Taxon: Tricyrtis hirta (Thunb.) Hook. **Family:** Liliaceae

Common Name(s): hairy toad lily
toad lily

Synonym(s): Tricyrtis japonica Miq.
Uvularia hirta Thunb.

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 27 Sep 2017

WRA Score: 3.5 **Designation:** L **Rating:** Low Risk

Keywords: Temperate Herb, Ornamental, Shade Tolerant, Self-Compatible, 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)	Low
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	n
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	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		
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	y=1, n=0	n
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)	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	y=1, n=-1	y
605	Requires specialist pollinators	y=-1, n=0	n
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		
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		
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**
	Ohwi, J. 1965. Flora of Japan. Smithsonian Institution, Washington, D.C.	"Perennial ... Honshu, Shikoku, Kyushu" [No evidence of domestication, but cultivars exist that may have been selected for traits which could reduce potential for invasiveness]

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. 2017. Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. 2017. 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"**	**Low**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 25 Sep 2017]	"Native: Asia-Temperate Eastern Asia: Japan"

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 25 Sep 2017]	

Qsn #	Question	Answer
203	**Broad climate suitability (environmental versatility)**	**y**
	Source(s)	**Notes**
	Missouri Botanical Garden. 2017. Tricyrtis hirta. http://www.missouribotanicalgarden.org/. [Accessed 25 Sep 2017]	"Zone: 4 to 8" [Grown in 5 hardiness zones]
	Dave's Garden. 2017. Tricyrtis Species, Hairy Toad Lily - Tricyrtis hirta. http://davesgarden.com/guides/pf/go/537/. [Accessed 25 Sep 2017]	Hardiness: USDA Zone 5a: to -28.8 °C (-20 °F) USDA Zone 5b: to -26.1 °C (-15 °F) USDA Zone 6a: to -23.3 °C (-10 °F) USDA Zone 6b: to -20.5 °C (-5 °F) USDA Zone 7a: to -17.7 °C (0 °F) USDA Zone 7b: to -14.9 °C (5 °F) USDA Zone 8a: to -12.2 °C (10 °F) USDA Zone 8b: to -9.4 °C (15 °F) USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F)"

204	Native or naturalized in regions with tropical or subtropical climates	n
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 25 Sep 2017]	"Native: Asia-Temperate Eastern Asia: Japan"
	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?	y
	Source(s)	**Notes**
	Dave's Garden. 2017. Tricyrtis Species, Hairy Toad Lily - Tricyrtis hirta. http://davesgarden.com/guides/pf/go/537/. [Accessed 25 Sep 2017]	Widely cultivated in several states in the continental U.S.

Qsn #	Question	Answer
301	**Naturalized beyond native range**	**y**
	Source(s)	**Notes**
	Haines, A. 2011. New England Wild Flower Society's Flora Novae Angliae: A Manual for the Identification of Native and Naturalized Higher Vascular Plants of New England. Yale University Press, Yale, CT	"hairy toad-lily. MA. Roadsides, forest edges, areas of human habitation." [Naturalized in Massachusetts]
	Angelo, R., & Boufford, D. E. (2000). Atlas of the flora of New England: Monocots except Poaceae and Cyperaceae. Rhodora, 102(909): 1-119	"Open woods. From eastern Asia."
	Dehnen-Schmutz, K., Julia Touza, Perrings, C., & Williamson, M. (2007). The Horticultural Trade and Ornamental Plant Invasions in Britain. Conservation Biology, 21(1), 224-231	"Table 4. The 26 species most frequently on sale from nurseries from 1987 to 2004, Society 2004), and their availability in eight nursery catalogues in the 1860s." [Tricyrtis hirta (Thunb.) Hook. Status - not escaping]

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

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**	
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Tricyrtis formosana cited as naturalized and a weed. Unable to confirm with evidence of detrimental impacts.

401	**Produces spines, thorns or burrs**	**n**
	Source(s)	**Notes**
	Ohwi, J. 1965. Flora of Japan. Smithsonian Institution, Washington, D.C.	[No evidence] "Perennial; stems 40-80 cm. long, hairy; leaves narrowly ovate-oblong to broadly lanceolate, 8-15 cm. long, 2-5 cm. wide, acuminate, those above usually clasping, die lower ones free"

Qsn #	Question	Answer
402	**Allelopathic**	
	Source(s)	**Notes**
	WRA Specialist. 2017. Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	**Notes**
	Ohwi, J. 1965. Flora of Japan. Smithsonian Institution, Washington, D.C.	"Perennial; stems 40-80 cm. long, hairy; leaves narrowly ovate-oblong to broadly lanceolate, 8-15 cm. long, 2-5 cm. wide, acuminate, those above usually clasping, die lower ones free" [Liliaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	**Notes**
	Wade, G.L. & Mengak, M.T. 2010. Deer-Tolerant Ornamental Plants. Circular 985. University of Georgia Cooperative Extension, Athens, Georgia	"Herbaceous Perennials and Bulbs Deer Rarely Browse" [Tricyrtis hirta included in list]

405	Toxic to animals	n
	Source(s)	**Notes**
	Dave's Garden. 2017. Tricyrtis Species, Hairy Toad Lily - Tricyrtis hirta. http://davesgarden.com/guides/pf/go/537/. [Accessed 27 Sep 2017]	"Danger: All parts of plant are poisonous if ingested" [Claim contradicted by multiple sources]
	NIH U.S. National Library of Medicine. 2017. TOXNET Toxicology Data Network. https://toxnet.nlm.nih.gov/. [Accessed]	No evidence
	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
	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	n
	Source(s)	**Notes**
	Missouri Botanical Garden. 2017. Tricyrtis hirta. http://www.missouribotanicalgarden.org/. [Accessed 25 Sep 2017]	"Problems - No serious insect or disease problems. Slugs are an occasional pest."
	Fine Gardening. 2017. Toad lily - Tricyrtis hirta. http://www.finegardening.com/toad-lily-tricyrtis-hirta. [Accessed 27 Sep 2017]	"Problems: Slugs, snails"

407	Causes allergies or is otherwise toxic to humans	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Dave's Garden. 2017. Tricyrtis Species, Hairy Toad Lily - Tricyrtis hirta. http://davesgarden.com/guides/pf/go/537/. [Accessed 25 Sep 2017]	"Danger: All parts of plant are poisonous if ingested" [Claim contradicted by multiple sources]
	Plants for a Future. 2017. Tricyrtis hirta. http://www.pfaf.org/user/Plant.aspx?LatinName=Tricyrtis+hirta. [Accessed 25 Sep 2017]	"Known Hazards - None known"
	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
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence
	NIH U.S. National Library of Medicine. 2017. TOXNET Toxicology Data Network. https://toxnet.nlm.nih.gov/. [Accessed 25 Sep 2017]	No evidence

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	**Notes**
	Fine Gardening. 2017. Toad lily - Tricyrtis hirta. http://www.finegardening.com/toad-lily-tricyrtis-hirta. [Accessed 27 Sep 2017]	"Noteworthy Characteristics: These perennials are from moist woodlands and high elevations from eastern Asia to the Philippines." [Not from fire prone habitats]
	Missouri Botanical Garden. 2017. Tricyrtis hirta. http://www.missouribotanicalgarden.org/. [Accessed 27 Sep 2017]	[No evidence. Growth requirements in areas that should not be prone to fire] "Sun: Part shade to full shade Water: Medium to wet "

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	**Notes**
	Harrison, M. 2006. Groundcovers for the South. Pineapple Press Inc., Sarasota, FL	"Best performance will be evidenced by plants grown in deep shade."
	Tenenbaum, F. 1994. Taylor's Guide to Shade Gardening. Houghton Mifflin Harcourt, New York	"Part to full shade"
	Missouri Botanical Garden. 2017. Tricyrtis hirta. http://www.missouribotanicalgarden.org/. [Accessed 25 Sep 2017]	"Sun: Part shade to full shade" ... "Easily grown in average, medium to wet, well-drained soils in part to full shade."

Qsn #	Question	Answer
410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y**
	Source(s)	**Notes**
	The Royal Horticultural Society. 2017. Tricyrtis hirta - Japanese orchid lily. https://www.rhs.org.uk/Plants/18351/i-Tricyrtis-hirta-i/Details. [Accessed 25 Sep 2017]	"Moisture - Moist but well-drained Soil - Loam, Chalk, Sand pH - Acid, Alkaline, Neutral"
	Perennials.com. 2017. Tricyrtis hirta. http://www.perennials.com/plants/tricyrtis-hirta.html. [Accessed 25 Sep 2017]	"Soil Type - Sandy or Clay; Soil pH - Neutral or Alkaline or Acid; Soil Moisture - Average or Moist "

411	**Climbing or smothering growth habit**	**n**
	Source(s)	**Notes**
	Ohwi, J. 1965. Flora of Japan. Smithsonian Institution, Washington, D.C.	"Perennial; stems 40-80 cm. long, hairy; leaves narrowly ovate-oblong to broadly lanceolate, 8-15 cm. long, 2-5 cm. wide, acuminate, those above usually clasping, die lower ones free"

412	**Forms dense thickets**	**n**
	Source(s)	**Notes**
	Ohwi, J. 1965. Flora of Japan. Smithsonian Institution, Washington, D.C.	"Honshu, Shikoku, Kyushu; rather common." [No evidence from native range]

501	**Aquatic**	**n**
	Source(s)	**Notes**
	Ohwi, J. 1965. Flora of Japan. Smithsonian Institution, Washington, D.C.	[Terrestrial] "Perennial; stems 40-80 cm. long, hairy;"

502	**Grass**	**n**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 21 Sep 2017]	Family: Liliaceae Subfamily: Calochortoideae

503	**Nitrogen fixing woody plant**	**n**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 21 Sep 2017]	Family: Liliaceae Subfamily: Calochortoideae

504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**n**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Ohwi, J. 1965. Flora of Japan. Smithsonian Institution, Washington, D.C.	"Rhizomes short-creeping" [Generic description] "Perennial; stems 40-80 cm" [Species description]
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"The rhizome of Tricyrtis is stoloniform and mostly decaying every year, rarely thickened and surviving for a few years (T. macropoda)."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	**Notes**
	Ohwi, J. 1965. Flora of Japan. Smithsonian Institution, Washington, D.C.	"Honshu, Shikoku, Kyushu; rather common."
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 21 Sep 2017]	"Native: Asia-Temperate Eastern Asia: Japan"

602	Produces viable seed	y
	Source(s)	**Notes**
	Missouri Botanical Garden. 2017. Tricyrtis hirta. http://www.missouribotanicalgarden.org/. [Accessed 25 Sep 2017]	"Non-rhizomatous. May self-seed in optimum growing conditions."

603	Hybridizes naturally	
	Source(s)	**Notes**
	Satô, D. (1939). Cyto-genetical Studies on Tricyrtis, II. Cytologia, 10(1-2), 127-157	[Hybridization possible. Unknown if naturally occurring hybrids exist] "T. hirta has six SAT-chromosomes (2Lti+Lt2+3St) and T. formosana var. stolonifera has four SAT chromosomes (2Lt1+ 2St) and their hybrids have only three SAT-chromosomes, namely one long chromosome having a small satellite at the distal end (L1) and two short chromosomes having large satellites at their proximal ends."

604	Self-compatible or apomictic	y
	Source(s)	**Notes**
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"Tricyrtis is self-compatible and can produce seeds by self-pollination if no pollinators visit it (Takahashi 1987), but autogamy is usually avoided by pronounced protandry. Geitonogamy seems to occur rather frequently, because 1st-day and 2nd-day flowers bloom often on a single plant and are visited successively by the insects."

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

Qsn #	Question	Answer
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"The flower of Tricyrtis is morphologically very peculiar. It opens usually for 2 days (observed in 8 spp. of sect. Tricyrtis). The primary pollinator is Bombus diversus; B. honshuensis and Amegilla sp. (Anthophoridae) sometimes act as additional pollinators."

606	Reproduction by vegetative fragmentation	
	Source(s)	**Notes**
	Missouri Botanical Garden. 2017. Tricyrtis hirta. http://www.missouribotanicalgarden.org/. [Accessed 25 Sep 2017]	"Non-rhizomatous. May self-seed in optimum growing conditions." [In contrast to Harrison (2006)]
	Harrison, M. 2006. Groundcovers for the South. Pineapple Press Inc., Sarasota, FL	"Roots are rhizomatous, and plants spread slowly to form modest clumps." [In contrast to claims of Missouri Botanical Garden]

607	Minimum generative time (years)	
	Source(s)	**Notes**
	Perennials.com. 2017. Tricyrtis hirta. http://www.perennials.com/plants/tricyrtis-hirta.html. [Accessed 27 Sep 2017]	"Growth Rate - Medium"
	Ohwi, J. 1965. Flora of Japan. Smithsonian Institution, Washington, D.C.	"Perennial; stems 40-80 cm." [Age of reproductive maturity unknown]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	**Notes**
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"The flat seeds of Calochortus and Tricyrtis point to wind dispersal." [No evidence to date]

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**
	Dave's Garden. 2017. Tricyrtis Species, Hairy Toad Lily - Tricyrtis hirta. http://davesgarden.com/guides/pf/go/537/. [Accessed 25 Sep 2017]	Cultivated in multiple states in mainland US

703	Propagules likely to disperse as a produce contaminant	
	Source(s)	**Notes**
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"The flat seeds of Calochortus and Tricyrtis point to wind dispersal." ... "Tricyrtis IS frequently grown as an ornamental." [Unknown, but may be possible for seeds to become contaminants in soil around other potted ornamental plants]

704	Propagules adapted to wind dispersal	y

Qsn #	Question	Answer
	Source(s)	**Notes**
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"The flat seeds of Calochortus and Tricyrtis point to wind dispersal."

705	Propagules water dispersed	
	Source(s)	**Notes**
	Sunlight Gardens. 2017. Tricyrtis hirta - Toad Lily. https://sunlightgardens.com/products/11627. [Accessed 27 Sep 2017]	"Toad lily is a slowly spreading perennial that is native to shaded rocky cliffs and stream banks in Japan." [Occurrence along stream banks suggests potential for dispersal by water]

706	Propagules bird dispersed	n
	Source(s)	**Notes**
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"The flat seeds of Calochortus and Tricyrtis point to wind dispersal."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"The flat seeds of Calochortus and Tricyrtis point to wind dispersal." ... "seeds flattened, without elaiosomes" [No means of external attachment. No elaiosomes to attract ants]

708	Propagules survive passage through the gut	n
	Source(s)	**Notes**
	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."
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"The flat seeds of Calochortus and Tricyrtis point to wind dispersal."

Qsn #	Question	Answer
801	**Prolific seed production (>1000/m2)**	
	Source(s)	**Notes**
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"Fruit a linear ellipsoid, trigonous, usually septicidal, rarely irregularly rupturing capsule. Seeds flattened." [Generic description. Densities unknown]

802	**Evidence that a persistent propagule bank is formed (>1 yr)**	
	Source(s)	**Notes**
	Gough, R. E. & Moore-Gough, C. 2011. The Complete Guide to Saving Seeds: 322 Vegetables, Herbs, Fruits, Flowers, Trees, and Shrubs. Storey Publishing, North Adams, MA	"Seed Viability: Unknown"
	Royal Botanic Gardens Kew. (2017) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/. [Accessed 27 Sep 2017]	Unknown. No storage information available. Other species (Tricyrtis macropoda) possesses orthodox seeds

803	**Well controlled by herbicides**	
	Source(s)	**Notes**
	WRA Specialist. 2017. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	
	Source(s)	**Notes**
	WRA Specialist. 2017. Personal Communication	Unknown

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**
	WRA Specialist. 2017. Personal Communication	Unknown. No information on cultivation in the Hawaiian Islands

Summary of Risk Traits:

High Risk / Undesirable Traits
• Broad climate suitability (5 hardiness zones)
• Naturalized in Massachusetts
• Possibly unpalatable
• Shade tolerant
• Tolerates many soil types
• Reproduces by seed
• Self-compatible
• May be able to spread vegetatively (contradictory evidence)
• Seeds dispersed by wind, possible water & intentionally by people
• Limited ecological information reduces accuracy of risk prediction

Low Risk Traits
• No reports of invasiveness
• Unarmed (no spines, thorns, or burrs)
• Ornamental

Second Screening Results for Herbs or Low Stature Shrubby Life Forms

(A) Reported as a weed of cultivated lands? No.
Outcome = Accept (Low Risk)