Taxon: Sambucus mexicana C.Presl ex DC. **Family:** Adoxaceae

Common Name(s): blue elderberry
Mexican elder
Mexican elderberry

Synonym(s): Sambucus bipinnata Schltdl. & Cham.
Sambucus canadensis L.
Sambucus nigra subsp. canadensis

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 26 Sep 2019

WRA Score: 9.0 **Designation:** H(HPWRA) **Rating:** High Risk

Keywords: Unresolved Taxonomy, Naturalized, Toxic, Bird-Dispersed, Coppices

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)	Low
203	Broad climate suitability (environmental versatility)	y=1, n=0	y
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed	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	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
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		

Qsn #	Question	Answer Option	Answer
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		
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	2
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		
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	n
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**
	Woodson, R., Schery, R., & D'Arcy, W. (1973). Flora of Panama. Part IX. Family 180. Caprifoliaceae. Annals of the Missouri Botanical Garden, 60(1), 155-167	[No evidence of domestication] "Sambucus canadensis ranges from Canada to Panama and has been introduced to South America. The var. laciniata which occurs in Panama is native to southern Florida, the Greater Antilles, and parts of Central America, but it has been widely planted throughout this range as an ornamental and medicinal plant so that the boundaries of its natural range are indeterminate."
	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	[No evidence of domestication] "The elderberry species cultivated and naturalized in Hawaii has long been called S. mexicana, a species native from Texas and California through Mexico and widely planted throughout tropical America."

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

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. (2019). Personal Communication	NA

201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**High**
	Source(s)	**Notes**
	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.	"Probably native only from Texas to California and Mexico, but widely planted throughout Central and South America" [Sambucus mexicana C.Presl ex DC. is a synonym of Sambucus canadensis L.]
	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	"The elderberry species cultivated and naturalized in Hawaii has long been called S. mexicana, a species native from Texas and California through Mexico and widely planted throughout tropical America." [Sambucus mexicana C.Presl ex DC. is a synonym of Sambucus canadensis L.]

202	**Quality of climate match data**	**Low**
	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.	"Probably native only from Texas to California and Mexico, but widely planted throughout Central and South America"

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

Qsn #	Question	Answer
	Source(s)	**Notes**
	Dave's Garden. (2019). American Elder, Common Elderberry - Sambucus canadensis. https://davesgarden.com/guides/pf/go/957/. [Accessed 25 Sep 2019]	"Hardiness: USDA Zone 3b: to -37.2 °C (-35 °F) USDA Zone 4a: to -34.4 °C (-30 °F) USDA Zone 4b: to -31.6 °C (-25 °F) USDA Zone 5a: to -28.8 °C (-20 °F) USDA Zone 5b: to -26.1 °C (-15 °F) USDA Zone 6a: to -23.3 °C (-10 °F) USDA Zone 6b: to -20.5 °C (-5 °F) USDA Zone 7a: to -17.7 °C (0 °F) USDA Zone 7b: to -14.9 °C (5 °F) USDA Zone 8a: to -12.2 °C (10 °F) USDA Zone 8b: to -9.4 °C (15 °F) USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F)"
	Gilman, E.F. & Watson, D.G. (1994). Sambucus mexicana: Mexican Elder. Fact Sheet ST-580. University of Florida, IFAS, Gainesville, FL. http://edis.ifas.ufl.edu. [Accessed 25 Sep 2019]	"USDA hardiness zones: 7B through 10" [Mostly tolerant of cooler climates, but broad elevation range]
	Missouri Botanical Garden. (2019). Sambucus canadensis. https://www.missouribotanicalgarden.org. [Accessed 25 Sep 2019]	"Zone: 3 to 9" [Mostly tolerant of cooler climates, but broad elevation range and already present and naturalized in regions with tropical climates]
	Plants for a Future. (2019). Sambucus Mexicana. https://pfaf.org/user/Plant.aspx?LatinName=Sambucus+mexicana. [Accessed 25 Sep 2019]	[Elevation range exceeds 1000 m] "Open flats and cismontane valleys and canyons below 1850 metres in California[71]. Oak forests along streams and ditches, 1800 - 3000 metres in Mexico[181]." [Sambucus mexicana C.Presl ex DC. is a synonym of Sambucus canadensis L.]

204	**Native or naturalized in regions with tropical or subtropical climates**	**y**
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Probably native only from Texas to California and Mexico, but widely planted throughout Central and South America; in Hawai'i commonly cultivated and sparingly naturalized or escaping in cool, mesic to wet areas in Koke'e State Park, Kaua'i, on O'ahu, East Maui, and scattered localities on Hawai'i. First collected on O'ahu in 1938 (Cooper s.n., BISH).-"
	Space, J. C. & Flynn, T. (2000). Observations on invasive plant species in American Samoa. USDA Forest Service, Honolulu	"Sambucus mexicana (Mexican elder) is fairly common on Tutuila, both as an ornamental and naturalized in open areas. It is also present on Ta'u."
	Oppenheimer, H. L. & Bartlett, R. T. 2002. New plant records from the main Hawaiian Islands. Bishop Museum Occasional Papers. 69: 1-14	"Sambucus mexicana K. Presl ex DC. Range extension Previously known from Kaua'i, O'ahu, East Maui, and Hawai'i (Wagner et al. 1999: 495), a small population on West Maui has recently been documented. Material examined. MAUI: West Maui, Lahaina Distr., Paunau, Kahoma Stream, at the water intake, 588 m, 6 Apr 2000, Oppenheimer et al. H40006."

205	**Does the species have a history of repeated introductions outside its natural range?**	**y**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Probably native only from Texas to California and Mexico, but widely planted throughout Central and South America; in Hawai'i commonly cultivated and sparingly naturalized or escaping in cool, mesic to wet areas in Koke'e State Park, Kaua'i, on O'ahu, East Maui, and scattered localities on Hawai'i."
	Franklin, J., Keppel, G., & Whistler, W. A. (2008). The vegetation and flora of Lakeba, Nayau and Aiwa islands, central Lau Group, Fiji. Micronesica, 40(1-2), 169-225	"Sambucus mexicana C.Presl ex DC. Introduced ornamental. Southwestern N America. Shrub. Planted in villages. N: F & K." [Sambucus mexicana C.Presl ex DC. is a synonym of Sambucus canadensis L.]
	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	"The elderberry species cultivated and naturalized in Hawaii has long been called S. mexicana, a species native from Texas and California through Mexico and widely planted throughout tropical America." [Sambucus mexicana C.Presl ex DC. is a synonym of Sambucus canadensis L.]

301	Naturalized beyond native range	y
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"in Hawai'i commonly cultivated and sparingly naturalized or escaping in cool, mesic to wet areas in Koke'e State Park, Kaua'i, on O'ahu, East Maui, and scattered localities on Hawai'i. First collected on O'ahu in 1938 (Cooper s.n., BISH).-"
	Space, J. C. & Flynn, T. (2000). Observations on invasive plant species in American Samoa. USDA Forest Service, Honolulu	"Sambucus mexicana (Mexican elder) is fairly common on Tutuila, both as an ornamental and naturalized in open areas. It is also present on Ta'u."
	Oppenheimer, H. L. & Bartlett, R. T. 2002. New plant records from the main Hawaiian Islands. Bishop Museum Occasional Papers. 69: 1-14	"Sambucus mexicana K. Presl ex DC. Range extension Previously known from Kaua'i, O'ahu, East Maui, and Hawai'i (Wagner et al. 1999: 495), a small population on West Maui has recently been documented. Material examined. MAUI: West Maui, Lahaina Distr., Paunau, Kahoma Stream, at the water intake, 588 m, 6 Apr 2000, Oppenheimer et al. H40006."

302	Garden/amenity/disturbance weed	y
	Source(s)	**Notes**
	Space, J. C. & Flynn, T. (2000). Observations on invasive plant species in American Samoa. USDA Forest Service, Honolulu	"Sambucus mexicana (Mexican elder) is fairly common on Tutuila, both as an ornamental and naturalized in open areas. It is also present on Ta'u." [Mentioned as potential environmental weed]

Qsn #	Question	Answer
	Dave's Garden. (2019). American Elder, Common Elderberry - Sambucus canadensis. https://davesgarden.com/guides/pf/go/957/. [Accessed 25 Sep 2019]	[Regarded as weedy and invasive in a garden and state park] "On Jan 26, 2005, xyris from Sebring, FL (Zone 9b) wrote: I suppose it must say something about the nature of my Florida garden that elderberry is a "weed" in my garden, both coming up from seed and from rapidly spreading underground rhizomes sending up suckers several feet from the parent clump. I am trying to reduce the amount of elderberry that I have to get in more diversity, but there will still be plenty left in the wetlands at the edge of my garden. It is now in flower in our area." … "On Mar 24, 2011, hawaiifarmer from Hilo, HI wrote: A small patch of Mexican Elderberry planted at a state park has become invasive in adjoining natural dry forest (mid elevation, Hawaii). We have cut trees down and tried several herbicides to kill the regrowth from the stumps, but it just keeps coming back! Be aware this plant may become invasive in cool, dry environments, difficult to kill if drought stressed. "

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

304	Environmental weed	
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"in Hawai'i commonly cultivated and sparingly naturalized or escaping in cool, mesic to wet areas in Koke'e State Park, Kaua'i, on O'ahu, East Maui, and scattered localities on Hawai'i. First collected on O'ahu in 1938 (Cooper s.n., BISH).-" [No negative environmental impacts described at the time of this publication]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"References: pantropics-W-22, United States of America-CE-617, Costa Rica-I-975, Pacific-E-621, United States of America-N- 301, United States of America-N-839, Belize-N-850, Mexico-I-878, United States of America-Q-1197, Mexico-W-1226, United States of America-N-1292, French Polynesia-N-1514, Global-CD-1611, Sao Tome and Principe-N-1805." [Referred to as an environmental weed, but no mention of impacts to native ecosystems or biodiversity in listed references.]
	Dave's Garden. (2019). American Elder, Common Elderberry - Sambucus canadensis. https://davesgarden.com/guides/pf/go/957/. [Accessed 25 Sep 2019]	[Potential environmental weed. Further evidence required. In this assessment, designated as a weed of general impacts. See 3.02] "On Mar 24, 2011, hawaiifarmer from Hilo, HI wrote: A small patch of Mexican Elderberry planted at a state park has become invasive in adjoining natural dry forest (mid elevation, Hawaii). We have cut trees down and tried several herbicides to kill the regrowth from the stumps, but it just keeps coming back! Be aware this plant may become invasive in cool, dry environments, difficult to kill if drought stressed. "

305	Congeneric weed	y

Qsn #	Question	Answer
	Source(s)	**Notes**
	Plants for a Future. (2019). Sambucus ebulus. https://pfaf.org/user/Plant.aspx?LatinName=Sambucus+ebulus. [Accessed]	"A very invasive plant, sending up new shoots a metre or more away [K]. It can be used for naturalising in the rougher parts of the garden [233], growing well on rough banks etc[1]."
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Sambucus nigra ... In its native range, this fast-growing shrub is found in open areas and woodland edges, riparian forests, and is associated with nutrient-rich soils. Where invasive, it forms dense stands that crowd out native plants by shading and competing for space, water and nutrients. The shrub is capable of establishing a closed shrub canopy in open forests. New shoots grow readily from cut or burned stumps, and pieces of shoots may become rooted under suitable conditions (Roy et al., 1998 Atkinson and Atkinson, 2002)."

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[No evidence] "Shrubs or small trees 3-5(-10) m tall, essentially glabrous throughout. Leaflets usually 5-7, lowest ones often trifoliolate, lateral ones reduced, ovate, lanceolate, oblanceolate, or elliptic-oblong, 3.5-9 cm long, 1.1-3 cm wide, often pubescent, especially on midrib on lower surface and petioles, margins serrate."

402	Allelopathic	
	Source(s)	**Notes**
	D'Abrosca, B., DellaGreca, M., Fiorentino, A., Monaco, P., Previtera, L., Simonet, A. M., & Zarrelli, A. (2001). Potential allelochemicals from Sambucus nigra. Phytochemistry, 58(7), 1073-1081	"Twenty-four aromatic metabolites belonging to cyanogenins, lignans, flavonoids, and phenolic glycosides were obtained from Sambucus nigra. Structures were determined on the basis of their spectroscopic features. Two compounds have been isolated and identified as (2S)-2-O-β Image glucopyranosyl-2-hydroxyphenylacetic acid and benzyl 2-O-β-Image -glucopyranosyl-2,6-dihydroxybenzoate. All the compounds have been assayed on dicotyledons Lactuca sativa (lettuce) and Raphanus sativus (radish) and monocotyledon Allium cepa (onion) to test their stimulatory or inhibitory effects on seed germination and radicle elongation. Cyanogenins have a mainly inhibiting effect while lignans stimulate the growth. Some compounds show different effects on dicotyledons and monocotyledons...Weed interference, which consists of the effects of competition and/or allelopathy, represents a serious threat to several crops. Sambucus nigra L., a shrub widely found throughout Italy, causes large crops losses, and, in a previous study Jensen and Nielsen (1973) reported the presence of cyanogenic glycosides. These compounds are considered highly phytotoxic since the action of microbes in the rhizosphere produces HCN and benzaldehydes (Conn, 1981)." [S. nigra, a synonym of S. mexicana, is allelopathic in greenhouse trials, but unknown if S. mexicana is allelopathic under field conditions]

403	Parasitic	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Shrubs or small trees 3-5(-10) m tall, essentially glabrous throughout." [No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**
	Hosten, P. E., Whitridge, H., Schuster, D., & Alexander, J. (2007). Livestock on the Cascade-Siskiyou National Monument: a summary of stocking rates, utilization, and management. US Department of the Interior, Bureau of Land Management, Medford District	"Cattle browse common shrubs in the Monument, including Symphoricarpos albus, Populus spp., Sambucus mexicana, Salix spp., Ribes spp., Amelanchier alnifolia, and Ceanothus cuneatus, especially in drought years (BLM Range Technician comments; Mitchell and Rogers 1985; Kie and Boroski 1996)."
	Gilman, E.F. & Watson, D.G. (1994). Sambucus mexicana: Mexican Elder. Fact Sheet ST-580. University of Florida, IFAS, Gainesville, FL. http://edis.ifas.ufl.edu. [Accessed 25 Sep 2019]	"The light green, thick, leathery, pinnately compound leaves are often browsed by deer and livestock."
	USDA NRCS (2019). Plant Guide. Blue Elderberry. Sambucus nigra L. ssp. caerulea (Raf.) R. Bolli. https://plants.usda.gov. [Accessed 25 Sep 2019]	"This species is known in some floras as Sambucus mexicana." … "Livestock: Blue elderberry is a useful range plant for domestic livestock, but is not equally palatable during all seasons. New growth of common elder contains a glucoside than can be fatal to livestock. Elderberry usually receives limited browsing in the spring and to a much greater extent in the late summer and fall. The leaves are eagerly devoured after the first heavy frost in the fall. Because many branches are beyond the reach of the animals, utilization is less destructive. Browse rating: Good for goats; good to fair for sheep; good to poor for deer; fair for cattle; and fair to poor for horses (Sampson and Jesperson 1981)."

405	Toxic to animals	y
	Source(s)	**Notes**
	Fuller, T.C. & McClintock, E.M. 1986. Poisonous plants of California: Issue 53 of California natural history guides. University of California Press, Berkeley and Los Angeles, CA	"Cases of poisoning from elderberries are rare but have been recorded for cattle, hogs, and humans. The roots and extensive rhizomes of elderberries have been postulated as the most toxic parts of the plant. Hogs should not be allowed to root in soil near elderberry bushes. Cattle rarely eat these shrubs. Ripe berries are not toxic, but they will produce nausea if too many are eaten."
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Sambucus canadensis … Sambucus mexicana C. Presl ex DC … This plant contains cyanogenic glycosides and a cathartic chemical; poisoned cattle and perhaps sheep, animals were poisoned after ingesting young shoots and leaves. Children were poisoned after using the hollow stems for whistles. Infusion of branches applied to head for headaches. Seeds and roots decoction taken for liver troubles. Bark cathartic, laxative. Ingesting uncooked berries may cause nausea; infusion of berry used for rheumatism."

406	Host for recognized pests and pathogens	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Gilman, E.F. & Watson, D.G. (1994). Sambucus mexicana: Mexican Elder. Fact Sheet ST-580. University of Florida, IFAS, Gainesville, FL. http://edis.ifas.ufl.edu. [Accessed 25 Sep 2019]	"Pest resistance: no pests are normally seen on the tree" … "Pests and Diseases No pests or diseases of major concern."

407	Causes allergies or is otherwise toxic to humans	y
	Source(s)	**Notes**
	Fuller, T.C. & McClintock, E.M. 1986. Poisonous plants of California: Issue 53 of California natural history guides. University of California Press, Berkeley and Los Angeles, CA	"Cases of poisoning from elderberries are rare but have been recorded for cattle, hogs, and humans. The roots and extensive rhizomes of elderberries have been postulated as the most toxic parts of the plant. Hogs should not be allowed to root in soil near elderberry bushes. Cattle rarely eat these shrubs. Ripe berries are not toxic, but they will produce nausea if too many are eaten."
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Sambucus canadensis … Sambucus mexicana C. Presl ex DC … This plant contains cyanogenic glycosides and a cathartic chemical; poisoned cattle and perhaps sheep, animals were poisoned after ingesting young shoots and leaves. Children were poisoned after using the hollow stems for whistles. Infusion of branches applied to head for headaches. Seeds and roots decoction taken for liver troubles. Bark cathartic, laxative. Ingesting uncooked berries may cause nausea; infusion of berry used for rheumatism."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	**Notes**
	New Mexico State University. (2017). Fire Wise Plant Materials. www.emnrd.state.nm.us	"Fire Wise Plant List for New Mexico" [Includes Sambucus mexicana]
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"in Hawai'i commonly cultivated and sparingly naturalized or escaping in cool, mesic to wet areas" [Not naturalized in fire prone areas]
	Fire Safe San Mateo. (2019). Fire Resistant Plant List. https://firesafesanmateo.org/resources/defensible-space/fire-resistant-plant-list. [Accessed 25 Sep 2019]	"Select from this list of fire resistant plants, or consult a professional for additional species. Plants on this list can be found at most commercial nurseries specializing in native plants. Some plants will do well along the coast, others in the warmer inland areas. A native plant nursery will recommend plants suited to your specific habitat conditions. Remember: even fire resistant plants can be hazardous when not maintained." [Blue elderberry Sambucus Mexicana among list of fire resistant plants]

409	Is a shade tolerant plant at some stage of its life cycle	
	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	"Elderberry thrives in moist, fertile soils in full sun or partial shade." [Most references either suggest full sun or partial shade]
	Plants for a Future. (2019). Sambucus Mexicana. https://pfaf.org/user/Plant.aspx?LatinName=Sambucus+mexicana. [Accessed 25 Sep 2019]	"It can grow in semi-shade (light woodland) or no shade."

Qsn #	Question	Answer
	Gilman, E.F. & Watson, D.G. (1994). Sambucus mexicana: Mexican Elder. Fact Sheet ST-580. University of Florida, IFAS, Gainesville, FL. http://edis.ifas.ufl.edu. [Accessed 25 Sep 2019]	"Light requirement: tree grows in full sun"
	Dave's Garden. (2019). American Elder, Common Elderberry - Sambucus canadensis. https://davesgarden.com/guides/pf/go/957/. [Accessed 25 Sep 2019]	"Sun Exposure: Full Sun"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	**Notes**
	Gilman, E.F. & Watson, D.G. (1994). Sambucus mexicana: Mexican Elder. Fact Sheet ST-580. University of Florida, IFAS, Gainesville, FL. http://edis.ifas.ufl.edu. [Accessed 25 Sep 2019]	"Soil tolerances: clay; loam; sand; acidic; alkaline; well-drained"
	Plants for a Future. (2019). Sambucus Mexicana. https://pfaf.org/user/Plant.aspx?LatinName=Sambucus+mexicana. [Accessed 25 Sep 2019]	"Tolerates most soils, including chalk[200], but prefers a moist loamy soil[11, 200]. Grows well in heavy clay soils."

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai‘i Press and Bishop Museum Press, Honolulu, HI.	"Shrubs or small trees 3-5(-10) m tall, essentially glabrous throughout."

412	Forms dense thickets	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	"New shoots emerge from around the base of the plant, and a sizable thicket may form in time"
	Petrides, G. A. (2005). Trees of the California Sierra Nevada. Stackpole Books, Mechanicsburg, PA	"Often growing in. dense groups at elevations up to 10,000'."

501	Aquatic	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai‘i Press and Bishop Museum Press, Honolulu, HI.	[Terrestrial] "in Hawai'i commonly cultivated and sparingly naturalized or escaping in cool, mesic to wet areas in Koke'e State Park, Kaua'i, on O'ahu, East Maui, and scattered localities on Hawai'i."

502	Grass	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 25 Sep 2019]	"Family: Viburnaceae Alternate family(ies): Adoxaceae, Caprifoliaceae, Sambucaceae"
	The Plant List. 2013. Version 1.1. Published on the Internet; http://www.theplantlist.org/. [Accessed 25 Sep 2019]	Adoxaceae

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 25 Sep 2019]	"Family: Viburnaceae Alternate family(ies): Adoxaceae, Caprifoliaceae, Sambucaceae"
	The Plant List. 2013. Version 1.1. Published on the Internet; http://www.theplantlist.org/. [Accessed 25 Sep 2019]	Adoxaceae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Shrubs or small trees 3-5(-10) m tall, essentially glabrous throughout."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[No evidence] "Probably native only from Texas to California and Mexico, but widely planted throughout Central and South America; in Hawai'i commonly cultivated and sparingly naturalized or escaping in cool, mesic to wet areas in Koke'e State Park, Kaua'i, on O'ahu, East Maui, and scattered localities on Hawai'i."

Qsn #	Question	Answer
602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	Plants for a Future. (2019). Sambucus Mexicana. https://pfaf.org/user/Plant.aspx?LatinName=Sambucus+mexicana. [Accessed 26 Sep 2019]	"Propagation - Seed - best sown as soon as it is ripe in the autumn in a cold frame, when it should germinate in early spring. Stored seed can be sown in the spring in a cold frame but will probably germinate better if it is given 2 months warm followed by 2 months cold stratification first[78, 98, 113]. Prick out the seedlings into individual pots when they are large enough to handle."
	Gilman, E.F. & Watson, D.G. (1994). Sambucus mexicana: Mexican Elder. Fact Sheet ST-580. University of Florida, IFAS, Gainesville, FL. http://edis.ifas.ufl.edu. [Accessed 26 Sep 2019]	"Propagation is by seed."

603	**Hybridizes naturally**	
	Source(s)	**Notes**
	Atkinson, M. D., & Atkinson, E. (2002). Sambucus nigra L. Journal of Ecology, 90(5), 895-923	"Natural Sambucus hybrids are very rare, the hybrid between S. nigra and S. racemosa L. having been reported twice in Denmark and in 1940 in Jutland (Böcher 1941), in 1943 in North Zeeland (Winge 1944) and in southern Sweden (Nilsson 1987)."
	Simonovik, B., Ivančič, A., Jakše, J., & Bohanec, B. (2007). Production and genetic evaluation of interspecific hybrids within the genus Sambucus. Plant Breeding, 126(6), 628-633	[Unknown. Artificial hybridization possible in genus] "The origin of putative interspecific hybrids has often been found to be the result of legitimate pollination. For instance, Dubouzet et al. (1998), reporting on the hybridization of A. giganteum with eight other Allium species, confirmed the hybrid nature of only one hybrid combination. In contrast, in Sambucus 21 of 22 hybrid plants obtained from three different combinations were confirmed to be true hybrids. The efficiency of hybridization was therefore very high. The same chromosome number and similarity of nuclear DNA content are characters that favour positive interspecific hybridizations in this genus, while previous unsuccessful attempts at hybridization between European Sambucus species, plus the relatively large genetic distances among some species, suggest possible hybridization barriers. The confirmation that five of eight plants tested from the combination (S. javanica ES · S. nigra) · (S. caerulea + S. javanica ES) were efficiently pollinated by S. caerulea shows the ability of the S. javanica ES · S. nigra complex to be a receptor of the S. caerulea genome. This needs to be confirmed but it does seem possible that the same hybrid combination used as seed parent can be used to break other hybridization barriers in this genus. The morphoagronomic characteristics of these novel two and three species hybrids are currently being studied."

604	**Self-compatible or apomictic**	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Atkinson, M. D., & Atkinson, E. (2002). Sambucus nigra L. Journal of Ecology, 90(5), 895-923	[Possibly self-compatible. Sambucus nigra is a synonym or closely related species] "Homogamous or protogynous (Knuth, Poll. II). Koncalová et al. (1983) gave a value for self-compatibility as 1.22% of buds. They do not state whether this refers to pollination of single flowers by their own pollen, or pollination by other flowers within the same bush, but the former seems more likely. Experiments by Bolli (1994) suggested that pollen did not normally travel beyond neighbouring flowers and that most fertilization was effected by pollen from the same individual but from different flowers or inflorescences. Bolli (1994) found that when freshly opened flowers were pollinated with pollen from another inflorescence from the same bush, more pollen tubes germinated than when pollen from another bush was used."

605	Requires specialist pollinators	n
	Source(s)	**Notes**
	Plants for a Future. (2019). Sambucus Mexicana. https://pfaf.org/user/Plant.aspx?LatinName=Sambucus+mexicana. [Accessed 26 Sep 2019]	"The species is hermaphrodite (has both male and female organs) and is pollinated by Insects."
	Koch-Munz, M., & Holyoak, M. (2008). An evaluation of the effects of soil characteristics on mitigation and restoration involving blue elderberry, Sambucus mexicana. Environmental Management, 42(1), 49-65	"Their flowers support a wide variety of insects, including pollinators for agricultural crops, and leaves and berries are food resources that support, and provide habitat for, a wide variety of species during the dry summer (e.g., Allen-Wardell and others 1998; Neal 1998)."

606	Reproduction by vegetative fragmentation	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	"New shoots emerge from around the base of the plant, and a sizable thicket may form in time; digging up and replanting these root sprouts is one easy method of propagation." [Can spread vegetatively, and coppice if tops are killed]
	USDA NRCS (2019). Plant Guide. Blue Elderberry. Sambucus nigra L. ssp. caerulea (Raf.) R. Bolli. https://plants.usda.gov. [Accessed 26 Sep 2019]	"Vegetative reproduction is limited to coppicing if the stems are killed or injured." [Sambucus mexicana auct. Synonym of Sambucus nigra L. subsp. cerulea (Raf.) Bolli]

607	Minimum generative time (years)	2
	Source(s)	**Notes**
	Atkinson, M. D., & Atkinson, E. (2002). Sambucus nigra L. Journal of Ecology, 90(5), 895-923	"Elder usually flowers in its third or fourth year, rarely in its second (Bolli 1994). The first crop of fruit was taken from 4-year-old bushes (Kaack 1988). Most shrubs produce copious amounts of fruit and viable seed every year (see section VIII(C)), the exception being shrubs growing in deep shade inside woodland which may produce few or no flowers." [Sambucus mexicana auct. Synonym of Sambucus nigra L. subsp. cerulea (Raf.) Bolli]
	USDA NRCS (2019). Plant Guide. Blue Elderberry. Sambucus nigra L. ssp. caerulea (Raf.) R. Bolli. https://plants.usda.gov. [Accessed 26 Sep 2019]	"Plants may flower and fruit after only 2-3 years and can reach full size in 3-4 years. They are said to be “short-lived.”" [Sambucus mexicana auct. Synonym of Sambucus nigra L. subsp. cerulea (Raf.) Bolli]

Qsn #	Question	Answer
701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**n**
	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	"Mature fruit purplish black, 5-8 mm in diameter" [No evidence, and no means of external attachment]

702	**Propagules dispersed intentionally by people**	**y**
	Source(s)	**Notes**
	Gilman, E.F. & Watson, D.G. (1994). Sambucus mexicana: Mexican Elder. Fact Sheet ST-580. University of Florida, IFAS, Gainesville, FL. http://edis.ifas.ufl.edu. [Accessed 26 Sep 2019]	"Outstanding tree: tree has outstanding ornamental features and could be planted more"
	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.	"widely planted throughout Central and South America; in Hawai'i commonly cultivated and sparingly naturalized or escaping in cool, mesic to wet areas in Koke'e State Park, Kaua'i, on O'ahu, East Maui, and scattered localities on Hawai'i."

703	**Propagules likely to disperse as a produce contaminant**	**n**
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Escapee"
	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.	"Mature fruit purplish black, 5-8 mm in diameter" [No evidence. Fleshy-fruited]

704	**Propagules adapted to wind dispersal**	**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.	"Mature fruit purplish black, 5-8 mm in diameter" [Fleshy-fruited]

705	**Propagules water dispersed**	
	Source(s)	**Notes**
	Koch-Munz, M., & Holyoak, M. (2008). An evaluation of the effects of soil characteristics on mitigation and restoration involving blue elderberry, Sambucus mexicana. Environmental Management, 42(1), 49-65	"In the Western United States, blue elderberry (Sambucus mexicana Presl: Caprifoliaceae) is a common understory shrub, found in a wide variety of habitats including upper riparian terraces and adjacent grasslands, and elderberry savannahs (Barr 1991; Talley and others 2007; Vaghti and others in review)." [Riparain distribution suggests seeds may be water dispersed]
	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	"Naturalized populations often grow along streams or other wet areas at higher elevations where cooler temperatures prevail." [Distribution along streams suggests possible movement by water]

706	**Propagules bird dispersed**	**n**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Gilman, E.F. & Watson, D.G. (1994). Sambucus mexicana: Mexican Elder. Fact Sheet ST-580. University of Florida, IFAS, Gainesville, FL. http://edis.ifas.ufl.edu. [Accessed 27 Sep 2019]	"Fruit characteristics: attracts birds; suited for human consumption"
	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.	"Mature fruit purplish black, 5-8 mm in diameter" [Fleshy-fruited]

707	Propagules dispersed by other animals (externally)	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.	"Mature fruit purplish black, 5-8 mm in diameter" [No means of external attachment]

708	Propagules survive passage through the gut	y
	Source(s)	**Notes**
	Gilman, E.F. & Watson, D.G. (1994). Sambucus mexicana: Mexican Elder. Fact Sheet ST-580. University of Florida, IFAS, Gainesville, FL. http://edis.ifas.ufl.edu. [Accessed 26 Sep 2019]	"Fruit characteristics: attracts birds"
	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.	"Mature fruit purplish black, 5-8 mm in diameter" [Presumably yes; fleshy-fruited]

801	Prolific seed production (>1000/m2)	
	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.	"Fruit drupaceous, globose, with 3-5 nutlets." … "Mature fruit purplish black, 5-8 mm in diameter." [Unknown if relatively small trees can produce high seed densities]

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	**Notes**
	Young, J. A., & Young, C. G. (1992). Seeds of Woody Plants in North America. Dioscorides Press, Portland, Oregon	"Seeds may be stored in closed containers at low temperatures for several years."
	USDA NRCS (2019). Plant Guide. Blue Elderberry. Sambucus nigra L. ssp. caerulea (Raf.) R. Bolli. https://plants.usda.gov. [Accessed 26 Sep 2019]	"The seeds have a hard seed coat and embryo dormancy and may remain viable for up to 16 years in storage. Without pretreatment, seed germination may be delayed from 2 to 5 years after planting." [Sambucus mexicana auct. Synonym of Sambucus nigra L. subsp. cerulea (Raf.) Bolli]

803	Well controlled by herbicides	y

Qsn #	Question	Answer
	Source(s)	**Notes**
	Atkinson, M. D., & Atkinson, E. (2002). Sambucus nigra L. Journal of Ecology, 90(5), 895-923	[Synonym for S. mexicana or closely related species, S. mexicana likely controlled in similar manner] "Sambucus nigra often invades hedges and is often regarded as undesirable (Marshall 1989). It was consistently controlled by 2,4,5-T and ammonium sulphamate (Fryer & Makepeace 1978). In trials in which 2-year-old seedlings of S. nigra were grown in pots and treated in June with half and full recommended rates of 15 herbicides and three plant growth regulators, Marshall (1989) noted that all plants treated with mecoprop, fluroxypyr and full rates of clopyralid and glyphosate were killed. Four months after application, vigour was reduced by the broad-leaved weed herbicides 2,4-D, fluroxypyr, ioxynil + bromoxynil and clopyralid, by glyphosate and by the highest rate of the plant growth regulator mefluidide."

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**n**
	Source(s)	**Notes**
	USDA NRCS (2019). Plant Guide. Blue Elderberry. Sambucus nigra L. ssp. caerulea (Raf.) R. Bolli. https://plants.usda.gov. [Accessed 26 Sep 2019]	"Vegetative reproduction is limited to coppicing if the stems are killed or injured...Fire kills above ground parts but the root crown may sprout but a severe fire can kill the root and stem buds from which sprouting occurs."

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 commonly cultivated and sparingly naturalized or escaping in cool, mesic to wet areas in Koke'e State Park, Kaua'i, on O'ahu, East Maui, and scattered localities on Hawai'i. First collected on O'ahu in 1938 (Cooper s.n., BISH).-"

Summary of Risk Traits:

High Risk / Undesirable Traits
• Broad climate suitability
• Able to grow in regions with temperate to tropical climates
• Naturalized on Kauai, Oahu, Maui and Hawaii (Hawaiian Islands) and elsewhere
• Regarded as a garden and landscaping weed, and potential environmental weed
• Other Sambucus species are invasive
• Toxic to animals and people
• Tolerates many soil types
• Forms dense thickets
• Reproduces by seed and vegetatively by root sprouts
• Reaches maturity in 2-4 years
• Seeds dispersed by birds and intentionally by people
• Seeds may form a persistent seed bank
• Able to coppice and resprout after cutting and fire

Low Risk Traits
• Unarmed (no spines, thorns, or burrs)
• Palatable despite reports of toxicity
• Herbicides may provide effective control