Taxon: Fuchsia paniculata Lindl. **Family:** Onagraceae

Common Name(s): paniculate fuchsia
shrubby fuchsia

Synonym(s): Fuchsia arborescens (Misapplied)
Fuchsia hamellioides Moc. & Sesse ex
Fuchsia liebmannii H.Lév.
Fuchsia paniculata Lindl. subsp.
Schufia arborescens (Sims) Spach

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 6 Jul 2021

WRA Score: 3.0 **Designation:** EVALUATE **Rating:** Evaluate

Keywords: Tropical Shrub, Naturalized, Gynodioecious, Bird-Pollinated, 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)	n
304	Environmental weed		
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	n
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
408	Creates a fire hazard in natural ecosystems	y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle		
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	y
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	n
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)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
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)		

Supporting Data:

Qsn #	Question	Answer
101	**Is the species highly domesticated?**	**n**
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	[Not domesticated] "Distribution: Mexico to Panama. Frequent in moist oak-pine and evergreen cloud forest from Veracruz, Mexico south to central Panama. North of the Isthmus of Tehuantepec, it occurs only on the wet Caribbean facing-slopes in Puebla, Veracruz, and Oaxaca. This species grows at elevations of (800-)1,200-3,000 m (Fig. 6). Flowering throughout the year."

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. (2021). Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. (2021). 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**
	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 from central Mexico to Panama; in Hawai'i sparingly naturalized in wet forest, Kilauea Forest Reserve and vicinity of Thurston Lava Tube, Hawai'i."
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 1 Jul 2021]	"Native Northern America SOUTHERN MEXICO: Mexico [Chiapas, Oaxaca, Puebla, Veracruz de Ignacio de la Llave] Southern America CENTRAL AMERICA: Costa Rica, Guatemala, Nicaragua, Panama, El Salvador"

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 1 Jul 2021]	

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

Qsn #	Question	Answer
	Source(s)	**Notes**
	Dave's Garden. (2021). Fuchsia Species, Shrubby Fuchsia, Paniculate Fuchsia Fuchsia paniculata. https://davesgarden.com. [Accessed 1 Jul 2021]	"Hardiness: USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)"
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	[Broad elevation range in tropical regions] "Distribution: Mexico to Panama. Frequent in moist oak-pine and evergreen cloud forest from Veracruz, Mexico south to central Panama. North of the Isthmus of Tehuantepec, it occurs only on the wet Caribbean facing-slopes in Puebla, Veracruz, and Oaxaca. This species grows at elevations of (800-)1,200-3,000 m"

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Distribution: Mexico to Panama. Frequent in moist oak-pine and evergreen cloud forest from Veracruz, Mexico south to central Panama. North of the Isthmus of Tehuantepec, it occurs only on the wet Caribbean facing-slopes in Puebla, Veracruz, and Oaxaca."
	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 from central Mexico to Panama; in Hawai'i sparingly naturalized in wet forest, Kilauea Forest Reserve and vicinity of Thurston Lava Tube, Hawai'i."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	**Notes**
	Dave's Garden. (2021). Fuchsia Species, Shrubby Fuchsia, Paniculate Fuchsia Fuchsia paniculata. https://davesgarden.com. [Accessed 2 Jul 2021]	"This plant is said to grow outdoors in the following regions: Alameda, California Oakland, California San Francisco, California(2 reports) San Leandro, California"
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	[Introduced to and naturalized in at least three locations outside native range] "Fuchsia paniculata has apparently become naturalized in Sri Lanka, Tanzania, and Hawaii. In addition, Standley & Williams (1963, p. 530) stated that it was widely cultivated for ornament in Guatemala, especially in the central highlands around Coban, where panicles of flowers were often sold in markets."
	Howell, C. J., & Sawyer, J. W. (2006). New Zealand naturalised vascular plant checklist. New Zealand Plant Conservation Network, Wellington, NZ	[New Zealand] "Fuchsia paniculata - Naturalised plant status = Casual"

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

Qsn #	Question	Answer
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Fuchsia paniculata has apparently become naturalized in Sri Lanka, Tanzania, and Hawaii. In addition, Standley & Williams (1963, p. 530) stated that it was widely cultivated for ornament in Guatemala, especially in the central highlands around Coban, where panicles of flowers were often sold in markets."
	Heenan, P. B., Breitwieser, I., Glenny, D., De Lange, P. J., & Brownsey, P. J. (1998). Checklist of dicotyledons and pteridophytes naturalised or casual in New Zealand: additional records 1994–1996. New Zealand Journal of Botany, 36(2), 155-162	"Fuchsia paniculata Lindi. FIRST RECORD: AK 223791, Hepburn Creek Road, Warkworth, Northland, P. J. de Lange 2921 & G. M. Crowcroft, 5 Aug 1995. NOTES: Garden escape. Several shrubs growing on the roadside margin of a small indigenous forest remnant. Sometimes cultivated as Fuchsia arborescens or F. arborea."
	Heenan, P. B., de Lange, P. J., Cameron, E. K., Ogle, C. C., & Champion, P. D. (2004). Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 2001–2003. New Zealand Journal of Botany, 42(5): 797-814	"Fuchsia paniculata Lindl. ADDITIONAL RECORDS: AK 233842, B. Waller, 1 Apr 1997, North Auckland, Kaipara, South Head; CHR 560986, T. Belton, 5 Jun 2002, Westland, Greymouth, Paroa; CHR 560990, R. Blake, 1 Aug 2002, Wellington, Lower Hutt, Kelson; AK 284337, P. J. de Lange 5724, G. M. Crowcroft &T.J.de Lange, 23 Aug 2003, North Auckland, Waitakere Ranges, Titirangi, Exhibition Drive. NOTES: These collections are of adult trees, saplings, and seedlings growing among other weeds, native vegetation, and in a garden."
	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 from central Mexico to Panama; in Hawai'i sparingly naturalized in wet forest, Kilauea Forest Reserve and vicinity of Thurston Lava Tube, Hawai'i. First naturalized collection made in 1966 (Degener & Degener 31130, BISH)."

302	Garden/amenity/disturbance weed	n
	Source(s)	**Notes**
	Tunison, J.T. & Zimmer, N.G. (1992). Success in controlling local alien plants in Hawaii Volcanoes National Park. Pp 506-524 in Stone, C.P., Smith, C.W. & Tunison, J.T. (eds.): Alien Plant Invasions in Native Ecosystems of Hawaii: Management & Research. Coop. Nat. Park Res. Studies Unit, Univ. of Hawaii, Honolulu, HI	Controlled as a potential environmental weed. Impacts unspecified
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Listed as a weed of unspecified impacts
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	No evidence
	Global Invasive Species Database (2021). http://www.iucngisd.org/gisd/. [Accessed 1 Jul 2021]	No evidence

303	Agricultural/forestry/horticultural weed	n
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	No evidence
	Global Invasive Species Database (2021). http://www.iucngisd.org/gisd/. [Accessed 1 Jul 2021]	No evidence

Qsn #	Question	Answer
304	**Environmental weed**	
	Source(s)	**Notes**
	Tunison, J.T. & Zimmer, N.G. (1992). Success in controlling local alien plants in Hawaii Volcanoes National Park. Pp 506-524 in Stone, C.P., Smith, C.W. & Tunison, J.T. (eds.): Alien Plant Invasions in Native Ecosystems of Hawaii: Management & Research. Coop. Nat. Park Res. Studies Unit, Univ. of Hawaii, Honolulu, HI	[Controlled in Hawaii Volcanoes National Park, presumably due to potential threats to natural environment. Eradicated before negative impacts were documented] "Table 1. Characteristics of localized alien plant species currently managed in Hawai`i Volcanoes National Park." [Fuchsia paniculata - Reason for Controlling = Fruit dispersable by birds; manageable]
	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.	[Negative impacts not documented] "Native from central Mexico to Panama; in Hawai'i sparingly naturalized in wet forest, Kilauea Forest Reserve and vicinity of Thurston Lava Tube, Hawai'i. First naturalized collection made in 1966 (Degener & Degener 31130, BISH)."
	Global Invasive Species Database (2021). http://www.iucngisd.org/gisd/. [Accessed 1 Jul 2021]	No evidence
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	No evidence
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	References cited in the Global Compendium of Weeds include Fuchsia paniculata as a potential environmental weed, but do not describe or report specific detrimental impacts

305	Congeneric weed	y
	Source(s)	**Notes**
	Global Invasive Species Database. (2021). Species profile: Fuchsia boliviana. http://www.iucngisd.org/gisd/. [Accessed 1 Jul 2021]	"Fuchsia boliviana is a small tree that develops rapidly. In tropical regions where it has been introduced (such as La Réunion or Hawaii), this plant tends to dominate native plant species. The dense foliage of large stands of Fuchsia boliviana intercept the light limiting the development of native understory species."
	Global Invasive Species Database. (2021). Species profile: Fuchsia magellanica. http://www.iucngisd.org/gisd/. [Accessed 1 Jul 2021]	"Fuchsia magellanica is a shrub with many horticultural varieties. In tropical regions where it has been introduced (such as La Réunion and Hawaii), this rapidly developing plant tends to dominate native plant species. The very dense foliage of Fuchsia magellanica thickets intercept light, thus limiting the development of native understorey plants."
	Queensland Government. (2021). Weeds of Australia. Fuchsia magellanica. https://keyserver.lucidcentral.org/weeds. [Accessed 1 Jul 2021]	"Hardy fuchsia (Fuchsia magellanica) is regarded as an environmental weed in Victoria, South Australia, Tasmania and Western Australia. This species has escaped cultivation as a garden plant and is listed as a priority environmental weed by at least one Natural Resource Management region. It is invasive in forests and forest margins, moist open woodlands, riparian areas and disturbed bushland areas in southern Australia."

401	Produces spines, thorns or burrs	n
	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.	[No evidence] "Gynodioecious or subdioecious, erect shrubs to small trees 3-8 m tall, usually glabrous. Leaves opposite or in whorls of 3-4 per node, subcoriaceous, elliptic to oblanceolate, 5-15.5 cm long, 2-5.5 cm wide, margins minutely to coarsely serrate, petioles 0.8-2.5 cm long, stipules triangular, often connate, 0.8-1.2 mm long, caducous. Flowers numerous, erect, in terminal, branched panicles; perfect flowers with pedicels 8-12 mm long, floral tube 4-8 mm long, with a smooth to irregularly lobed nectary at base, sepals rose purple, 5-10 mm long, spreading to reflexed at anthesis, petals lavender, 4-10 mm long, erect to spreading, staminal filaments opposite the sepals 4-13 mm long, those opposite the petals 2-11 mm long; pistillate flowers similar to perfect ones except floral tube 3-5.5 mm long, sepals 3.5-7 mm long, petals 2.3-4.5 mm long"

402	Allelopathic	
	Source(s)	**Notes**
	WRA Specialist. (2021). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Gynodioecious or subdioecious, erect shrubs to small trees 3-8 m tall, usually glabrous." [Onagraceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**
	Nahed, J., Villafuerte, L., Grande, D., Pérez-Gil, F., Alemán, T., & Carmona, J. (1997). Fodder shrub and tree species in the Highlands of southern Mexico. Animal Feed Science and Technology, 68(3-4), 213-223	"Table 1. Multipurpose fodder plants used in sheep feeding in Bautista Chico, Chiapas, Mexico" [Fuchsia paniculata - Uses: 1 = fodder; 2 = firewood; 4 = ornamental]

405	Toxic to animals	n
	Source(s)	**Notes**
	Plants for a Future. (2021). Fuchsia paniculata. https://pfaf.org. [Accessed 6 Jul 2021]	"Known Hazards - None known"
	Nahed, J., Villafuerte, L., Grande, D., Pérez-Gil, F., Alemán, T., & Carmona, J. (1997). Fodder shrub and tree species in the Highlands of southern Mexico. Animal Feed Science and Technology, 68(3-4), 213-223	[No evidence. Used as fodder] "Table 1. Multipurpose fodder plants used in sheep feeding in Bautista Chico, Chiapas, Mexico" [Fuchsia paniculata - Uses: 1 = fodder; 2 = firewood; 4 = ornamental]
	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	

Qsn #	Question	Answer
	Source(s)	**Notes**
	The Royal Horticultural Society. (2021). Fuchsia paniculata - paniculate fuchsia. https://www.rhs.org.uk. [Accessed 6 Jul 2021]	"Pests Aphids, capsid bug, fuchsia gall mite and vine weevil may cause problems Diseases May be subject to glasshouse grey moulds and fuchsia rust"

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	**Notes**
	Plants for a Future. (2021). Fuchsia paniculata. https://pfaf.org. [Accessed 6 Jul 2021]	"Known Hazards - None known"
	Quattrocchi, U. (2012). CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	[No evidence. Does not occur in fire prone habitats] "Distribution: Mexico to Panama. Frequent in moist oak-pine and evergreen cloud forest from Veracruz, Mexico south to central Panama. North of the Isthmus of Tehuantepec, it occurs only on the wet Caribbean facing-slopes in Puebla, Veracruz, and Oaxaca. This species grows at elevations of (800-)1,200-3,000 m"

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	**Notes**
	Plants for a Future. (2021). Fuchsia paniculata. https://pfaf.org. [Accessed 6 Jul 2021]	"It can grow in semi-shade (light woodland) or no shade."
	Dave's Garden. (2021). Fuchsia Species, Shrubby Fuchsia, Paniculate Fuchsia Fuchsia paniculata. https://davesgarden.com. [Accessed 6 Jul 2021]	"Sun Exposure: Sun to Partial Shade Light Shade"
	The Royal Horticultural Society. (2021). Fuchsia paniculata - paniculate fuchsia. https://www.rhs.org.uk. [Accessed 6 Jul 2021]	"Sunlight Full Sun Partial Shade"
	MorningChores. (2021). Growing Fuchsias: How to Plant, Raise, and Use The Berries and Flowers. https://morningchores.com/growing-fuchsias/. [Accessed 6 Jul 2021]	[General description] "Fuchsias usually need partial shade without hot afternoon sun. Check on your hybrid, though, as some do prefer full sun. While they can grow in full shade, they won't usually bloom, or blooming will be reduced if they don't get a few hours of direct sun."

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

Qsn #	Question	Answer
	The Royal Horticultural Society. (2021). Fuchsia paniculata - paniculate fuchsia. https://www.rhs.org.uk. [Accessed 6 Jul 2021]	"Moisture - Moist but well-drained, Well-drained Soil - Chalk, Clay, Loam, Sand pH - Acid, Alkaline, Neutral"
	Plants for a Future. (2021). Fuchsia paniculata. https://pfaf.org. [Accessed 6 Jul 2021]	"Succeeds in any fertile well-drained circum-neutral soil[200]. Succeeds in a good loam if sand and leafmold are added[1]."

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Erect woody shrubs or small trees 3-8 m tall, usually glabrous."

412	Forms dense thickets	n
	Source(s)	**Notes**
	Munn-Estrada, D. X. (2017). Contribution to the Floristic Knowledge of the Sierra Mazateca of Oaxaca, Mexico. Lundellia, 20(1), 25-59	"Other species present in this area but not as abundant as Oreomunnea forests are: Saurauia villosa, Clethra conzattiana, Fuchsia paniculata, Glossostipula concinna, Myriocarpa longipes, Oreopanax xalapensis, and Arachnothryx heteranthera."
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	[No evidence] "Distribution: Mexico to Panama. Frequent in moist oak-pine and evergreen cloud forest from Veracruz, Mexico south to central Panama. North of the Isthmus of Tehuantepec, it occurs only on the wet Caribbean facing-slopes in Puebla, Veracruz, and Oaxaca. This species grows at elevations of (800-)1,200-3,000 m"
	Heenan, P. B., de Lange, P. J., Cameron, E. K., Ogle, C. C., & Champion, P. D. (2004). Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 2001–2003. New Zealand Journal of Botany, 42(5): 797-814	[No evidence] "Fuchsia paniculata Lindl. ADDITIONAL RECORDS: AK 233842, B. Waller, 1 Apr 1997, North Auckland, Kaipara, South Head; CHR 560986, T. Belton, 5 Jun 2002, Westland, Greymouth, Paroa; CHR 560990, R. Blake, 1 Aug 2002, Wellington, Lower Hutt, Kelson; AK 284337, P. J. de Lange 5724, G. M. Crowcroft &T.J.de Lange, 23 Aug 2003, North Auckland, Waitakere Ranges, Titirangi, Exhibition Drive. NOTES: These collections are of adult trees, saplings, and seedlings growing among other weeds, native vegetation, and in a garden."
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai‘i Press and Bishop Museum Press, Honolulu, HI.	[No evidence] "Native from central Mexico to Panama; in Hawai'i sparingly naturalized in wet forest, Kilauea Forest Reserve and vicinity of Thurston Lava Tube, Hawai'i. First naturalized collection made in 1966 (Degener & Degener 31130, BISH)."
	Global Invasive Species Database (2021). http://www.iucngisd.org/gisd/. [Accessed]	No evidence

Qsn #	Question	Answer
501	**Aquatic**	**n**
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	[Terrestrial] "Frequent in moist oak-pine and evergreen cloud forest from Veracruz, Mexico south to central Panama. North of the Isthmus of Tehuantepec, it occurs only on the wet Caribbean facing-slopes in Puebla, Veracruz, and Oaxaca. This species grows at elevations of (800-)1,200-3,000 m"

502	Grass	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 1 Jul 2021]	"Family: Onagraceae Subfamily: Onagroideae Tribe: Circaeeae"

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 1 Jul 2021]	"Family: Onagraceae Subfamily: Onagroideae Tribe: Circaeeae"

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Erect woody shrubs or small trees 3-8 m tall, usually glabrous. Branchlets ascending, 1-4 dm long, 2-5 m thick, subtriangular to quadrangular; older branches and main trunk 2-15 cm thick."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	**Notes**
	GBIF Secretariat (2021). Fuchsia paniculata Lindl. GBIF Backbone Taxonomy. Checklist dataset. https://www.gbif.org/species/5938223. [Accessed 6 Jul 2021]	IUCN status - LC (Least Concern)

602	Produces viable seed	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Berry subglobose, 4--9 mm long, 4--7 mm thick, purple with a glaucous, waxy bloom; seeds 1-1.4 mm long, 0.5-0.8 mm thick."
	Plants for a Future. (2021). Fuchsia paniculata. https://pfaf.org. [Accessed 6 Jul 2021]	"Seed - best sown as soon as it is ripe[200] though it can also be sown in the spring[1]. Surface sow the seed in pots in a warm greenhouse and do not allow the compost to dry out[200]. Germination should take place in less than 6 weeks."

603	Hybridizes naturally	
	Source(s)	**Notes**
	Wagner, W. L., Hoch, P. C., & Raven, P. H. (2007). Revised classification of the Onagraceae. Systematic Botany Monographs 83: 1-240	[Unknown for Fuchsia paniculata] "Many species and hybrids of Fuchsia are cultivated and are the most widely cultivated members of the family. Hybrids between members of sect. Quelusia and sect. Ellobium have given rise to most cultivated fuchsias, which generally are treated under the names F. ´hybrida Hort. and F. speciosa Hort. (Berry 1989); the most common parental species of hybrids are F. magellanica and F. fulgens. There are hundreds of named cultivars in Fuchsia, and many horticultural societies worldwide are specifically dedicated to growing and enjoying them."

604	Self-compatible or apomictic	y
	Source(s)	**Notes**
	Tropical Plants Database, Ken Fern. (2021). Fuchsia paniculata. http://tropical.theferns.info. [Accessed 6 Jul 2021]	"Self-fertile - Yes"
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	[Some seeds may be produced by perfect-flowered selfed plants] "Perfect-flowered plants with small stigmas and short styles, raised at the Missouri Botanical Garden from seed of Breedlove 42742 (MO) from Chiapas, Mexico, regularly produced moderate numbers of selfed fruits with viable seeds. Some of these seeds were raised until flowering, yielding 9 hermaphroditic and 4 pistillate individuals. Although the sample size was quite small, this does indicate that male sterility in F. paniculata is not controlled by a dominant gene"

605	Requires specialist pollinators	y
	Source(s)	**Notes**
	Partida-Lara, R., Enríquez, P. L., Vázquez-Pérez, J. R., de Bonilla, E. P. D., Martínez-Ico, M., & Rangel-Salazar, J. L. (2018). Pollination syndromes and interaction networks in hummingbird assemblages in El Triunfo Biosphere Reserve, Chiapas, Mexico. Journal of Tropical Ecology, 34 (5), 293-307	[Fuchsia paniculata - Pollination = Ornit: ornithophilous. Visited by hummingbirds] "Appendix 1. Plant species visited by hummingbirds according to their pollination syndrome (Ornit: ornithophilous plants; NonOrnit: nonornithophilous plants) at three altitudes: high (>2000–2500 m asl), middle (>1000–2000 m asl) and low (300–1000 m asl) in El Triunfo Biosphere Reserve, Chiapas, Mexico."
	Wagner, W. L., Hoch, P. C., & Raven, P. H. (2007). Revised classification of the Onagraceae. Systematic Botany Monographs 83: 1-240	[Genus description. Fuchsia paniculata visited by hummingbirds and some bumblebees] "by hummingbirds, other passerine birds (Pacific species), and sometimes bees, flies (tachinid and syrphid), and butterflies"

Qsn #	Question	Answer
606	**Reproduction by vegetative fragmentation**	**n**
	Source(s)	**Notes**
	Plants for a Future. (2021). Fuchsia paniculata. https://pfaf.org. [Accessed 6 Jul 2021]	[Propagated by seeds and by greenwood cuttings. Natural vegetative spread not documented] "Seed - best sown as soon as it is ripe[200] though it can also be sown in the spring[1]. Surface sow the seed in pots in a warm greenhouse and do not allow the compost to dry out [200]. Germination should take place in less than 6 weeks. Prick out the seedlings into individual pots when they are large enough to handle, and grow them on in the greenhouse for at least their first winter. Plant out in late spring or early summer, after the last expected frosts. Inter-nodal cuttings of greenwood, 5 - 8cm long, May/June in a frame. Quick and easy, a high percentage take[78, K]. Overwinter in the greenhouse for the first year and plant out after the last expected frosts. Inter-nodal cuttings of half-ripe wood, July/August in a frame. Very quick and easy, treat as greenwood cuttings above[K]. Cuttings usually succeed at any time during the growing season[K]."
	Berry, P. E. (1982). The systematics and evolution of Fuchsia sect. Fuchsia (Onagraceae). Annals of the Missouri Botanical Garden, 69(1): 1-198	[Some species in sect. Fuchsia spread vegetatively. No evidence for Fuchsia paniculata, which is placed in sect. Schufia] "Trailing stems or broken stem pieces of Fuchsia root readily in the moist humus that is usually found in thickets where most species of the genus occur. Large colonies of F. boliviana that reproduce mainly in this manner were seen in Venezuela (naturalized) and in Bolivia (native). The same process also gives rise in other species to dense thickets of plants that probably arose from a single individual."

607	**Minimum generative time (years)**	
	Source(s)	**Notes**
	Tropical Plants Database, Ken Fern. (2021). Fuchsia paniculata. http://tropical.theferns.info. [Accessed 6 Jul 2021]	"Growth Rate Medium" [Time to maturity unknown]

701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**n**
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Berry subglobose, 4--9 mm long, 4--7 mm thick, purple with a glaucous, waxy bloom; seeds 1-1.4 mm long, 0.5-0.8 mm thick." [No evidence. Fleshy-fruited and adapted for bird dispersal. Seeds lack means of external attachment]

702	**Propagules dispersed intentionally by people**	**y**
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Fuchsia paniculata has apparently become naturalized in Sri Lanka, Tanzania, and Hawaii. In addition, Standley & Williams (1963, p. 530) stated that it was widely cultivated for ornament in Guatemala, especially in the central highlands around Coban, where panicles of flowers were often sold in markets."

Qsn #	Question	Answer
	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	"Native from the state of Veracruz, Mexico, to central Panama, it was first introduced to cultivation in Europe prior to 1847, when it was listed for sale in the catalog of the Van Houtte nurseries in France, and is now widely cultivated in botanical gardens and parks throughout the world."
	Dave's Garden. (2021). Fuchsia Species, Shrubby Fuchsia, Paniculate Fuchsia Fuchsia paniculata. https://davesgarden.com. [Accessed 1 Jul 2021]	"This plant is said to grow outdoors in the following regions: Alameda, California Oakland, California San Francisco, California(2 reports) San Leandro, California"

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Berry subglobose, 4--9 mm long, 4--7 mm thick, purple with a glaucous, waxy bloom; seeds 1-1.4 mm long, 0.5-0.8 mm thick." [No evidence, and unlikely. Adapted for bird-dispersal. Not cultivated with produce]

704	Propagules adapted to wind dispersal	n
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Berry subglobose, 4--9 mm long, 4--7 mm thick, purple with a glaucous, waxy bloom; seeds 1-1.4 mm long, 0.5-0.8 mm thick." [Bird-dispersed]

705	Propagules water dispersed	n
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Berry subglobose, 4--9 mm long, 4--7 mm thick, purple with a glaucous, waxy bloom; seeds 1-1.4 mm long, 0.5-0.8 mm thick." [Adapted for bird-dispersal. No evidence. Not reported to be common in riparian habitats]

706	Propagules bird dispersed	y
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Berry subglobose, 4--9 mm long, 4--7 mm thick, purple with a glaucous, waxy bloom; seeds 1-1.4 mm long, 0.5-0.8 mm thick."

Qsn #	Question	Answer
	Kappelle, M., & Wilms, J. J. A. M. (1997). Seed dispersal by birds and successional change in a Costa Rican montane oak forest. In Vegetation Science Meeting of the Royal Dutch Botanical Society, University of Amsterdam, NL, March 24, 1997. (Vol. 47, pp. 155-156)	"Frugivorous birds play a more important role in seed dispersal in the tropics than in temperate regions. Simultaneously, the key role they may play in forest recovery in disturbed vegetation is greater in the tropical montane zone than in tropical lowland rain forest areas. In parturelands, isolated remnant forest trees may function as protection for frugivorous birds, as perching places, for food, or as 'stepping stones'. Thus, these trees may act as nuclei of succession following forest clearing and abandonment. In order to get a better understanding of montane cloud forest recovery following clearing, and the role of frugivorous birds during the recovery process, we studied frugivorous bird species, their diets, behaviour, distribution, diversity and habitat preferences in a tropical montane oak dominated cloud forest area in the Costa Rican Los Santos Forest Reserve. Avian key seed dispersers were identified and classified according to different traits. Implications for restoration of neotropical montane cloud forests depending on seed dispersal by birds were formulated. During both the dry and wet season a total of 34 frugivorous bird species were observed in nine plots distributed over three plant communities (mature forest, successional forest and pastureland with isolated trees), being 45.3ú of the total amount of avian species known from the area. Twenty of these species (58.8%) were observed foraging on at least one fruiting tree species. A comparison of frugivorous bird species compositions showed no significant differences in similarity within and between plant communities, with exception of similarity found within pasturelands. Plant community preference was assessed for 18 frugivorous bird species, nine of which showed no significant plant community preference and three of which appeared significantly less often in either successional forest or pastureland. From the birds' perspective the plots belonging to three plant communities can be reclustered into two habitats, a closed forest and an open successional habitat. Only seven out of 34 bird species act as key seed dispersal agents, as they frequently cross the forest edge between closes mature and open, successional habitats. Two ornitohochorous tree species are identified as important fruit trees for several bird species: the small-seeded Fuchsia paniculata and the large-seeded Ocotea spp. the first of which grows mainly in secondary vegetation, the latter in closed, dense mature oak forest. Next to F. paniculata, Freziera candicans appeared to be the fruiting species visited by the largest number of foraging bird species. The presence of isolated ornithochorous tree species in open successional plant communities is an important factor for attracting birds from mature forests and accelerates the process of forest restoration. Therefore, reforestation of pasturelands with the fore-mentioned three arboreal taxa is highly recommended"
	Wilms, J. J. A. M., & Kappelle, M. (2006). Frugivorous birds, habitat preference and seed dispersal in a fragmented Costa Rican montane oak forest landscape. In Ecology and conservation of neotropical montane oak forests (pp. 309-324). Springer, Berlin, Heidelberg	"Small to medium-sized birds foraged mainly on fruits of successional trees as Fuchsia paniculata, Miconia tonduzii, Monnina xalapensis and Viburnum costaricanum, whereas medium to large-sized birds foraged largely on mature forest tree species in, e.g., Lauraceae, including Ocotea pharomachrosorum (the 'Quetzal-bearing' Ocotea). Fuchsia paniculata and Freziera candicans were the two most visited ornithochorous tree species,with 12 and nine avian frugivores foraging on their fruits, respectively." ... "Indeed, we observed numerous frugivorous birds in pastures where they were attracted by isolated fruiting trees, including the small-seeded pioneer tree Fuchsia paniculata and the large-seeded Ocotea spp."

Qsn #	Question	Answer
707	**Propagules dispersed by other animals (externally)**	**n**
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Berry subglobose, 4--9 mm long, 4--7 mm thick, purple with a glaucous, waxy bloom; seeds 1-1.4 mm long, 0.5-0.8 mm thick." [Adapted for frugivory. No means of external attachment]
708	**Propagules survive passage through the gut**	**y**
	Source(s)	**Notes**
	Wilms, J. J. A. M., & Kappelle, M. (2006). Frugivorous birds, habitat preference and seed dispersal in a fragmented Costa Rican montane oak forest landscape. In Ecology and conservation of neotropical montane oak forests (pp. 309-324). Springer, Berlin, Heidelberg	[Presumably Yes] "Fuchsia paniculata and Freziera candicans were the two most visited ornithochorous tree species,with 12 and nine avian frugivores foraging on their fruits, respectively."
801	**Prolific seed production (>1000/m2)**	
	Source(s)	**Notes**
	Breedlove, D. E., Berry, P. E., & Raven, P. H. (1982). The Mexican and Central American species of Fuchsia (Onagraceae) except for Sect. Encliandra. Annals of the Missouri Botanical Garden, 69(1): 209-234	"Berry subglobose, 4--9 mm long, 4--7 mm thick, purple with a glaucous, waxy bloom; seeds 1-1.4 mm long, 0.5-0.8 mm thick." [Numbers unknown, but possibly low in functionally male plants]
802	**Evidence that a persistent propagule bank is formed (>1 yr)**	
	Source(s)	**Notes**
	Royal Botanic Gardens Kew. (2021) Seed Information Database (SID). Version 7.1. http://data.kew.org/sid/ . [Accessed 6 Jul 2021]	[General description. Unknown for Fuchsia paniculata] "Storage Behaviour: Orthodox? Storage Conditions: Seeds maintained for 2 years in commercial storage conditions (Priestley, 1986)"
803	**Well controlled by herbicides**	**y**
	Source(s)	**Notes**

Qsn #	Question	Answer
	Gowans, M. (2021). How to Kill a Fuschia Bush. http://homeguides.sfgate.com/kill-fuschia-bush-73769.html. [Accessed 6 Jul 2021]	[Control of Fuchsia magellanica described] "Chemical Control 1. Cut the branches or stems off larger fuchsia bushes using loppers or gardening shears, leaving only the main stem. Cut the main stem to about 3 inches above the soil. 2. Pour undiluted 2,4-D, glyphosate or triclopyr herbicide in a disposable container. Dip a clean foam paintbrush in the undiluted herbicide and paint the cut stump with the saturated paintbrush. For best results, apply the herbicide immediately after cutting the fuchsia bush. If more than a few minutes pass, cut about 1/2 inch of the fuchsia bush stump before applying the herbicide. 3. Check the fuchsia bush stump regularly. Cut new growth with gardening shears and paint the cut with herbicide in the same manner as before."
	Tunison, J.T. & Zimmer, N.G. (1992). Success in controlling local alien plants in Hawaii Volcanoes National Park. Pp 506-524 in Stone, C.P., Smith, C.W. & Tunison, J.T. (eds.): Alien Plant Invasions in Native Ecosystems of Hawaii: Management & Research. Coop. Nat. Park Res. Studies Unit, Univ. of Hawaii, Honolulu, HI	[Table 2. Three Fuchsia paniculata plants effectively controlled using the Cut stump treatment with an application of Tordon RTU] "Eleven treated plant species were not observed over one year after treatment: albizia (Albizia sp.), Chinese melon (Benicasa hispida), eleagnus (Eleagnus umbellata), guavasteen (Feijoa sellowiana), tropical ash (Fraxinus uhdei), fuchsia (Fuchsia paniculata), Luculia gratissima, paperbark (Melaleuca quinquenervia), maile pilau (Paederia scandens), New Zealand flax (Phormium tenax), and rose apple (Syzygium jambos) (Table 2)."

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	
	Source(s)	**Notes**
	Tropical Plants Database, Ken Fern. (2021). Fuchsia paniculata. http://tropical.theferns.info. [Accessed 6 Jul 2021]	[Unknown. Tolerates pruning] "Any pruning, therefore, is best carried out at the start of the growing season, cutting out old wood in order to encourage vigorous new growth[200]."

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Unknown] "in Hawai'i sparingly naturalized in wet forest, Kilauea Forest Reserve and vicinity of Thurston Lava Tube, Hawai'i. First naturalized collection made in 1966 (Degener & Degener 31130, BISH)."

Summary of Risk Traits:

High Risk / Undesirable Traits
• Broad elevation range
• Grows, and able to spread, in regions with tropical climates.
• Naturalized on Hawaii Island, and possibly New Zealand.
• Other species have become invasive.
• Tolerates many soil types.
• Reproduces by seeds.
• Gynodioecious; plants with perfect flowers reportedly self-fertile
• Seeds dispersed by birds, and intentionally cultivated by people.

Low Risk Traits
• Although controlled in Hawaii Volcanoes National Park, negative impacts were not quantified.
• Unarmed (no spines, thorns, or burrs)
• Provides fodder for livestock.
• Non-toxic
• Gynodioecious breeding system may limit seed production, especially for isolated plants.
• Herbicides may provide effective control.

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> Possibly tolerant of some shade.
(B) Bird or clearly wind-dispersed?> Yes. Dispersed by birds.
(C) Life cycle <4 years? Unknown
Outcome = Evaluate Further