

Taxon: <i>Melastoma septemnervium</i> Lour.	Family: Melastomataceae
Common Name(s): Asian Melastome	Synonym(s): <i>Melastoma candidum</i> D. Don <i>Melastoma malabathricum</i>

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 29 Apr 2021
WRA Score: 18.0	Designation: H(Hawai'i)	Rating: High Risk

Keywords: Invasive Shrub, Environmental Weed, Dense Stands, Bird-Dispersed, Prolific Seeder

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	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)	n
303	Agricultural/forestry/horticultural weed		
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	y
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals		
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
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

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
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	y=1, n=-1	y
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)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	y
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant		
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed		
706	Propagules bird dispersed	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)		
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m ²)	y=1, n=-1	y
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
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	[No evidence of domestication] "Distribution — N Vietnam, S China, Taiwan. Naturalised on Hawaii. Habitat& Ecology — In light forests, clearings, and grass lands, or on rocky slopes, from sea level to 1500 m altitude."

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
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	"Distribution — N Vietnam, S China, Taiwan. Naturalised on Hawaii. Habitat& Ecology — In light forests, clearings, and grass lands, or on rocky slopes, from sea level to 1500 m altitude."

202	Quality of climate match data	High
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	

203	Broad climate suitability (environmental versatility)	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 cultivated and now naturalized in mesic to wet areas and bog margins, on Kaua'i and Hawai'i, especially on the windward sides, where it is locally abundant and invasive from near sea level up to ca. 900 m." [Treatment of <i>Melastoma candidum</i>]
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	{Elevation range >1000 m} "Distribution — N Vietnam, S China, Taiwan. Naturalised on Hawaii. Habitat& Ecology — In light forests, clearings, and grass lands, or on rocky slopes, from sea level to 1500 m altitude."

Qsn #	Question	Answer
204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	"Distribution — N Vietnam, S China, Taiwan. Naturalised on Hawaii."

205	Does the species have a history of repeated introductions outside its natural range?	n
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	"Distribution — N Vietnam, S China, Taiwan. Naturalised on Hawaii." [No evidence of cultivation other than Hawaii]
	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 cultivated and now naturalized in mesic to wet areas and bog margins, on Kaua'i and Hawai'i, especially on the windward sides, where it is locally abundant and invasive from near sea level up to ca. 900 m."

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.	[Kauai and Hawaii. Treatment for <i>Melastoma candidum</i>] "Native to Vietnam, southern China, Philippine Islands, Taiwan, Ryukyu Islands, and southern Japan; in Hawai'i cultivated and now naturalized in mesic to wet areas and bog margins, on Kaua'i and Hawai'i, especially on the windward sides, where it is locally abundant and invasive from near sea level up to ca. 900 m. First collected on Kaua'i in 1928 (Bryan 626, BISH)"
	Conant, P. (1996). New Hawaiian pest plant records for 1995. <i>Bishop Museum Occasional Papers</i> 46: 1-2	[Oahu] " <i>Melastoma candidum</i> D.Don New island record This plant was found naturalized for the first time on Oahu in Upper Kalihi Valley. Over 200 plants, some as tall as 6 m were pulled up or treated with herbicide in and around a commercial plant nursery on 19 July 1995 by HDOA staff. The proprietor of the nursery had no recollection of <i>M. candidum</i> being a part of the nursery inventory. Confirmation of the identification was made by George Staples at Bishop Museum. Distribution in Wagner et al. (1990: 911) is listed as Kauai and Hawaii. Material examined. OAHU: Honolulu District, Kalihi Valley, TMK 1-4-20-12, 0.1km N of Kalihi Stream in plant nursery, 220 m, 23 May 1995, Heu s.n. (BISH)."

302	Garden/amenity/disturbance weed	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.	"in Hawai'i cultivated and now naturalized in mesic to wet areas and bog margins, on Kaua'i and Hawai'i, especially on the windward sides, where it is locally abundant and invasive from near sea level up to ca. 900 m."

303	Agricultural/forestry/horticultural weed	
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Qsn #	Question	Answer
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Pastures"
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. (2003). Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	[Impacts to agriculture have not been quantified. If unpalatable, may impact wet pastures] "Environmental impact: Spread by birds, melastoma forms dense stands in wetter pastures and forests, shading out understory."

304	Environmental weed	y
	Source(s)	Notes
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. (2003). Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Environmental impact: Spread by birds, melastoma forms dense stands in wetter pastures and forests, shading out understory."
	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 cultivated and now naturalized in mesic to wet areas and bog margins, on Kaua'i and Hawai'i, especially on the windward sides, where it is locally abundant and invasive from near sea level up to ca. 900 m."
	Zimmerman, N. et al. (2008). Patterns of primary succession of native and introduced plants in lowland wet forests in eastern Hawai'i. <i>Biotropica</i> , 40(3), 277-284	"In the forest stands we studied, <i>P. cattleianum</i> and <i>M. candidum</i> were by far the most prevalent introduced species. While these and other introduced species were quite prevalent during latter-successional stages, they were relatively scarce in forests younger than 300 yr." ... "Although different in nature, the long-term impacts of introduced species such as <i>P. cattleianum</i> and <i>M. candidum</i> will likely prove just as detrimental to the integrity of these native ecosystems. <i>Falcataria</i> , N-fixing and dominant in the overstory, has a 'top-down' effect on the ecosystems it invades, increasing N availability and decreasing light availability for native overstory dominants. Our results suggest that, in contrast, where subcanopy woody invaders such as <i>P. cattleianum</i> and <i>M. candidum</i> attain sufficient densities, they have the potential to constrain native plant recruitment—likely through resource competition—and thus have the capacity to profoundly alter the future successional trajectories of these lowland forests, even while a relatively intact native overstory remains in place."
	Wood, K. R., & Kirkpatrick, M. (2014). Rediscovery of <i>Melicope quadrangularis</i> (Rutaceae) and other notable plant records for the island of Kaua'i, Hawai'i. <i>Bishop Museum Occasional Papers</i> , 115, 29-32	" <i>Melicope quadrangularis</i> is a Kaua'i endemic tree known from the holotype collection made by Charles Forbes in 1909, and rediscovered in the same general region of Wahiawa in May 1991 (Lorence et al. 1995; Lorence & Flynn 1997). the rediscovered population, consisting of 13 trees in close proximity, was subsequently destroyed by Hurricane 'iniki in September 1992 (Wood 2000, 2009, 2011) and reported as possibly extinct, as no living individuals were known (Wood 2012)." ... "threats include severe storms, pigs, rats, <i>Psidium cattleianum</i> & <i>P. rosifolius</i> , <i>Melastoma candidum</i> "

Qsn #	Question	Answer
	<p>Smith, C.W. (1985). Impact of Alien Plants on Hawaii's Native Biota. Pp. 180-250 in Stone & Scott (eds.). Hawaii's terrestrial ecosystems: preservation & management. CPSU, Honolulu, HI</p>	<p>[Entry for <i>Melastoma malabathricum</i>, now treated as <i>Melastoma septemnerium</i>] "This noxious, spreading shrub forms tangled brush up to 2 m tall which crowds out all other species. Its berry-like fruit is dispersed by frugivorous birds. There is no information on its adaptation to fire. Al-though Gardner and Davis (1982) suggested that it has been partially controlled by <i>Selca brunella</i> Hampson caterpillars, there is little evidence of any decrease in population levels. There are heavy infestations on Kauai and the and Hamakua Districts of Hawaii from sea level to 700 m."</p>
	<p>Hughes, R. F. et al. (2017). Influence of invasive species on carbon storage in Hawai 'i's ecosystems. Pp. 43-55 in Baseline and projected future carbon storage and carbon fluxes in ecosystems of Hawai'i. US Geological Survey Professional Paper 1834. USGS, Reston, VA</p>	<p>[Negatively affects carbon storage and cycling in formerly native ecosystems] "Collectively, shrubby members of the Melastomataceae introduced to Hawai'i within the last 100 years, including <i>Clidemia hirta</i> (soap bush), <i>Melastoma septemnerium</i>, and <i>Miconia calvenscens</i> (velvet tree), pose some of the most serious threats to both the native biodiversity of Hawai'i's forests and their capacity to store aboveground and belowground carbon." ... "Regarding the capacity of these three invasive melastomes to store and cycle carbon relative to the native species they displace, <i>C. hirta</i> and <i>M. septemnerium</i> are both better characterized as shrubs than trees, and all three species are relatively low stature compared to the much taller native trees (for example, <i>M. polymorpha</i> and <i>A. koa</i>) they displace. As such, their invasion across landscapes formerly dominated by native forests has been typically accompanied by a substantial diminution in ecosystem carbon stocks. In addition, Allison and Vitousek (2004) noted that, unlike the leaf litter of native species of Hawai'i's wet forests which tends to decompose slowly, immobilizing nutrients and stabilizing soil carbon, litter of <i>C. hirta</i>, <i>M. septemnerium</i>, and <i>M. calvenscens</i> decomposes quickly, releasing nutrients in the process. As such, we would expect soils supporting these invasive melastomes to accumulate and store substantially less carbon than their native-forest counterparts."</p>

Qsn #	Question	Answer
305	Congeneric weed	y
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Melastoma affine - Weed of: Orchards & Plantations" ... "Melastoma malabathricum - Weed of: Bananas, Orchards & Plantations, Pome Fruits, Vegetables"
	Faravani, M., & Bakar, B. B. (2007). Effects of light on seed germination, growth pattern of straits Rhododendron (<i>Melastoma malabathricum</i> L.). Journal of Agricultural and Biological Science, 2(3), 1-5	"Melastoma malabathricum is a serious weed in many crops, derelict and abandoned farmlands, and arable lands in Malaysia (Ridley 1922; Maxwell 1989, Baki 2004; 2006; Faravani and Baki 2007), and else where in the tropics and subtropics (Renner and Meyer 2001; Clausing and Renner 2001). The weed has a propensity to become invasive with adaptive life strategies including robust clonal and reproductive growths coupled with efficient seed dispersal, often aided by ants and birds, and are attracted by copious production of fruits."
	Tanimoto, V.M. & Char, W.P. (1992). Alien Plant Control or State Lands Including Natural Areas. Pp 536-550 in Stone, C.P. et al. (eds.). Alien Plant Invasions in Native Ecosystems of Hawaii: Management & Research. University of Hawaii CPSU, Honolulu, HI	"Table 1. Weeds listed for control by four Division of Forestry and Wildlife field offices, 1975-present." [includes <i>Melastoma sanguineum</i> on Hawaii and Kauai]

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . Blumea, 46, 351-398	[No evidence] "Shrub up to 2 m tall; young branches quadrangular, more or less densely covered with appressed brown scales; bark brown to grey and darkening with age. Leaves elliptic to ovate, 4.2-10.3 by 2-6 cm, base obtuse or rounded, often slightly cordate, apex acute or acuminate, lamina strigose or subvillous above, subvillous to villous underneath, olive-green; nerves 7, but marginal nerves sometimes inconspicuous, covered with slender scales or bristles; petiole 5-18 mm long. Inflorescences terminal or distal axillary, few-flowered cymes."

402	Allelopathic	
	Source(s)	Notes

Qsn #	Question	Answer
	Faravani, M., Baki, H. B., & Khalij, A. (2008). Assessment of Allelopathic Potential of <i>Melastoma malabathricum</i> L. on Radish raphanus sativus L. and Barnyard Grass (<i>Echinochloacrus-galli</i>). <i>Notulae Botanicae Horti Agrobotanici Cluj-Napoca</i> , 36(2), 54-60	[Unknown. Demonstrated with aqueous extracts of a congener in controlled laboratory conditions] " <i>Melastoma malabathricum</i> L. is a weedy invasive shrub in arable lands, abandoned farmlands, secondary forest openings and derelict areas in Malaysia. Some allelochemicals present in this plant extracts may, directly, prevent or promote germination when environmental conditions are conducive to growth and establishment. It may have an important role, indirectly, in determining plant community structures. The aqueous extract and methanol extracts, were assayed for the aqueous extract of fresh materials with concentrations of 0, 50,100,150 and 200 gl-1 and at aqueous of oven dried materials extract with concentrations of 40,80,120,160,and 200 gl-1 .The crude methanol extracts were prepared using extract concentrations of 10.8,14.28 ,18 and 30 gl-1 of shoot and root materials. The extracts were tested with the widely used radish seed barnyard grass seed. Radish seed germination was inhibited at concentrations ranging from 200 gl-1 in the extract aqueous of dried materials and in the methanol extract concentrations of 14.28 and 30 gl-1 .The inhibition of root and shoot growth was also observed in the Barnyard grass seed. Both species were susceptible to allelopathy by extracts isolated from shoot and root of <i>M. malabathricum</i> and also their rate of germination, root length and shoot length in were decreased upon the application of both type of extractions. The results from this study strongly suggest that allelopathy may be a possible mechanism controlling the timing of barnyard grass germination and seedling establishment."

403	Parasitic	n
	Source(s)	Notes
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching,L. (2003). <i>Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide</i> . CTAHR, UH Manoa, Honolulu, HI	"Shrub up to 2 m tall; young branches quadrangular, more or less densely covered with appressed brown scales; bark brown to grey and darkening with age." [Melastomataceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	Rosleine, D., & Suzuki, E. (2012). Secondary sucession at abandoned grazing sites, Pangandaran Nature Reserve, West Java, Indonesia. <i>Tropics</i> , 21(3), 91-104	[Unknown. Other species reported to have low palatability] " <i>Melastoma malabathricum</i> and <i>C. odorata</i> are less palatable to ungulates (Simbolon et al. 1986) and have possibility to suppress the growth of grasses and herbs." ... "Small shrubs such as <i>C. odorata</i> , <i>B. balsamifera</i> , and <i>M. malabathricum</i> increased in abundance at Cikamal and Nanggorak, where disturbance was still occurring. Unfortunately, these species are less palatable for ungulates (Simbolon et al. 1986). During our research, we observed that few leaves of <i>M. malabathricum</i> were eaten by ungulates. Kangiras (2009) studied the food of deer in PNR and reported that <i>M. malabathricum</i> was consumed less by deer, whose main food sources were <i>Fimbristylis annua</i> , <i>I. cylindrica</i> , <i>E. indica</i> , <i>Chrysopogon aciculatus</i> , and <i>D. triflorum</i> . It is possible that the lower preference for <i>M. malabathricum</i> and other species by ungulates might promote their invasion of the abandoned grazing sites."

Qsn #	Question	Answer
	Chee, Y. K., & Wong, C. C. (1986). Forages in Malaysia. Pp. 84-88 in Forages in Southeast Asian and South Pacific Agriculture, ACIAR Proceedings Series No. 12	[Unknown. Other species unpalatable] "The weeds are Mimosa pudica, Mikania cordata, Melastoma malabathricum and Eupatorium odoratum. The ferns are Nephrolepis biserrata, Gleichenia linearis. Lygodium spp. and others. The ground vegetation species Imperata cylindrica, Melastoma malabathricum and most ferns are not palatable."

405	Toxic to animals	n
	Source(s)	Notes
	Quattrocchi, U. (2012). CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. (2008). International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

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

Qsn #	Question	Answer
	<p>Huang, K. W., & Wang, C. F. (2009). Eriophyoid mites (Acari: Eriophyoidea) of Taiwan: thirty-seven species from Yangmingshan, including one new genus and twenty-two new species. <i>Zootaxa</i>, 1986(1), 1-50</p>	<p>"This work describes and illustrates two families, five subfamilies, 20 genera, and 37 species of Eriophyoidea, including one new genus and 22 new species, from Yangmingshan (Northern Taiwan): <i>Taicolopodacus primus</i> gen. et sp. nov. (infesting <i>Helicia formosana</i>), <i>Colopodacus rubrus</i> sp. nov. (infesting <i>Glochidion rubrum</i>), <i>Col. parallelus</i> sp. nov. (infesting <i>Hydrangea angustipetala</i>), <i>Nothopoda taiwanensis</i> sp. nov. (infesting <i>Melastoma candidum</i>), <i>Pangacarus formosanus</i> sp. nov. (infesting <i>Callicarpa formosana</i>), <i>Cosella fleshneri</i> (Keifer) (infesting <i>Helicia formosana</i>), <i>Cos. viburniae</i> Huang et Wang (infesting <i>Viburnum luzonicum</i>), <i>Cos. parvifloriae</i> sp. nov. (infesting <i>Itea parviflora</i>), <i>Cos. kadsuriae</i> sp. nov. (infesting <i>Piper kadsura</i>), <i>Cos. chinensis</i> sp. nov. (infesting <i>Symplocos chinensis</i>), <i>Gammaphytoptus commune</i> sp. nov. (infesting <i>Lindera communis</i>), <i>Acaphyllisa communiae</i> sp. nov. (infesting <i>Lindera communis</i>), <i>Aca. duplicella</i> sp. nov. (infesting <i>Symplocos chinensis</i>), <i>Neopentamerus octcellus</i> Huang (infesting <i>Lindera communis</i>, <i>Smilax lanceifolia</i> and <i>Smilax china</i>), <i>Tumoris sanasaii</i> Huang (infesting <i>Symplocos chinensis</i>), <i>Phyllocoptes calirubi</i> Keifer (infesting <i>Rubus croceacanthus</i>), <i>Calepitrimerus proprius</i> sp. nov. (infesting <i>Lindera communis</i>), <i>Cal. scutulatus</i> sp. nov. (infesting <i>Symplocos chinensis</i>), <i>Neometaculus beecheyaus</i> sp. nov. (infesting <i>Ficus erecta beecheyana</i>), <i>Abacarus rotundus</i> sp. nov. (infesting <i>Smilax china</i>), <i>Aba. bambusae</i> (Channabasavanna) (infesting <i>Bambusa oldhamii</i>), <i>Aba. tomentosus</i> Huang & Wang (infesting <i>Bridelia monoica</i>), <i>Aba. aralioidus</i> Huang (infesting <i>Trochodendron aralioides</i>), <i>Aba. floritulus</i> Huang (infesting <i>Miscanthus floridulus</i>), <i>Aculopus monices</i> Huang (infesting <i>Bridelia tomentosa</i>), <i>Apodiptacus coniunctus</i> sp. nov. (infesting <i>Machilus thunbergii</i>), <i>Apo. styracus</i> Huang (infesting <i>Styrax formosana</i>), <i>Asetadiptacus phaeostictus</i> sp. nov. (infesting <i>Prunus phaeosticta</i>), <i>Diptacus glaber</i> sp. nov. (infesting <i>Rubus</i> sp.), <i>Dip. acuminatus</i> sp. nov. (infesting <i>Litsea acuminata</i>), <i>Dip. tristylus</i> Huang (infesting <i>Saurauia tristyla</i>), <i>Diptilomiopus cumminis</i> Chakrabarti et al. (infesting <i>Eurya chinensis</i> and <i>E. japonica</i>), <i>Dip. aralioides</i> Huang (infesting <i>Trochodendron aralioides</i>), <i>Dip. candidus</i> sp. nov. (infesting <i>Melastoma candidum</i>), <i>Dip. decem</i> sp. nov. (infesting <i>Callicarpa formosana</i>), <i>Catarhinus palmifolius</i> Huang (infesting <i>Setaria palmifolia</i>), and <i>Asetacus obscurus</i> sp. nov. (infesting <i>Helicia formosana</i>). Keys to species of eriophyoid mites from Yangmingshan are provided."</p>

Qsn #	Question	Answer
407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Tropical Plants Database, Ken Fern. (2021). <i>Melastoma candidum</i> . http://tropical.theferns.info/viewtropical.php?id=Melastoma+candidum . [Accessed 29 Apr 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
	Wagstaff, D.J. (2008). International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	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. Unlikely given wet habitat invaded] "in Hawai'i cultivated and now naturalized in mesic to wet areas and bog margins, on Kaua'i and Hawai'i, especially on the windward sides, where it is locally abundant and invasive from near sea level up to ca. 900 m."

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Wong, C. P. (2007). Hawaiian lowland wet forests: impacts of invasive plants on light availability. <i>J Young Invest</i> , 16, 1-5.	[Phenotypically plastic and capable of growing in a number of light conditions] "There were no substantial differences in the photosynthetic rates of <i>P. hawaiiensis</i> , <i>M. candidum</i> , and <i>M. mappa</i> . <i>P. hawaiiensis</i> demonstrated equivalent shade-tolerant traits as <i>M. candidum</i> and <i>M. mappa</i> . All three species fell in the range of shade-tolerance. <i>P. hawaiiensis</i> may be one of the most abundant native subcanopy species because of its competitive shade tolerant characteristics. Possibly, <i>P. hawaiiensis</i> was less abundant in the past yet the reduction in light availability is now allowing this species to increase. Likely species diversity of native lowland flora was historically higher because light conditions were more dynamic permitting native shade-intolerant species to survive and persist. <i>M. candidum</i> and <i>M. mappa</i> had higher standard deviations for their light compensation points than <i>P. hawaiiensis</i> , suggesting that <i>M. candidum</i> and <i>M. mappa</i> are more phenotypically plastic, which allow them to quickly adapt to a variety of light conditions."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. (2003). Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Adapted to acid soils"

Qsn #	Question	Answer
	GardenTags. (2021). <i>Melastoma candidum</i> syn. <i>Melastoma septemnerium</i> . https://www.gardentags.com . [Accessed 29 Apr 2021]	Soil - Asian Melastome likes rich and free draining ph 5.5 - 8.0 Acid - Neutral

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	"Shrub up to 2 m tall; young branches quadrangular, more or less densely covered with appressed brown scales; bark brown to grey and darkening with age."

412	Forms dense thickets	y
	Source(s)	Notes
	Global Invasive Species Database (2021) Species profile: <i>Melastoma candidum</i> . http://www.iucngisd.org/gisd/species.php?sc=1053 . [Accessed 29 Apr 2021]	" <i>Melastoma candidum</i> (Asian melastome) is an invasive shrub that can spread rapidly and may form dense monotypic thickets in a variety of habitats such as: open land, grassland, shrubland and native forest. It originates from southeast Asia and was introduced to Hawaii as an ornamental shrub. All species of the genus <i>Melastoma</i> have a notoriously weedy history and noxious weed status but are still cultivated in Hawaii and elsewhere."
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. (2003). <i>Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide</i> . CTAHR, UH Manoa, Honolulu, HI	"Spread by birds, melastoma forms dense stands in wetter pastures and forests, shading out understory."

501	Aquatic	n
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	[Terrestrial] "In light forests, clearings, and grass lands, or on rocky slopes, from sea level to 1500 m altitude."

502	Grass	n
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	Melastomataceae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	Melastomataceae

Qsn #	Question	Answer
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	"Shrub up to 2 m tall; young branches quadrangular, more or less densely covered with appressed brown scales; bark brown to grey and darkening with age."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Global Invasive Species Database (2021) Species profile: <i>Melastoma candidum</i> . http://www.iucngisd.org/gisd/species.php?sc=1053 . [Accessed 29 Apr 2021]	[No evidence] " <i>Melastoma candidum</i> (Asian melastome) is an invasive shrub that can spread rapidly and may form dense monotypic thickets in a variety of habitats such as: open land, grassland, shrubland and native forest. It originates from southeast Asia and was introduced to Hawaii as an ornamental shrub. All species of the genus <i>Melastoma</i> have a notoriously weedy history and noxious weed status but are still cultivated in Hawaii and elsewhere."

602	Produces viable seed	y
	Source(s)	Notes
	Yang, X., Cao, C., Jin, H., Chen, X., & Fairylake, B. G. (2016). Preliminary study on germination factors of <i>Melastoma candidum</i> D. Don. <i>Journal of Henan Agricultural University</i> , 04.	"Adopting of the method of paper on the petri dish, effects of different temperature treatments, low temperature(4℃) pretreatment and different concentrations of nitrate,GA ₃ and PEG6000on seed germination of the <i>Melastoma candidum</i> D. Don were studied. The results showed that under the non temperature treatment, the germination rate of seed at 25℃ was higher than at 16℃. Different time of low temperature pretreatment improved germination of the yellow seed, and the germination rate was the highest in 12 h pretreatment. The treatment of different concentrations of nitrate,PEG6000 and GA ₃ all increased germination rate of the yellow seed at seed germination stage; The treatment of0. 1%,0. 5%,1% PEG6000 and 50,100 mg·L ⁻¹ GA ₃ had no effect."
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching,L. (2003). <i>Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide</i> . CTAHR, UH Manoa, Honolulu, HI	"Berries black, 0.5 inches long, 5-celled, seeds small, many, coiled appearance, more than 1000 seeds per fruit"
	Cordell, S., Ostertag, R., Rowe, B., Sweinhart, L., Vasquez-Radonic, L., Michaud, J., Cole, T. C., & Schulten, J. R. (2009). Evaluating barriers to native seedling establishment in an invaded Hawaiian lowland wet forest. <i>Biological Conservation</i> , 142(12), 2997-3004	"Four non-native species (<i>Cecropia</i> , <i>Macaranga</i> , <i>Melastoma</i> , and <i>Trema</i>) showed no difference in germination percentage among light treatments, indicating that they would be successful under both invaded and removal conditions." [Melastoma septemnerium - High germination rate, moderate seed rain]

603	Hybridizes naturally	y
	Source(s)	Notes

Qsn #	Question	Answer
	Liu, T. et al. (2014). Extensive hybridization and introgression between <i>Melastoma candidum</i> and <i>M. sanguineum</i> . PLoS One, 9(5), e96680	"Recently, we have identified <i>Melastoma intermedium</i> as a natural hybrid between <i>M. candidum</i> and <i>M. dodecandrum</i> based on sequences of two nuclear genes [11]. These results indicate that reproductive isolation between some <i>Melastoma</i> species is not complete."

604	Self-compatible or apomictic	
	Source(s)	Notes
	Luo, Z., Zhang, D., & Renner, S. S. (2008). Why two kinds of stamens in buzz-pollinated flowers? Experimental support for Darwin's division-of-labour hypothesis. <i>Functional Ecology</i> , 22(5), 794-800	[Possibly. Closely related species is self-compatible] "Experimental selfing confirmed earlier findings that <i>M. malabathricum</i> (synonym <i>M. affine</i>) is self-compatible (Gross 1993)."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Huang, J. C. C., Hsieh, Y. C., Lu, S. S., Yeh, W. C., Liang, J. Y., Lin, C. J., & Tung, G. S. (2021). Flower-visiting insects of genus <i>Melastoma</i> (Myrtales: Melastomataceae) at the Fushan Botanical Garden, Taiwan. <i>Biodiversity Data Journal</i> , 9: e60315	"Despite the commonality in the dependence of buzz-pollinating bees, our results reveal a different bee pollinator composition to other studies on <i>Melastoma</i> plants, even for the same plant species. Liu et al. (2008) studied pollination biology of <i>Melastoma candidum</i> and other three confamilial species in Melastomataceae in central Taiwan and found that bees of genera <i>Bambus</i> and <i>Xylocopa</i> (both Apidae) are the primary pollinators. Studies on <i>M. malabathricum</i> (affine) in Australia (Gross 1993) reported <i>Xylocopa</i> , <i>Amegilla</i> (family Apidae) and <i>Nomia</i> (<i>Maculonomia</i>) as the main pollinators. Studies on several <i>Melastoma</i> species in southern China suggested that <i>Bambus</i> and <i>Xylocopa</i> , as well as <i>Amegilla</i> bees, are the most important pollinators (Liu et al. 2008, Luo et al. 2008, Peng et al. 2012, Peng et al. 2014). Except <i>Maculonomia</i> bees, these common bee pollinators of <i>Melastoma</i> , particularly the genus <i>Amegilla</i> , represent the minority in our observations."
	Soh, Z. W. W., & Ngiam, R. W. J. (2013). Flower-visiting bees and wasps in Singapore parks (Insecta: Hymenoptera). <i>Nature in Singapore</i> , 6, 153-172	[Morphologically similar <i>Melastoma septemnerium</i> likely pollinated by a similar suite of insects] "The first plant is the native <i>Melastoma malabathricum</i> , which received the highest diversity of visitors of all the native plants surveyed in this study. As this plant is native and is visited by a wide variety of flower-visiting insect species, it may be beneficial to grow more of this species in other parks to support the flower-visiting insect communities there. In addition, this plant may support bird populations, as species of flower-peckers and bulbuls have been observed to feed on the fruits of <i>Melastoma malabathricum</i> (pers. obs.)."

606	Reproduction by vegetative fragmentation	y
	Source(s)	Notes
	Ostertag, R., Cordell, S., Michaud, J., Cole, T. C., Schulten, J. R., Publico, K. M., & Enoka, J. H. (2009). Ecosystem and restoration consequences of invasive woody species removal in Hawaiian lowland wet forest. <i>Ecosystems</i> , 12 (3), 503-515	"invasive species in this site have a variety of competitive advantages including shade tolerance, high specific leaf area, and lower construction costs (Wong 2007), high leaf area (<i>Macaranga</i>), high nutrient litter with fast decomposition rates (<i>Melastoma</i>), and vegetative reproduction (<i>Melastoma</i> and <i>Psidium</i>)."

Qsn #	Question	Answer
	US Fish and Wildlife Service. (2008). Endangered and Threatened Wildlife and Plants; Listing 48 Species on Kauai as Endangered and Designating Critical Habitat; Proposed Rule. Federal Register Vol. 73, No. 204: 62592-62742	"Melastoma septemnerium is another member of the Melastomataceae family. This plant displaces and outcompetes native vegetation because of its invasive characteristics such as high germination rate, rapid growth, early maturity, ability of fragments to root, possible asexual reproduction, and efficient seed dispersal, especially by birds"

607	Minimum generative time (years)	
	Source(s)	Notes
	WRA Specialist. (2021). Personal Communication	Unknown. A previous assessment of this species completed in 2004 estimated a time to maturity of 2-3 years, based on the fact that it is an "early successional shrub fast growth rate allow domination"

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	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.	[Small seeds (0.5-1 mm long) presumably stick to mud on shoes, equipment, and vehicles, as do many other invasive Melastomataceae] "in Hawai'i cultivated and now naturalized in mesic to wet areas and bog margins, on Kaua'i and Hawai'i, especially on the windward sides, where it is locally abundant and invasive from near sea level up to ca. 900 m."

702	Propagules dispersed intentionally by people	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 cultivated and now naturalized in mesic to wet areas and bog margins"
	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	"Melastoma septemnerium is native to southern China, Vietnam, Taiwan, the Ryukyu Islands, and southern Japan. It is cultivated in the warmer parts of the U.S. and occasionally grown as a greenhouse plant in temperate regions." ... "Melastoma septemnerium has consistently been confused with and misidentified in the horticultural trade as M. malabathricum Linnaeus, Indian-rhododendron, which is not cultivated in Hawai'i or the Western Hemisphere."

703	Propagules likely to disperse as a produce contaminant	
	Source(s)	Notes
	Starr, F., Starr, K. & Loope, L. (2003). Melastoma candidum. http://www.starrenvironmental.com/publications/species_reports/pdf/melastoma_candidum.pdf . [Accessed 29 Apr 2021]	[Potentially Yes. Documented for Miconia] "Dispersal from inter-island horticulture exchange is also a threat as several species of Melastomataceae and other invasive weeds have been observed moving inter-island on hapu'u fern (Cibotium spp.) stumps and parts."

Qsn #	Question	Answer
704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	"Fruit a campanulate fleshy capsule, 8-12 by 7-10 mm, rupturing irregularly at maturity, exposing the black pulp and yellow seeds."
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. (2003). <i>Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide</i> . CTAHR, UH Manoa, Honolulu, HI	"Spread by birds, melastoma forms dense stands in wetter pastures and forests, shading out understory."

705	Propagules water dispersed	
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). <i>Manual of the flowering plants of Hawaii</i> . Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Fleshy-fruited and adapted for frugivory, but secondary dispersal by water may occur in wet or riparian habitats] "in Hawai'i cultivated and now naturalized in mesic to wet areas and bog margins, on Kaua'i and Hawai'i, especially on the windward sides, where it is locally abundant and invasive from near sea level up to ca. 900 m."

706	Propagules bird dispersed	y
	Source(s)	Notes
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. (2003). <i>Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide</i> . CTAHR, UH Manoa, Honolulu, HI	"Spread by birds, melastoma forms dense stands in wetter pastures and forests, shading out understory."
	Corlett, R. T. 1998. Frugivory and seed dispersal by birds in Hong Kong shrubland. <i>Forktail</i> : 23-28	"Table 2. The number of bird species recorded consuming the major bird-fruits in the shrubland at KARC, based on faecal analysis and direct observations." [Melastoma candidum/M.sanguineum - Bird species (number) = 9]

707	Propagules dispersed by other animals (externally)	
	Source(s)	Notes
	Meyer, K. (2001). Revision of the Southeast Asian genus <i>Melastoma</i> . <i>Blumea</i> , 46, 351-398	"Fruit a campanulate fleshy capsule, 8-12 by 7-10 mm, rupturing irregularly at maturity, exposing the black pulp and yellow seeds." [Small seed size suggests seeds could be dispersed in mud, or on feet and/or fur of mammals]

708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Corlett, R. T. 1998. Frugivory and seed dispersal by birds in Hong Kong shrubland. <i>Forktail</i> : 23-28	[Presumably Yes] "Table 2. The number of bird species recorded consuming the major bird-fruits in the shrubland at KARC, based on faecal analysis and direct observations." [Melastoma candidum/M.sanguineum - Bird species (number) = 9]

801	Prolific seed production (>1000/m2)	y
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Qsn #	Question	Answer
	Source(s)	Notes
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. (2003). Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Berries black, 0.5 inches long, 5-celled, seeds small, many, coiled appearance, more than 1000 seeds per fruit"
	Cordell, S., Ostertag, R., Rowe, B., Sweinhart, L., Vasquez-Radonic, L., Michaud, J., Cole, T. C., & Schulten, J. R. (2009). Evaluating barriers to native seedling establishment in an invaded Hawaiian lowland wet forest. Biological Conservation, 142(12), 2997-3004	"Table 3 Regeneration characteristics of the major non-native and native species under low light conditions (present closed canopy) and under high light conditions (canopy opening through biomass removal)." [Melastoma septemnerium - High germination rate, moderate seed rain]

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 29 Apr 2021]	"Storage Behaviour: No data available for species. Of 2 known taxa of genus Melastoma, 100.00% Orthodox(p/?)" [Melastoma candidum]
	Metcalf, D. J. (1996). Germination of small-seeded tropical rain forest plants exposed to different spectral compositions. Canadian Journal of Botany, 74(4), 516-520	[Seeds of a related species buried in soil remain viable for >104 weeks (2 years)] "Melastoma malabathricum (M. affine according to Whiffin 1990), along with 28 other pioneer or secondary species, has been shown to retain viability for more than 104 weeks buried in the soil (Hopkins and Graham 1987), although responsiveness to light after burial was not tested. There appears to be no previously documented case of a tropical rain forest plant keeping its light requirement for several months, but it seems likely that other melastomes and possibly some of the light-demanding Rubiaceae and Euphorbiaceae will fall into this category."

803	Well controlled by herbicides	y
	Source(s)	Notes
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. (2003). Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Management: Sensitive to hormone-type herbicides 2,4-D, dicamba, and triclopyr at 1 lb/acre, and to metsulfuron at 0.45 oz/acre. Sensitive to basal bark and stump bark applications of 2,4-D and triclopyr at 4% product in diesel."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	US Fish and Wildlife Service. (2008). Endangered and Threatened Wildlife and Plants; Listing 48 Species on Kauai as Endangered and Designating Critical Habitat; Proposed Rule. Federal Register Vol. 73, No. 204: 62592-62742	[Possibly. Spreads vegetatively and probably able to resprout after cutting or damage] "Melastoma septemnerium is another member of the Melastomataceae family. This plant displaces and outcompetes native vegetation because of its invasive characteristics such as high germination rate, rapid growth, early maturity, ability of fragments to root, possible asexual reproduction, and efficient seed dispersal, especially by birds"

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	

Qsn #	Question	Answer
	Source(s)	Notes
	<p>Starr, F., Starr, K. & Loope, L. (2003). <i>Melastoma candidum</i>. http://www.starrenvironmental.com/publications/species_reports/pdf/melastoma_candidum.pdf. [Accessed 29 Apr 2021]</p>	<p>[Unclear how effective biocontrol agents are at minimizing impacts of this species] "Biological control: Several moth species (Lepidoptera) have been purposely introduced as biological control agents for <i>M. candidum</i> (as <i>M. malabathricum</i> in Teramoto and Heu 2000). Two moths in the family Pyralidae have been released. <i>Bocchoris adipalis</i> Zell., native to Malaysia, was released in 1964 (Teramoto and Heu 2000). Another, <i>Bocchoris fatualis</i> (Lederer), native to the Philippines, was released in 1958 and is now established on Kaua'i (Teramoto and Heu 2000). A moth in the Arctiidae family, <i>Selca brunella</i> Hampson, native to Malaysia, was released in 1964 and is now established on the island of Hawai'i (Teramoto and Heu 2000)."</p>

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Thrives in tropical climates
- Naturalized on Kauai, Oahu and Hawaii islands
- An environmental weed that invades native forests, threatens rare native plants, and impacts carbon cycle
- Other *Melastoma* species are invasive
- Shade tolerant (invades native forest understory)
- Forms dense stands that
- Reproduces by prolific seed production and by vegetative spread
- Hybridizes with other *Melastoma* species
- Seeds dispersed by birds, and probably by attachment in mud to footwear, equipment and vehicles

Low Risk Traits

- Unarmed (no spines, thorns, or burrs)
- No reports of toxicity
- Herbicides may provide effective control