

Taxon: <i>Picris hieracioides</i> L.	Family: Asteraceae
Common Name(s): hawkweed hawkweed oxtongue	Synonym(s): <i>Picris hieracioides</i> subsp. <i>hieracioides</i>

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 10 Oct 2017
WRA Score: 11.0	Designation: H(HPWRA)	Rating: High Risk

Keywords: Annual Herb, Weedy, Unpalatable, Self-Incompatible, Wind-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
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
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
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
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
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
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
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
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed		

Qsn #	Question	Answer Option	Answer
303	Agricultural/forestry/horticultural weed		
304	Environmental 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
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
402	Allelopathic		
403	Parasitic	y=1, n=0	n
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	y
404	Unpalatable to grazing animals	y=1, n=-1	y
405	Toxic to animals	y=1, n=0	n
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens	y=1, n=0	y
406	Host for recognized pests and pathogens	y=1, n=0	y
407	Causes allergies or is otherwise toxic to humans	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
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	n
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	n
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
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
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets		
412	Forms dense thickets		
501	Aquatic	y=5, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	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
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally		
603	Hybridizes naturally		
604	Self-compatible or apomictic	y=1, n=-1	n
604	Self-compatible or apomictic	y=1, n=-1	n
605	Requires specialist pollinators	y=-1, n=0	n
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	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
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)	y=1, n=-1	y
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	y
702	Propagules dispersed intentionally by people	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	n
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	y
704	Propagules adapted to wind dispersal	y=1, n=-1	y
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	y
708	Propagules survive passage through the gut	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m ²)	y=1, n=-1	y

Qsn #	Question	Answer Option	Answer
801	Prolific seed production (>1000/m ²)	y=1, n=-1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	n
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	n
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		
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] "Native to Eurasia; in Hawai'i naturalized usually in relatively dry areas on Lana'i and Hawai'i. First collected on Lana'i in 1930 (Munro 540, BISH)."

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

Qsn #	Question	Answer
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
	<p>USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 9 Oct 2017]</p>	<p>"Native: Asia-Temperate Caucasus: Armenia; Azerbaijan; Georgia; Russian Federation - Dagestan; Russian Federation-Ciscaucasia - Ciscaucasia China: China - Anhui, - Gansu, - Guizhou, - Hebei, - Heilongjiang, - Henan, - Jilin, - Liaoning, - Nei Monggol, - Qinghai, - Shaanxi, - Shandong, - Shanxi, - Sichuan, - Xinjiang, - Xizang, - Yunnan Eastern Asia: Japan - Hokkaido, - Honshu, - Kyushu, - Shikoku; Korea Middle Asia: Kazakhstan; Kyrgyzstan Mongolia: Mongolia Russian Far East: Russian Federation - Amur, - Khabarovsk, - Kurile Islands, - Primorye, - Sakhalin Siberia: Russian Federation - Altay, - Buryatia, - Chita, - Gorno-Altay, - Irkutsk, - Kemerovo, - Krasnoyarsk, - Kurgan, - Novosibirsk, - Omsk, - Tomsk, - Tuva, - Tyumen Western Asia: Syria; Turkey Asia-Tropical Indian Subcontinent: Bhutan; India - Himachal Pradesh, - Jammu and Kashmir, - Meghalaya, - Sikkim, - Uttar Pradesh; Nepal Europe Eastern Europe: Belarus; Estonia; Latvia; Lithuania; Moldova; Russian Federation-European part - European part; Ukraine Middle Europe: Austria; Belgium; Czech Republic; Germany; Hungary; Netherlands; Poland; Slovakia; Switzerland Northern Europe: Denmark; Finland; Sweden Southeastern Europe: Albania; Bosnia and Herzegovina; Bulgaria; Croatia; Greece; Italy; Macedonia; Montenegro; Romania; Serbia; Slovenia Southwestern Europe: France; Portugal; Spain"</p>

202	Quality of climate match data	High
	Source(s)	Notes
	<p>USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 9 Oct 2017]</p>	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	Notes
	<p>Plants for a Future. 2017. <i>Picris hieracioides</i>. www.pfaf.org/user/Plant.aspx?LatinName=Picris+hieracioides</p>	"USDA hardiness: 5-9"

Qsn #	Question	Answer
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	[Elevation range exceeds 3400 m, demonstrating environmental versatility] "Grasslands, mountain slopes, forests, along ditches, fields, wastelands, sandy soils; 200–3600 m."

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 naturalized usually in relatively dry areas on Lana'i and Hawai'i."
	Oppenheimer, H. 2008. New Hawaiian plant records for 2007. Bishop Museum Occasional Papers 100: 22-38	"Many plants on the leeward south side of the island appeared to have been browsed by feral goats but not devoured, and this species is apparently unpalatable and possibly poisonous to them. Material examined. MOLOKA'I: Kawela drainage, along switchback trail W of Kawela tunnel, 1100 m, 29 Aug 2007, Oppenheimer & Perlman H80705; Waiakuilani Gulch, eastern headwaters, 940 m, 30 Aug 2007, Oppenheimer & Perlman H80708."
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 9 Oct 2017]	"Native: ... Asia-Tropical - Indian Subcontinent: Bhutan; India - Himachal Pradesh, - Jammu and Kashmir, - Meghalaya, - Sikkim, - Uttar Pradesh; Nepal"
	Oppenheimer, H. 2013. New Hawaiian plant records for 2012. Bishop Museum Occasional Papers 114: 17–20	"Previously documented from Moloka'i, Lāna'i, and Hawai'i (Wagner et al. 1999: 350; Oppenheimer 2008: 24) this herb was found growing in a mesic shrubland area that had burned three years prior. Material examined. MAUI: West Maui, Lahaina district, slopes of Helu, 1052 m, 16 Feb 2010, Oppenheimer et al. H21005."

205	Does the species have a history of repeated introductions outside its natural range?	y
	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 9 Oct 2017]	"Naturalized: Africa - Southern Africa: South Africa - KwaZulu-Natal. Australasia - Australia: Australia New Zealand: New Zealand Europe - Southwestern Europe: France - Corsica. Northern America - Eastern Canada: Canada - Ontario North-Central U.S.A.: United States - Illinois, - Missouri Northeastern U.S.A.: United States - Connecticut, - Massachusetts, - Michigan, - New Jersey, - New York, - Ohio, - Pennsylvania, - Rhode Island, - Vermont Northwestern U.S.A.: United States - Washington Southeastern U.S.A.: United States - Kentucky, - Maryland, - North Carolina, - Tennessee, - Virginia. Pacific - North-Central Pacific: United States - Hawaii. Adventive: Europe - Northern Europe: Ireland"
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	" <i>Picris hieracioides</i> has also been introduced to SE Africa and North America."

301	Naturalized beyond native range	y
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Qsn #	Question	Answer
	Source(s)	Notes
	Oppenheimer, H. 2008. New Hawaiian plant records for 2007. Bishop Museum Occasional Papers 100: 22-38	"Known in Hawai'i from the islands of Lāna'i and Hawai'i (Wagner et al. 1999a: 350), this Eurasian hawkweed is well established on Moloka'i. Besides the collections cited here, it was also observed in the Moloka'i Forest Reserve along a disturbed, unpaved roadside. Many plants on the leeward south side of the island appeared to have been browsed by feral goats but not devoured, and this species is apparently unpalatable and possibly poisonous to them. Material examined. MOLOKA'I: Kawela drainage, along switchback trail W of Kawela tunnel, 1100 m, 29 Aug 2007, Oppenheimer & Perlman H80705; Waiakuilani Gulch, eastern headwaters, 940 m, 30 Aug 2007, Oppenheimer & Perlman H80708."
	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 Eurasia; in Hawai'i naturalized usually in relatively dry areas on Lana'i and Hawai'i. First collected on Lana'i in 1930 (Munro 540, BISH)."
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed]	"Naturalized: Africa Southern Africa: South Africa - KwaZulu-Natal Australasia Australia: Australia New Zealand: New Zealand Europe Southwestern Europe: France - Corsica Northern America Eastern Canada: Canada - Ontario North-Central U.S.A.: United States - Illinois, - Missouri Northeastern U.S.A.: United States - Connecticut, - Massachusetts, - Michigan, - New Jersey, - New York, - Ohio, - Pennsylvania, - Rhode Island, - Vermont Northwestern U.S.A.: United States - Washington Southeastern U.S.A.: United States - Kentucky, - Maryland, - North Carolina, - Tennessee, - Virginia Pacific North-Central Pacific: United States - Hawaii Adventive: Europe Northern Europe: Ireland"
	Oppenheimer, H. 2013. New Hawaiian plant records for 2012. Bishop Museum Occasional Papers 114: 17–20	"Previously documented from Moloka'i, Lāna'i, and Hawai'i (Wagner et al. 1999: 350; Oppenheimer 2008: 24) this herb was found growing in a mesic shrubland area that had burned three years prior. Material examined. MAUI: West Maui, Lahaina district, slopes of Helu, 1052 m, 16 Feb 2010, Oppenheimer et al. H21005."

302	Garden/amenity/disturbance weed	y
	Source(s)	Notes
	Washington State Noxious Weed Control Board. 2017. Oxtongue Hawkweed. <i>Picris hieracioides</i> . https://www.nwcb.wa.gov . [Accessed 10 Oct 2017]	"It grows in meadows, grain fields, cultivated fields, clear cuts and waste places."

Qsn #	Question	Answer
	Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. & Leigh, J.H. 2011. Plants of Western New South Wales. CSIRO Publishing, Collingwood, Australia	"Its covering of somewhat prickly hairs probably makes hawkweed unattractive to stock and it is generally regarded as a weed, although it rarely occurs in sufficient quantity to be a pest."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Canola, Cereals, Grapevines, Orchards & Plantations, Pastures" [Potential agricultural weed, but impacts on crops not specified. At minimum, a weed adapted to disturbed sites]

303	Agricultural/forestry/horticultural weed	
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Canola, Cereals, Grapevines, Orchards & Plantations, Pastures"

304	Environmental weed	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.	"Native to Eurasia; in Hawai'i naturalized usually in relatively dry areas on Lana'i and Hawai'i." [Not regarded as a significant environmental weed in the Hawaiian Islands]
	Holzappel, S. (1994). A Revision of the Genus <i>Picris</i> (Asteraceae, Lactuceae) s.l. in Australia. Willdenowia, 24 (1/2), 97-218	"Two of the introduced species, <i>P. altissima</i> and <i>P. hieracioides</i> , have apparently not established themselves in Australia and, if still present at all, they can not be regarded as weeds of any importance today."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Cited as an environmental weed, but unable to confirm negative impacts

305	Congeneric weed	y
	Source(s)	Notes
	DiTomaso, J. M., Kyser, G. B., Oneto, et al. 2013. Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California, Davis, CA	" <i>Picris echinoides</i> ... Impacts: Can form dense stands in rangelands and other areas near coastal grasslands."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	A number of <i>Picris</i> species have been cited as naturalized and/or weeds

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] "Biennial or short-lived perennial herbs, densely hirsute or hispid, many of the hairs branched. Leaves often quickly deciduous, oblanceolate to lanceolate or oblong, 7-30 cm long, 0.5-5 cm wide, usually abruptly reduced in upper part of stem."

402	Allelopathic	
	Source(s)	Notes

Qsn #	Question	Answer
	Takemura, T., Sakuno, E., Kamo, T., Hiradate, S., & Fujii, Y. 2013. Screening of the Growth-Inhibitory Effects of 168 Plant Species against Lettuce Seedlings. American Journal of Plant Sciences, 4(5): 1095-1104	[<i>Picris hieracioides</i> subsp. <i>japonica</i> - EC50 value = 25.2 (15.8 - 40.8). Possibly allelopathic, but higher concentrations needed than in other species tested] "The methanol extracts of 168 plant species from 68 families were evaluated for their inhibitory activity against lettuce seedling elongation. Among the plant species tested, 12 species had EC50 values for radicle growth inhibition ranging from 0.01 to 5.00 mg fresh weight equivalent mL ⁻¹ . <i>Enterolobium contortisiliquum</i> , a traditionally used herbal medicine, exhibited the strongest inhibitory activity (estimated EC50: 0.28 fresh weight equivalent mL ⁻¹). Among the 12 species, <i>Pachysandra terminalis</i> , <i>Tamarindus indica</i> , and <i>Albizia guachapele</i> required investigation, because only little has been reported about their chemical constituents to date. The data in the present study would be useful in finding new lead compounds for natural herbicides."

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.	"Biennial or short-lived perennial herbs, densely hirsute or hispid, many of the hairs branched." [Asteraceae. No evidence]

404	Unpalatable to grazing animals	y
	Source(s)	Notes
	Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. & Leigh, J.H. 2011. Plants of Western New South Wales. CSIRO Publishing, Collingwood, Australia	"Its covering of somewhat prickly hairs probably makes hawkweed unattractive to stock and it is generally regarded as a weed, although it rarely occurs in sufficient quantity to be a pest."
	Oppenheimer, H. 2008. New Hawaiian plant records for 2007. Bishop Museum Occasional Papers 100: 22-38	"Many plants on the leeward south side of the island appeared to have been browsed by feral goats but not devoured, and this species is apparently unpalatable and possibly poisonous to them."
	Gillbank, L. (2014). The weed that was not: <i>Picris hieracioides</i> (Asteraceae) in Australia. <i>Muelleria</i> , 32, 39-51	"They are not poisonous but useless or even objectionable in fodder'."

405	Toxic to animals	n
	Source(s)	Notes
	Gillbank, L. (2014). The weed that was not: <i>Picris hieracioides</i> (Asteraceae) in Australia. <i>Muelleria</i> , 32, 39-51	"In The weeds, poison plants, and naturalized aliens of Victoria, Ewart (1909b) reported that both <i>P. echioides</i> 'The Ox Tongue' and <i>P. hieracioides</i> 'Sometimes termed the Hawkweed <i>Picris</i> ' were 'likely to prove troublesome if neglected, but can be kept down by cultivation, and the prevention of seeding. They are not poisonous but useless or even objectionable in fodder'."
	Washington State Noxious Weed Control Board. 2017. Oxtongue Hawkweed. <i>Picris hieracioides</i> . https://www.nwcb.wa.gov . [Accessed 10 Oct 2017]	"Is this Weed Toxic?: not known to be"
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Whole plant used for lungs and headache." [No evidence. Medicinal uses]

Qsn #	Question	Answer
	Cornell University. 2017. Plants Poisonous to Livestock and other Animals. http://poisonousplants.ansci.cornell.edu/index.html . [Accessed 10 Oct 2017]	No evidence

406	Host for recognized pests and pathogens	y
	Source(s)	Notes
	Mesturino, L. (1990). Possible hosts of <i>Verticillium dahliae</i> Kleb. among weeds infesting a Tuscan olive grove. <i>Rivista di Patologia Vegetale</i> , 26(2-3), 59-67	"Abstract : A total of 51 plant species of 19 families were identified in a Tuscan olive grove in Italy, and 39 species were inoculated with <i>V. dahliae</i> . The fungus colonized 18 species, 6 of which had been previously known as <i>V. dahliae</i> hosts. The fungus was readily reisolated from <i>Picris hieracioides</i> , <i>Galium album</i> , <i>Veronica persica</i> and <i>Torilis arvensis</i> , but only <i>Amaranthus retroflexus</i> showed disease symptoms on inoculation. It is concluded that weeds may be important in the epidemiology of <i>V. dahliae</i> in olive groves. "

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Washington State Noxious Weed Control Board. 2017. Oxtongue Hawkweed. <i>Picris hieracioides</i> . https://www.nwcb.wa.gov . [Accessed 10 Oct 2017]	"Is this Weed Toxic?: not known to be"
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Whole plant used for lungs and headache." [No evidence. Medicinal uses]

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.	"in Hawai'i naturalized usually in relatively dry areas on Lana'i and Hawai'i." [May contribute to fuel load, but relative contribution to fire risk compared to non-native grasses probably minor]
	Castillo, J. M., McAdams, A., Nakahara, M., Weise, D., & Enriquez, G. (2006). Effects of Prescribed Grazing and Burning Treatments on Fire Regimes in Alien Grass-dominated Wildland-Urban Interface Areas, Leeward Hawaii. Final Report to the Joint Fire Science Program Project No. 01-3-4-14	"Table 4. Herbaceous Fuel Species Frequency (Average Frequency--% occurrence Among 24 Treatment Units--3 replicates of 8 treatment combinations)." [<i>Picris hieracioides</i> = 0.4%; low frequency after 2 years]

Qsn #	Question	Answer
409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Plants for a Future. 2017. <i>Picris hieracioides</i> . www.pfaf.org/user/Plant.aspx?LatinName=Picris+hieracioides	"It cannot grow in the shade."
	NatureGate. 2017. Hawkweed Oxtongue. <i>Picris hieracioides</i> . http://www.luontoportti.com/suomi/en/kukkakasvit/hawkweed-oxtongue . [Accessed 10 Oct 2017]	"It is able to persevere in thickets and even in the shade of young forests, but only as a pitiful leaf rosette – it is unable to flower or produce seeds. Hawkweed oxtongue’s last refuges are light-filled roadside edges and embankments."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Interhort. 2017. Bristly Oxtongue (<i>Picris Hieracioides</i>). http://www.interhort.com/pages/Bristly%20Oxtongue.php . [Accessed 10 Oct 2017]	"Preferred Habitat - All soil types"
	Practical Plants. 2017. <i>Picris hieracioides</i> - Hawkweed Ox-Tongue. http://practicalplants.org/wiki/Picris_hieracioides . [Accessed 10 Oct 2017]	"Prefers a dryish soil but succeeds in most soils"
	Plants for a Future. 2017. <i>Picris hieracioides</i> . www.pfaf.org/user/Plant.aspx?LatinName=Picris+hieracioides	"Suitable for: light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils and can grow in very alkaline soils."

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.	"Biennial or short-lived perennial herbs, densely hirsute or hispid, many of the hairs branched."

412	Forms dense thickets	
	Source(s)	Notes
	Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. & Leigh, J.H. 2011. Plants of Western New South Wales. CSIRO Publishing, Collingwood, Australia	"Hawkweed usually occurs as scattered plants, or in the more favoured habitats it may be found in small groups."
	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 naturalized usually in relatively dry areas on Lana'i and Hawai'i"
	Holzappel, S. (1994). A Revision of the Genus <i>Picris</i> (Asteraceae, Lactuceae) s.l. in Australia. <i>Willdenowia</i> , 24 (1/2), 97-218	"Two of the introduced species, <i>P. altissima</i> and <i>P. hieracioides</i> , have apparently not established themselves in Australia and, if still present at all, they can not be regarded as weeds of any importance today."

501	Aquatic	n
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Qsn #	Question	Answer
	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 naturalized usually in relatively dry areas on Lana'i and Hawai'i."
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	[Terrestrial] "Herbs 16–120 cm tall, annual or short-lived perennial." ... "Grasslands, mountain slopes, forests, along ditches, fields, wastelands, sandy soils; 200–3600 m."

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 9 Oct 2017]	Family: Asteraceae (alt.Compositae) Subfamily: Cichorioideae Tribe: Cichorieae Subtribe: Hypochaeridinae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	"Herbs 16–120 cm tall, annual or short-lived perennial." [Asteraceae]

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.	"Biennial or short-lived perennial herbs, densely hirsute or hispid, many of the hairs branched. Leaves often quickly deciduous, oblanceolate to lanceolate or oblong, 7-30 cm long, 0.5-5 cm wide, usually abruptly reduced in upper part of stem."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	[No evidence. Widespread native & introduced ranges] "Grasslands, mountain slopes, forests, along ditches, fields, wastelands, sandy soils; 200–3600 m. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jilin, Shaanxi, Shandong, Shanxi, Sichuan, Xizang, Yunnan [Bhutan, N India, Kashmir, Kazakhstan, W Russia, Vietnam; SW Asia, Europe, Mediterranean region]. <i>Picris hieracioides</i> has also been introduced to SE Africa and North America."

602	Produces viable seed	y
	Source(s)	Notes
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	"Achene brown, fusiform, 3–5 mm, apex truncate. Pappus 5–6 mm, caducous."

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.	"Achenes longitudinally grooved, rugose, 3.5-6 mm long, narrowed above or with a very short beak."
	Roberts, H. A., & Neilson, J. E. (1981). Seed survival and periodicity of seedling emergence in twelve weedy species of Compositae. <i>Annals of Applied Biology</i> , 97(3), 325-334	"Achenes of 12 species of Compositae were collected in each of 3 years and mixed with the top 7.5 cm of sterilised soil which was confined in cylinders sunk in the ground outdoors and cultivated three times yearly. Seedling emergence was recorded for 5 yr and the numbers of viable seeds remaining then determined. Emergence of <i>Arctium lappa</i> , <i>A. minus</i> , <i>Picris hieracioides</i> , <i>Taraxacum officinale</i> , <i>Sonchus arvensis</i> and <i>S. asper</i> was mainly in spring. Seedlings of <i>Chrysanthemum segetum</i> , <i>Lapsana communis</i> , <i>Anthemis cotula</i> and <i>Sonchus oleraceus</i> were often most numerous in spring but also emerged at other times, while <i>Matricaria matricarioides</i> and <i>M. recutita</i> showed no consistent seasonal pattern of emergence. Except for <i>C. segetum</i> and <i>A. cotula</i> , in which there was evidence of innate dormancy imposed by the seed coat, the numbers of seedlings were greatest in the first year and thereafter decreased approximately exponentially from year to year. Few viable seeds of <i>A. lappa</i> or <i>A. minus</i> remained after 5 yr and those of <i>T. officinale</i> , <i>P. hieracioides</i> and <i>S. arvensis</i> accounted for less than 1.5% of the seeds sown. Seed survival was greatest in the annual weeds and ranged from 2.1% (<i>S. asper</i>) to 8.6% (<i>M. matricarioides</i>) after 5 yr."
	Washington State Noxious Weed Control Board. 2017. Oxtongue Hawkweed. <i>Picris hieracioides</i> . https://www.nwcb.wa.gov . [Accessed 10 Oct 2017]	"Oxtongue hawkweed reproduces by seed."

603	Hybridizes naturally	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown

604	Self-compatible or apomictic	n
	Source(s)	Notes
	Slovák, M., Šingliarová, B., & Mráz, P. (2007). Chromosome numbers and mode of reproduction in <i>Picris hieracioides</i> s.l. (Asteraceae), with notes on some other <i>Picristaxa</i> . <i>Nordic Journal of Botany</i> , 25(3-4), 238-244	"In <i>P. hieracioides</i> s.l. only strict allogamy was found, demonstrating the presence of a self-incompatibility system in this species. Because apomixis, namely apospory, has previously been reported in <i>P. hieracioides</i> , castration experiments were performed in order to confirm or reject this report. However, no evidence of apomictic seed formation was found within this species. In the light of our results, <i>P. hieracioides</i> should be considered a strictly sexual taxon."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. <i>Flora of China</i> Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	"Synflorescence corymbiform to corymbosely paniculiform, with some to many capitula. Peduncle slender. Involucre cylindrical-campanulate to ovoid, 0.9–1.2 cm. Phyllaries abaxially with whitish rigid 2-hooked hairs along midrib; outer and inner phyllaries ± linear-lanceolate, apex acute to acuminate. Florets yellow."

Qsn #	Question	Answer
	Plants for a Future. 2017. <i>Picris hieracioides</i> . www.pfaf.org/user/Plant.aspx?LatinName=Picris+hieracioides	"The flowers are hermaphrodite (have both male and female organs) and are pollinated by Bees, flies, self, apomictic. The plant is self-fertile."
	Frund, J., Linsenmair, K. E., & Bluthgen, N. (2010). Pollinator diversity and specialization in relation to flower diversity. <i>Oikos</i> , 119(10), 1581-1590	"The halictid bee <i>Lasioglossum villosulum</i> was clearly specialized, it preferred <i>Picris hieracioides</i> on all sites where both were present, and it was only observed on the subfamily Cichorioideae of Asteraceae in the whole study."

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	"Herbs 16–120 cm tall, annual or short-lived perennial. Taproot stout. Stem erect, branched especially in apical third, hirsute with spreading rigid 2-hooked hairs, leafy." [No evidence]

607	Minimum generative time (years)	1
	Source(s)	Notes
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	[Annual or perennial] "Herbs 16–120 cm tall, annual or short-lived perennial. Taproot stout. Stem erect, branched especially in apical third, hirsute with spreading rigid 2-hooked hairs, leafy."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
	Source(s)	Notes
	Hants Plants. 2015. Asteraceae tribe Cichorieae Workshop Notes. http://www.hantsplants.org.uk/docs/Asteraceae%20Cichorieae%20workshop%20notes.pdf . [Accessed 10 Oct 2017]	"It is a plant of grassland and rough ground particularly on free-draining soils, and appears to be going through a phase of spread in Hampshire on roadsides around some of the towns."
	Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. & Leigh, J.H. 2011. Plants of Western New South Wales. CSIRO Publishing, Collingwood, Australia	[Occurs along roadsides] "Mainly on grey clay soils (often non self-mulching types) in open areas in black box, coolibah and river red gum communities; also along roadsides."
	Gilman, B. 2014. Biological Survey for Invasive Species in Loon Lake and the Surrounding Watershed, Steuben County, New York. Finger Lakes Community College, Canandaigua, NY	[Pappus & leaves may aid in dispersal] "A perennial native of Europe and Asia, the ox-tongue has a yellow inflorescence resembling a hawkweed, and alternate leaves covered on the upper surface with hooked bristles that cause the leaf to stick to clothing. It is common in the Loon Lake watershed in disturbed soils as well as successional old fields. Hair-like pappus contributes to widespread wind dispersal of the tiny seeds."

702	Propagules dispersed intentionally by people	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Animals, Water, Wind" [No evidence of intentional introduction in Hawaiian Islands or tropical Pacific]

703	Propagules likely to disperse as a produce contaminant	y
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Qsn #	Question	Answer
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Contaminant, Crop, Herbal, Ornamental"

704	Propagules adapted to wind dispersal	y
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Animals, Water, Wind"
	Gilman, B. 2014. Biological Survey for Invasive Species in Loon Lake and the Surrounding Watershed, Steuben County, New York. Finger Lakes Community College, Canandaigua, NY	"Hair-like pappus contributes to widespread wind dispersal of the tiny seeds."
	Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. & Leigh, J.H. 2011. Plants of Western New South Wales. CSIRO Publishing, Collingwood, Australia	"Seeds spindle-shaped but curved, 7-8 mm long, longitudinally furrowed and transversely wrinkled, tapering to a short slender column which is surmounted by a tuft or feathery bristles united into a short ring at the base, the tuft falling off in one piece."

705	Propagules water dispersed	y
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Animals, Water, Wind"
	Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. & Leigh, J.H. 2011. Plants of Western New South Wales. CSIRO Publishing, Collingwood, Australia	"Scattered through the north-western pan of the region, mainly along the Darling River floodplain and in the Broken Hill district."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. & Leigh, J.H. 2011. Plants of Western New South Wales. CSIRO Publishing, Collingwood, Australia	"Seeds spindle-shaped but curved, 7-8 mm long, longitudinally furrowed and transversely wrinkled, tapering to a short slender column which is surmounted by a tuft or feathery bristles united into a short ring at the base, the tuft falling off in one piece."

707	Propagules dispersed by other animals (externally)	y
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Animals, Water, Wind" [Pappus may aid in external dispersal by animals]

Qsn #	Question	Answer
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	"Answer 'no' where the taxon is unlikely to be eaten by animals or if seeds are not viable following passage through the gut."
	WRA Specialist. 2017. Personal Communication	No evidence that seeds are consumed or internally dispersed

801	Prolific seed production (>1000/m ²)	y
	Source(s)	Notes
	Klemow, K., & Raynal, D. (1985). Demography of Two Facultative Biennial Plant Species in an Unproductive Habitat. <i>Journal of Ecology</i> , 73(1), 147-167	"There was great year-to-year variation in density of <i>Picris</i> seeds produced, as densities were three to ten times greater in 1977 than in 1979 (Table 1a). Every year, the density of seeds was greater on the dense site than on the sparse site, and the mean density of seeds on the sparse site (556 m ⁻²) was about 60% of that on the dense site." [Seed densities ranged from 126-1170 m ⁻² at the sparse site and 511-1620 m ⁻² at the dense site]

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	"Seed Longevity: Long Term"
	Roberts, H. A., & Neilson, J. E. (1981). Seed survival and periodicity of seedling emergence in twelve weedy species of Compositae. <i>Annals of Applied Biology</i> , 97(3), 325-334	[Most seeds germinated in 1st year, but some survived for up to 5 years] "Achenes of 12 species of Compositae were collected in each of 3 years and mixed with the top 7.5 cm of sterilised soil which was confined in cylinders sunk in the ground outdoors and cultivated three times yearly. Seedling emergence was recorded for 5 yr and the numbers of viable seeds remaining then determined. Emergence of <i>Arctium lappa</i> , <i>A. minus</i> , <i>Picris hieracioides</i> , <i>Taraxacum officinale</i> , <i>Sonchus arvensis</i> and <i>S. asper</i> was mainly in spring." ... "Except for <i>C. segetum</i> and <i>A. cotula</i> , in which there was evidence of innate dormancy imposed by the seed coat, the numbers of seedlings were greatest in the first year and thereafter decreased approximately exponentially from year to year. Few viable seeds of <i>A. lappa</i> or <i>A. minus</i> remained after 5 yr and those of <i>T. officinale</i> , <i>P. hieracioides</i> and <i>S. arvensis</i> accounted for less than 1.5% of the seeds sown."

803	Well controlled by herbicides	
	Source(s)	Notes

Qsn #	Question	Answer
	Marocchi, G. (1989). New Problems in weed control in Italy. Proc. VII Int. Symp. Biol. Contr. Weeds, Rome Italy: 633–637	"Because of the loss of effectiveness of hormone-based compounds, other weeds which are becoming widespread in wheat are <i>Viola tricolor campestris</i> L. (Violaceae), <i>Scandix pecten veneris</i> L. (Apiaceae), <i>Bifora radians</i> Bieb. (Apiaceae), <i>Chrysanthemum segetum</i> L. (Asteraceae), <i>Matricaria camomilla</i> L. (Asteraceae), <i>Picris hieracioides</i> L. (Asteraceae), <i>Myragrum perfoliatum</i> L. (Brassicaceae), <i>Equisetum arvense</i> L. (Equisetaceae), <i>Convolvulus arvensis</i> L. (Convolvulaceae), and others. For control of these weeds, the new herbicides specific to broad-leaf plants should give good results and replace the more commonly-used hormone-based compounds."
	Washington State Noxious Weed Control Board. 2017. Oxtongue Hawkweed. <i>Picris hieracioides</i> . https://www.nwcb.wa.gov . [Accessed 10 Oct 2017]	"Herbicide Control Please refer to the PNW Weed Management Handbook, or contact your county noxious weed coordinator."
	DiTomaso, J. M., Kyser, G. B., Oneto, et al. 2013. Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California, Davis, CA	"There is very little information available for the control of bristly oxtongue, but control measures for other members of the Asteraceae are expected to be effective. In particular, the chemical control options for yellow starthistle are likely to also be effective on bristly oxtongue."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	n
	Source(s)	Notes
	Interhort. 2017. Bristly Oxtongue (<i>Picris Hieracioides</i>). http://www.interhort.com/pages/Bristly %20Oxtongue.php . [Accessed 10 Oct 2017]	"Bristly oxtongue plants produce large quantities of seed but can be controlled by discing."
	Washington State Noxious Weed Control Board. 2017. Oxtongue Hawkweed. <i>Picris hieracioides</i> . https://www.nwcb.wa.gov . [Accessed 10 Oct 2017]	"Mechanical Control - Hand-pulling or grubbing out small, new infestations should be effective."

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.	"in Hawai'i naturalized usually in relatively dry areas on Lana'i and Hawai'i" [Unknown]

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 3000 m, demonstrating environmental versatility
- Able to grow in temperate and tropical climates
- Naturalized on Hawaii, Maui, Lanai, & Molokai & widely naturalized elsewhere
- A weed of disturbed sites, and possible weed of agriculture
- Other *Picris* species have become invasive
- Unpalatable to grazing animals
- Host of olive pathogen
- Tolerates many soil types
- Reproduces by seeds
- Seeds dispersed by wind, water, animals (externally) & as a seed contaminant
- Prolific seed production
- Some seeds may persist in the soil for up to 5 years

Low Risk Traits

- Unarmed (no spines, thorns, or burrs)
- Requires full sun
- Self-incompatible
- Not reported to spread vegetatively
- Herbicides may provide effective control
- Mechanical methods provide effective control