium, most of the species are pollinated by insects but self-pollination is frequent."
	Miller, A. E., Brosi, B. J., Magnacca, K., Daily, G. C., & Pejchar, L. (2015). Pollen Carried by Native and Nonnative Bees in the Large Scale Reforestation of Pastureland in Hawaii: Implications for Pollination. Pacific Science, 69(1): 67-79	"We found pollen from a total of 16 plant species in bee-carried pollen." ... "Pollen from nonnative plant species found on bees was Taraxacum officinale (dandelion), Trifolium repens (clover), Ulex europaeus (gorse), Lotus corniculatus (bird's-foot trefoil), and Geranium homeanum (Australasian geranium)." [Pollen of Geranium homeanum carried by native Hylaeus spp. and introduced Apis mellifera]

Qsn #	Question	Answer
605	**Requires specialist pollinators**	**n**
	Source(s)	**Notes**
	Miller, A. E., Brosi, B. J., Magnacca, K., Daily, G. C., & Pejchar, L. (2015). Pollen Carried by Native and Nonnative Bees in the Large Scale Reforestation of Pastureland in Hawaii: Implications for Pollination. Pacific Science, 69(1): 67-79	"We found pollen from a total of 16 plant species in bee-carried pollen." ... "Pollen from nonnative plant species found on bees was Taraxacum officinale (dandelion), Trifolium repens (clover), Ulex europaeus (gorse), Lotus corniculatus (bird's-foot trefoil), and Geranium homeanum (Australasian geranium)." [Pollen of Geranium homeanum carried by native Hylaeus spp. and introduced Apis mellifera]
	Kubitzki, K., Bayer, C. 7 Stevens, P.F. 2007. The families and genera of vascular plants: Volume IX. Flowering Plants. Eudicots. Springer-Verlag, Berlin, Heidelberg, New York	[Family traits] "All genera are protandrous. In Erodium and Geranium, most of the species are pollinated by insects but self-pollination is frequent."

606	**Reproduction by vegetative fragmentation**	**n**
	Source(s)	**Notes**
	All Things Plants. 2015. Australasian Cranesbill (Geranium homeanum) in the Geraniums Database. http://allthingsplants.com/plants/view/128331/Australasian-Cranesbill-Geranium-homeanum/. [Accessed 8 Sep 2015]	"Propagation: Seeds" [No evidence of vegetative spread]

607	**Minimum generative time (years)**	**1**
	Source(s)	**Notes**
	The Royal Botanic Gardens & Domain Trust. 2015. Geranium homeanum. http://www.rbgsyd.nsw.gov.au. [Accessed 18 Aug 2015]	"Annual or short-lived perennial. Longevity 1 - 5 years."

701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	
	Source(s)	**Notes**
	Carolin, R. C. (1960). Geraniaceae. Flora Malesiana-Series 1, Spermatophyta, 6(1): 445-449	[Occurrence along roadsides may facilitate dispersal in these disturbed habitats] "Roadsides in montane mixed and Casuarina forest, 1500-2000 m."
	Gardner, R. O. (1984). Geranium solanderi and allies in New Zealand. New Zealand Journal of Botany, 22(1): 127-134	[Probably Yes. Common along heavily trafficked areas] "Geranium homeanum ... Dry to slightly damp open lowland places, in company with adventive weeds or marginal to native communities (e.g., along track edges)."

702	**Propagules dispersed intentionally by people**	**n**
	Source(s)	**Notes**
	New Zealand Plant Conservation Network. 2015. Flora Details - Geranium homeanum. http://www.nzpcn.org.nz/flora_details.aspx?ID=2137. [Accessed 8 Sep 2015]	"Where To Buy: Not commercially available - very weedy"

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.	[Widely distributed, but no evidence of intentional dispersal] "in Hawai'i it is the most commonly collected naturalized species, occurring in disturbed areas, primarily pastures, 1,130-2,150 m, on Kaua'i, Maui, and Hawai'i. First collected on Hawai'i in 1909 (Rock 3377, BISH)."

703	Propagules likely to disperse as a produce contaminant	
	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.	[Could possibly be dispersed accidentally as a contaminant in pastures] "in Hawai'i it is the most commonly collected naturalized species, occurring in disturbed areas, primarily pastures, 1,130-2,150 m, on Kaua'i, Maui, and Hawai'i."
	French, K. (2010) A Framework to Guide Ecological Restoration: Coastal Foredune Scrub and Temperate Littoral Rainforest. South Coast. University of Wollongong, Wollongong	[Limited dispersal] "Geranium homeanum" ... "DISPERSAL - Short-none"

704	Propagules adapted to wind dispersal	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.	[No adaptations for wind dispersal] "Carpel bodies ca. 3 mm long, pubescent. Seeds released from carpel body, reddish brown, oblong, ca. 2 mm long, the surface conspicuously reticulate."

705	Propagules water dispersed	
	Source(s)	**Notes**
	Royal Botanic Gardens Melbourne. 2015. VicFlora Flora of Victoria - Geranium homeanum. http://data.rbg.vic.gov.au/vicflora/. [Accessed 18 Aug 2015]	[Occurrence along streams may facilitate secondary dispersal by water] "Common throughout high-rainfall areas and moist environments including rainforest margins, creek banks and wet gullies,"

706	Propagules bird dispersed	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.	[Not fleshy-fruited] "Carpel bodies ca. 3 mm long, pubescent. Seeds released from carpel body, reddish brown, oblong, ca. 2 mm long, the surface conspicuously reticulate."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Thorsen, M. J., Dickinson, K. J., & Seddon, P. J. (2009). Seed dispersal systems in the New Zealand flora. Perspectives in Plant Ecology, Evolution and Systematics, 11(4): 285-309	"Ballistic dispersal is achieved through ejection of the propagule during capsule rupture (explosive dispersal) (Ridley,1930; Stamp andLucas,1983), by exaggerated wind movement of capsules on long peduncles (censer dispersal; van derPijl,1982), or when water droplets falling into capsules eject the propagules (splash-cup dispersal; Ridley, 1930; Nakanishi,2002). Explosive dispersal is a feature of Cardamine (but is lost in the aquatic Cardamine lacustris), Discaria, Geranium, and Pelargonium (Medan,1985; Philip,1992; Heenan,2002)."
	Kubitzki, K., Bayer, C. 7 Stevens, P.F. 2007. The families and genera of vascular plants: Volume IX. Flowering Plants. Eudicots. Springer-Verlag, Berlin, Heidelberg, New York	"Most Geraniaceae are autochorous, active ballists, some are (exo)zoochorous or anemochorous."

708	Propagules survive passage through the gut	
	Source(s)	**Notes**
	WRA Specialist. 2015. Personal Communication	Unknown whether or not plants are consumed by ungulates, or if seeds would survive passage through gut. Probably not a common means of dispersal

801	Prolific seed production (>1000/m2)	
	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] "Seeds released from carpel body, reddish brown, oblong, ca. 2 mm long, the surface conspicuously reticulate."

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	**Notes**
	The Royal Botanic Gardens & Domain Trust. 2015. Geranium homeanum. http://www.rbgsyd.nsw.gov.au. [Accessed 18 Aug 2015]	"Seeds brown, 2 mm long, mature October–April. Expelled as the fruit sections dry off. Hard seeded with physical dormancy, germinate after scarification/nicking allowing moisture through the seed coat."

803	Well controlled by herbicides	
	Source(s)	**Notes**
	WRA Specialist. 2015. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

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

Qsn #	Question	Answer
	Kubiak, P. J. 2009. Fire responses of bushland plants after the January 1994 wildfires in northern Sydney. Cunninghamia, 11(1): 131-165	"Appendix 1. Observations on fire responses (after 100% leaf scorch) of vascular plants in the Lane Cove River (LCR) (observations mainly Jan 1994 – Oct 1999) and Narrabeen Lagoon (NL) (Mar – Oct 1994) catchments, following the fires of January 1994." [R = majority of adult plants resprouted after the fires; Geranium homeanum is a resprouter]
	The Royal Botanic Gardens & Domain Trust. 2015. Geranium homeanum. http://www.rbgsyd.nsw.gov.au. [Accessed 18 Aug 2015]	"Resprout from base after high intensity fire. Seedlings noted after fire and subsequent rain. Some seed germination possibly promoted by fire."

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. No evidence] "in Hawai'i it is the most commonly collected naturalized species, occurring in disturbed areas, primarily pastures, 1,130-2,150 m, on Kaua'i, Maui, and Hawai'i."

Summary of Risk Traits:

High Risk / Undesirable Traits
• Elevation range exceeds 1000 m, demonstrating environmental versatility
• Able to grow in tropical climates
• Naturalized on Kauai, Maui, & Hawaii, Hawaiian Islands
• Other Geranium species have become invasive
• Shade tolerant
• Reproduces by seeds
• Hybridizes with other Geranium species
• Perennial, but able to reproduce in one growing season
• Small seeds, possibly spread through ballistic dispersal or by other means
• Seeds possess physical dormancy and can form a persistent seed bank
• Able to resprout after fire

Low Risk Traits
• Weedy, but impacts generally not specified in introduced range
• Unarmed (no spines, thorns or burrs)
• Not reported to spread vegetatively
• Limited ecological information makes accurate risk prediction difficult