UF IFAS UNIVERSITY of FLORIDA

Assessment of Non-native Plants in Florida's Natural Areas

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Assessment date 27 Jan 2017

	Aleurites fordii ALL ZONES	Answer	Score
1.01	Is the species highly domesticated?	n	0
1.02	Has the species become naturalised where grown?		
1.03	Does the species have weedy races?		
2.01	Species suited to Florida's USDA climate zones (0-low; 1-intermediate; 2-high) North Zone: suited to Zones 8, 9 Central Zone: suited to Zones 9, 10 South Zone: suited to Zone 10	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	y	1
2.04	Native or naturalized in habitats with periodic inundation North Zone: mean annual precipitation 50-70 inches Central Zone: mean annual precipitation 40-60 inches South Zone: mean annual precipitation 40-60 inches	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	y	2
3.02	Garden/amenity/disturbance weed	y	2
3.03	Weed of agriculture	unk	
3.04	Environmental weed	unk	
3.05	Congeneric weed	y	2
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	unk	0
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	n	-1
4.05	Toxic to animals	y	1
4.06	Host for recognised pests and pathogens	n	0
4.07	Causes allergies or is otherwise toxic to humans	y	1
4.08	Creates a fire hazard in natural ecosystems	unk	0
4.09	Is a shade tolerant plant at some stage of its life cycle	n	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	unk	0
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	n	0
5.01	Aquatic	n	0
5.02	Grass	n	0
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	n	0

6.01	Evidence of substantial reproductive failure in native habitat	n	0
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally	unk	-1
6.04	Self-compatible or apomictic	y	1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	y	1
6.07	Minimum generative time (years)	3	0
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	unk	-1
7.02	Propagules dispersed intentionally by people	y	1
7.03	Propagules likely to disperse as a produce contaminant	n	-1
7.04	Propagules adapted to wind dispersal	n	-1
7.05	Propagules water dispersed	unk	-1
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	n	-1
8.01	Prolific seed production	n	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	unk	-1
8.03	Well controlled by herbicides	y	-1
8.04	Tolerates, or benefits from, mutilation or cultivation	unk	-1
8.05		?	
	Total Score	**1**	
	Implemented Pacific Second Screening	**YES**	
	Risk Assessment Results	LOW	

section	**# questions answered**		**satisfy minimum?**
A		9	yes
B		9	yes
C		18	yes
total		36	yes

	Reference	Source data
1.01	1. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 2. Rinehart, Edwards, and Spiers. HortScience. http://hortsci.ashspublications.org/content/48/1/123.full (Accessed: 18 January 2017)	Insufficient evidence of selection for reduced invasiveness 1. "High-yielding cultivars continue to be developed. Some of the best varieties released by the USDA for growing in southern, United States are the following: 'Folsom': low-heading, high productivity; fruits large, late maturing, turning purplish when mature, containing 21% oil; highest resistance to low temperature in fall. 'Cahl': low-heading, productive; fruits large, 20% oil content; matures early, somewhat resistant to cold in fall. 'Isabel': low-heading, high productive; fruits large, maturing early, 22% oil content. 'La Crosser: High-heading, exceptional productivity; fruits small, late maturing, tending to break segments if not harvested promptly, 21–14% oil content; a very popular variety. 'Lampton': outyields all other varieties; very low-heading; fruits large, early maturing; 22% oil content." 2. "'Anna Bella' was released by the USDA Agricultural Research Service and is not patented. It may be propagated and sold freely."; "'Anna Bella' is a semisterile, or nutless, tung tree selection that significantly reduces concerns about mowing and yard maintenance, toxicity to pets and children, and the possibility of invasiveness."
1.02		Skip to 2.01
1.03		Skip to 2.01
2.01	1. Global Plant Hardiness Zones for Phytosanitary Risk Analysis. http://naldc.nal.usda.gov/download/36586/PDF (Accessed: 18 January 2017) 2. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=320180 (Accessed: 18 January 2017) 3. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 4. Global Biodiversity Information Facility. http://www.gbif.org/species/3074907 (Accessed: 18 January 2017) 5. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2016) 6. Rinehart, Edwards, and Spiers. HortScience. http://hortsci.ashspublications.org/content/48/1/123.full (Accessed: 18 January 2017)	1. Figure 3. Florida North Zone: Hardiness zones 8 and 9. Central Zone: Hardiness zones 9 and 10. South Zone: Hardiness zone 10. 2. Native or naturalized in China, Myanmar, Vietnam, Australia, and the United States 3. "Native to central and western China, where seedlings have been planted for thousands of years; planted in southern United States from Florida to eastern Texas." 4. See distribution map. 5. "Zone: 8 to 10" 6. "USDA cold hardiness zones 8 through 10"
2.02		Native range well known.
2.03	1. The University of Melbourne. Köppen-Geiger Climate Map of the Wolrd. http://people.eng.unimelb.edu.au/mpeel/koppen.html (Accessed: 18 January 2017) 2. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=320180 (Accessed: 18 January 2017) 3. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 4. Global Biodiversity Information Facility. http://www.gbif.org/species/3074907 (Accessed: 18 January 2017)	1. Native or naturalized to Köppen-Geiger Climate Zones: Am, Aw, BSh, Cwa, Cwb, and Cfa 2. Native or naturalized in China, Myanmar, Vietnam, Australia, and the United States 3. "Native to central and western China, where seedlings have been planted for thousands of years; planted in southern United States from Florida to eastern Texas." 4. See distribution map.

2.04	1. Climate Charts. World Climate Maps. http://www.climate-charts.com/World-Climate-Maps.html#rain (Accessed: 18 January 2017) 2. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=320180 (Accessed: 18 January 2017) 3. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 4. Global Biodiversity Information Facility. http://www.gbif.org/species/3074907 (Accessed: 18 January 2017)	1. Native and naturalized in areas with rainfall within these ranges. 2. Native or naturalized in China, Myanmar, Vietnam, Australia, and the United States 3. "Native to central and western China, where seedlings have been planted for thousands of years; planted in southern United States from Florida to eastern Texas." 4. See distribution map.
2.05	1. Global Biodiversity Information Facility. http://www.gbif.org/species/3074907 (Accessed: 18 January 2017) 2. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=320180 (Accessed: 18 January 2017) 3. Texas Invasive Species Institute. http://www.tsusinvasives.org/home/database/vernicia-fordii (Accessed: 18 January 2017) 4. Keller, Stampella, Delucchi, and Hurrell. Boletin de la Sociedad Argentina de Botanica. http://www.scielo.org.ar/scielo.php?script=sci_arttext&pid=S1851-23722013000300015 (Accessed: 20 January 2017) 5. CABI Invasive Species Compendium. http://www.cabi.org/isc/datasheet/4122 (Accessed: 20 January 2017)	1. See distribution map. Present outside of native range in South America, Africa, and New Zealand. 2. Cultivated in Kenya, Tanzania, Malawi, South Africa, Swaziland, Madagascar, Georgia, China, Japan, Korea, India, Nepal, Sri Lanka, Cambodia, Laos, Myanmar, Vietnam, Malaysia, Australia, New Zealand, Ukraine, the United States, Brazil, Argentina, and Paraguay. Many of these countries are outside the native or even naturalized range. 3. "It is well established in Georgia, Alabama, Mississippi and Louisiana. In Texas it has been reported from 3 counties: Montgomery, Walker and Hardin, as early as 2010." 4. Naturalized in Argentina 5. See distribution table
3.01	1. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=320180 (Accessed: 18 January 2017) 2. Keller, Stampella, Delucchi, and Hurrell. Boletin de la Sociedad Argentina de Botanica. http://www.scielo.org.ar/scielo.php?script=sci_arttext&pid=S1851-23722013000300015 (Accessed: 20 January 2017) 3. LSU. Louisiana Plant Identification and Interactive Virtual Tours. http://www.rnr.lsu.edu/plantid/species/tungoiltree/tungoiltree.htm (Accessed: 20 January 2017)	1. Naturalized in Australia (Queensland) and the United States 2. Naturalized in Argentina 3. Naturalized in Louisiana
3.02	1. Global Compendium of Weeds. http://www.hear.org/gcw/species/aleurites_fordii/ (Accessed: 18 January 2017) 2. Langeland K.A., Craddock Burks K. , eds (2008) Identification and biology of non-native plants in Florida's natural areas. 2nd Ed. University of Florida Press, Gainesville, FL. (Accessed: 18 January 2017) 3. Texas Invasive Species Institute. http://www.tsusinvasives.org/home/database/vernicia-fordii (Accessed: 19 January 2017) 4. Invasive Plant Atlas. http://www.invasiveplantatlas.org/subject.cfm?sub=6592 (Accessed: 19 January 2017) 5. Dave's Garden. http://davesgarden.com/guides/articles/view/3334#b (Accessed: 25 January 2017)	1. Classified as a weed, agricultural weed, and environmental weed 2. Although they have not been shown to displace native flora, tung trees persist in fence rows and along roadsides and are classified as mildly invasive in parts of Florida. 3. "U.S. Habitat: Forest edges, right of ways and urban green spaces." 4. "Vernicia fordii invades forest edges, rights of ways and urban green spaces." 5. "some trees from the old plantations remain in areas where they successfully compete for resources with native species"
3.03	1. Global Compendium of Weeds. http://www.hear.org/gcw/species/aleurites_fordii/ (Accessed: 18 January 2017)	Insufficient evidence 1. Classified as an agricultural weed
3.04	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Global Compendium of Weeds. http://www.hear.org/gcw/species/aleurites_fordii/ (Accessed: 18 January 2017) Dave's Garden. http://davesgarden.com/guides/articles/view/3334#b (Accessed: 25 January 2017)	Insufficient evidence 1. "Tung trees do not handle competition well." 2. Classified as an environmental weed 3. "some trees from the old plantations remain in areas where they successfully compete for resources with native species" 4. It has escaped from cultivation and become naturalized in natural habitats where it replaces native vegetation and competes for space, water, light, and nutrients

3.05	1. Global Compendium of Weeds. http://www.hear.org/gcw/species/aleurites_moluccana/ (Accessed: 18 January 2017) 2. US Fish and Wildlife Service. http://policy.fws.gov/library/00fr66807.html (Accessed: 25 January 2017) 3. Elevitch, C. R. Ed. 2006. Traditional Trees of Pacific Islands. Permanent Agriculture Resources. Hulualoa. Hawaii.	1. Aleurites moluccana classified as a environmental weed, but not a noxious weed 2. "The major threat to Munroidendron racemosum is competition with alien plant species, such as Aleurites moluccana" "The major threats to Pteralyxia kauaiensis are...competition with...Aleurites moluccana" "Diellia pallida....grows on bare soil on steep, rocky, dry slopes in lowland mesic forests, from 520 to 915 m ...The major threats to this species include competition with Aleurites moluccana (kukui)" 3. "Kukui has naturalized in several Pacific Islands, particularly in Hawaii and has the potential to become established outside of cultivation. Despite this, kukui is rarely considered a harmful invasive or pest species."
4.01	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2017) 3. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017)	No evidence of these characteristics
4.02		No evidence
4.03		No evidence
4.04	1. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 2. Traditional Veterinary Practice in Africa. https://books.google.com/books?id=Gvot4jxaV4IC&pg=PA285&lpg=PA285&dq=%22Aleurites+fordii%22+graze&source=bl&ots=JqdRWqlLqt&sig=YixRQa4pHjAA-gyT8EOf7-VvAJw&hl=en&sa=X&ved=0ahUKEwjF1bDUg97RAhXBLyYKHb3oBz4Q6AEIJzAC#v=onepage&q=%22Aleurites%20fordii%22%20graze&f=false (Access: 20 January 2017) 3. Jarvis. Michigan Technological University. http://forest.mtu.edu/pcforestry/people/1997/jarvis.pdf (Accessed: 20 January 2017)	1. "fruit and leaves of tung trees are toxic to most animal life" 2. "Cattle have been poisoned from grazing on its foilage and even from eating trimmings and discarded foilage. The effects are profuse, watery and sanguineous diarrhea, loss of appetite, atony of the rumen, listlessness, general weakness, emaciation, and death." 3. "he is able to graze his cattle in his plantation year round, excluding livestock only during the period of the most intensive harvest of tung nuts"
4.05	1. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 2. Wells MJ, Balsinhas AA, Joffe H, Engelbrecht VM, Harding G, Stirton CH, 1986. A catalogue of problem plants in South Africa. Memoirs of the botanical survey of South Africa No 53. Pretoria, South Africa: Botanical Research Institute. (Accessed: 20 January 2017) 3. Plants for a Future. http://www.pfaf.org/User/Plant.aspx?LatinName=Aleurites+fordii (Accessed: 20 January 2017) 4. Horse DVM. http://www.horsedvm.com/poisonous/tung-oil-tree/ (Accessed: 20 January 2017) 5. Traditional Veterinary Practice in Africa. https://books.google.com/books?id=Gvot4jxaV4IC&pg=PA285&lpg=PA285&dq=%22Aleurites+fordii%22+graze&source=bl&ots=JqdRWqlLqt&sig=YixRQa4pHjAA-gyT8EOf7-VvAJw&hl=en&sa=X&ved=0ahUKEwjF1bDUg97RAhXBLyYKHb3oBz4Q6AEIJzAC#v=onepage&q=%22Aleurites%20fordii%22%20graze&f=false (Access: 20 January 2017)	1. "fruit and leaves of tung trees are toxic to most animal life" 2. "Foliage, sap, fruits, and seeds of V. fordii are poisonous to humans and animals and may cause skin irritation" 3. "Saponins are much more toxic to some creatures, such as fish, and hunting tribes have traditionally put large quantities of them in streams, lakes etc in order to stupefy or kill the fish" 4. "All parts of the tung oil tree are toxic to horses, although the seeds within the fruits produced by the tree are the most dangerous. Consumption of even one seed can be lethal." 5. "Cattle have been poisoned from grazing on its foilage and even from eating trimmings and discarded foilage. The effects are profuse, watery and sanguineous diarrhea, loss of appetite, atony of the rumen, listlessness, general weakness, emaciation, and death."

4.06	1. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2016) 2. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 3. Rinehart, Edwards, and Spiers. HortScience. http://hortsci.ashspublications.org/content/48/1/123.full (Accessed: 18 January 2017)	No evidence that it is a significant primary or alternate host 1. "No serious insect or disease problems. Susceptible to dieback and canker." 2. "Tung trees are relatively free of insects and diseases, only a few causing losses serious enough to justify control measures: as Botroyosphaeria ribis, Clitocybe tabescens, Mycosphaerella aleuritidis, Pellicularia koleroga, Physalospora rhodina and the bacterium, Pseudomonas aleuritidis. Other bacteria and fungi reported on tung trees are: Armillaria mellea, Botryodiplodia theobromae, Cephaleures virescens, Cercospora aleuritidis, Colletotrichum gloeosporioides, Corticium koleroga, Fomes lamaoensis, F. lignosus, Fusarium heterosporum forma aleuritidis, F. oxysporum, F. scirpi, F. solani, Ganoderma pseudoferreum, Cloeosporium aleuriticum, Glomerella clngulata, Pestalotia dichaeta, Phyllosticta microspore, Phytomonas syringas, Phytophthora omnivora, Ph. cinnamomi, Poria hypolateritia, Pythium aphanidermatum, Rhizoctonia solani, Septobasidium aleuritidis, S. pseudopedicellatum, Sphaerostilbe repens, Uncinula miyabei, var. aleuritis, Ustilina maxima, U. zonata. Insect pests are not a serious problem, since fruit and leaves of tung trees are toxic to most animal life. Nematodes Meloidogyne spp. have been reported" 3. "Like most tung trees, it is tolerant of common insects and diseases and has no significant pathogens or pests."
4.07	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2017) 3. Dave's Garden. http://davesgarden.com/guides/pf/go/72530/ (Accessed: 18 January 2017) 4. Lin, Hsu, Lee, Shiu, and Deng. J Toxicol Clin Toxicol. 1996. https://www.ncbi.nlm.nih.gov/pubmed/8632519 (Accessed: 18 January 2017) 5. Texas Invasive Species Institute. http://www.tsusinvasives.org/home/database/vernicia-fordii (Accessed: 19 January 2017)	1. "Although it is dangerously toxic, tung oil has been used to treat skin conditions and constipation."; "All parts of tung tree are toxic, but the fruits are most dangerous. Eating even one seed may be fatal. Symptoms may include severe stomach pain, vomiting, diarrhea, weakness, slowed breathing, and poor reflexes. The leaves give some people a poison-ivy-like rash." 2. "All parts of the tree are toxic to humans if ingested, and in particular the seeds." 3. "Danger: All parts of plant are poisonous if ingested" 4. "We report two outbreaks of Aleurites fordii poisoning, occurring on November 27, 1992 and November 29, 1994. Thirty-five elementary school students and 29 senior high school students misidentified Aleurites fordii seeds as chestnuts and ingested variable amounts... The three most common symptoms of the patients were vomiting, abdominal pain and diarrhea. The more serious clinical presentations occurred in younger victims. Our information suggests that food attenuates intestinal irritation perhaps by delaying absorption of the toxic principle. With symptomatic treatment, all of the symptoms and signs subsided within one to two days." 5. "The leaves create a skin rash much like poison-ivy and one seed can be fatal if to humans if consumed!"
4.08		No evidence
4.09	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2017) 3. Dave's Garden. http://davesgarden.com/guides/pf/go/72530/ (Accessed: 18 January 2017)	1. "Nearly full sun is necessary for good growth." 2. "grows best in... full sun. Tolerates some light shade." 3. "Sun Exposure: Full Sun"
4.10	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017)	Insufficient evidence 1. "Tung prefers slightly acidic loamy light to medium soils. The ideal pH is somewhere around 5.5-6.0. Tung will tolerate more alkalinity, but it is likely to exhibit leaf roll and leaf scorch when the pH gets up past 7.0. A wide range of soils is acceptable, so long as it is well drained, penetrable, and deeply aerated, but still has good moisture holding capacity." 2. "Tung makes its best growth on virgin land. Soils must be well-drained, deep aerated, and have a high moisture-holding capacity to be easily penetrated by the roots. Green manure crops and fertilizers may be needed. Dolomitic lime may be used to correct excessive acidity; pH 6.0–6.5 is best; liming is beneficial to most soils in the Tung Belt, the more acid soils requiring greater amounts of lime."

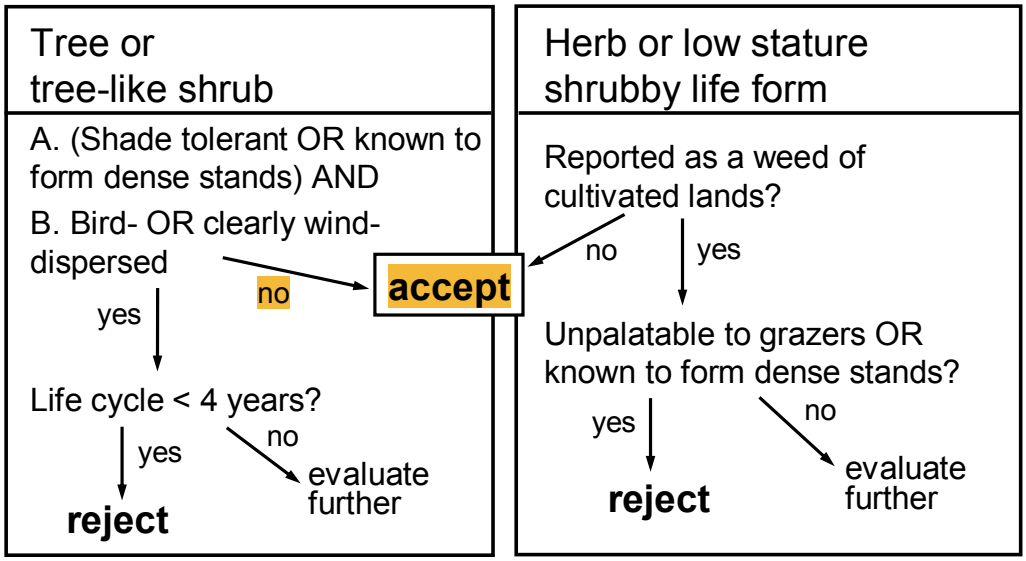
4.11	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2017) 3. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017)	No evidence
4.12	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2017) 3. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017)	No evidence
5.01	1. CABI Invasive Species Compendium. http://www.cabi.org/isc/datasheet/4122 (Accessed: 24 January 2017)	1. Terrestrial
5.02	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2016) 3. USDA Plants Database. https://plants.usda.gov/core/profile?symbol=VEFO (Accessed: 20 January 2017)	1. "deciduous tree" 2. "Type: Tree" 3. "Growth Habit: Tree"
5.03	1. USDA Plants Database. https://plants.usda.gov/core/profile?symbol=VEFO (Accessed: 20 January 2017)	1. "Family: Euphorbiaceae"
5.04	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2017) 3. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017)	No evidence of these specialized structures
6.01		No evidence
6.02	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 3. Texas Invasive Species Institute. http://www.tsusinvasives.org/home/database/vernicia-fordii (Accessed: 19 January 2017)	1. "Seedling tung trees typically outgrow those that are vegetatively propagated, but because tung trees grown from seed are extremely variable and often bear little resemblance to the parent plant, budding is the preferred method of propagation." 2. "Tung trees may be propagated by seed or by budding." 3. "Trees are able to reproduce by seeds within the fruits"
6.03		No evidence
6.04	1. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 2. Useful Tropical Plants. http://tropical.theferns.info/viewtropical.php?id=Vernicia+fordii&redir=Aleurites+fordii (Accessed: 24 January 2017) 3. CABI Invasive Species Compendium. http://www.cabi.org/isc/datasheet/4122 (Accessed: 24 January 2017)	1. "Seedlings which have been self-pollinated for several generations give rather uniform plants." 2. Self-fertile 3. Self-compatible
6.05	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 3. USDA. All About Flowers. http://www284.pair.com/florists/all-about-flowers/Tung-Tree.htm (Accessed: 25 January 2017) 4. UF IFAS EDIS. http://edis.ifas.ufl.edu/aa264 (Accessed: 25 January 2017)	1. "pollination by honeybees" 2. "Bees are needed to transfer pollen from anthers to pistil." 3. "The pollination of tung trees is dependent upon the honey bee. Other insects visit the blossoms but rarely in sufficient abundance to be of significance" 4. Honeybees are present in Florida

6.06	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Texas Invasive Species Institute. http://www.tsusinvasives.org/home/database/vernicia-fordii (Accessed: 19 January 2017) 3. UF IFAS Center for Aquatic and Invasive Plants. http://plants.ifas.ufl.edu/plant-directory/aleurites-fordii/ (Accessed: 19 January 2017)	1. "Seedling tung trees typically outgrow those that are vegetatively propagated, but because tung trees grown from seed are extremely variable and often bear little resemblance to the parent plant, budding is the preferred method of propagation." 2. "However, since they can reproduce vegetatively through suckers, if the tree is not fully removed it could spread and create new saplings."; Trees are able to reproduce by seeds within the fruits, and through vegetative reproduction from underground stems. 3. "Vegetation reproduction occurs with the formation of suckers from underground stems."
6.07	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 2. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 3. UF IFAS Center for Aquatic and Invasive Plants. http://plants.ifas.ufl.edu/plant-directory/aleurites-fordii/ (Accessed: 19 January 2017) 4. Center for Invasive Species and Ecosystem Health. http://www.invasive.org/weedcd/pdfs/srs/2008/TungoilTree.pdf (Accessed: 25 January 2017)	1. "Tung trees usually begin bearing fruit when they are 2-4 years old and reach maximum productivity at around 10-12 years." 2. "Tung trees usually begin bearing fruit the third year after planting, and are usually in commercial production by the fourth or fifth year, attaining maximum production in 10–12 years." 3. "Fruit production begins when trees are 2 to 4 years old. " 4. "Viable seed can be produced at 3 years."
7.01	1. Langeland K.A., Craddock Burks K. , eds (2008) Identification and biology of non-native plants in Florida's natural areas. 2nd Ed. University of Florida Press, Gainesville, FL. (Accessed: 18 January 2017) 3. Texas Invasive Species Institue. http://www.tsusinvasives.org/home/database/vernicia-fordii (Accessed: 19 January 2017)	1. Although they have not been shown to displace native flora, tung trees persist in fence rows and along roadsides and are classified as mildly invasive in parts of Florida. 3. "U.S. Habitat: Forest edges, right of ways and urban green spaces."
7.02	1. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=320180 (Accessed: 18 January 2017) 2. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017) 3. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2017) 4. Woodlands. https://www.woodlanders.net/index.cfm?fuseaction=plants.plantDetail&plant_id=1610 (Accessed: 18 January 2017) 5. Texas Invasive Species Institute. http://www.tsusinvasives.org/home/database/vernicia-fordii (Accessed: 19 January 2017)	1. Economic importance: materials, vertebrate poisons 2. "Tung was formerly cultivated primarily for its oil, but it also makes a lovely ornamental tree." 3. "Where winter hardy, they may be grown in the landscape as specimens or small shade trees. Spring flowers are ornamentally attractive." 4. Available for purchase online 5. "human interaction has allowed this plant to spread outside of its native range"
7.03		No evidence
7.04	1. USDA Plants Database. https://plants.usda.gov/core/profile?symbol=VEFO (Accessed: 20 January 2017)	No evidence 1. See photo of seeds. No evidence of adapatation for wind dispersal
7.05		No evidence
7.06	1. Krfissmann G. 1977. Manual of cultivated broad-leaved trees and shrubs. Vol. 1. Portland (OR): Timber Press. 440 pp. (Accessed: 25 January 2017) 2. BurrowsGEandRJTyri. 2001. Toxic plants of North America. Ames (IA): University oflowa Press. p.460-462. (Accessed: 25 January 2017)	1&2. Animal dispersal of the fruits/seeds is probably limited or absent because of the toxicity of the seeds
7.07	1. USDA Plants Database. https://plants.usda.gov/core/profile?symbol=VEFO (Accessed: 20 January 2017)	No evidence 1. See photo of seeds. No evidence of mechanism of attachment
7.08		1. Animal dispersal of the fruits/seeds is probably limited or absent because of the toxicity of the seeds
8.01	1. Texas Invasive Species Institute. http://www.tsusinvasives.org/home/database/vernicia-fordii (Accessed: 19 January 2017) 2. UF IFAS Center for Aquatic and Invasive Plants. http://plants.ifas.ufl.edu/plant-directory/aleurites-fordii/ (Accessed: 19 January 2017)	1. "The toxic fruits can grow up to 3 inches in diameter… Following fertilization the flowers will turn into fruits that contain 3-4 seeds within." 2. "Fruits are spherical or pear-shaped, green to purple at maturity, containing 4 to 5 seeds."
8.02	1. Floridata. http://floridata.com/Plants/Euphorbiaceae/Aleurites%20fordii/804 (Accessed: 18 January 2017)	1. "If seeds are to be used, the nuts should be hulled and planted within a few months after they mature, since they lose viability quickly in storage."

8.03	1. Texas Invasive Species Institute. http://www.tsusinvasives.org/home/database/vernicia-fordii (Accessed: 19 January 2017) 2. UF IFAS Center for Aquatic and Invasive Plants. http://plants.ifas.ufl.edu/plant-directory/aleurites-fordii/ (Accessed: 19 January 2017) 3. Florida Exotic Pest Plant Council, 2013. List of Invasive Plant Species., USA: Florida Exotic Pest Plant Council. http://www.fleppc.org/list/list.htm (Accessed: 19 January 2017)	1. "These trees respond well to triclopyr herbicides if they're directly applied to the stump quickly after cutting. For basal bark treatments a 25% triclopyr solution with diesel fuel also works well." 2. "Cut-stump and basal bark applications of triclopyr are effective, but retreatment is often necessary. Use 25% solution with diesel fuel for basal bark treatments. For cut stump treatments, apply 50% triclopyr solution within one minute of cutting." 3. "The herbicide triclopyr has been effective controlling infestations of V. fordii. In Florida, the Florida Exotic Pest Plant Council (2013) recommends the use of 25% solution with diesel fuel for basal bark treatments and applications of 50% triclopyr solution for cut stump treatments. Re-applications are often necessary"
8.04	1. Rinehart, Edwards, and Spiers. HortScience. http://hortsci.ashspublications.org/content/48/1/123.full (Accessed: 18 January 2017) 2. UF IFAS Center for Aquatic and Invasive Plants. http://plants.ifas.ufl.edu/plant-directory/aleurites-fordii/ (Accessed: 19 January 2017)	1. "Trees are softwood and may shatter in high winds." 2. "Care must be exercised to prevent seed spread and dispersal during the removal process."
8.05	1. Missouri Botanical Garden. http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=280083&isprofile=0& (Accessed: 18 January 2016) 2. Purdue University. https://hort.purdue.edu/newcrop/duke_energy/Aleurites_fordii.html (Accessed: 18 January 2017) 3. Rinehart, Edwards, and Spiers. HortScience. http://hortsci.ashspublications.org/content/48/1/123.full (Accessed: 18 January 2017) 4. Texas Invasive Species Institute. http://www.tsusinvasives.org/home/database/vernicia-fordii (Accessed: 19 January 2017) 5. UF IFAS Center for Aquatic and Invasive Plants. http://plants.ifas.ufl.edu/plant-directory/aleurites-fordii/ (Accessed: 19 January 2017)	1. "No serious insect or disease problems. Susceptible to dieback and canker." 2. "Tung trees are relatively free of insects and diseases, only a few causing losses serious enough to justify control measures: as Botroyosphaeria ribis, Clitocybe tabescens, Mycosphaerella aleuritidis, Pellicularia koleroga, Physalospora rhodina and the bacterium, Pseudomonas aleuritidis. Other bacteria and fungi reported on tung trees are: Armillaria mellea, Botryodiplodia theobromae, Cephaleures virescens, Cercospora aleuritidis, Colletotrichum gloeosporioides, Corticium koleroga, Fomes lamaoensis, F. lignosus, Fusarium heterosporum forma aleuritidis, F. oxysporum, F. scirpi, F. solani, Ganoderma pseudoferreum, Cloeosporium aleuriticum, Glomerella clngulata, Pestalotia dichaeta, Phyllosticta microspore, Phytomonas syringas, Phytophthora omnivora, Ph. cinnamomi, Poria hypolateritia, Pythium aphanidermatum, Rhizoctonia solani, Septobasidium aleuritidis, S. pseudopedicellatum, Sphaerostilbe repens, Uncinula miyabei, var. aleuritis, Ustilina maxima, U. zonata. Insect pests are not a serious problem, since fruit and leaves of tung trees are toxic to most animal life. Nematodes Meloidogyne spp. have been reported" 3. "Like most tung trees, it is tolerant of common insects and diseases and has no significant pathogens or pests." 4. "Researchers are looking into the biological control benefits of the flea beetle Aphthona nigriscutis." 5. "Aphthona nigriscutis, a type of flea beetle, is a potential biological control agent for tung oil tree."

Pacific second screening: decision rules for species with WRA scores between 1 and 6

(from Daehler *et al*. 2004)



Vines must pass both tests