

Taxon: <i>Youngia japonica</i> (L.) DC.	Family: Asteraceae
Common Name(s): Oriental false hawkbeard Oriental hawkbeard	Synonym(s): <i>Crepis japonica</i> (L.) Benth. <i>Crepis japonica</i> var. <i>japonica</i> (L.) <i>Prenanthes japonica</i> L. <i>Youngia japonica</i> subsp. <i>japonica</i> (L.) ...

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 12 Mar 2019
WRA Score: 14.0	Designation: H(Hawai'i)	Rating: High Risk

Keywords: Annual Herb, Environmental Weed, Shade-Tolerant, Autogamous, 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)	y
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	y=1, n=-1	n
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

Qsn #	Question	Answer Option	Answer
409	Is a shade tolerant plant at some stage of its life cycle	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
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	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	y
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
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	y
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/m ²)		
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	n

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	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	"present in all easterly and southerly neighboring countries; originating probably from China and introduced pantropically, extending into adjacent subtropical regions" [No evidence of domestication]

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2019). 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. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 11 Mar 2019]	"Native Asia-Temperate WESTERN ASIA: Afghanistan (e.) CHINA: China [Anhui, Fujian, Gansu, Guangxi, Guizhou, Hebei, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Xizang, Yunnan, Zhejiang, Guangdong, Henan, Shaanxi, Shandong, Hainan] EASTERN ASIA: Japan, [Hokkaido, Honshu, Kyushu, Ryukyu Islands, Shikoku] Korea, Taiwan Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, [Himachal Pradesh, Jammu and Kashmir, Punjab, Uttar Pradesh] Nepal, Pakistan INDO-CHINA: Cambodia, Myanmar, Thailand, Vietnam MALESIA: Malaysia, Philippines Australasia AUSTRALIA: Australia [New South Wales, Queensland]"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 11 Mar 2019]	

203	Broad climate suitability (environmental versatility)	y
-----	---	---

Qsn #	Question	Answer
	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	"Mountain slopes, mountain valleys, ravines, forests, forest margins, grasslands, moist areas, by water, stream banks, trailsides, roadsides, disturbed places, densely grassy areas by houses or roads, field margins, as a weed in gardens and fields; below 100–4500 m." [Elevation range exceeds 4000 m, demonstrating environmental versatility]
	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 southeastern Asia, now a pantropical weed; in Hawai'i a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m" [Broad climate and habitat suitability. Elevation range exceeds 1000 m]
	Nakamura, K., Chung, K. F., Huang, C. J., Kono, Y., Kokubugata, G., & Peng, C. I. (2012). Extreme habitats that emerged in the Pleistocene triggered divergence of weedy <i>Youngia</i> (Asteraceae) in Taiwan. <i>Molecular Phylogenetics and Evolution</i> , 63(2), 486-499	" <i>Youngia japonica</i> is commonly found over a broad range of environmental conditions from seaside to mountain ranges, from forest margin to disturbed sites such as wastelands, cultivated fields, and roadsides (Peng et al., 1998); but mostly in moist and semi-shaded habitats. As is suggested by its broad range of habitats, <i>Y. japonica</i> is an invasive weed worldwide (Barker et al., 2005; Botha, 2001; Botond and Zoltán, 2004; PIER, 2010)."

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.	"Native to southeastern Asia, now a pantropical weed; in Hawai'i a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m, on all of the main islands except Ni'ihau and Kaho'olawe. First collected on O'ahu in 1864-1865 (Mann & Brigham 244, BISH)."
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 11 Mar 2019]	"Native Asia-Temperate WESTERN ASIA: Afghanistan (e.) CHINA: China [Anhui, Fujian, Gansu, Guangxi, Guizhou, Hebei, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Xizang, Yunnan, Zhejiang, Guangdong, Henan, Shaanxi, Shandong, Hainan] EASTERN ASIA: Japan, [Hokkaido, Honshu, Kyushu, Ryukyu Islands, Shikoku] Korea, Taiwan Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, [Himachal Pradesh, Jammu and Kashmir, Punjab, Uttar Pradesh] Nepal, Pakistan INDO-CHINA: Cambodia, Myanmar, Thailand, Vietnam MALESIA: Malaysia, Philippines Australasia AUSTRALIA: Australia [New South Wales, Queensland]"

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes

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.	"Native to southeastern Asia, now a pantropical weed; in Hawai'i a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m, on all of the main islands except Ni'ihau and Kaho'olawe. First collected on O'ahu in 1864-1865 (Mann & Brigham 244, BISH)."
	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	"originating probably from China and introduced pantropically, extending into adjacent subtropical regions"

301	Naturalized beyond native range	y
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Native to southeastern Asia, now a pantropical weed; in Hawai'i a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m, on all of the main islands except Ni'ihau and Kaho'olawe. First collected on O'ahu in 1864-1865 (Mann & Brigham 244, BISH)."

302	Garden/amenity/disturbance weed	y
	Source(s)	Notes
	Medeiros, A.C., Loope, L.L. & Chimera, C.G. 1998. Flowering Plants and Gymnosperms of Haleakala National Park. Technical Report 120. Pacific Cooperative Studies Unit, Honolulu, HI	"Annual, yellow-flowered weed of moist, disturbed sites as well as more intact rainforests (common along streambanks). Flowering and fruiting observed year-round."
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Found in woody and moist regions from sea level to 4,000 feet. A weed in cultivated areas."
	Zhenghao Xu & Le Chang. 2017. Identification and Control of Common Weeds: Volume 3. Zhejiang University Press, Hangzhou and Springer Nature Singapore	"Harmfulness A weed in fields, uplands, or gardens." ... "Management Chemical control can choose pendimethalin, butralin, and prometryn."
	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 a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m"
	Univar. (2019). PestWeb - Asiatic Hawksbeard. https://pestweb.com/pests/a0263a/asiatic-hawksbeard . [Accessed 12 Mar 2019]	"This is a warm season annual that may live through the winter in warmer climates. It is a common weed in turf and landscape, in nurseries, along roadsides, and in most disturbed habitats. Reproduction is from seeds."
	Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. 19+ vols. New York and Oxford	"Waste places, lawns, etc.; 0-2400 m"

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	[Identified as a crop weed. impacts or importance as a crop weed is unclear] "Weed of: Cereals, Orchards & Plantations, Pastures, Pome Fruits"

Qsn #	Question	Answer
304	Environmental weed	y
	<p data-bbox="180 296 810 331">Source(s)</p> <p data-bbox="180 569 810 695">US Fish and Wildlife Service. (2015). Endangered and Threatened Wildlife and Plants; Endangered Status for 49 Species From the Hawaiian Islands; Proposed Rule. Federal Register Vol. 80, No. 189: 58820-58909</p> <p data-bbox="180 932 810 1024">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.</p> <p data-bbox="180 1058 810 1213">U.S. Fish and Wildlife Service. (1996). Endangered and Threatened Wildlife and Plants; Determination of Endangered or Threatened Status for Nineteen Plant Species From the Island of Kauai, Hawaii. Federal Register Vol. 61, No. 198: 53070-53089</p> <p data-bbox="180 1360 810 1516">US Fish and Wildlife Service. (2008). Endangered and Threatened Wildlife and Plants; Listing 48 Species on Kauai as Endangered and Designating Critical Habitat; Proposed Rule. Federal Register Vol. 73, No. 204: 62592-62742</p>	<p data-bbox="823 296 1565 919">Notes</p> <p data-bbox="823 344 1565 919">"Nonnative Plants in the Lowland Wet Ecosystem: Nonnative plants threatening the lowland wet ecosystem plants proposed for listing (Cyanea kauaulaensis, Cyclosorus boydiae, Cyperus neokunthianus, Deparia kaalaana, Gardenia remyi, Kadua fluviatilis, Myrsine fosbergii, Ochrosia haleakalae, Phyllostegia brevidens, P. helleri, Santalum involutum, Schiedea diffusa ssp. diffusa, S. pubescens, Stenogyne kaalae ssp. sherffii, and Wikstroemia skottsbergiana) include ... Youngia japonica (oriental hawksbeard);" ... "Nonnative Plants in the Montane Wet Ecosystem: Nonnative plants threatening the montane wet ecosystem plants proposed for listing (Calamagrostis expansa, Cyclosorus boydiae, Cyrtandra hematos, Dryopteris glabra var. pusilla, Hypolepis hawaiiensis var. mauiensis, Microlepia strigosa var. mauiensis, Myrsine fosbergii, Phyllostegia brevidens, P. helleri, P. stachyoides, Ranunculus mauiensis, Schiedea diffusa ssp. diffusa, S. pubescens, and Sicyos macrophyllus) include the nonnative understory and subcanopy species ... Youngia japonica," ... "Youngia japonica can invade intact lowland and montane native wet forest, where it displaces native species"</p> <p data-bbox="823 932 1565 1024">"now a pantropical weed; in Hawai'i a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m"</p> <p data-bbox="823 1037 1565 1234">"Youngia japonica (Oriental hawksbeard) is an annual herb native to southeast Asia and now is a common weed in disturbed moist and shaded sites, as well as intact wet forests, on most of the main Hawaiian Islands (Wagner et al. 1990). The Waioli Valley population of Cyanea recta is threatened by this weed (Lorence and Flynn 1993a)."</p> <p data-bbox="823 1247 1565 1621">[Identified as a weed of endangered plants of wet cliff ecosystems on Kauai] "The nonnative plant threats to the species inhabiting the wet cliff ecosystem include the understory and subcanopy species Ageratum conyzoides (maile honohono), Andropogon glomeratus, Blechnum appendiculatum, Clidemia hirta, Cyperus meyenianus, Erigeron karvinskianus, Juncus planifolius, Kalanchoe pinnata, Lonicera japonica, Paspalum conjugatum, Passiflora edulis (passion fruit, lilikoi), P. tarminiana, Pluchea carolinensis (sourbush), Rubus argutus, R. rosifolius, Setaria parviflora, Sphaeropteris cooperi, and Youngia japonica (oriental hawksbeard), and the canopy species Buddleja asiatica (dog tail) and Psidium cattleianum (S. Perlman, in litt. 2007; HBMP 2007)."</p>

Qsn #	Question	Answer
	<p>US Fish and Wildlife Service. (2003). Endangered and Threatened Wildlife and Plants; Final Designation or Nondesignation of Critical Habitat for 95 Plant Species From the Islands of Kauai and Niihau, HI. Federal Register Vol. 68, No. 39: 9116-9479</p>	<p>[Identified as a weed threat to three endangered plant species] "Cyanea recta grows in lowland wet or mesic <i>Metrosideros polymorpha</i> forest or shrubland, usually in gulches or on slopes, and typically at elevations between 234 and 1,406 m (768 and 4,613 ft)." ... "The major threats to this species are bark removal and other damage by rats; habitat degradation by feral pigs; browsing by goats; unidentified slugs that feed on the stems; and competition with the nonnative plant species ... <i>Youngia japonica</i>" ... "Cyanea undulata typically grows in narrow drainages and wet streambanks in <i>Metrosideros polymorpha</i> dry to montane wet forest or shrubland at elevations between 145 and 1,066 m (476 and 3,497 ft)." ... "The primary threats to this species include competition with the nonnative plant species ... <i>Youngia japonica</i>;" ... "<i>Cyrtandra limahuliensis</i>, a member of the African violet family (Gesneriaceae), is an unbranched or few-branched shrub with moderately or densely hairy leaves." ... "The major threats to this species are competition from nonnative plant species (<i>Blechnum occidentale</i>, <i>Clidemia hirta</i>, <i>Erechtites valerianifolia</i>, <i>Hedychium flavescens</i> (yellow ginger), <i>Melastoma candidum</i>, <i>Paspalum conjugatum</i>, <i>Psidium cattleianum</i>, <i>Psidium guajava</i>, <i>Rubus rosifolius</i>, or <i>Youngia japonica</i>); habitat degradation by feral pigs; natural landslides; and hurricanes (59 FR 9304)."</p>
	<p>US Fish and Wildlife Service. (2012). Endangered and Threatened Wildlife and Plants; Listing 38 Species on Molokai, Lanai, and Maui as Endangered and Designating Critical Habitat on Molokai, Lanai, Maui, and Kahoolawe for 135 Species; Proposed Rule. Federal Register Vol. 77, No. 112: 34464-34775</p>	<p>[Identified as one of the potential weed threats to 20 native species] "Nonnative plant species that threaten the 20 plant species (<i>Bidens campylotheca</i> ssp. <i>pentamera</i>, <i>B. campylotheca</i> ssp. <i>waihoiensis</i>, <i>B. conjuncta</i>, <i>Calamagrostis hillebrandii</i>, <i>Cyanea duvalliorum</i>, <i>C. horrida</i>, <i>C. kunthiana</i>, <i>C. maritae</i>, <i>C. profuga</i>, <i>C. solanacea</i>, <i>Cyrtandra oxybapha</i>, <i>Geranium hanaense</i>, <i>G. hillebrandii</i>, <i>Myrsine vaccinioides</i>, <i>Peperomia subpetiolata</i>, <i>Phyllostegia bracteata</i>, <i>P. pilosa</i>, <i>Santalum haleakalae</i> var. <i>lanaiense</i>, <i>Schiedea laui</i>, and <i>Wikstroemia villosa</i>) proposed or reevaluated for listing in this rule that inhabit the montane wet ecosystem on Molokai and Maui include the understory and subcanopy species <i>Ageratina adenophora</i>, <i>Ageratina riparia</i>, <i>Ageratum conyzoides</i> (maile honohono), <i>Buddleia asiatica</i>, <i>Cestrum nocturnum</i> (night cestrum), <i>Christella dentata</i>, <i>Chrysophyllum oliviforme</i>, <i>Cinchona pubescens</i>, <i>Cinnamomum burmannii</i>, <i>Clidemia hirta</i>, <i>Conyza bonariensis</i> (hairy horseweed), <i>Cortaderia jubata</i>, <i>Cuphea carthagenensis</i> (tarweed), <i>Drymaria cordata</i> (chickweed), <i>Erechtites valerianifolia</i> (fireweed), <i>Erigeron karvinskianus</i>, <i>Hedychium gardnerianum</i> (kahili ginger), <i>Hypochoeris radicata</i> (hairy cat's ear), <i>Juncus</i> spp., <i>Lantana camara</i>, <i>Rubus</i> spp., <i>Cyathea cooperi</i>, <i>Tibouchina herbacea</i>, <i>Ulex europaeus</i> (gorse), and <i>Youngia japonica</i> (oriental hawksbeard) (MLP 2005, p. 11; HBMP 2008; TNCH 2009a, pp. 1–14; EMoWP 2010, pp. 5–6)."</p>
	<p>WRA Specialist. (2019). Personal Communication</p>	<p><i>Youngia japonica</i> has been identified as one of several non-native plants that threaten endangered plant species in the Hawaiian Islands. Although specific impacts are generally not identified, its ability to invade otherwise intact native ecosystems suggests that it can compete with, and possibly prevent the establishment of endangered plant seedlings. Although probably not a conspicuous driver of habitat modification, its impacts, in conjunction, with other factors, on rare native plants warrant its designation as an environmental weed</p>

Qsn #	Question	Answer
305	Congeneric weed	
	Source(s)	Notes
	Zhenghao Xu & Le Chang. 2017. Identification and Control of Common Weeds: Volume 3. Zhejiang University Press, Hangzhou and Springer Nature Singapore	" <i>Youngia erythrocarpa</i> ... Harmfulness A weed in uplands and wetlands. ... Management Chemical control can choose 2,4-D butyl ester." [Limited information on impacts]
401	Produces spines, thorns or burrs	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] "Herbs usually 10–150 cm tall, annual. Stems solitary or few, erect, branched from base, middle, or only apically, glabrous or basally often ± hairy, ± leafy or leafless. Basal leaves ± oblanceolate, to 15(–25) × 4(–6) cm, lyrate-pinnatifid or pinnatisect, rarely not divided; glabrous or somewhat hairy, base attenuate into a longer or shorter narrowly winged to ± unwinged petiole-like portion, margin sinuate-dentate; lateral lobes few to many, ovate, rhombic, or elliptic, gradually smaller toward leaf base; terminal lobe ovate, ovate-lanceolate, or obovate, much larger than lateral ones, apex rounded to acute. Stem leaves similar to basal leaves, abruptly or gradually reduced to bracts upward on stem."
402	Allelopathic	
	Source(s)	Notes
	Chon, S. U., & Nelson, C. J. (2010). Allelopathy in Compositae plants. A review. <i>Agronomy for Sustainable Development</i> , 30(2), 349-358	[Unknown. Extracts from <i>Youngia sonchifolia</i> increased root lengths of <i>Lactuca sativa</i>] "Chon et al. (2003a) evaluated aqueous extracts of 16 Compositae plants and found <i>Lactuca sativa</i> , <i>Xanthium occidentale</i> and <i>Cirsium japonicum</i> showed the highest inhibition on alfalfa (<i>Medicago sativa</i>) seedlings. Conversely, extracts of <i>Chrysanthemum indicum</i> , <i>Youngia sonchifolia</i> , <i>Bidens frondosa</i> , and <i>Breca segeta</i> at concentrations below 20 g dry matter L-1 increased root length of alfalfa by 13–33%."
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.	"Subscapose annual herbs 1-9 dm tall, glabrous or pubescent toward base." [Asteraceae. No evidence]

Qsn #	Question	Answer
404	Unpalatable to grazing animals	n
	Source(s)	Notes
	Zhenghao Xu & Le Chang. 2017. Identification and Control of Common Weeds: Volume 3. Zhejiang University Press, Hangzhou and Springer Nature Singapore	"Utilization: Young leaves can be used for fodder."
	Plants for a Future. (2019). <i>Youngia japonica</i> . https://pfaf.org . [Accessed 12 Mar 2019]	"Young leaves and young plant - raw or cooked"

405	Toxic to animals	n
	Source(s)	Notes
	Zhenghao Xu & Le Chang. 2017. Identification and Control of Common Weeds: Volume 3. Zhejiang University Press, Hangzhou and Springer Nature Singapore	"Utilization: Young leaves can be used for fodder."
	Plants for a Future. (2019). <i>Youngia japonica</i> . https://pfaf.org . [Accessed 12 Mar 2019]	"Young leaves and young plant - raw or cooked"
	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
	Gardner, D. E. 1996. Rust and smut fungi of Hawai'i: an annotated host index on angiosperms and ferns. Technical Report 100. Cooperative National Park Resources Studies Unit, University of Hawaii at Manoa, Honolulu, HI	[Unknown if rust affects other important taxa] "Puccinia crepidis-montanae ... The host is a low-growing, annual herb native to southeastern Asia. It has become a naturalized weed in moist, shaded habitats in disturbed areas throughout the Islands. The rust appears to occur seasonally, or in response to favorable climatic conditions, and may produce moderate to heavy infections on the undersurfaces of the leaves nearest the soil. Only the uredinial pustules have been found in Hawai'i, and are visible as minute, bright yellow, raised leaf spots. The pustules are usually discrete, but may tend to coalesce in particularly heavy infections. Corresponding small sunken, discolored spots are evident on the upper leaf surfaces. (Gardner, 1997)"

Qsn #	Question	Answer
	<p>Ohno, S. et al. (2010). Non-crop host plants of Tetranychus spider mites (Acari: Tetranychidae) in the field in Okinawa, Japan: Determination of possible sources of pest species and inference on the cause of peculiar mite fauna on crops. <i>Applied Entomology and Zoology</i>, 45(3), 465-475</p>	<p>[<i>Youngia japonica</i> identified as an alternate host of Tetranychus spider mites] "The species composition of spider mites on crops in Okinawa is peculiar in that Tetranychus okinawanus and T. piercei are dominant on most islands, whereas T. urticae (green form) and T. kanzawai are not. To determine the source plants of Tetranychus species infesting crops, as well as to contribute to our understanding of the cause of this peculiar mite fauna, we collected Tetranychus mites on non-crop plants throughout Okinawa (more than 450 sites on 15 islands) and identified them. Except in the case of T. parakanzawai, the species frequently found on crops tended to occur frequently on non-crop plants, suggesting that the peculiar species composition on crops reflects that also on non-crop plants. T. parakanzawai has been rarely found on crops but frequently found on particular non-crop plants, possibly due to the narrower host range of this species. The type of host plants varied among mite species; for example, T. okinawanus was frequently found on indigenous plants inhabiting the seashore and invasive weeds, T. piercei and T. parakanzawai on inland indigenous plants, T. urticae (green form) on invasive weeds, and T. neocaledonicus on introduced trees. These results are of great significance when considering vegetation control as a tactic for the integrated management of spider mites."</p>

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	<p>Quattrocchi, U. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i>. CRC Press, Boca Raton, FL</p>	<p>"Herb, leaves ovate crenate-toothed rosette, naked flowering stalk, pale pink heads, leaves and young shoots used as vegetable" ... "Leaves extract given in dyspepsia." [No evidence]</p>
	<p>Plants for a Future. (2019). <i>Youngia japonica</i>. https://pfaf.org. [Accessed 12 Mar 2019]</p>	<p>"Known Hazards: None known" ... "Edible Uses: Young leaves and young plant - raw or cooked"</p>

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	<p>Wagner, W.L., Herbst, D.R. & Sohmer, S.H. 1999. <i>Manual of the flowering plants of Hawaii</i>. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.</p>	<p>"Subscapose annual herbs 1-9 dm tall ... in Hawai'i a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest" [No evidence. Unlikely given habit and habitat]</p>

Qsn #	Question	Answer
409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Practical Plants. (2019). <i>Youngia japonica</i> - Japanese Hawkweed. https://practicalplants.org/wiki/Youngia_japonica . [Accessed 11 Mar 2019]	"Has shade tolerance: Light shade"
	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 a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	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 a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m," [Broad ecological distribution suggests substrate type is not a limiting factor]
	Practical Plants. (2019). <i>Youngia japonica</i> - Japanese Hawkweed. https://practicalplants.org/wiki/Youngia_japonica . [Accessed 12 Mar 2019]	"Soil PH - acid, neutral, alkaline" ... "Soil Texture - sandy, loamy, clay"
	Plants for a Future. (2019). <i>Youngia japonica</i> . https://pfaf.org . [Accessed 12 Mar 2019]	"Suitable for: light (sandy), medium (loamy) and heavy (clay) soils. Suitable pH: acid, neutral and basic (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.	"Subscapose annual herbs 1-9 dm tall, glabrous or pubescent toward base."

Qsn #	Question	Answer
412	Forms dense thickets	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.	"Subscapose annual herbs 1-9 dm tall" ... "in Hawai'i a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m" [No
	US Fish and Wildlife Service. (2015). Endangered and Threatened Wildlife and Plants; Endangered Status for 49 Species From the Hawaiian Islands; Proposed Rule. Federal Register Vol. 80, No. 189: 58820-58909	" <i>Youngia japonica</i> can invade intact lowland and montane native wet forest, where it displaces native species" [In this and other USFWS reports, <i>Youngia japonica</i> is listed as a weed threat to a number of endangered plant species, presumably due to competition. None of these publications describe formation of dense monocultures or pure "stands" as the means of this competitive exclusion]
	WRA Specialist. (2019). Personal Communication	Unlikely, and no evidence found. As an annual herb capable of invading intact forest, this species has the potential to compete with and exclude seedlings of native plant species, and may form dense cover in areas. No description of such monocultures has been found in the literature searched

501	Aquatic	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Terrestrial] "Subscapose annual herbs 1-9 dm tall... in Hawai'i a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest"

502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 11 Mar 2019]	Family: Asteraceae (alt.Compositae) Subfamily: Cichorioideae Tribe: Cichorieae Subtribe: Crepidinae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 11 Mar 2019]	Family: Asteraceae (alt.Compositae) Subfamily: Cichorioideae Tribe: Cichorieae Subtribe: Crepidinae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Zhenghao Xu & Le Chang. 2017. Identification and Control of Common Weeds: Volume 3. Zhejiang University Press, Hangzhou and Springer Nature Singapore	"Root: Taper root robust, fibrous roots, tender, white."

Qsn #	Question	Answer
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 and introduced ranges] "Mountain slopes, mountain valleys, ravines, forests, forest margins, grasslands, moist areas, by water, stream banks, trailsides, roadsides, disturbed places, densely grassy areas by houses or roads, field margins, as a weed in gardens and fields; below 100–4500 m. Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [present in all easterly and southerly neighboring countries; originating probably from China and introduced pantropically, extending into adjacent subtropical regions]."

602	Produces viable seed	y
	Source(s)	Notes
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Seeds topped with a soft white ring of hairs (20). Propagation: By seed. Dispersed by the wind."
	Tsuyuzaki, S., & Goto, M. (2001). Persistence of seed bank under thick volcanic deposits twenty years after eruptions of Mount Usu, Hokkaido Island, Japan. American Journal of Botany, 88(10), 1813-1817	"TABLE 1. Seeds detected by germination and flotation methods. Values indicate mean seed density (no./m2) 6 1 SD. A few unidentified species might have been germinated using both methods." [Youngia japonica seeds that were collected from the Lower soil layer germinated]

603	Hybridizes naturally	
	Source(s)	Notes
	Tae, K. H., In, D. S., & Shin, K. S. (2001). Assessment of random amplified polymorphic DNA (RAPD) for determining the origin of <i>Youngia koidzumiana</i> Kitamura (compositae). Journal of Plant Biology, 44(1), 61-64	[Unknown. Hybridization documented in the genus] "We determined the parental species of <i>Youngia koidzumiana</i> (a natural interspecific hybrid) using PCR and arbitrary 10-mer primers to generate random amplified polymorphic DNA (RAPD) markers. These markers, generated by three primers, were sufficient to distinguish <i>Youngia sonchifolia</i> , <i>Youngia denticulata</i> , <i>Youngia chelidoniifolia</i> , and <i>Y. koidzumiana</i> . The electrophoresis profiles of the amplified products from each of the four species were then compared. Three primers produced a total of 42 scorable markers; nine were specific markers for <i>Y. denticulata</i> and <i>Y. chelidoniifolia</i> . The length of the amplified DNA fragments ranged from 370 to 2500 b p. The three primers revealed polymorphic bands, which were indicators of the parental species of <i>Y. koidzumiana</i> . These bands showed a combination of specific profiles for <i>Y. denticulata</i> and <i>Y. chelidoniifolia</i> . Our results also were comparable to the data obtained for flowering times, floret numbers, and chromosome numbers of the four species. Therefore, we suggest that <i>Y. koidzumiana</i> is a hybrid between <i>Y. denticulata</i> and <i>Y. chelidoniifolia</i> , and that RAPD markers are well suited for assessing the origins of plant species."

604	Self-compatible or apomictic	y
-----	------------------------------	---

Qsn #	Question	Answer
	Source(s)	Notes
	Hauber, D., Kuhnell, R., & Miller, M. (1989). Evidence for Predominant Autogamy in <i>Youngia japonica</i> (Asteraceae). <i>The Southwestern Naturalist</i> , 34(4), 557-559	"Floral morphology, physiology and phenology in <i>Y. japonica</i> are consistent with autogamy. Fertile florets are perfect, and the androecium and pistil mature simultaneously. Aborted fruits were rare in field-grown individuals and pollinator activity was practically nonexistent."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Hauber, D., Kuhnell, R., & Miller, M. (1989). Evidence for Predominant Autogamy in <i>Youngia japonica</i> (Asteraceae). <i>The Southwestern Naturalist</i> , 34(4), 557-559	[Does not require pollinators] "Floral morphology, physiology and phenology in <i>Y. japonica</i> are consistent with autogamy. Fertile florets are perfect, and the androecium and pistil mature simultaneously. Aborted fruits were rare in field-grown individuals and pollinator activity was practically nonexistent. Specifically, a single small bee (<i>Lasioglossum</i> sp.) was observed on an open head during 3 days of observation (totaling about 6 h) of a population in anthesis at intervals during which heads were open (early morning to early afternoon). No other pollinators have ever been sighted during casual observations. High seed set (80%) was also achieved from bagged heads of greenhouse-grown individuals. At most, 300 pollen grains from a single, unopened floret could be extracted onto a microscope slide."

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. <i>Handbook of Hawaiian Weeds</i> . University of Hawaii Press, Honolulu, HI	"An erect, slender annual ... Propagation: By seed. Dispersed by the wind."
	Zhenghao Xu & Le Chang. 2017. <i>Identification and Control of Common Weeds: Volume 3</i> . Zhejiang University Press, Hangzhou and Springer Nature Singapore	"Diffusion Characteristics: Seed reproduction."

607	Minimum generative time (years)	1
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. 1999. <i>Manual of the flowering plants of Hawaii</i> . Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Annual] "Subscapose annual herbs 1-9 dm tall, glabrous or pubescent toward base."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
	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	"Mountain slopes, mountain valleys, ravines, forests, forest margins, grasslands, moist areas, by water, stream banks, trailsides, roadsides, disturbed places, densely grassy areas by houses or roads"

Qsn #	Question	Answer
	Smith, C. (2008). Invasive Plants of North Carolina. N.C. Department of Transportation	[Along heavily trafficked areas] "Currently found along roadsides and disturbed areas primarily in the piedmont and coastal plain of North Carolina, this plant is spreading relatively rapidly. It has the potential to be a problem in natural areas given its prolific seed production."
	WRA Specialist. (2019). Personal Communication	A wind-dispersed weed that thrives in disturbance and is commonly found along heavily trafficked corridors. Likely transported through human-facilitated means (i.e. movement of equipment, machinery, soil, etc.)

702	Propagules dispersed intentionally by people	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 southeastern Asia, now a pantropical weed; in Hawai'i a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m, on all of the main islands except Ni'ihau and Kaho'olawe. First collected on O'ahu in 1864-1865" [Widely distributed weed with no evidence of intentional cultivation, although some edible and medicinal uses are mentioned in the international literature]

703	Propagules likely to disperse as a produce contaminant	y
	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 Dispersed by: Humans Weed of: Cereals, Orchards & Plantations, Pastures, Pome Fruits"

704	Propagules adapted to wind dispersal	y
	Source(s)	Notes
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Seeds topped with a soft white ring of hairs" ... "Propagation: By seed. Dispersed by the wind."

Qsn #	Question	Answer
705	Propagules water dispersed	y
	Source(s)	Notes
	Hayashi, H., Shimatani, Y., Shigematsu, K., Nishihiro, J., Ikematsu, S., & Kawaguchi, Y. (2012). A study of seed dispersal by flood flow in an artificially restored floodplain. <i>Landscape and Ecological Engineering</i> , 8(2), 129-143	"Upon a major flooding event in the Azamenose area in June 2004, a field survey was conducted to collect seeds from the flood sediment in the Azamenose area and the Matsuura River. There were only a few plant species in the Azamenose area during the investigation period due to the recent excavation work that was conducted for the restoration of the Azamenose Swamp just before the field survey." [Youngia japonica seed collected and germinated in floodplain]
	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	[Presence near water and along streams suggests water aids in secondary dispersal of seeds] "Mountain slopes, mountain valleys, ravines, forests, forest margins, grasslands, moist areas, by water, stream banks, trailsides, roadsides, disturbed places, densely grassy areas by houses or roads, field margins, as a weed in gardens and fields"
706	Propagules bird dispersed	n
	Source(s)	Notes
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Seeds topped with a soft white ring of hairs" ... "Propagation: By seed. Dispersed by the wind."
707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Seeds topped with a soft white ring of hairs" ... "Propagation: By seed. Dispersed by the wind."
708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Seeds topped with a soft white ring of hairs" ... "Propagation: By seed. Dispersed by the wind."

Qsn #	Question	Answer
801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Smith, C. (2008). Invasive Plants of North Carolina. N.C. Department of Transportation	"Currently found along roadsides and disturbed areas primarily in the piedmont and coastal plain of North Carolina, this plant is spreading relatively rapidly. It has the potential to be a problem in natural areas given its prolific seed production." [Densities unspecified]
	Loh, R. K., & Daehler, C. C. (2008). Influence of woody invader control methods and seed availability on native and invasive species establishment in a Hawaiian forest. <i>Biological Invasions</i> , 10(6), 805-819	[<i>Youngia japoica</i> 's contribution to seed rain unspecified] "In the log plots, the seed rain of other alien species (2,400– 33,000 seeds m ⁻² year ⁻¹ in aggregate) mainly consisted of <i>A. arvensis</i> , <i>H. lanatus</i> , <i>Melinis minutiflora</i> P. Beauv., <i>Oxalis corniculata</i> L., <i>R. rosifolius</i> , <i>Sacciolepis indica</i> (L.) Chase, <i>Schizachyrium condensatum</i> (Kunth) Nees, <i>Setaria gracilis</i> , and <i>Youngia japonica</i> L."

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	Notes
	Royal Botanic Gardens Kew. (2019) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/ . [Accessed 12 Mar 2019]	"Storage Behaviour: Orthodox"
	Tsuyuzaki, S., & Goto, M. (2001). Persistence of seed bank under thick volcanic deposits twenty years after eruptions of Mount Usu, Hokkaido Island, Japan. <i>American Journal of Botany</i> , 88(10), 1813-1817	[Although longevity was not evaluated, <i>Youngia japonica</i> seeds collected from the 5-10 cm soil depth germinated after 20 years of burial] "The topsoil that contained the seed bank became buried under thick tephra after the eruptions of Mount Usu during 1977 and 1978. To determine the seed bank potential of the topsoil 20 yr after the eruptions, i.e., in 1998, 408 100-cm ³ samples were excavated under 115–185 cm of volcanic deposits. The topsoil was collected at 10-cm intervals along the horizontal scale and was divided into a 0– 5 cm deep upper layer and a 5–10 cm deep lower layer." ... "TABLE 1. Seeds detected by germination and flotation methods. Values indicate mean seed density (no./m ²) ± 1 SD. A few unidentified species might have been germinated using both methods." ... "The other nine species have not been recorded for seed longevity, or the longevity was reported as ,20 yr: <i>Carex oxyandra</i> , <i>Aralia cordata</i> , <i>Hypericum erectum</i> , <i>Hydrocotyle ramiflora</i> , <i>Epilobium cephalostigma</i> , <i>Sagina japonica</i> , <i>Youngia japonica</i> , <i>Eragrostis multicaulis</i> , and <i>Luzula capitata</i> ."

803	Well controlled by herbicides	y
	Source(s)	Notes
	NC State Extension. (2019). <i>Youngia japonica</i> . https://plants.ces.ncsu.edu/plants/all/youngia-japonica-l-dc/ . [Accessed 12 Mar 2019]	"Hawksbeard appears to be well controlled by available preemergence herbicides; however, herbicide efficacy rankings for this species are based on limited experimental data."
	Zhenghao Xu & Le Chang. 2017. Identification and Control of Common Weeds: Volume 3. Zhejiang University Press, Hangzhou and Springer Nature Singapore	"Management Chemical control can choose pendimethalin, butralin, and prometryn."

Qsn #	Question	Answer
	Univar. (2019). PestWeb - Asiatic Hawksbeard. https://pestweb.com/pests/a0263a/asiatic-hawksbeard . [Accessed 12 Mar 2019]	"Physical removal of single plants is effective. When found in turf most members of the sunflower family can be effectively controlled with a selective broadleaf herbicide. Prevention of seed germination can be accomplished with a pre-emergent herbicide."
	Bhowmik, P. C. (2010). Current status of herbicide resistant weeds around the Globe. <i>Journal of Crop and Weed</i> , 6, 33-43	"Similar resistance of <i>Conyza canadensis</i> (four countries), <i>Erigeron sumatrensis</i> , and <i>Youngia japonica</i> were also observed. Currently, there are 24 paraquat resistant species documented in the world."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	Univar. (2019). PestWeb - Asiatic Hawksbeard. https://pestweb.com/pests/a0263a/asiatic-hawksbeard . [Accessed 12 Mar 2019]	"Physical removal of single plants is effective. When found in turf most members of the sunflower family can be effectively controlled with a selective broadleaf herbicide. Prevention of seed germination can be accomplished with a pre-emergent herbicide."
	Braman, S.K. et al. (2015). Pest management strategic plan for container and field-produced nursery crops: revision 2015. A.V. LeBude and A. Fulcher, eds. Southern Region IPM Center, Raleigh	" <i>Youngia japonica</i> ... Hand weeding is difficult because seedlings are small and larger plants produce a thick taproot."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	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 a common weed in often moist and shaded, disturbed sites, but also occurring in nearly intact wet forest, 0-1,400 m, on all of the main islands except Ni'ihau and Kaho'olawe." [No evidence. Unlikely given ubiquitous distribution]

Summary of Risk Traits:

High Risk / Undesirable Traits

- Broad climate and elevation range, demonstrating environmental versatility
- Grows in temperate to tropical climates
- Naturalized on main Hawaiian Islands (except Ni'ihau and Kaho'olawe) and widely naturalized elsewhere
- A disturbance-adapted weed of lawns, gardens, and cultivated areas that can also invade native ecosystems and threaten endangered plant species (Hawaiian Islands)
- Shade-tolerant
- Tolerates many soil types
- Reproduces by seeds
- Autogamous (able to produce seeds through self-fertilization)
- An annual, reaching maturity in <1 year
- Seeds dispersed by wind, water & unintentionally by people
- Prolific seed production (but probably not in excess of 1000 m⁻²)
- Forms a persistent seed bank (up to 20 years or more)
- Mechanical control may be difficult due to growth habit

Low Risk Traits

- Unarmed (no spines, thorns, or burrs)
- Provides fodder for livestock
- Not reported to spread vegetatively
- Herbicides may provide effective control