

<b>Taxon:</b> <i>Torenia asiatica</i> L.	<b>Family:</b> Linderniaceae
<b>Common Name(s):</b> Ola'a beauty wishbone flower	<b>Synonym(s):</b> <i>Torenia glabra</i> Osbeck

<b>Assessor:</b> Chuck Chimera	<b>Status:</b> Assessor Approved	<b>End Date:</b> 12 Feb 2020
<b>WRA Score:</b> 12.0	<b>Designation:</b> H(HPWRA)	<b>Rating:</b> High Risk

**Keywords:** Annual, Naturalized, Ornamental, Spreads Vegetatively, 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	y
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed		
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	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		
604	Self-compatible or apomictic		
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
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)		
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m <sup>2</sup> )		
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
	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 of domestication] " <i>Torenia asiatica</i> is a popular lei flower and is cultivated on all of the main islands. A related species, <i>T. journeri</i> Lindl. ex Fourn., also called Ola'a beauty or nanioola'a, is also cultivated in Hawai'i for lei and differs from <i>T. asiatica</i> in its erect stems, ellipsoid calyx 7-11 mm long with strigose wings, and pale blue or white corolla."

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"	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 16 Jun 2017]	"Native: Asia-Temperate China: China - Zhejiang, - Fujian, - Hunan, - Hubei, - Jiangxi, - Guangdong, - Guizhou, - Sichuan, - Yunnan, - Guangxi, - Xizang, - Hainan Eastern Asia: Japan - Kyushu Asia-Tropical Indo-China: Vietnam"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 16 Jun 2017]	

Qsn #	Question	Answer
203	<b>Broad climate suitability (environmental versatility)</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Elevation range exceeds 1000 m, demonstrating environmental versatility] "Native to southern India; in Hawai'i sparingly naturalized in wet areas from Hilo to Volcano, 75-1,100 m, Hawai'i."

204	<b>Native or naturalized in regions with tropical or subtropical climates</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Native to southern India; in Hawai'i sparingly naturalized in wet areas from Hilo to Volcano, 75-1,100 m, Hawai'i. Cultivated prior to 1948 (Neal, 1948)"
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 16 Jun 2017]	"Native: Asia-Temperate China: China - Zhejiang, - Fujian, - Hunan, - Hubei, - Jiangxi, - Guangdong, - Guizhou, - Sichuan, - Yunnan, - Guangxi, - Xizang, - Hainan Eastern Asia: Japan - Kyushu Asia-Tropical Indo-China: Vietnam"

205	<b>Does the species have a history of repeated introductions outside its natural range?</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	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	"Several specie are grown as ornamentals; in Hawai'i three of them are cultivated, two of which have escaped and becon1e naturalized on the Big Island." ... "In the traditional taxonomic concept followed in the book, <i>T. asiatica</i> is a wide spread species ranging from peninsular India through Southeast Asia and southern China and frequently cultivated in other tropical regions"

301	<b>Naturalized beyond native range</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Staples, G.W., Imada, C.T., & Herbst, D.R. 2002. New Hawaiian plant records for 2000. Bishop Museum Occasional Papers 68: 3-18	"Native to Nepal, Bhutan, Assam, Vietnam, southern and central China, and the Japanese island of Kyushu (Yamazaki, 1985), the majority of Hawaiian specimens of naturalized <i>Torenia</i> are actually this species. Although widespread on the Big Island, a single weedy specimen has been collected at the back of Mānoa Valley in a wet, sheltered area. Interestingly, the earliest specimen collected (in 1977, Degener 35245) noted that this species is a "pretty exotic dangerously spreading among grass and moss."
	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 southern India; in Hawai'i sparingly naturalized in wet areas from Hilo to Volcano, 75-1,100 m, Hawai'i. Cultivated prior to 1948 (Neal, 1948)"
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 16 Jun 2017]	"Taxon: <i>Torenia glabra</i> Osbeck Synonym of <i>Torenia asiatica</i> "

Qsn #	Question	Answer
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	" <i>Torenia asiatica L.</i> Scrophulariaceae Total N° of Refs:6 Global Risk Score: 0.48 Rating: Low Preferred Climate/s: Tropical Origin: SE Asia Major Pathway/s: Ornamental Dispersed by: Humans, Escapee References: United States of America-CE- 617, United States of America-N-101, United States of America-N-301, United States of America-N-839, United States of America-N-1292, Global-CD-1611."

302	Garden/amenity/disturbance weed	y
	Source(s)	Notes
	Malon, M. (2020). USDA NRCS Civil Engineering Technician. Pers. Comm. 05 Feb	[Nuisance weed in crops and orchards, and potential to impact crop production. Impacts unquantified at this time] "It seems it is quite a nuisance but maybe this is just a bad year for it? It seems to be mostly a problem in orchards and with crop producers. I don't know that the physical implications on the crops are too detrimental, it is just a thick ground cover. One producer mentioned that he took a string trimmer to it and every piece of plant debris rooted and formed another plant. So it has some potential to be nasty. Several folks are trying different herbicide treatments."

303	Agricultural/forestry/horticultural weed	
	Source(s)	Notes
	Malon, M. (2020). USDA NRCS Civil Engineering Technician. Pers. Comm. 05 Feb	[Potential crop weed in Hawaii. Impacts unquantified] "It seems it is quite a nuisance but maybe this is just a bad year for it? It seems to be mostly a problem in orchards and with crop producers. I don't know that the physical implications on the crops are too detrimental, it is just a thick ground cover. "
	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

Qsn #	Question	Answer
	Office of the Gene Technology Regulator. 2008. The Biology of <i>Torenia</i> spp. ( <i>torenia</i> ). Version 2. Department of Health and Ageing, Australian Government	"A number of <i>Torenia</i> spp. are classified as "naturalized" or "weeds" in various parts of the world including <i>T. asiatica L.</i> (US), <i>T. bicolor</i> Dalz. (global), <i>T. concolor</i> Lindl. (global), <i>T. flava</i> Bth. (Java), <i>T. fournieri</i> Linden ex Fourn. [Guyana, Surinam French Guiana and the US, (Florida)], <i>T. polygonoides</i> Benth. (Thailand), <i>T. spicata</i> Engl. (global), <i>T. thouarsii</i> (Cham. & Schltld.) Kuntze. (global; Guyana, Surinam French Guiana) and <i>T. violacea</i> (Azaola ex Blanco) Pennell (Java, Global, Indonesia, The Tropics and China) (Randall 2002). <i>Torenia asiatica</i> and <i>Torenia glabra</i> are classified as potentially invasive in Hawaii (Staples et al. 2000). <i>Torenia. x hybrida</i> does not possess any characteristics typical of weeds since it does not produce any viable seed, cannot spread by vegetative means under natural conditions and does not produce any persistent vegetative structures."

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] "Annual herbs; stems decumbent, often rooting at the nodes, usually 1-3 dm long. Leaves ovate-deltate, 1-4.5 cm long, 0.5-2.6 cm wide, upper surface minutely scabrous, lower surface glabrous or very sparsely puberulent along the veins, margins coarsely serrate, apex obtuse to acuminate, base truncate to truncate-cordate, petioles 0.5-1 cm long."

402	Allelopathic	n
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. No evidence found

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.	"Annual herbs; stems decumbent" [No evidence of parasitism]

404	Unpalatable to grazing animals	n
	Source(s)	Notes
	Better Homes & Gardens. 2017. Wishbone Flower. <i>Torenia fournieri</i> . <a href="http://www.bhg.com/gardening/plant-dictionary/annual/wishbone-flower/">http://www.bhg.com/gardening/plant-dictionary/annual/wishbone-flower/</a> . [Accessed ]	"Deer Resistant" [Related taxon potentially unpalatable]

405	Toxic to animals	n
	Source(s)	Notes

Qsn #	Question	Answer
	Office of the Gene Technology Regulator. 2008. The Biology of <i>Torenia</i> spp. ( <i>torenia</i> ). Version 2. Department of Health and Ageing, Australian Government	"Throughout the world <i>Torenia</i> spp. are widely grown ornamental plants and are not known to be poisonous to people or other organisms. A comprehensive search of the scientific literature <sup>6</sup> and an examination of a number of toxic plant databases <sup>7</sup> (Cornell University Poisonous Plant Information Database; Canadian Poisonous Plants Information System; FDA Poisonous Plant Database; Toxic Plant Database, Veterinary Library, University of Illinois, USA; Toxic Plant Database, University of Purdue, USA) revealed no evidence that <i>torenia</i> has any toxic or allergenic potential to people or is toxic to other organisms."
	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

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Staples, G.W., Imada, C.T., & Herbst, D.R. 2002. New Hawaiian plant records for 2000. Bishop Museum Occasional Papers 68: 3-18	" <i>Torenia</i> s are easy to grow, requiring a reasonably fertile, moist soil in a location that is protected from intense sunlight; partial shade is suitable in Hawaii." [No information on pest or pathogens]
	Gilman, E.F. & Howe, T. 1999. <i>Torenia fournieri</i> . Fact Sheet FPS-584. University of Florida IFAS Extension. <a href="http://edis.ifas.ufl.edu">http://edis.ifas.ufl.edu</a> . [Accessed 19 Jun 2017]	[Information on related taxon] "Pest resistance: long-term health usually not affected by pests" ... "Pests and Diseases: <i>Torenia</i> had moderate to severe whitefly infestations in central Florida evaluation trials." [Whiteflies are a common pest]

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Office of the Gene Technology Regulator. 2008. The Biology of <i>Torenia</i> spp. ( <i>torenia</i> ). Version 2. Department of Health and Ageing, Australian Government	"Throughout the world <i>Torenia</i> spp. are widely grown ornamental plants and are not known to be poisonous to people or other organisms. A comprehensive search of the scientific literature <sup>6</sup> and an examination of a number of toxic plant databases <sup>7</sup> (Cornell University Poisonous Plant Information Database; Canadian Poisonous Plants Information System; FDA Poisonous Plant Database; Toxic Plant Database, Veterinary Library, University of Illinois, USA; Toxic Plant Database, University of Purdue, USA) revealed no evidence that <i>torenia</i> has any toxic or allergenic potential to people or is toxic to other organisms."
	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	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.	"Annual herbs" ... "in Hawai'i sparingly naturalized in wet areas from Hilo to Volcano" [No evidence. Unlikely given habit and habitat]

Qsn #	Question	Answer
409	Is a shade tolerant plant at some stage of its life cycle	y
	<b>Source(s)</b>	<b>Notes</b>
	George, S. 2009. Ornamental Plants. New India Publishing, New Delhi, India	"Torenia glabra ... Plants are shade-loving tender-stemmed perennial creepers adapted to the tropics."
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	<b>Source(s)</b>	<b>Notes</b>
	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	"Torenia are easy to grow, requiring a reasonably fertile, moist soil in a location that is protected from intense sunlight;"
411	Climbing or smothering growth habit	n
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Annual herbs; stems decumbent, often rooting at the nodes, usually 1-3 dm long. Leaves ovate-deltate, 1-4.5 cm long, 0.5- 2.6 cm wide, upper surface minutely scabrous, lower surface glabrous or very sparsely puberulent along the veins, margins coarsely serrate, apex obtuse to acuminate, base truncate to truncate-cordate, petioles 0.5-1 cm long."
412	Forms dense thickets	n
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"in Hawai'i sparingly naturalized in wet areas from Hilo to Volcano"
501	Aquatic	n
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Terrestrial herb] "in Hawai'i sparingly naturalized in wet areas from Hilo to Volcano, 75-1,100 m, Hawai'i."
502	Grass	n
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 16 Jun 2017]	Family: Linderniaceae
503	Nitrogen fixing woody plant	n
	<b>Source(s)</b>	<b>Notes</b>



Qsn #	Question	Answer
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 16 Jun 2017]	Family: Linderniaceae
504	<b>Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Annual herbs; stems decumbent, often rooting at the nodes, usually 1-3 dm long." [No evidence]
601	<b>Evidence of substantial reproductive failure in native habitat</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 19 Jun 2017]	"Native: Asia-Temperate China: China - Fujian, - Guangdong, - Guangxi, - Guizhou, - Hainan, - Hubei, - Hunan, - Jiangxi, - Sichuan, - Xizang, - Yunnan, - Zhejiang Eastern Asia: Japan - Kyushu Asia-Tropical Indo-China: Vietnam" [No evidence. Wide distribution]
602	<b>Produces viable seed</b>	y
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Capsule 1–1.3 cm. Seeds yellow, ca. 0.4 mm."
	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.	"Capsules oblong-ovoid, ca. 1 cm long, withered style persistent. Seeds oblong-ellipsoid, ca. 0.5 mm long, reticulate-pitted."
	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	"Propagation is equally easy from cuttings or seed, which are readily produced; in fact, naturalized populations on the Big Island probably originated from reseeded plants."
603	<b>Hybridizes naturally</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Office of the Gene Technology Regulator. 2008. The Biology of <i>Torenia</i> spp. ( <i>torenia</i> ). Version 2. Department of Health and Ageing, Australian Government	[Unknown. Artificial hybridization possible in genus] " <i>Torenia</i> x hybrid describes those plants derived from controlled crosses between <i>T. fournieri</i> and <i>T. concolor</i> (see Section 2.5). The flowers of <i>T. x hybrida</i> are both male and female sterile (Tanaka 2008)"
604	<b>Self-compatible or apomictic</b>	

Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Kuppler, J. (2016). Functional floral traits as mechanistic explanation for community structure. PhD Dissertation. Heinrich-Heine-University Düsseldorf, Düsseldorf	"Table A3. Native and introduced plant species observed in the study. Given are number of occurrences on plots, number of floral units (inflorescence or flower) on all plots, and reproductive properties of the plant species (V = vegetative reproduction, NV = no vegetative reproduction, SC = self-compatible, SI = self-incompatible, X = no information)." [Torenia glabra - Reproductive properties - X = no information]

605	Requires specialist pollinators	n
	<b>Source(s)</b>	<b>Notes</b>
	Office of the Gene Technology Regulator. 2008. The Biology of <i>Torenia</i> spp. ( <i>torenia</i> ). Version 2. Department of Health and Ageing, Australian Government	"The genera of Scrophulariaceae are mainly insect pollinated. <i>Torenia</i> spp. (excluding <i>T. x hybrida</i> ) are apparently insect pollinated and produce numerous seeds. One of the parents of <i>T. x hybrida</i> ( <i>T. fournieri</i> ) is mainly bee pollinated (Yamazaki 1985; Fischer 2004). In Thailand, pollen from <i>T. fournieri</i> is a food source for several species of stingless bees (Jongjitvimol & Wattanachaiyingcharoen 2006). In North America, hummingbirds are reportedly attracted to the flowers of <i>T. fournieri</i> (Cornell University 2006) and may therefore act as potential pollinators."

606	Reproduction by vegetative fragmentation	y
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Annual herbs; stems decumbent, often rooting at the nodes, usually 1-3 dm long."
	Malon, M. (2020). USDA NRCS Civil Engineering Technician. Pers. Comm. 05 Feb	"One producer mentioned that he took a string trimmer to it and every piece of plant debris rooted and formed another plant."

607	Minimum generative time (years)	1
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Annual herbs; stems decumbent, often rooting at the nodes, usually 1-3 dm long."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	Staples, G.W., Imada, C.T., & Herbst, D.R. 2002. New Hawaiian plant records for 2000. Bishop Museum Occasional Papers 68: 3-18	[Collected along roads. Possibly moved by vehicles, or adapted to disturbed sites] "Material examined. O'AHU: Honolulu, Lyon Arboretum, weedy groundcover, naturalizing in section H-34, 4 Sep 1996, K. Shigematsu s.n. (BISH 645937). HAWAI'I: South Hilo Distr., Waiäkea, Keaukaha Military Reservation, 19° 43' N, 155° 25' W, elev. 60 ft, 5 Jul 1996, D.R. Herbst 9781; Hilo Forest Reserve, Humu'ula Trail, elev. 2800 ft, 21 Oct 1982, R. Imoto (ESP) 372; Puna Distr., Kamoamoahupua'a, Volcano Rd. on lava flow below Pu'u Kamoamoah, elev. ca. 2360 ft, 6 Jun 1979, J.D. Jacobi & P.K. Higashino 1334; Hawai'i Volcanoes National Park, Small Tract, 'öla'a, more than 0.5 mile from road in closed Cibotium/Metrosideros forest, elev. 3900 ft, L.W. Cuddihy 1918; NW of Glenwood, on North Peck Rd., 6 Sep 1980, F.R. Fosberg 60544; near Mountain View, along back roads, elev. ca. 1500 ft, 1 Apr 1983, K. Nagata 2642; land of 'öla'a, along North Kūlani Rd., about 1/2 mile from Mountain View, elev. 1400 ft, 16 Dec 1975, D. Herbst & S. Ishikawa 5595; Volcano, abandoned forestry cabin on Kalanikoa St., 13 Jun 1977, O. Degener 35245."

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	"Several species are grown as ornamentals; in Hawai'i three of them are cultivated, two of which have escaped and become naturalized on the Big Island."

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.	[Small seeds may contaminate other plants or soil grown in proximity] "A related species, <i>T.ournieri</i> Lindl. ex Fourn., also called Ola'a beauty or nanioola'a, is also cultivated in Hawai'i for lei and differs from <i>T. asiatica</i> in its erect stems, ellipsoid calyx 7-11 mm long with strigose wings, and pale blue or white corolla."

704	Propagules adapted to wind dispersal	y
	Source(s)	Notes
	Office of the Gene Technology Regulator. 2008. The Biology of <i>Torenia</i> spp. ( <i>torenia</i> ). Version 2. Department of Health and Ageing, Australian Government	"A special case of poricidy occurs in <i>T.ournieri</i> where the fruiting body opens adjacent to the septum on each side producing longitudinal pores. This is followed by the septa separating from the placenta emptying the capsule while the septum splits (Kadereit 2008). At the time of poricidal dehiscence of the capsule the calyx splits longitudinally. In <i>Torenia</i> spp. (excluding <i>T. x hybrida</i> ), seeds are numerous, minute and wind dispersed (Yamazaki 1985; Fischer 2004)."

705	Propagules water dispersed	
	Source(s)	Notes

Qsn #	Question	Answer
	Office of the Gene Technology Regulator. 2008. The Biology of <i>Torenia</i> spp. ( <i>torenia</i> ). Version 2. Department of Health and Ageing, Australian Government	[Wind-dispersed, but small size may aid in secondary dispersal by water] "A special case of poricidy occurs in <i>T. fournieri</i> where the fruiting body opens adjacent to the septum on each side producing longitudinal pores. This is followed by the septa separating from the placenta emptying the capsule while the septum splits (Kadereit 2008). At the time of poricidal dehiscence of the capsule the calyx splits longitudinally. In <i>Torenia</i> spp. (excluding <i>T. x hybrida</i> ), seeds are numerous, minute and wind dispersed (Yamazaki 1985; Fischer 2004)."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Office of the Gene Technology Regulator. 2008. The Biology of <i>Torenia</i> spp. ( <i>torenia</i> ). Version 2. Department of Health and Ageing, Australian Government	"In <i>Torenia</i> spp. (excluding <i>T. x hybrida</i> ), seeds are numerous, minute and wind dispersed"

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Office of the Gene Technology Regulator. 2008. The Biology of <i>Torenia</i> spp. ( <i>torenia</i> ). Version 2. Department of Health and Ageing, Australian Government	[No means of external attachment. Small size could aid in attachment to animals] "In <i>Torenia</i> spp. (excluding <i>T. x hybrida</i> ), seeds are numerous, minute and wind dispersed"

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. <i>Plant Protection Quarterly</i> , 25(2): 56-74	[No evidence] "Answer [no] where the taxon is unlikely to be eaten by animals or if seeds are not viable following passage through the gut."

801	Prolific seed production (>1000/m2)	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.	"Capsules septicidal. Seeds numerous." [Generic description]
	Office of the Gene Technology Regulator. 2008. The Biology of <i>Torenia</i> spp. ( <i>torenia</i> ). Version 2. Department of Health and Ageing, Australian Government	"Following fertilization, the ovary develops into a fruit classified as a capsule, containing tiny seeds (0.5mm long and 0.3mm wide)." [Seeds small, but densities unknown]

Qsn #	Question	Answer
802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Royal Botanic Gardens Kew. (2017) Seed Information Database (SID). Version 7.1. Available from: <a href="http://data.kew.org/sid/">http://data.kew.org/sid/</a> . [Accessed 19 Jun 2017]	Unknown. Three related taxa with orthodox seeds

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. Despite weediness, no information on herbicide efficacy or chemical control of this species found

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	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	[Possibly. Tolerates regular pruning] "A sprawling, sparsely leaved plant, <i>T. asiatica</i> requires regular pruning to maintain a compact growth form."

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] "in Hawai'i sparingly naturalized in wet areas from Hilo to Volcano, 75-1,100 m"

**Summary of Risk Traits:**

## High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Thrives in tropical climates
- Naturalized on Hawaii Island and Oahu
- Other species have become invasive
- Deer resistant (possibly unpalatable)
- Shade tolerant
- Able to spread vegetatively (roots at nodes)
- Annual (able to reach maturity in one growing season)
- Seeds dispersed by wind & intentionally by people
- Prolific seed production (densities unknown)
- Tolerates regular pruning

## Low Risk Traits

- Despite naturalization, no reports of detrimental impacts
- Unarmed (no spines, thorns, or burrs)
- Non-toxic
- Ornamental (lei flower)