Family: ***Solanaceae***

Taxon: ***Brunfelsia americana***

Synonym: ***Common Name*** lady-of-the-night

Questionaire : current 20090513 **Assessor:** Chuck Chimera **Designation:** L(Hawai'i)

Status: Assessor Approved **Data Entry Person:** Chuck Chimera **WRA Score -3**

101	**Is the species highly domesticated?**	**y=-3, n=0**	**n**
102	**Has the species become naturalized where grown?**	**y=1, n=-1**	
103	**Does the species have weedy races?**	**y=1, n=-1**	
201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**(0-low; 1-intermediate; 2-high) (See Appendix 2)**	**High**
202	**Quality of climate match data**	**(0-low; 1-intermediate; 2-high) (See Appendix 2)**	**High**
203	**Broad climate suitability (environmental versatility)**	**y=1, n=0**	**n**
204	**Native or naturalized in regions with tropical or subtropical climates**	**y=1, n=0**	**y**
205	**Does the species have a history of repeated introductions outside its natural range?**	**y=-2, ?=-1, n=0**	**y**
301	**Naturalized beyond native range**	**y = 1*multiplier (see Appendix 2), n= question 205**	
302	**Garden/amenity/disturbance weed**	**n=0, y = 1*multiplier (see Appendix 2)**	**n**
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**	**y**
406	**Host for recognized pests and pathogens**	**y=1, n=0**	**n**
407	**Causes allergies or is otherwise toxic to humans**	**y=1, n=0**	**y**
408	**Creates a fire hazard in natural ecosystems**	**y=1, n=0**	**n**
409	**Is a shade tolerant plant at some stage of its life cycle**	**y=1, n=0**	**n**
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**	**n**
605	**Requires specialist pollinators**	**y=-1, n=0**	**y**
606	**Reproduction by vegetative fragmentation**	**y=1, n=-1**	
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**	**n**
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**	
803	**Well controlled by herbicides**	**y=-1, n=1**	
804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**y=1, n=-1**	**n**
805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	**y=-1, n=1**	

Designation: L(Hawai'i) **WRA Score** **-3**

Supporting Data:

101	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	No evidence that Brunfelsia americana is highly domesticated
201	2009. Rauch, F.D./Weissich, P.R.. Small Trees for the Tropical Landscape. University of Hawaii Press, Honolulu, HI	Native to the West Indies
202	2009. Rauch, F.D./Weissich, P.R.. Small Trees for the Tropical Landscape. University of Hawaii Press, Honolulu, HI	Native to the West Indies
203	2003. Llamas, K. A.. Tropical Flowering Plants. Timber Press, Portland, OR	zones 10-11
204	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	originally from the West Indies
205	2009. Chong, K.Y./Tan, H.T.W./Corlett, R.T.. A Checklist of the Total Vascular Plant Flora of Singapore: Native, Naturalized and Cultivated Species. Raffles Museum of Biodiversity Research, National University of Singapore, Singapore	cultivated only [Singapore]
205	2010. Dave's Garden. PlantFiles: Lady of the Night. Dave's Garden, http://davesgarden.com/guides/pf/go/70946/	Brooksville, Florida Clearwater, Florida Haines City, Florida Hollywood, Florida Jupiter, Florida Melrose, Florida Miami, Florida (2 reports) Tampa, Florida Thonotosassa, Florida Mililani, Hawaii Lafayette, Louisiana Lake Charles, Louisiana Cedar Park, Texas Houston, Texas Seabrook, Texas Spring, Texas
205	2010. eFloras. Flora of Pakistan - Solanaceae. Missouri Botanical Gardenand Harvard University Herbaria, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=10828	Brunfelsia americana L., Sp. Pl. 191.1753; Bailey, Stand. Cyclop. Hort. 1:582. 1919. A native of S. America. Reportedly cultivated (Price List Catalogue, Gandhi, Gardens, Karachi 1958). A free flowering shrub. The fragrant white flowers fade to yellow with age.
301	2000. Liogier, A. H./ Martorell, L. F.. Flora of Puerto Rico and adjacent islands: a systematic synopsis. La Editorial, UPR, San Juan, Puerto Rico	In woodlands at lower to middle elevations in the eastern mountains and southern slopes of central Cordillera, Puerto Rico, probably an escape from cultivation [possibly naturalized?]
302	2007. Randall, R.. Global Compendium of Weeds - Brunfelsia americana [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/brunfelsia_americana/	Listed as a cultivation escape, weed [cites Liogier (2000), which does not provide evidence that B. americana is a garden weed. See answer to Question 3.01]
303	2007. Randall, R.. Global Compendium of Weeds - Brunfelsia americana [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/brunfelsia_americana/	No evidence of B. americana as a weed of Agricultural/forestry/horticultural
304	2007. Randall, R.. Global Compendium of Weeds - Brunfelsia americana [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/brunfelsia_americana/	No evidence of B. americana as an environmental weed
305	2007. Randall, R.. Global Compendium of Weeds - Brunfelsia calycina [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/brunfelsia_calycina/	Brunfelsia calycina listed as a weed, but no evidence of impacts or control found
305	2007. Randall, R.. Global Compendium of Weeds - Brunfelsia nitida [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/brunfelsia_nitida/	Brunfelsia nitida listed as a weed, but no evidence of impacts or control found

305	2007. Randall, R.. Global Compendium of Weeds - Brunfelsia pauciflora [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/brunfelsia_pauciflora/	Brunfelsia pauciflora listed as a weed, but no evidence of impacts or control found
401	1973. Woodson, Jr., R. E./Schery, R. W./D'Arcy, W. G.. Flora of Panama. Part IX. Family 170. Solanaceae. Annals of the Missouri Botanical Garden. 60: 573-780.	Unarmed shrubs or trees,
402	2010. WRA Specialist. Personal Communication.	No evidence of allelopathy for B. americana
403	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Not parasitic
404	2004. Crescent Bloom. Brunfelsia americana. http://www.crescentbloom.com/plants/specimen/bo/Brunfelsia%20americana.htm	Deer resistant: no
404	2009. Harrison, M.. Flowering Shrubs and Small Trees for the South. Pineapple Press Inc, Sarasota, FL	Like many members of the nightshade family, Brunfelsia contains poisonous substances. The berries are extremely toxic, and all parts of the plant (flowers, leaves, berries and seeds) should be considered toxic to animals. Dogs appear to be particularly attracted to the berries and seeds.
405	2009. Harrison, M.. Flowering Shrubs and Small Trees for the South. Pineapple Press Inc, Sarasota, FL	Like many members of the nightshade family, Brunfelsia contains poisonous substances. The berries are extremely toxic, and all parts of the plant (flowers, leaves, berries and seeds) should be considered toxic to animals. Dogs appear to be particularly attracted to the berries and seeds.
405	2009. Rauch, F.D./Weissich, P.R.. Small Trees for the Tropical Landscape. University of Hawaii Press, Honolulu, HI	Because related species produce toxins, it is wise to avoid ingesting any part of the plant.
406	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	Insects/Diseases: For grasshoppers, apply diazinon [no other pests or pathogens mentioned]
406	2006. Brooks, F.. List of Plant Diseases in American Samoa 2006. American Samoa Community College Land Grant Program, Pago Pago, AS	Brunfelsia americana L. [lady-of-the-night] Colletotrichum sp. — anthracnose (ASLG296P) Lasiodiplodia theobromae — on anthracnose lesion (ASLG297P) [diseases recorded in American Samoa, no indication that B. americana is an important alternate host]
407	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	The fruits are reported to be poisonous
407	2010. Dave's Garden. PlantFiles: Lady of the Night. Dave's Garden, http://davesgarden.com/guides/pf/go/70946/	Danger: Seed is poisonous if ingested. Parts of plant are poisonous if ingested
408	2010. WRA Specialist. Personal Communication.	No evidence that plant is a fire hazard
409	2003. Llamas, K. A.. Tropical Flowering Plants. Timber Press, Portland, OR	Full to part sun.
409	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	prefers hot, sunny, dry areas with rich, well-drained soil
409	2009. Rauch, F.D./Weissich, P.R.. Small Trees for the Tropical Landscape. University of Hawaii Press, Honolulu, HI	Plant it in full sun in a good, well-drained soil.
410	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	Adaptable; will grow almost anywhere in Hawaii except in salt-exposed areas; prefers hot, dry, sunny locations with rich, well-watered, well-drained soil.
410	2003. Llamas, K. A.. Tropical Flowering Plants. Timber Press, Portland, OR	Humus-rich, well-drained soil; neutral pH.
411	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Shrub around 10 feet tall [not climbing or smothering]

412	1918. Britton, N.L.. The flora of the American Virgin Islands. New York Botanical Garden, New York, NY	Thickets and hillsides [occurs as a component of thickets, but no evidence that species forms dense thickets or monocultures]
501	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Terrestrial
502	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Solanaceae
503	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Solanaceae [not a nitrogen fixing woody plant]
504	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Not a geophyte
601	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	No evidence of substantial reproductive failure in native habitat
602	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	Grown from seeds or cuttings
602	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	Propagate by cuttings; sometimes propagated by seeds.
602	2002. MacCubbin, T./Tasker, G.. Florida Gardener's Guide. Cool Springs Press, Franklin, TN	To sow seeds, remove the skin and pulp, push seeds just beneath the surface of a 50-50 mix of peat moss and perlite, and keep moist.
602	2010. Dave's Garden. PlantFiles: Lady of the Night. Dave's Garden, http://davesgarden.com/guides/pf/go/70946/	Propagation Methods: From seed; direct sow outdoors in fall From seed; winter sow in vented containers, coldframe or unheated greenhouse Direct sow as soon as the ground can be worked From seed; sow indoors before last frost From seed; direct sow after last frost
603	2010. WRA Specialist. Personal Communication.	Ability to hybridize unknown
604	1998. Plowman, T. C.. A revision of the South American species of Brunfelsia (Solanaceae). Fieldiana Botany. 39: 1–135.	All species were artificially self-pollinated, although selfing appears to take place naturally. The dehiscing anthers lie very close to the stigma, and loose pollen may easily fall upon it. However, no viable seed was produced from any of the self-pollinated individuals, indicating that these species are self- incompatible. Fruits were occasionally produced spontaneously in B. pilosa and B. densifolia, but these contained completely aborted seeds.
605	2010. Knapp, S.. On 'various contrivances': pollination, phylogeny and flower form in the Solanaceae. Philosophical Transactions of the Royal Society B: Biological sciences. 365: 449-460.	In Brunfelsia, the South American species have either moth (e.g. Brunfelsia guianensis) or butterfly (e.g. Brunfelsia grandiflora, figure 1e) flowers, while the Caribbean taxa (thought to be monophyletic by Plowman 1998) are all long-tubed (e.g. Brunfelsia americana) and probably pollinated by sphingid moths, except for the Cuban endemic Brunfelsia cestroides, which has bright red, presumably hummingbird-pollinated flowers.
606	1998. Plowman, T. C.. A revision of the South American species of Brunfelsia (Solanaceae). Fieldiana Botany. 39: 1–135.	Vegetative reproduction may also occur to a limited extent by the rooting of broken branches on the forest floor. This has been observed in B. chiricaspi [some species of Brunfelsia can spread vegetatively, but unknown for B. americana]
607	2010. Shoot Gardening. Brunfelsia americana (Lady of the night). http://www.shootgardening.co.uk/plant/brunfelsia-americana	5-10 years to maturity
701	1973. Woodson, Jr., R. E./Schery, R. W./D'Arcy, W. G.. Flora of Panama. Part IX. Family 170. Solanaceae. Annals of the Missouri Botanical Garden. 60: 573-780.	Fruit a globose to ovoid fleshy or coriaceous, mostly indehiscent berry; seeds large, prismatic, the embryo straight or slightly curved in fleshy endosperm. [No evidence, and no means of external attachment]

702	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	commonly cultivated for its showy flowers that are fragrant at night….the flowers are used in lei making [planted intentionally as an ornamental].
703	1973. Woodson, Jr., R. E./Schery, R. W./D'Arcy, W. G.. Flora of Panama. Part IX. Family 170. Solanaceae. Annals of the Missouri Botanical Garden. 60: 573-780.	Fruit a globose to ovoid fleshy or coriaceous, mostly indehiscent berry; seeds large, prismatic, the embryo straight or slightly curved in fleshy endosperm. [No evidence of produce contamination]
704	1973. Woodson, Jr., R. E./Schery, R. W./D'Arcy, W. G.. Flora of Panama. Part IX. Family 170. Solanaceae. Annals of the Missouri Botanical Garden. 60: 573-780.	Fruit a globose to ovoid fleshy or coriaceous, mostly indehiscent berry; seeds large, prismatic, the embryo straight or slightly curved in fleshy endosperm. [No adaptations for wind dispersal]
705	1973. Woodson, Jr., R. E./Schery, R. W./D'Arcy, W. G.. Flora of Panama. Part IX. Family 170. Solanaceae. Annals of the Missouri Botanical Garden. 60: 573-780.	Fruit a globose to ovoid fleshy or coriaceous, mostly indehiscent berry; seeds large, prismatic, the embryo straight or slightly curved in fleshy endosperm. [No evidence of adaptations for water dispersal]
706	1973. Woodson, Jr., R. E./Schery, R. W./D'Arcy, W. G.. Flora of Panama. Part IX. Family 170. Solanaceae. Annals of the Missouri Botanical Garden. 60: 573-780.	Fruit a globose to ovoid fleshy or coriaceous, mostly indehiscent berry; seeds large, prismatic, the embryo straight or slightly curved in fleshy endosperm. [fleshy-fruited, genus description]
706	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	Round, orange-colored, 1/2-inch berries may appear on the plant at the same time with flowers.
706	1998. Plowman, T. C.. A revision of the South American species of Brunfelsia (Solanaceae). Fieldiana Botany. 39: 1–135.	The only species of Brunfelsia that occurs today in the Lesser Antilles is B. americana, the least specialized and most widely distributed species of the genus. It is also found in Puerto Rico and the easternmost tip of Hispaniola. This plant has fleshy, bright orange fruits that may be carried by birds from island to island. The agency of long-distance dispersal by birds cannot be ignored in considering the migration of Brunfelsia into the Caribbean, although a path of "island hopping" seems more logical.
707	1973. Woodson, Jr., R. E./Schery, R. W./D'Arcy, W. G.. Flora of Panama. Part IX. Family 170. Solanaceae. Annals of the Missouri Botanical Garden. 60: 573-780.	Fruit a globose to ovoid fleshy or coriaceous, mostly indehiscent berry; seeds large, prismatic, the embryo straight or slightly curved in fleshy endosperm. [No evidence for external animal dispersal, and no means of external attachment]
708	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	Round, orange-colored, 1/2-inch berries may appear on the plant at the same time with flowers. [fleshy fruits presumably adapted for consumption by and passage through gut of disperser]
801	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	Propagate by cuttings; sometimes propagated by seeds [suggests seed production is not sufficient to achieve such high densities]
801	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Shrub around 10 feet tall [no evidence for such high seed densities in Hawaiian Islands]
802	2008. Liu, K./Eastwood, R. J./Flynn, S./Turner, R. M./Stuppy, W. H.. Seed Information Database (release 7.1, May 2008). http://www.kew.org/data/sid	Storage Behaviour: Orthodox? Storage Conditions: This species may show orthodox seed storage behaviour [persistence of seed bank in field conditions unknown]
803	2010. WRA Specialist. Personal Communication.	Unknown [no information found on control of this species, although a standard herbicide used to control woody species would probably be effective]
804	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	It should be pruned only lightly
804	2009. Rauch, F.D./Weissich, P.R.. Small Trees for the Tropical Landscape. University of Hawaii Press, Honolulu, HI	Although only growing to 10 feet in height, it can be pruned into a small tree to shade a walkway or frame an entry [but see Staples and Herbst 2005)
805	2010. WRA Specialist. Personal Communication.	Unknown if effective natural enemies present locally