Taxon: Ligustrum sinense

Family: Oleaceae

Common Name(s): Chinese liguster
Chinese privet
small-leaf privet

Synonym(s): Ligustrum indicum (Lour.) Merr.
Ligustrum microcarpum Kaneh. &
Ligustrum sinense var. stauntonii
Ligustrum stauntonii DC.
Phillyrea indica Lour.

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 18 Sep 2017

WRA Score: 20.0 **Designation:** H(HPWRA) **Rating:** High Risk

Keywords: Ornamental Tree, Environmental Weed, Toxic, Thicket-Forming, Bird-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)	n
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	y
304	Environmental weed	n=0, y = 2*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
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	y
406	Host for recognized pests and pathogens	y=1, n=0	n
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	y

Qsn #	Question	Answer Option	Answer
408	Creates a fire hazard in natural ecosystems		
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	y
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	y
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	>3
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)	y=1, n=-1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	n
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	**Is the species highly domesticated?**	**n**
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Mixed forests, valleys, along streams, thickets, woods, ravines;200–2700 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Vietnam]." [No evidence of domestication]
	Langeland, K.A. & Burks, K.C. (eds.). 2008. Identification and Biology of Non-Native Plants in Florida's Natural Areas. UF/IFAS Distribution, Gainesville, FL	[Not domesticated, but variegated form would be less invasive if truly sterile] "Pure variegated form not known to produce viable seed (H. Gramling, Tampa Bay Wholesale Growers, 1998 personal communication)."

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

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. 2017. Personal Communication	NA

201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**High**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 15 Sep 2017]	"Native: Asia-Temperate China: China - Anhui, - Fujian, - Guangdong, - Guangxi, - Guizhou, - Hubei, - Hunan, - Jiangsu, - Jiangxi, - Sichuan, - Yunnan, - Zhejiang; Hong Kong Eastern Asia: Taiwan Asia-Tropical Indo-China: Laos; Vietnam"

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 15 Sep 2017]	

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

Qsn #	Question	Answer
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Mixed forests, valleys, along streams, thickets, woods, ravines;200–2700 m." [Elevation range exceeds 2500 m, demonstrating environmental versatility]
	Plants for a Future. 2017. Ligustrum sinense. http://pfaf.org/User/Plant.aspx?LatinName=Ligustrum+sinense. [Accessed 15 Sep 2017]	"USDA hardiness: 7-10"

204	Native or naturalized in regions with tropical or subtropical climates	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 15 Sep 2017]	"Native: Asia-Temperate China: China - Anhui, - Fujian, - Guangdong, - Guangxi, - Guizhou, - Hubei, - Hunan, - Jiangsu, - Jiangxi, - Sichuan, - Yunnan, - Zhejiang; Hong Kong Eastern Asia: Taiwan Asia-Tropical Indo-China: Laos; Vietnam"

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 15 Sep 2017]	"Naturalized: Africa Southern Africa: South Africa Australasia Australia: Australia New Zealand: New Zealand Northern America : United States"
	Langeland, K.A. & Burks, K.C. (eds.). 2008. Identification and Biology of Non-Native Plants in Florida's Natural Areas. UF/IFAS Distribution, Gainesville, FL	"Reported by managers for Florida conservation areas in 9 counties from Santa Rosa to Citrus counties (EPPC 1996). Also widely naturalized elsewhere in the South, from the Carolinas to Texas, and north to Kentucky and Tennessee (Radford et al. 1968, Correll and Johnston 1970)."

301	Naturalized beyond native range	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Langeland, K.A. & Burks, K.C. (eds.). 2008. Identification and Biology of Non-Native Plants in Florida's Natural Areas. UF/IFAS Distribution, Gainesville, FL	"Distribution: In Florida, most abundantly naturalized in Panhandle and northern counties, but also documented by herbarium specimens south on the peninsula in Hernando, Hillsborough, and Dade counties (Wunderlin et al. 1995). Reported by managers for Florida conservation areas in 9 counties from Santa Rosa to Citrus counties (EPPC 1996). Also widely naturalized elsewhere in the South, from the Carolinas to Texas, and north to Kentucky and Tennessee (Radford et al. 1968, Correll and Johnston 1970)."
	Herbarium Pacificum Staff. 1999. New Hawaiian plant records for 1998. Bishop Museum Occasional Papers 58: 3 -11	"Ligustrum sinense Lour. New island record The genus Ligustrum has not previously been found naturalized in the Hawaiian Islands. Ligustrum sinense, native to China and Vietnam, is widely cultivated and has escaped in many subtropical and warm temperate places to become a weedy pest (Green, 1995). For example, it is considered an invasive woody weed on rainforest margins and along fence lines in cleared areas in New South Wales (Harden, 1992). Elsewhere in this issue it is documented as naturalized on Kaua'i (Lorence & Flynn, 1999). The small blackish drupes are attractive to birds, which spread the seeds. Material examined. HAWAI'I: Ka'ü Distr., Hawai'i Volcanoes National Park near Thurston Lava Tube, elev. 3800 ft, shrub in closed Metrosideros forest, 11 Jul 1985, T. Tunison s.n. (BISH 605525)."
	Lorence, D. & Flynn, T. 1999. New naturalized plant records for the Hawaiian Islands. Bishop Museum Occasional Papers. 59: 3-6	"Ligustrum sinense Lour. New state record These collections represent a new state record for the genus Ligustrum L. This species has become naturalized profusely around the cabins at Koke'e State Park and now extends far into the forest. It likely originated at this site as yard plantings by residential cabins where shrubs reaching 4 m tall and 5 m in diameter were observed. The specimens were kindly identified by Peter S. Green of Royal Botanic Gardens, Kew, who notes two other specimens collected from cultivated plants on Hawai'i Island: Puna, Volcano, Degener & Degener 32472 (K); South Kona, Captain Cook, Staples 628 (K). Green warns that L. sinense has become a serious naturalized weed pest in New South Wales and the southeastern United States and should be eradicated before it spreads further in Hawai'i (P.S. Green, pers. comm., 1998). The juicy berries are presumably dispersed by birds. Material examined. KAUA'I: Waimea District: Koke'e State Park, along Halemanu road by group of three cabins near Koke'e-Halemanu trailhead, degraded Acacia koa mesic forest, 22°07'05"N, 159°39'42"W, 3520 ft, 16 Oct 1997, D. Lorence, T. Flynn, S. Joe, F. Kraus, K. Reinard, J. Plews 8149 (BISH, K, MO, PTBG, US); Faya Road, Acacia/Metrosideros forest with Coprosma, Styphelia, Myrica, Psidium, and Dodonaea,. ca. 1060 m, 29 Apr 1997, T. Flynn & D. Lorence 6132 (BISH, K, PTBG)."
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. 2017. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/. [Accessed 15 Sep 2017]	"Ligustrum sinense Lour. Status: Naturalized Distribution: K (Koke`e State Park)/ H (Hawaii Volcanoes NP, Thurstor Lava Tube)"
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 15 Sep 2017]	"Naturalized: Africa Southern Africa: South Africa Australasia Australia: Australia New Zealand: New Zealand Northern America : United States"

Qsn #	Question	Answer
302	Garden/amenity/disturbance weed	n
	Source(s)	**Notes**
	Langeland, K.A. & Burks, K.C. (eds.). 2008. Identification and Biology of Non-Native Plants in Florida's Natural Areas. UF/IFAS Distribution, Gainesville, FL	[Disturbance adapted weed with detrimental environmental impacts. See 3.04] "Occurs most densely in open disturbed areas, especially low wet places, but also invades less disturbed upland hammocks and pinelands, river and stream floodplains, lake shores, and edges of swamps and marshes, often becoming locally abundant even in deep shade."
303	Agricultural/forestry/horticultural weed	y
	Source(s)	**Notes**
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"L. sinense is difficult and expensive to control and has indirect impacts on the beef industry. Cost of control using a combined mulching and chemical treatment was reported as $737 per acre ($298 per hectare) (Klepacet al., 2007). It can also hinder animal movement through bushland (Queensland Government, 2007) and presumably affect the cattle industry."
304	Environmental weed	y
	Source(s)	**Notes**
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"they (L. lucidum and L. sinense) are more or less serious environmental weeds."
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"In Florida, USA, Chinese privet invades tropical hammocks and pinelands, threatening Miccosukee gooseberry (Ribes echinellum), a threatened plant species (Langeland and Craddock Burks, 1998). The shrub invades floodplain forests in the southeastern USA and strongly reduces native plant species richness (Wilcox and Beck, 2007; Hanula et al., 2009). Where Chinese privet is abundant, beetle richness and diversity is strongly reduced as well (Ulyshen et al., 2010). Growth and survival of native seedlings in invaded plots is much lower than in uninvaded plots (Greene and Blossey, 2012). Studies have shown that in areas colonized by Chinese privet, nitrogen mineralization is much higher, thus affecting nutrient cycling (Mitchell et al., 2011). In Australia, Chinese privet spreads in rainforests and shades out other plant species. Due to its extensive root system the shrub also competes for water and nutrients. The shrub strongly alters the natural vegetation structure and affects wildlife habitat (State of Queensland, 2014)."

Qsn #	Question	Answer
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"L. sinense appears to possess a competitive advantage over a US native member of the Oleaceae Forestieraligustrina, with which it is in direct competition because of its greater ability to spatially and temporally capture light, a phenomenon that may lead to higher photosynthetic capacity and resource-use efficiency, and because of the higher fruit production observed (Morris et al., 2002). Impact on Habitats Abundance and richness of native plants were found to be reduced in high privet-density plots (Wilcox and Beck, 2007) but bird abundance and species richness were found to vary only during the winter, both increasing in high privet density. The authors also suggest that removal of privet would improve native plant communities, while having no substantial impact on songbird populations. L. sinense competes with native species for nutrients and water by forming a highly efficient dense shallow fibrous root system (Swarbrick and Timmins, 1999). The leaves of the plant have been found to have toxic effects on macro-invertebrates (Llewellyn, 2005). The species can therefore have a negative impact on water quality; it is unknown however to what extent. Impact on Biodiversity L. sinense can form impenetrable thickets crowding out native vegetation and displacing the native shrub layer, thereby preventing the regeneration of native species. The trees are long lived and its monospecific stands can be self-maintaining for long periods of time. Over a period of 20 years, L. sinense, was observed invading a mixed hardwood forest in western North Carolina, USA, where it penetrated about 30 m under the canopy trees, providing 100% cover of the forest floor (Merriam and Feil, 2002). This study supports the thesis that L. sinense can severely reduce herbaceous species and almost completely suppress tree regeneration in a mixed hardwood forest."

305	Congeneric weed	y
	Source(s)	**Notes**
	Aragón, R., & Groom, M. (2003). Invasion by Ligustrum lucidum (Oleaceae) in NW Argentina: early stage characteristics in different habitat types. Revista de Biología Tropical, 51(1), 59-70	"Currently biological invasions are considered one of the worlds most serious conservation problems. Ligustrum lucidum is the most abundant exotic tree in secondary forest patches of montane forests of NW Argentina." ... "L. lucidum saplings grew significantly more than saplings of the most common native species, and also showed higher seedling survival. L. lucidum is a prolific fruit producer, is capable of germinating and surviving in a broad range of forest environments, it is relatively shade tolerant and has higher survival and faster growth rate in comparison to the most common native species. All these characteristics highlight its potency as a successful invader, and point to few vulnerabilities that could be targets of control measures."
	Ervin, G. N., Madsen, J. D., & Wersal, R. M. (2007). Invasive Species Fact Sheet: Japanese Privet (Ligustrum japonicum Thunb.). Mississippi State University: GeoResources Institute. https://www.gri.msstate.edu/. [Accessed 15 Sep 2017]	"Japanese privet, which is shade tolerant, may occur as single plants or in thickets, frequently occurring in the same habitats as Chinese privet but generally not as abundantly as the latter. Japanese privet will invade both lowland and upland habitats, including floodplains, forests, wetlands and fields, but it usually is more prevalent in lowland habitats, typically at elevations less than 915m (3000ft). All the privets are frequently seen along roadsides and other disturbed areas."

Qsn #	Question	Answer
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"they (L. lucidum and L. sinense) are more or less serious environmental weeds."

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Shrubs or small trees 2–4(–7) m, deciduous. Branchlets terete, villous, pubescent, pilose, puberulent, to glabrescent. Petiole 2–8 mm; leaf blade ovate, oblong, elliptic to lanceolate, or suborbicular, 2–7(–13) × 1–3(–5.5) cm, densely villous to sparsely pubescent or glabrous, papery to somewhat leathery, base cuneate to subrounded, apex acute to acuminate, sometimes obtuse and retuse; primary veins 4–6(or 7) on each side of midrib, impressed or plane adaxially, somewhat raised abaxially. Panicles terminal or axillary, 4–11 × –8 cm, with or without leaf at base. Pedicel 1–5 mm. Calyx 1–1.5 mm, glabrous or pubescent. Corolla 3.5–5.5 mm; tube slightly shorter than lobes. Stamens reaching apex of corolla lobes or exceeding that; anthers ca. 1 mm. Fruit subglobose, 5–8 mm in diam."

Qsn #	Question	Answer
402	**Allelopathic**	
	Source(s)	**Notes**
	Grove, E., & Clarkson, B. D. (2005). An ecological study of Chinese privet (Ligustrum sinense Lour.) in the Waikato Region. CBER Contract Report No. 41. Prepared for Environment Waikato Regional Council	[Possibly. Some effects observed on radish seeds] "Due to observations of a limited number of species regenerating under Chinese privet dominated canopy a preliminary experiment was undertaken to investigate a possible allelopathic effect by Chinese privet which could inhibit seed germination or growth. Chinese privet leaf leachate was used as leaves often produce the toxic substances in other allelopathic tree species, although stems and roots may have a similar effect (Rice 1984; van den Bosch et al. 2004). Radish seeds were germinated and left for four days on damp filter paper in sealed dishes in an incubating oven at 25°C. Distilled water was the control and privet leaf leachate the treatment. After four days 92% of the control seeds had germinated compared to only 80% of the treated seeds. Mean root length for seeds treated with leachate was significantly lower (p=0.01309) than for the control seeds, mean stem length was also lower for treated seeds but not significantly (Table 2)."
	Greene, B. T., & Blossey, B. (2012). Lost in the weeds: Ligustrum sinense reduces native plant growth and survival. Biological Invasions, 14(1), 139-150	[Potentially] "Light limitation under dense stands of L. sinense appears to be the most probable cause of the reduced growth and survival seen in the transplant experiment. However, a number of alternative explanations involving allelopathy (Callaway and Aschehoug 2000), negative soil feedback, and alterations of arbuscular mycorrhizal communities (Greipsson and DiTommaso 2006) favoring self-propagation while suppressing competitors cannot be excluded. More detailed experiments manipulating one or more of the likely mechanisms deserve additional investigations, but such investigations are beyond the scope of this project. While we cannot provide a clear mechanistic explanation, the results of our study clearly establish L. sinense as an agent of change."

403	Parasitic	n
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Shrubs or small trees 2–4(–7) m, deciduous." [Oleaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"Both species of privet have associated with the poisoning of stock (mainly horses) ";"feeding fruit and foliage to pigs and fruits to sheep has resulted in no apparent ill effects"
	Williams, P. A., Timmins, S. M., Smith, J. M., & Downey, P. O. (2001). The Biology of Australian Weeds 38. Lonicera japonica Thunb. Plant Protection Quarterly, 16(3), 90-100	"In the Blue Mountains, swamp wallabies which browse Ligustrum sinense do not eat Japanese honeysuckle;"

Qsn #	Question	Answer
	Stromayer, K. A., Warren, R. J., Johnson, A. S., Hale, P. E., Rogers, C. L., & Tucker, C. L. (1998). Chinese privet and the feeding ecology of white-tailed deer: the role of an exotic plant. The Journal of Wildlife Management, 62(4): 1321-1329	"These results suggest privet is an important component of the fall and diets of CBP deer and may serve as a nutritional buffer during years of acorn scarcity. The value of privet a deer forage must be weighed against the threat it poses to biodiversity conservation."

405	Toxic to animals	y
	Source(s)	**Notes**
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Berries poisonous, highly toxic, may be fatal if eaten."
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"Both species of privet have associated with the poisoning of stock (mainly horses) and people (especially children)"
	Grove, E., & Clarkson, B. D. (2005). An ecological study of Chinese privet (Ligustrum sinense Lour.) in the Waikato Region. CBER Contract Report No. 41. Prepared for Environment Waikato Regional Council	"The fruit and leaves of all of the naturalised privet species are considered poisonous to humans and stock, isolated poisoning cases have been recorded in New Zealand and overseas including the death of cows and horses, and human sickness and diarrhoea from eating fruit (Connor 1977). Nevertheless stock appear to graze seedlings in New Zealand (B.D. Clarkson pers. comm.) and the species is a common component of deer diet in parts of the USA (providing up to 75% of winter diet during a study in Georgia: Stromayer et al. 1998)."

406	Host for recognized pests and pathogens	n
	Source(s)	**Notes**
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[None mentioned] "Ligustrum spp. leaves are high in phenolic compounds that defend against herbivores, especially insects. The compounds work by inhibiting digestive enzymes and proteins (Batcher, 2000). This would be expected to restrict the diversity of natural enemies. However, Zheng et al. (2004) report 95 species of arthropod from seven orders and 39 families recorded from the genus. Of their extensive list of natural enemies associated with L. sinense, those reported as monophagous are listed in the Natural Enemies table. In addition a leaf-spot disease on variegated varieties of L. sinense caused by Corynesporacassiicola has been identified as serious in the USA (Miller and Alfieri, 1973)."

Qsn #	Question	Answer
407	**Causes allergies or is otherwise toxic to humans**	**y**
	Source(s)	**Notes**
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"Both species of privet have associated with the poisoning of stock (mainly horses) and people (especially children)"
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Ligustrum sinense ... Berries poisonous, highly toxic, may be fatal if eaten."

408	Creates a fire hazard in natural ecosystems	
	Source(s)	**Notes**
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[Litter has low flammability] "Faulkner et al. (1989) reported that in experimental trials of prescribed burning, there were no significant differences in the abundance of L. sinense in burned versus unburned plots. Ligustrum litter has a low flammability and fires did not carry well in these treatments. The Nature Conservancy land managers in Alabama reported that burning top-kills L. vulgare and L. sinense and eliminates them over time, and that burning is effective at controlling L. sinense if done annually with low fuel moisture and high Keetch-Byram Drought."
	Munger, G. T. 2003. Ligustrum spp. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. http://www.fs.fed.us/database/feis. [Accessed 15 Sep 2017]	[Unknown if fire risk is increased in natural settings] "Fire adaptations: Chinese privet survives fire by sprouting from the root crown in response to damage of aboveground tissue [14,31]. It is likely, though speculative, that privets generally respond to fire damage by sprouting from the root crown, and/or by root suckering (see Fire Effects). More research is needed on the fire ecology of privets in North America. "

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	**Notes**
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"Both species of privet can germinate and grow under very low light intensity"
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Chinese privet thrives even in deep shade. Seedlings may persist for several years until disturbances increase light levels, causing rapid growth (Langeland and Craddock Burks, 1998; Muyt, 2001)."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Munger, G. T. 2003. Ligustrum spp. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. http://www.fs.fed.us/database/feis. [Accessed 15 Sep 2017]	"Chinese privet occurs within a variety of sites throughout its North American range. It is adapted to an assortment of soil types, is somewhat drought tolerant, and has low soil fertility requirements. Chinese privet is most competitive on moist, well-drained soils [31]. It is frequently mentioned from moist or "nonxeric" sites [1,4,10,14,20,31,40,46,59,68], and ruderal or edge habitats [1,9,20,31,43,59,68,75]."
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"Soil drainage impeded seasonally waterlogged Soil reaction acid alkaline neutral Soil texture light medium Special soil tolerances infertile shallow"

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Shrubs or small trees 2–4(–7) m, deciduous."

412	Forms dense thickets	y
	Source(s)	**Notes**
	Langeland, K.A. & Burks, K.C. (eds.). 2008. Identification and Biology of Non-Native Plants in Florida's Natural Areas. UF/IFAS Distribution, Gainesville, FL	"Can form impenetrable thickets and thrive in sunny concrete crevices as well as in fully shaded floodplains—“found about everywhere that birds fly” (Dirr 1983)."
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"Ligustrum sinense displaces the native shrub layer in both forest and regenerated native vegetation in the north Island of New Zealand."
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Where invasive, the shrub forms impenetrable thickets crowding out native vegetation and preventing any regeneration of other species."

501	Aquatic	n
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Terrestrial shrub/small tree] "Shrubs or small trees 2–4(–7) m, deciduous." ... "Mixed forests, valleys, along streams, thickets, woods, ravines; 200–2700 m."

502	Grass	n

Qsn #	Question	Answer
	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 15 Sep 2017]	Family: Oleaceae Tribe: Oleeae

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 15 Sep 2017]	Family: Oleaceae Tribe: Oleeae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Shrubs or small trees 2–4(–7) m, deciduous."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence. Widespread distribution] "Mixed forests, valleys, along streams, thickets, woods, ravines; 200–2700 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Vietnam]."

602	Produces viable seed	y
	Source(s)	**Notes**
	Munger, G. T. 2003. Ligustrum spp. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. http://www.fs.fed.us/database/feis. [Accessed 15 Sep 2017]	"Privets reproduce from seed or from root or stump sprouts"
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"reproduce naturally only by seed"

603	Hybridizes naturally	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Johnson, S. B. (2009). Privet species–are we sitting on species time bombs?. In Proceedings of the 15th Biennial NSW Weeds Conference, Narrabri	"Hybrids between the various species of Ligustrum have not been reported (Swarbrick et al. 1999), with one possible exception between L. ovalifolium and L. sinense (Goulding 1973)."
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"hybrids have not been reported"

604	Self-compatible or apomictic	y
	Source(s)	**Notes**
	Needham, J. R. (2013). Exotic plants and local pollinators: Ligustrum sinense and Lonicera japonica pollination in central Arkansas. MSc Thesis. University of Central Arkansas, Conway, Arkansas	[Partial self-compatibility, but with reduced seed set] "Ligustrum sinense fruit set was significantly reduced by the exclusion of pollinating insects (Figure 1.1 andFigure 1.2), but it was higher than expected for an SI plant. There are two possible scenarios that explain the presence of L. sinense fruit inside pollinator exclusion bags. First, even though L. sinense is likely SI because access to pollinators increases fruit set and it belongs to a family with many SI species, it is possible that L. sinense exhibits partial self-incompatibility or delayed selfing. Self-incompatibility is not a discrete trait; flowering plants can vary in their strength of self-incompatibility allowing typically SI flowering plant species to be SC under certain conditions."

605	Requires specialist pollinators	n
	Source(s)	**Notes**
	Needham, J. R. (2013). Exotic plants and local pollinators: Ligustrum sinense and Lonicera japonica pollination in central Arkansas. MSc Thesis. University of Central Arkansas, Conway, Arkansas	"Ligustrum sinense flowers were visited by a wide range of pollinating insects representing several orders, and the flowers produced significantly more fruit when exposed to pollinators than when excluded from them."
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"Pollination is presumably by medium sized insects such as flies and beetles"

606	Reproduction by vegetative fragmentation	y
	Source(s)	**Notes**
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"Ligustrum sinense reproduces by shoots arising from surface roots as well as by seed, although the degree which this happens without prior wounding of the surface roots is unclear. Such wounding could occur naturally to some extent, and subsequent cutting of the interconnecting surface roots would results in separate plants"

607	Minimum generative time (years)	>3
	Source(s)	**Notes**

Qsn #	Question	Answer
	Johnson, S. B. (2009). Privet species–are we sitting on species time bombs?. In Proceedings of the 15th Biennial NSW Weeds Conference, Narrabri	"Ligustrum species appear to have a long juvenile period before reaching reproductive maturity, for example four years in L. lucidum (Blood 2001). There is no information on the juvenile period of other Ligustrum species."
	Criley, R. 2002. University of Hawaii at Manoa. Department of Tropical Plant and Soil Sciences. Pers. Comm.	4+ years

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	**Notes**
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"The ellipsoid fruits are blue-black and berry-like, 5–8 mm diameter and formed into abundant pyramidal clusters." ... "L. sinense is capable of spreading unaided through seed set and also with the help of fruit feeding birds and the intentional redistribution by humans through horticulture and hedging." ... "The spread of this species is aided by fructivorous birds and one study in Australia found that pied currawongs carried the seeds up to one kilometre (Swarbrick et al., 1999)."

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"In Hawaii, L. sinense is seen in Japanese-style gardens and has escaped cultivation at least on Kauai and the Big Island, its spread aided by birds."
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"The plant is still sold by many nurseries in its invasive range with no reference to its invasive potential (USDA-NRCS, 2000) so its continued intentional introduction is almost guaranteed given the ease with which gardeners can grow the plant successfully. Growing the plant from cuttings is very easy with 100% survival shown even in cuttings made with no leaves (Bona et al., 2005)."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	**Notes**
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"L. sinense is capable of spreading unaided through seed set and also with the help of fruit feeding birds and the intentional redistribution by humans through horticulture and hedging."
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"Seed dispersal is principally by birds"

704	Propagules adapted to wind dispersal	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Langeland, K.A. & Burks, K.C. (eds.). 2008. Identification and Biology of Non-Native Plants in Florida's Natural Areas. UF/IFAS Distribution, Gainesville, FL	"Fruits dark blue or bluish-black drupes, ellipsoid to subglobose, mostly 4-5 mm (0.2 in) long." ... "Dispersal by birds important to new colonizations (Montaldo 1993) and higher seed germination (Burrows and Kohen 1986)."
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"Seed dispersal is principally by birds"

705	Propagules water dispersed	y
	Source(s)	**Notes**
	Ward, R. W. (2002). Extent and dispersal rates of Chinese privet (Ligustrum sinense) invasion on the upper Oconee River floodplain, North Georgia. Southeastern Geographer, 42(1), 29-48	"privet remains a popular hedge plant in the eastern and southeastern U.S., and seed from abandoned hedges and mature individuals growing on property margins are routinely carried by street runoff, through storm drains, to rivers and streams where it is dispersed over floodplains by overbank flood events."

706	Propagules bird dispersed	y
	Source(s)	**Notes**
	Kubiak, P. J. 2009. Fire responses of bushland plants after the January 1994 wildfires in northern Sydney. Cunninghamia, 11(1): 131-165	"Buchanan (1989) found evidence to indicate that the pied currawong (Strepera graculina) is an important agent in the dispersal of some major environmental weeds, such as Ligustrum sinense, Ligustrum lucidum and Lantana camara, in the Lane Cove River area."
	Panetta, F. D. (2000). Fates of fruits and seeds of Ligustrum lucidum WT Ait. and L. sinense Lour. maintained under natural rainfall or irrigation. Australian Journal of Botany, 48(6), 701-706	"Fruits of L. lucidum and L. sinense are fed upon by a number of generalist avian frugivores (see Swarbrick et al. 1999), the most prominent of which is the pied currawong (Strepera graculina) (Buchanan 1989b; Bass 1995, but see Ekert and Bucher 1999). Prolific fruit crops (Westoby et al. 1983) are produced in winter at a time when S. graculina forms feeding flocks."
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"L. sinense is capable of spreading unaided through seed set and also with the help of fruit feeding birds and the intentional redistribution by humans through horticulture and hedging."
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Seeds are dispersed by frugivorous birds and mammals."

Qsn #	Question	Answer
707	**Propagules dispersed by other animals (externally)**	**n**
	Source(s)	**Notes**
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"The ellipsoid fruits are blue-black and berry-like, 5–8 mm diameter and formed into abundant pyramidal clusters." ... "L. sinense is capable of spreading unaided through seed set and also with the help of fruit feeding birds and the intentional redistribution by humans through horticulture and hedging." ... "The spread of this species is aided by fructivorous birds and one study in Australia found that pied currawongs carried the seeds up to one kilometre (Swarbrick et al., 1999)." [No means of external attachment]

708	Propagules survive passage through the gut	y
	Source(s)	**Notes**
	McCall, L. J., & Walck, J. L. (2014). Dispersal characteristics of two native and two nonnative fleshy-fruited sympatric shrubs. Castanea, 79(2), 88-99	"Regurgitated and defecated seeds of L. sinense were frequently found on leaves of L. sinense, on leaves of nearby shrubs of other species, and on the ground" ... "No evidence of seed predation of L. sinense was observed."
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	"Seed dispersal is principally by birds"

801	Prolific seed production (>1000/m2)	y
	Source(s)	**Notes**
	Kalesnik, F., Sirolli, H., & Collantes, M. (2013). Seed bank composition in a secondary forest in the Lower Delta of the Paraná River (Argentina). Acta Botanica Brasilica, 27 (1), 40-49	"Although L. sinense seeds did not germinate in any of the samples, high densities of that species where found in all samples by direct count, totaling 197 seeds (1254 seeds/m2)."
	Westoby, M., Dalby, J., & Adams-Acton, L. (1983). Fruit production by two species of privet, Ligustrum sinense Lour. and L. lucidum WT Ait., in Sydney. Australian Weeds, 2(4), 127-129	"Fruit production by Ligustrum sinense and L. lucidum was studied at 58 sites in urban bushland in the N. suburbs of Sydney in 1978, and in a further 8 sites (L. sinense) in 1979. L. sinense produced 1300 fruits/m2 of canopy while L. lucidum produced 400/m2. Fruit production in both spp. was reduced with increasing shade and was lower on smaller diam. shoots of L. sinense. There was variation in fruit production between shoots of similar sizes and at differentsites which was not correlated with soil fertility. Sites with high L. sinense fruit production in 1979 were not the same as those with high production in 1978."
	Swarbrick, J. T., Timmins, S. M., & Bullen, K. M. (1999). The biology of Australian weeds. 36. Ligustrum lucidum Aiton and Ligustrum sinense Lour. Plant Protection Quarterly, 14 (4), 122-130	85 seeds/100fruits

802	Evidence that a persistent propagule bank is formed (>1 yr)	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Panetta, F. D. (2000). Fates of fruits and seeds of Ligustrum lucidum WT Ait. and L. sinense Lour. maintained under natural rainfall or irrigation. Australian Journal of Botany, 48(6), 701-706	"Seeds of both species were short-lived, with most (>95%) not persisting for 12 months in any case."

803	Well controlled by herbicides	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"Chemical control After cutting, large plants can be treated with herbicide. Effective herbicides include glyphosate, tryclopyr or 2,4-D plus picloram (Weber, 2003). The findings of a detailed experimental study carried out by Harrington and Miller (2005) on the application rates and timings of two chemicals against L. sinense were as follows: for spring (April) and autumn (October and December) applications, the percentage control of privet cover averaged 93-100% and 49-70% for glyphosate and triclopyr treatments, respectively, whereas for summer (June and August) applications, the control averaged 67-69% and 14-26%, respectively (study 1). However, privet control was not influenced by variation in herbicide rates of 1.7, 3.4, 5.0, or 6.7 kg a.e./ha compared with each of the five application timings. No differences were found in August comparisons of liquid versus dry glyphosate products or water-soluble versus oil-soluble triclopyr products for each of the four rates (study 2). In a comparison of low rates of glyphosate applied in August with or without trenching of plot perimeters to isolate privet clumps (study 3), control increased from 12 to 65% as rate increased from 0 to 0.8 kg a.e./ha, suggesting that rate responses may occur at lower values than those tested in studies 1 and 2. Isolation of privet clumps by trenching did not have a statistically detectable effect on privet susceptibility to glyphosate. Low rates of glyphosate (1.7 kg a.e./ha or possibly lower) will provide effective control of privet when applied in the spring or autumn. Cut Stump Method: This control method should be considered when treating individual shrubs or where the presence of desirable species precludes foliar application. It is recommended that this treatment is used only as long as the ground is not frozen. Immediately after cutting stems at or near ground level, apply a 25% solution of glyphosate and water or triclopyr and water to the cut stump, being careful to cover the entire surface (Batcher, 2000). Effectiveness of the herbicide is increased if holes are cut in the top of the freshly felled stump, to hold the herbicide in for better absorption by plant. Stem injection: Among the chemicals evaluated as injection treatments for the species, triclopyr at 4.8% and 9.6% were found to be more effective than hexazinone (25%) and glyphosate (7. 2%) (Mowatt, 1981). Basal Bark Method: Apply a mixture of 25% triclopyr and 75% horticultural oil to the basal parts of the shrub to a height of 30-38 cm(12-15 in) from the ground. Thorough wetting is necessary for good control; spray until run-off is noticeable at the ground line. Like the cut stump application, this method may be effective throughout the year, if Ligustrum spp. responds similarly to Rhamnus spp. (Batcher, 2000). In New Zealand, researchers have killed standing Ligustrum trees by drilling downward-sloping 20 mm wide holes 5 cm into the trunk at no greater than 5 cm spacing around the trunk, and filling the holes with a stump paint-herbicide mix (Batcher, 2000). Faulkner et al. (1989) reported that in experimental trials of prescribed burning, there were no significant differences in the abundance of L. sinense in burned versus unburned plots. Ligustrum litter has a low flammability and fires did not carry well in these treatments. The Nature Conservancy land managers in Alabama reported that burning top-kills L. vulgare and L. sinense and eliminates them over time, and that burning is effective at controlling L. sinense if done annually with low fuel moisture and high Keetch-Byram Drought."

Qsn #	Question	Answer
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching,L. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Foliar applications of glyphosate effective. Katie Cassel (Kōke'e Museum) reported privet was susceptible to cut-stump applications of triclopyr or glyphosate. Stems <0.5 inch diameter susceptible to basal bark application of 20% triclopyr ester in oil. Larger stems must be notched or frilled. HAVO staff report control with triclopyr amine at 10% of product in water applied to cut stumps (Chris Zimmer, HAVO). The manufacturer reported that metsulfuron was highly effective when applied to the foliage of actively growing plants at a rate of 5 grams per 10 liters of water (spray to wet the foliage)"
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Large plants can be cut and the cut stumps treated with herbicide. Effective herbicides arc glyphosate, triclopyr or 2,4-D plus picloram. Control should aim at removing fruit-bearing plants first (Motooka et al., 2003; Batcher, 2014b). Glyphosate applied in the spring or autumn provides effective control (Harrington and Miller, 2005). If areas cleared of Chinese privet are planted with native plants future recolonization may be prevented."
	Miller, J.H. (1998). Primary screening of forestry herbicides for control of Chinese privet (Ligustrum sinense), Chinese wisteria (Wisteria sinensis, and trumpetcreeper (Campis radicans). Proceedings, Southern Weed Science Society 51: 161-162	"Privet control exceeded 90 percent with Accord (glyphosate) at 1.5 gpa and Arsenal (imazapyr) at 24 opa applied in August or September, while Escort (metsulfuron) provided 89 percent control at 3.3 opa applied in August These herbicides and rates were not significantly different Escort in September yielded only 73 percent control. Other herbicides when averaged by timing were as follows: Garlon 4 (triclopyr) at 1.5 gpa gave 64 percent control, Oust (sulfometuron) at 6 opa gave 31 percent control, Vanquish (dicamba) at 1.5 gpa gave 27 percent control, Tordon K (picloram) at 0.5 gpa gave 12 percent control, and Transline (clopyralid) at 21 opa yielded no control."
	Mowatt, J. (1981). Control of large-leaved privet (Ligustrum lucidum) and small-leaved privet (L. sinense) in urban bushland. Proceedings of the Sixth Australian Weeds Conference, 1981. Volume 1: 165-168	"Summary. Two methods of controlling large-leaved privet (Ligustrum lucidum) and small-leaved privet (L. sinense) were studied: poisoning of standing trees and physical removal. Large-leaved privet regenerated rapidly from cut stumps but not from lateral roots once the stump had been removed; Both species can be killed by injecting concentrated herbicide into the trunk without cutting the tree down. The two methods are discussed in relation to weeding urban bushland so as to cause minimal disturbance."

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

Qsn #	Question	Answer
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"Ligustrum spp. can be effectively controlled by the manual removal of young seedlings. Plants should be pulled as soon as they are large enough to grasp but before they produce seeds. Seedlings are best pulled after rain when the soil is loose. Larger stems (up to 6 cm in diameter) can be removed using a weed wrench or similar uprooting tools. The entire root must be removed since broken fragments may re-sprout. Mowing and cutting are appropriate for small populations or environmentally sensitive areas where herbicides cannot be used. Stems should be cut at least once per growing season as close to ground level as possible. Repeated mowing or cutting will control the spread of Ligustrum spp., but may not eradicate it. However, L. sinense cannot be permanently controlled by cutting, though covering the cut stems with black polyethylene showed some potential in prolonging suppression (Mowatt, 1981)."
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"The shrub resprouts after stem damage and suckers from roots."
	Kubiak, P. J. 2009. Fire responses of bushland plants after the January 1994 wildfires in northern Sydney. Cunninghamia, 11(1): 131-165	[Resprouts after fires] "Many populations of weed species rapidly re-established themselves by growing from soil seedbanks and/or by resprouting after the fires. For example, in the study areas, the troublesome environmental weeds Ligustrum sinense (Oleaceae), Rubus ?discolor (Rosaceae) and Lantana camara (Verbenaceae) all resprouted quickly and vigorously after the fires. These resprouting weed species subsequently flowered and fruited profusely in the burnt parts of the Lane Cove River area, within a handful of years after the fires of January 1994."

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**
	CABI, 2017. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"Biological control - None known as yet but identified as a potential target by Van Driesche et al. (2002)."
	WRA Specialist. 2017. Personal Communication	Unknown in Hawaiian Islands

Summary of Risk Traits:

High Risk / Undesirable Traits
• Grows in temperate to subtropical climates, & elevation range exceeds 2500 m, demonstrating environmental versatility
• Naturalized in several locations, including Kauai and Hawaii islands
• Agricultural and environmental weed
• Other Ligustrum species are invasive
• Potentially allelopathic
• Toxic to animals and people
• Host of pathogens
• Shade tolerant
• Tolerates many soil types
• Forms dense stands, excluding other vegetation
• Reproduces by seeds & vegetatively by suckering
• Partial self-compatibility
• Seeds dispersed by birds, other frugivorous animals, water & intentionally by people
• Prolific seed production
• Able resprout after cutting and fire

Low Risk Traits
• Unarmed (no spines, thorns, or burrs)
• Browsed by deer & other animals (palatable despite reports of toxicity)
• Ornamental
• Reaches maturity in 4+ years
• Seeds lose viability after 12 months
• Herbicides may provide effective control