Family: ***Myrtaceae***

Taxon: ***Luma apiculata***

Synonym: *Eugenia apiculata DC. (basionym)*
Eugenia luma O. Berg
Myrceugenia apiculata (DC.) Nied.

Common Name: shortleaf stopper
Chilean myrtle
arrayán
collimamol
palo colorado
temu
orange-barked myrtle

Questionaire : current 20090513 **Assessor:** Chuck Chimera **Designation:** L
Status: Assessor Approved **Data Entry Person:** Chuck Chimera **WRA Score 0**

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)**	**Intermediate**
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**	**n**
204	**Native or naturalized in regions with tropical or subtropical climates**	**y=1, n=0**	**n**
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)**	
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)**	**n**
305	**Congeneric weed**	**n=0, y = 1*multiplier (see Appendix 2)**	**n**
401	**Produces spines, thorns or burrs**	**y=1, n=0**	**n**
402	**Allelopathic**	**y=1, n=0**	**n**
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**	**y=1, n=0**	**n**
407	**Causes allergies or is otherwise toxic to humans**	**y=1, n=0**	**n**
408	**Creates a fire hazard in natural ecosystems**	**y=1, n=0**	**n**

409	**Is a shade tolerant plant at some stage of its life cycle**	**y=1, n=0**	**y**
410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y=1, n=0**	**y**
411	**Climbing or smothering growth habit**	**y=1, n=0**	**n**
412	**Forms dense thickets**	**y=1, n=0**	**n**
501	**Aquatic**	**y=5, n=0**	**n**
502	**Grass**	**y=1, n=0**	**n**
503	**Nitrogen fixing woody plant**	**y=1, n=0**	**n**
504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**y=1, n=0**	**n**
601	**Evidence of substantial reproductive failure in native habitat**	**y=1, n=0**	**n**
602	**Produces viable seed**	**y=1, n=-1**	**y**
603	**Hybridizes naturally**	**y=1, n=-1**	
604	**Self-compatible or apomictic**	**y=1, n=-1**	**y**
605	**Requires specialist pollinators**	**y=-1, n=0**	**n**
606	**Reproduction by vegetative fragmentation**	**y=1, n=-1**	**n**
607	**Minimum generative time (years)**	**1 year = 1, 2 or 3 years = 0, 4+ years = -1**	**3**
701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y=1, n=-1**	**n**
702	**Propagules dispersed intentionally by people**	**y=1, n=-1**	**y**
703	**Propagules likely to disperse as a produce contaminant**	**y=1, n=-1**	**n**
704	**Propagules adapted to wind dispersal**	**y=1, n=-1**	**n**
705	**Propagules water dispersed**	**y=1, n=-1**	
706	**Propagules bird dispersed**	**y=1, n=-1**	**y**
707	**Propagules dispersed by other animals (externally)**	**y=1, n=-1**	**n**
708	**Propagules survive passage through the gut**	**y=1, n=-1**	**y**
801	**Prolific seed production (>1000/m2)**	**y=1, n=-1**	**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**	**y**
804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**y=1, n=-1**	**y**
805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	**y=-1, n=1**	

Designation: L **WRA Score** **0**

Supporting Data:

101	2001. Hanelt, P. (ed.). Mansfeld's encyclopedia of agricultural and horticultural crops: (except ornamentals).. Angiospermae - monocotyledones: orchidaceae - pandanaceae, Volume 5. Springer-Verlag, Berlin, Heidelberg, New York	No evidence that Luma apiculata is highly domesticated
102	2010. WRA Specialist. Personal Communication.	NA
103	2010. WRA Specialist. Personal Communication.	NA
201	2001. Hanelt, P. (ed.). Mansfeld's encyclopedia of agricultural and horticultural crops: (except ornamentals).. Angiospermae - monocotyledones: orchidaceae - pandanaceae, Volume 5. Springer-Verlag, Berlin, Heidelberg, New York	"Chile (from Valparaiso to Aysen) and adjacent Argentina. Cultivated for its edible fruits, also as an ornamental tree, in countries with a Mediterranean climate."
202	2001. Hanelt, P. (ed.). Mansfeld's encyclopedia of agricultural and horticultural crops: (except ornamentals).. Angiospermae - monocotyledones: orchidaceae - pandanaceae, Volume 5. Springer-Verlag, Berlin, Heidelberg, New York	"Chile (from Valparaiso to Aysen) and adjacent Argentina. Cultivated for its edible fruits, also as an ornamental tree, in countries with a Mediterranean climate."
203	2005. McIndoe, A.. The Horticulture gardener's guides: Shrubs. David & Charles, Devon, UK	"zone 9-10"
203	2010. Dave's Garden. PlantFiles: Arrayan - Luma apiculata. http://davesgarden.com/guides/pf/go/80411/	"Hardiness: USDA Zone 9a: to -6.6 °C (20 °F) 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)"
204	2007. Randall, R.P.. Global Compendium of Weeds - Luma apiculata [Online Database]. http://www.hear.org/gcw/species/luma_apiculata/	No evidence of naturalization in tropical or subtropical climates [only temperate climates. See 3.01]
205	2003. Paterson, A.. Trees for Your Garden. Frances Lincoln Ltd, London, UK	"In moist, mild zone 9 gardens of Cornwall and Devon and also in Ireland and western Scotland…"
205	2008. Cox, K./Machin, R.C,. Garden Plants for Scotland. Frances Lincoln Ltd, London, UK	Cultivated as an ornamental in Scotland
205	2008. Hogan, S.. Trees for all seasons: broadleaved evergreens for temperate climates. Timber Press, Portland, OR	"Numerous wonderful specimens exist in New Zealand gardens."
301	2002. Sykes, W.R.. Luma apiculata and its relatives in New Zealand. New Zealand Botanical Society Newsletter. 70: 7-8.	"The Chilean tree Luma apiculata (DC.) Burret has been discovered regenerating spontaneously at Otatara near Invercargill, Southland. This species is otherwise only known as a rather rare cultivated tree in New Zealand, although it is scattered through both North and South Islands...Early this year Philip Simpson of the Department of Conservation sent a specimen of Luma apiculata from Marama Avenue South, Otatara, near Invercargill, to Landcare Research for identification, with an accompanying note saying that the species was spreading naturally and invading a mixed podocarp/hardwood stand notable for southern rata. Further information by Carol West of DOC, Invercargill has revealed that there are 20 50 large seedlings or saplings in an area of about 5 x 5 m. A putative parent is 6-8 m tall with a straight trunk c. 10 cm diameter. The population presumably originated from a cultivated plant in the vicinity. Some kilometres away a tree of Luma apiculata has been destroyed by State Highway 99 at Pahia and another one has been reported at Riverton, all these localities being in Southland. However, they seem to be unconnected and almost certainly represent three separate introductions to cultivation (Carol West pers. com.)."
301	2006. Forrest, M.. Landscape trees and shrubs: selection, use and management. CABI, Wallingford, UK	"At Glanlean, a garden on Valentia Island, County Kerry, where Luma apiculata has become naturalized, a variegated myrtle was noticed by the owner, propagated and is now named L. apiculata 'Glanleam'. Both the species and the cultivar are widely available in the trade."
301	2007. Hillier, J./Coombes, A.J.. Hillier Manual of Trees and Shrubs. David & Charles, Cincinnati, OH	"In some southern Irish gardens it has become naturalized and reproduction is prolific."

301	2009. Keator, G./Steunenberg, M.J.. California plant families: west of the Sierran crest and deserts. University of California Press, Berkeley and Los Angeles, CA	"Luma apiculata is a small tree with fleshy fruits naturalized near the coast."
301	2010. Stace, C./van der Meijden, R. (ed.)/de Kort, I. (ed.). Interactive Flora of NW Europe - Luma apiculata (Myrtle, Chilean). http://nlbif.eti.uva.nl/bis/flora.php?menuentry=soorten&id=3045	"Habitat: Introduced-naturalized; thriving only in very mild areas but self-sown in semi-natural woodland or scrub."
302	2001. Figueroa, J.A./Armesto, J.J.. Community-wide germination strategies in a temperate rainforest of Southern Chile: ecological and evolutionary correlates. Australian Journal of Botany. 49: 411–425.	"Disturbed areas are often colonised by secondary forest vegetation, corresponding to a mixture of tree and shrub species, such as Drimys winteri J.R. et G.Forster, Rhaphithamnus spinosus (A.L.Juss.) Mol., Berberis spp., Gaultheria spp. and myrtle trees, such as Luma apiculata (D.C.) Burret." [adapted to disturbance in native range, but not regarded as a weed there]
302	2008. Cox, K./Machin, R.C,. Garden Plants for Scotland. Frances Lincoln Ltd, London, UK	"In favorable gardens, it will self seed" [not regarded as a weed by the author]
303	2007. Kogan, M./Alister, C.. Efficacy of glyphosate in Forest Plantations. CIAA, Universidad de Viña del Mar, Viña del Mar, Chile	"Native species in some circumstances growth in forest sites. Unfortunately in those situations are considered as undesirable vegetation" [Luma apiculata controlled in forestry plantations]
303	2007. Randall, R.P.. Global Compendium of Weeds - Luma apiculata [Online Database]. http://www.hear.org/gcw/species/luma_apiculata/	No evidence
304	2007. Randall, R.P.. Global Compendium of Weeds - Luma apiculata [Online Database]. http://www.hear.org/gcw/species/luma_apiculata/	No evidence
305	2007. Randall, R.P.. Global Compendium of Weeds [Online Database]. http://www.hear.org/gcw/	No species of Luma considered invasive
401	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	"Evergreen tree or shrub, up to 15 (20) m tall; crown spherical, richly branched." [no spines, thorns, or burrs]
402	2010. WRA Specialist. Personal Communication.	No evidence of allelopathy documented in literature.
403	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	[Not parasitic]
404	1989. Veblen, T.T./Mermoz, M./Martin, C./Ramilo, E.. Effects of Exotic Deer on Forest Regeneration and Composition in Northern Patagonia. Journal of Applied Ecology. 26(2): 711-724.	"Luma apiculata, another subcanopy tree species, showed a consistent pattern of greater abundance on Peninsula Quetrihue (Tables 3-5). It was so rare on Isla Victoria that the frequency with which it was browsed was low. Mean maximum heights on the island however, were 19-5 cm (S.E. 6 5) compared to 147 cm (S.E. 30) on the peninsula. This difference suggests that deer have inhibited its growth." [deer browsed]
405	1989. Veblen, T.T./Mermoz, M./Martin, C./Ramilo, E.. Effects of Exotic Deer on Forest Regeneration and Composition in Northern Patagonia. Journal of Applied Ecology. 26(2): 711-724.	Browsed by deer [no evidence of toxicity to animals found]
406	2009. Home and Garden. Luma apiculata. http://www.home-garden.eu/luma/apiculata-shrub	"Pests: Generally pest free. Diseases: Generally disease free."
407	2001. Hanelt, P. (ed.). Mansfeld's encyclopedia of agricultural and horticultural crops: (except ornamentals).. Angiospermae - monocotyledones: orchidaceae - pandanaceae, Volume 5. Springer-Verlag, Berlin, Heidelberg, New York	"Cultivated for its edible fruits, also as an ornamental tree…" [no evidence of or warnings about toxicity]
407	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	"Fruit a black berry, edible"
408	2002. Litton, C.M./Santelices, R.. Early post-fire succession in a Nothofagus glauca forest in the Coastal Cordillera of south-central Chile. International Journal of Wildland Fire. 11: 115-125.	"Luma apiculata…decreased considerably in both cover and frequency in the burned plots." [intolerant of fire, and no evidence that Luma increases fire hazards]

409	2001. Figueroa,J.A./Hernandez, J.F.. Seed germination responses in a temperate rain forest of Chiloé, Chile: effects of a gap and the tree canopy. Ecologia Austral. 11(1): 39-47.	"In contrast, germination in the other edge tree species (Lomatia ferruginea, Lomatia hirsuta, Luma apiculata, and Myrceugenia exsucca) was not inhibited under the canopy even though these species do not normally grow within this darker habitat."
409	2007. Rügera, N./Gutiérrez, Á.G./Kissling, W.D./Armesto, J.J./Huth, A.. Ecological impacts of different harvesting scenarios for temperate evergreen rain forest in southern Chile—A simulation experiment. Forest Ecology and Management. 252: 52–66.	"Finally, five tree species in the Myrtaceae family (Amomyrtus luma, A. meli, Luma apiculata, Myrceugenia ovata, M. planipes) were combined into one species group because of their similar ecological characteristics. They are shade tolerant species with maximum heights of 15–20 m, which often dominate the lower canopy and understorey (e.g. Donoso et al., 1999)."
409	2009. Chileflora. Plant Browser - Luma apiculata. http://www.chileflora.com/Florachilena/FloraEnglish/HighResPages/EH0246.htm	"Light conditions: Some shadow. Some protection against direct sunlight, some shadow from vegetation, filtering about 20 - 40 % of light."
410	2009. Home and Garden. Luma apiculata. http://www.home-garden.eu/luma/apiculata-shrub	"Soil. Acid, Alkaline or Neutral. Well-drained. Chalk, Clay, Loam or Sand."
410	2010. Dave's Garden. PlantFiles: Arrayan - Luma apiculata. http://davesgarden.com/guides/pf/go/80411/	"Soil pH requirements: 5.6 to 6.0 (acidic) 6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral)"
411	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	"Evergreen tree or shrub, up to 15 (20) m tall" [not climbing or smothering]
412	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	No evidence
501	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	"Hygrophilous species, bordering lakes, rivers and on other very moist soils." [terrestrial tree that tolerates wet soils]
502	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	Myrtaceae
503	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	Myrtaceae [not a nitrogen fixing woody plant]
504	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	"Evergreen tree or shrub, up to 15 (20) m tall; crown spherical, richly branched." [not a geophyte]
601	1998. Smith-Ramírez, C./Armesto, J.J./Figueroa, J.. Flowering, fruiting and seed germination in Chilean rain forest myrtaceae: ecological and phylogenetic constraints. Plant Ecology. 136: 119–131.	[No evidence of substantial reproductive failure in native habitat]
602	2001. Figueroa,J.A./Hernandez, J.F.. Seed germination responses in a temperate rain forest of Chiloé, Chile: effects of a gap and the tree canopy. Ecologia Austral. 11(1): 39-47.	"Table 1...Luma apiculata...Seed viability...High"
603	2010. WRA Specialist. Personal Communication.	Unknown
604	2007. Newton, A.C. (ed.). Biodiversity loss and conservation in fragmented forest landscapes: the forests of montane Mexico and temperate South America. CABI, Wallingford, UK	"Significant inbreeding measure in large stands of Luma apiculata can be attributed to biparental inbreeding as well as self-fertilization…the mating system of L. apiculata fits the mixed mating model, being predominantly an outcrosser." [demonstrates self-compatibility]
605	2005. Smith=Ramirez, C./Martinez, P./Nunez, M./Gonzalez, C./Arnesto, J.J.. Diversity, flower visitation frequency and generalism of pollinators in temperate rain forests of Chiloé Island, Chile. Botanical Journal of the Linnean Society. 147: 399–416.	"Table 2. Species richness and visiting rates of pollinators for 26 plant species of temperate rain forests of Chiloé Island, Chile...Luma apiculata...Number of pollinator species = 29" [adapted for insect pollination by a number of different orders]
605	2008. Montenegro, G./Gómez, M./Díaz-Forestier, J./Pizarro, R.. Ciencia e Investigacion Agraria. 35(2): 145-154.	"Thirteen species were important sources of nectar for the native multifloral honeys produced between regions IV and VII of Chile, while only seven species were in regions IX and X...Chilean myrtle (Luma apiculata) and maqui (Aristotelia chilensis) were species contributing to nectar in both areas. Their contributions would be related to their wider geographical distribution and a certain preference of A. mellifera for the nectar of these species." [flowers adapted for insect pollination]
606	2009. Home and Garden. Luma apiculata. http://www.home-garden.eu/luma/apiculata-shrub	"Propagation: Propagate by seed and semi-hardwood cuttings." [spreads by seeds]
607	2008. Hogan, S.. Trees for all seasons: broadleaved evergreens for temperate climates. Timber Press, Portland, OR	"The spring to early summer flowers begin appearing when the tree is only a few years old…"

701	2002. Sykes, W.R.. Luma apiculata and its relatives in New Zealand. New Zealand Botanical Society Newsletter. 70: 7-8.	"Berry 7-9 mm diameter, broad ellipsoid or suborbicular, glossy black. Seeds 2 4 mm across, flattened." [no evidence, and no means of external attachment]
702	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	"Luma is a species of outstanding ornamental value."
704	1987. Armesto, J.J./Rozzi, R./Miranda, P./Sabag, C.. Plant/frugivore interactions in South American temperate forests. Revista Chilena de Historia Natural. 60: 321-336.	"Characteristics of fruits of bird-dispersed plants in the forest of Chiloe ." [Luma apiculata with fleshy, bird-dispersed berries. No adaptations for wind dispersal]
705	2008. Gut, B.. Trees in Patagonia. Birkhauser Verlag, Basel, Switzerland	"Hygrophilous species, bordering lakes, rivers and on other very moist soils." [unknown if fruits are buoyant, but proximity to water suggests potential for water dispersal]
706	2002. Figueroa, J.A./Castro, S.A.. Effects of bird ingestion on seed germination of four woody species of the temperate rainforest of Chiloé island, Chile. Plant Ecology. 160: 17–23.	"The seeds of Luma apiculata and Myrceugenia planipes that belong to a group of Myrtaceae with naked embryos, showed similar responses to ingestion by birds. In both species, the seeds inside the pulp of the fruit did not germinate, whereas those ingested by birds or extracted manually germinated (Figure 1). These results suggest that the pulp of L. apiculata and M. planipes may inhibit seed germination...In L. apiculata and M. planipes the birds also help to eliminate the pulp in order to permit seed germination, as well as dispersing the seeds." [bird-dispersed]
707	2010. WRA Specialist. Personal Communication.	No evidence [but possible that fruits could be carried and externally transported by rodents, mongoose or other omnivorous animals in Hawaiian Islands]
708	2002. Figueroa, J.A./Castro, S.A.. Effects of bird ingestion on seed germination of four woody species of the temperate rainforest of Chiloé island, Chile. Plant Ecology. 160: 17–23.	"The seeds of Luma apiculata and Myrceugenia planipes that belong to a group of Myrtaceae with naked embryos, showed similar responses to ingestion by birds. In both species, the seeds inside the pulp of the fruit did not germinate, whereas those ingested by birds or extracted manually germinated (Figure 1). These results suggest that the pulp of L. apiculata and M. planipes may inhibit seed germination." [seeds require processing & gut passage]
801	1987. Armesto, J.J./Rozzi, R./Miranda, P./Sabag, C.. Plant/frugivore interactions in South American temperate forests. Revista Chilena de Historia Natural. 60: 321-336.	"Table 5. No. seeds per fruit (range)…Luma apiculata…4 (3-6)" [unlikely to produce such high seed densities]
802	1998. Smith-Ramírez, C./Armesto, J.J./Figueroa, J.. Flowering, fruiting and seed germination in Chilean rain forest myrtaceae: ecological and phylogenetic constraints. Plant Ecology. 136: 119–131.	"The second group shows moderate to slow seed germination, with a dormancy period ranging between 40 and 160 days (A. luma, A. meli, U. molinae, U. candollei, M. nummularia and Luma apiculata)."
803	2007. Kogan, M./Alister, C.. Efficacy of glyphosate in Forest Plantations. CIAA, Universidad de Viña del Mar, Viña del Mar, Chile	"Table 4. Recommended pre-planting glyphosate treatments to control some brush and woody trees...Luma apiculata...Herbicide treatments … Glyphosate 1.4 ae·ha-1 + Triclopyr 1.5 kg butoxyethyl ester·ha-1 (Add a non-ionic surfactant)"
804	2002. Litton, C.M./Santelices, R.. Early post-fire succession in a Nothofagus glauca forest in the Coastal Cordillera of south-central Chile. International Journal of Wildland Fire. 11: 115-125.	Decreases in cover after burning
804	2010. Top Tropicals. Luma apiculata, Eugenia apiculata. Top Tropicals Botanical Garden, http://toptropicals.com/cgi-bin/garden_catalog/cat.cgi?uid=Luma_apiculata	"Its small, aromatic leaves respond well to pruning so it is commonly used as a hedge."
805	2010. WRA Specialist. Personal Communication.	Unknown