

Family: *Hydrangeaceae*

Taxon: *Philadelphus karwinskyanus*

Synonym: *Philadelphus scandens* Moore

Common Name Mexican Mock Orange  
evergreen mock orange  
philadelphus

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation: H(HPWRA)
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score 7
101	Is the species highly domesticated?		y=-3, n=0	n
102	Has the species become naturalized where grown?		y=1, n=-1	
103	Does the species have weedy races?		y=1, n=-1	
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	n
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		n=0, y = 2*multiplier (see Appendix 2)	
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		y=1, n=0	
403	Parasitic		y=1, n=0	n
404	Unpalatable to grazing animals		y=1, n=-1	
405	Toxic to animals		y=1, n=0	
406	Host for recognized pests and pathogens		y=1, n=0	
407	Causes allergies or is otherwise toxic to humans		y=1, n=0	
408	Creates a fire hazard in natural ecosystems		y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle		y=1, n=0	
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		y=1, n=0	

411	Climbing or smothering growth habit	y=1, n=0	y
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	
602	Produces viable seed	y=1, n=-1	n
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	
605	Requires specialist pollinators	y=-1, n=0	
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	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	
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	
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	
801	Prolific seed production (>1000/m2)	y=1, n=-1	n
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	
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)	y=-1, n=1	

Designation: H(HPWRA)

WRA Score 7

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**Supporting Data:**

101	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	No evidence
102	2011. WRA Specialist. Personal Communication.	NA
103	2011. WRA Specialist. Personal Communication.	NA
201	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Native to southern Mexico..."
202	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Native to southern Mexico..."
203	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . Journal of the Arnold Arboretum. 35(4): 275-333.	"A great altitudinal variation is reported for this species. In Oaxaca it has been collected 2000 meters above the sea level and in Sinaloa, it has been reported from humid lowlands almost at sea level." [environmental versatility]
203	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Native to southern Mexico...grows between sea level and 6500' in the mountains of Oaxaca, Sinaloa, and Veracruz." [although native to tropical climate, elevation range exceeds 1000 m, displaying environmental versatility]
204	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Native to southern Mexico..."
205	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	No evidence
301	1995. Lorence, D.H./Flynn, T.W./Wagner, W.L.. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers. 41: 19-58.	"This is a new naturalized record of <i>Philadelphus</i> L. in the Hawaiian Islands. A native of Mexico, <i>Philadelphus karwinskianus</i> has been cultivated on Oahu since 1944 and was originally planted on Kauai as an ornamental at cabins in Kokee State Park where it has subsequently spread extensively...Material examined. KAUAI: Waimea District, Kokee State Park, unnamed trail from Kokee-Halemanu Trail to Hwy 550, 1100-1150 m, 17 Feb 1988, D. Lorence et al. 5811 (PTBG, US); Kokee State Park, below J.H.R. Plews' cabin along Mohihi Road, 5 Aug 1983, T. Flynn 519 (PTBG), 21 Aug 1985, R. Howard 20217 (A, PTBG). MAUI: Kula District, common in Kula along Kula Hwy, ca. 1219 m (ca. 4000 ft), 13 Jun 1984, K. M. Nagata 2461 (BISH)."
301	2002. Starr, F./Martz, K./Loope, L.L.. New plant records from the Hawaiian archipelago. Bishop Museum Occasional Papers. 69: 16-27.	" <i>Philadelphus karwinskianus</i> ( <i>philadelphus</i> ) has been cultivated in Hawai'i since 1944. Planted on at least Kaua'i, O'ahu, and Maui, it is now escaping by spreading vegetatively and blanketing large areas, and has become naturalized on Kaua'i (Lorence et al., 1995: 38). On Maui, <i>Philadelphus</i> is widely planted in the Kula area, and though not noted to be producing viable fruit, is spreading well beyond initial plantings in the Kula area. This collection represents a new island record for Maui. Material examined. MAUI: E. Maui, Kula, above Sunrise Market, sprawling along Crater Rd., 3900 ft [1189 m], 26 Aug 1998, Starr & Martz 980129-1."
302	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"...a single plant can soon give rise to a thicket of considerable size. For this reason, <i>P. karwinskianus</i> should be monitored in all upcountry areas, where it could escape from cultivation to become a weed."
302	2011. Division of Forestry and Wildlife. Hawaii's Most Invasive Horticultural Plants: mock orange, <i>Philadelphus karwinskianus</i> . DLNR, <a href="http://www.state.hi.us/dlnr/dofaw/hortweeds/species/phikar.htm">http://www.state.hi.us/dlnr/dofaw/hortweeds/species/phikar.htm</a>	"WARNING: The stems of this species root where they touch the ground, and one shrub soon gives rise to a thicket capable of covering trees or hillsides."

303	2007. Randall, R.P.. Global Compendium of Weeds - <i>Philadelphus karwinskyanus</i> [Online Database]. <a href="http://www.hear.org/gcw/species/philadelphus_karwinskyanus/">http://www.hear.org/gcw/species/philadelphus_karwinskyanus/</a>	No evidence
304	1995. Lorence, D.H./Flynn, T.W./Wagner, W.L.. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers. 41: 19-58.	"planted on Kauai as an ornamental at cabins in Kokee State Park where it has subsequently spread extensively. Although it does not appear to set fruit, it spreads vegetatively, blanketing large areas on slopes along streams in koa forest. Currently infestations occur in at least 3 areas: along the Noe Stream adjacent to Mohihi Road; along and above the Elekeninui Stream facing Mohihi Road;" [potential to become a serious environmental weed in native koa forest]
305	1993. Hiebert, R.D. /Stubbenieck, J.. Handbook for Ranking Exotic Plants for Management and Control. Natural Resources Report NPS/NRMWRO/NRR-93/08. NPS Natural Resources Publication Office, Denver, CO	<i>Philadelphus coronarius</i> ranked as a weed of Pipestone National Monument
305	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>	Thirteen other <i>Philadelphus</i> species of hybrids listed as naturalized or weeds
401	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . Journal of the Arnold Arboretum. 35(4): 275-333.	"A subscent shrub up to 4 meters high, branchlets slender, the flowering ones over 50 cm. long, much ramified, terete, striate, villose, the base of the hairs thickened; axillary buds conic, villose. Leaves ovate, 4 7.5 cm. long, 2-3.5 cm. wide, rounded at the base, acuminate at the apex, 5-nerved, reticulations conspicuous beneath, remotely sharp serrate, 5-8 teeth on each side, sparsely strigose on both surfaces; petiole 5-10 mm. long, attached on cushion-like projections of the node." [no spines, thorns, or burrs]
402	2011. WRA Specialist. Personal Communication.	Unknown
403	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . Journal of the Arnold Arboretum. 35(4): 275-333.	"A subscent shrub up to 4 meters high, branchlets slender, the flowering ones over 50 cm. long..." [No evidence, not parasitic]
404	2011. Montana Native Plant Society. <i>Philadelphus lewisii</i> - Lewis's Mockorange. <a href="http://www.mtnativeplants.org/filelib/35.pdf">www.mtnativeplants.org/filelib/35.pdf</a>	"The new sprouts are very palatable and are consumed by deer and elk." [Description for <i>Philadelphus lewisii</i> . Unknown for <i>P. karwinskyanus</i> ]
405	2011. Lady Bird Johnson Wildflower Center. Native Plant Database - <i>Philadelphus microphyllus</i> . <a href="http://www.wildflower.org/plants/result.php?id_plant=PHMI4">http://www.wildflower.org/plants/result.php?id_plant=PHMI4</a>	"Warning: This plant may be somewhat toxic to livestock. Humans should generally avoid ingesting plants that are toxic to animals." [description for <i>Philadelphus microphyllus</i> . Unknown for <i>P. karwinskyanus</i> ]
406	2011. WRA Specialist. Personal Communication.	Unknown
407	2011. Lady Bird Johnson Wildflower Center. Native Plant Database - <i>Philadelphus microphyllus</i> . <a href="http://www.wildflower.org/plants/result.php?id_plant=PHMI4">http://www.wildflower.org/plants/result.php?id_plant=PHMI4</a>	"Warning: This plant may be somewhat toxic to livestock. Humans should generally avoid ingesting plants that are toxic to animals." [description for <i>Philadelphus microphyllus</i> . Unknown for <i>P. karwinskyanus</i> ]
408	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . Journal of the Arnold Arboretum. 35(4): 275-333.	"A great altitudinal variation is reported for this species. In Oaxaca it has been collected 2000 meters above the sea level and in Sinaloa, it has been reported from humid lowlands almost at sea level. It is an evergreen shrub, flowering all year around." [probably does not increase fire hazards. Native to humid areas]
409	2011. WRA Specialist. Personal Communication.	Unknown
410	2011. WRA Specialist. Personal Communication.	Unknown
411	1995. Lorence, D.H./Flynn, T.W./Wagner, W.L.. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers. 41: 19-58.	"Although it does not appear to set fruit, it spreads vegetatively, blanketing large areas on slopes along streams in koa forest. Currently infestations occur in at least 3 areas: along the Noe Stream adjacent to Mohihi Road; along and above the Elekeninui Stream facing Mohihi Road; and between the S end of the Kokee-Halemanu Trail and Hwy 550."
412	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"The arching, limber stems apparently self-layer when they spread on the ground; in this way, a single plant can soon give rise to a thicket of considerable size. For this reason, <i>P. karwinskyanus</i> should be monitored carefully in all upcountry rural areas, where it could escape from cultivation to become a noxious weed."

501	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . <i>Journal of the Arnold Arboretum</i> . 35(4): 275–333.	"A subscandent shrub up to 4 meters high..." [terrestrial]
502	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	Hydrangeaceae
503	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	Hydrangeaceae [not a nitrogen fixing woody plant]
504	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . <i>Journal of the Arnold Arboretum</i> . 35(4): 275–333.	"A subscandent shrub up to 4 meters high..." [not a geophyte]
601	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . <i>Journal of the Arnold Arboretum</i> . 35(4): 275–333.	Unknown. Limited information from native range.
602	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . <i>Journal of the Arnold Arboretum</i> . 35(4): 275–333.	"Capsule and seed not known"
602	1995. Lorence, D.H./Flynn, T.W./Wagner, W.L.. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers. 41: 19-58.	"...it does not appear to set fruit..."
603	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . <i>Journal of the Arnold Arboretum</i> . 35(4): 275–333.	"Garden hybrids usually have low stamen counts, and many of them are sterile, with the exception of one form, which has up to 60 stamens, they have 20 to 29, rarely up to 40 stamens." [ability to hybridize naturally unknown]
604	1995. Lorence, D.H./Flynn, T.W./Wagner, W.L.. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers. 41: 19-58.	"...flowers 4-merous, hermaphroditic, fragrant; hypanthium turbinate, 5–6 mm long, sericeous, sepals green, triangular-ovate, 6–8 x 4–5 mm, sericeous, petals white, subcircular, 10–15 x 10–15 mm, stamens ca. 50, filaments white, anthers yellow; stigma lobes 4, style villous basally, disc villous." [self-compatibility unknown]
605	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . <i>Journal of the Arnold Arboretum</i> . 35(4): 275–333.	"Inflorescences with 5-31 flowers, in a loose depauperate panicle, the woody portion below the pedicel 4-20 mm. long, pubescent, the pedicels 2-5 mm. long, thickly strigose and lanate; hypanthia subglobose, 4 mm. in diameter, strigose-lanate, the sepals ovate, 5-8 mm. long, densely lanate, the hairs entirely obscuring the tissue beneath; corolla 2.5 3 cm. across, the petals obovate-suborbicular 0.8-13 mm. in diameter, sparsely pubescent along the median dorsal line, glabrous on the ventral side, the apex rounded; stamens about 45, the longest half as long as the petals; disc subconic, pubescent, stigmas 2.5-3 mm. long, enlarged cristate, the sterile portion pubescent, the abaxial surface with 2 papillose ridges." [pollinator requirements unknown]
605	2004. Sargent, R.D./Otto, S.P.. A phylogenetic analysis of pollination mode and the evolution of dichogamy in angiosperms. <i>Evolutionary Ecology Research</i> . 6: 1183–1199.	"Appendix... <i>Philadelphus coronarius</i> ...Primary pollinator...Insect" [related species with similar floral morphology does not require specialist pollinators]
606	1995. Lorence, D.H./Flynn, T.W./Wagner, W.L.. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers. 41: 19-58.	"Although it does not appear to set fruit, it spreads vegetatively, blanketing large areas on slopes along streams in koa forest."
607	1995. Lorence, D.H./Flynn, T.W./Wagner, W.L.. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers. 41: 19-58.	"Although it does not appear to set fruit, it spreads vegetatively, blanketing large areas on slopes along streams in koa forest." [ability to spread vegetatively indicates that plants will be able to vegetatively reproduce within the first year of growth]

701	2002. Starr, F./Martz, K./Loope, L.L.. New plant records from the Hawaiian archipelago. Bishop Museum Occasional Papers. 69: 16-27.	"Planted on at least Kaua'i, O'ahu, and Maui, it is now escaping by spreading vegetatively and blanketing large areas, and has become naturalized on Kaua'i (Lorence et al., 1995: 38). On Maui, <i>Philadelphus</i> is widely planted in the Kula area, and though not noted to be producing viable fruit, is spreading well beyond initial plantings in the Kula area. This collection represents a new island record for Maui. Material examined. MAUI: E. Maui, Kula, above Sunrise Market, sprawling along Crater Rd., 3900 ft [1189 m], 26 Aug 1998, Starr & Martz 980129-1." [growing along roadsides, & in yards & gardens. Ability to spread vegetatively suggests that plants could inadvertently be spread with garden waste and cuttings]
702	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	Cultivated ornamentally
703	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Fruit a 4-valved capsule. Seeds numerous, often appendaged" [genus description]. Frt not seen" [species description. No evidence that seeds, if produced, are grown with or contaminate produce]
704	2007. USDA Forest Service. Umatilla National Forest - Native Plant Notebook - <i>Philadelphus lewisii</i> . <a href="http://www.fs.fed.us/r6/uma/native/ts35.htm">http://www.fs.fed.us/r6/uma/native/ts35.htm</a>	"Seed dispersal in fall. Seed remains in capsules until scattered by wind." [description of related species <i>Philadelphus lewisii</i> . If <i>P. karwinskyanus</i> produced fruit and seeds, would probably be wind-dispersed]
705	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Fruit a 4-valved capsule. Seeds numerous, often appendaged" [genus description]. Frt not seen" [species description, Fruits & seeds, if formed, not adapted for water dispersal]
706	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Fruit a 4-valved capsule. Seeds numerous, often appendaged." [genus description, not adapted for bird dispersal, & capsules apparently not formed by <i>P. karwinskyanus</i> in Hawaiian Islands]
707	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Fruit a 4-valved capsule. Seeds numerous, often appendaged" [genus description]. Frt not seen" [species description, Fruits & seeds, if formed, have no means of external attachment]
708	2011. WRA Specialist. Personal Communication.	Unknown if propagules survive passage through gut, and capsules not known to form in Hawaiian Islands.
801	1954. Hu, S.-Y.. A monograph of the genus <i>Philadelphus</i> . Journal of the Arnold Arboretum. 35(4): 275-333.	"Capsule and seed not known"
801	1995. Lorence, D.H./Flynn, T.W./Wagner, W.L.. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers. 41: 19-58.	"...it does not appear to set fruit..."
802	1995. Lorence, D.H./Flynn, T.W./Wagner, W.L.. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers. 41: 19-58.	"...it does not appear to set fruit..."
803	2011. WRA Specialist. Personal Communication.	Unknown. No information found on use of herbicides with this species.
804	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Because of its sprawling, scrambling manner of growth, shrubs require regular pruning to keep them from becoming straggly." [tolerates regular pruning]
805	2011. WRA Specialist. Personal Communication.	Unknown, but ability to spread on Kauai & Maui suggests that no natural enemies are keeping it in check.