Keywords: Evaluate, Naturalized, Tree, Edible fruit, Ornamental, Animal and Bird dispersal

Family: ***Rubiaceae***

Taxon: ***Ixora pavetta***

Synonym: *Ixora arborea Roxb. ex Sm.*
Ixora parviflora Vahl

Common Name: small-flowered ixora
torch tree
torchwood

Questionaire : current 20090513 **Assessor:** Patti Clifford **Designation:** EVALUATE
Status: Assessor Approved **Data Entry Person:** Patti Clifford **WRA Score 1**

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)**	
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**	**n**
301	**Naturalized beyond native range**	**y = 1*multiplier (see Appendix 2), n= question 205**	**n**
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**	
403	**Parasitic**	**y=1, n=0**	**n**
404	**Unpalatable to grazing animals**	**y=1, n=-1**	
405	**Toxic to animals**	**y=1, n=0**	**n**
406	**Host for recognized pests and pathogens**	**y=1, n=0**	
407	**Causes allergies or is otherwise toxic to humans**	**y=1, n=0**	**n**
408	**Creates a fire hazard in natural ecosystems**	**y=1, n=0**	**n**
409	**Is a shade tolerant plant at some stage of its life cycle**	**y=1, n=0**	**y**
410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y=1, n=0**	

411	**Climbing or smothering growth habit**	**y=1, n=0**	**n**
412	**Forms dense thickets**	**y=1, n=0**	
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**	**n**
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**	
701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y=1, n=-1**	**n**
702	**Propagules dispersed intentionally by people**	**y=1, n=-1**	**y**
703	**Propagules likely to disperse as a produce contaminant**	**y=1, n=-1**	**n**
704	**Propagules adapted to wind dispersal**	**y=1, n=-1**	**n**
705	**Propagules water dispersed**	**y=1, n=-1**	
706	**Propagules bird dispersed**	**y=1, n=-1**	**y**
707	**Propagules dispersed by other animals (externally)**	**y=1, n=-1**	**n**
708	**Propagules survive passage through the gut**	**y=1, n=-1**	**y**
801	**Prolific seed production (>1000/m2)**	**y=1, n=-1**	
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**	
805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	**y=-1, n=1**	

Designation: EVALUATE **WRA Score** **1**

Supporting Data:

101	2012. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No] No evidence of domestication that reduces invasive traits.
102	2012. WRA Specialist. Personal Communication.	[Has the species become naturalized where grown? NA]
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"?] Native distribution India; Bangla Desh; Ceylon; Pakistan.
202	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Quality of climate match data? 2 - high] Native distribution India; Bangla Desh; Ceylon; Pakistan.
203	2012. WRA Specialist. Personal Communication.	[Broad climate suitability (environmental versatility)? No] USDA hardiness zones: 8-10.
204	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Native or naturalized in regions with tropical or subtropical climates? Yes] Native distribution India; Bangla Desh; Ceylon; Pakistan.
205	2012. WRA Specialist. Personal Communication.	[Does the species have a history of repeated introductions outside its natural range? No] No evidence of repeated introductions.
301	2012. United States Department of Agriculture. USDA Plants Database - Ixora pavetta. USDA Natural Resources Conservation Service, http://plants.usda.gov/java/county?state_name=Florida&statefips=12&symbol=IXPA	[Naturalized beyond native range? Yes] According to the USDA Plants Database, Ixora pavetta is naturalized in Florida.
302	2007. Randall, R.. Global Compendium of Weeds - Ixora pavetta. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?103318	[Garden/amenity/disturbance weed? No] No evidence.
303	2007. Randall, R.. Global Compendium of Weeds - Ixora pavetta. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?103318	[Agricultural/forestry/horticultural weed? No] No evidence.
304	2012. WRA Specialist. Personal Communication.	[Environmental weed? No] No evidence.
305	2007. Randall, R.P.. Global Compendium of Weeds - Index. http://www.hear.org/gcw/	[Congeneric weed?] The Global Compendium of Weeds lists Ixora paludosa as an agricultural weed in Java. [no mention of impact or control available]
401	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Produces spines, thorns or burrs? No] "Branched small tree, bark dark coloured, scabrous, younger branches glabrous. Leaves opposite, 7-15 x 3.5–6.5 cm, glabrous, obtuse or shortly acuminate; petiole c. 5 mm long. Inflorescence corymbiform terminal panicle. Flowers sessile, c. 64 mm long, fragrant, white or scarlet. Calyx minute, teeth very small, obtuse. Corolla-tube filiform, c. 6 mm long, glabrous, lobes 4, reflexed. Filaments c. 0.5 mm; anthers ± equalling the corolla-lobes. Style densely pubescent. exserted; stigma biforked. Fruit globose, 2-seeded, somewhat didymous, black when ripe."
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2010. Nickrent, D.. The parasitic plant connection. Department of Plant Biology, Southern Illinois University, Carbondale http://www.parasiticplants.siu.edu/index.html	[Parasitic? No] Rubiaceae.
403	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Parasitic? No] Rubiaceae.
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2010. National Center for Biotechnology Information. PubMed. U.S. National Library of Medicine, Bethesda, Maryland http://www.ncbi.nlm.nih.gov/sites/entrez	[Toxic to animals? No] No evidence.

405	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Toxic to animals? No] No evidence.
406	2012. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	2010. National Center for Biotechnology Information. PubMed. U.S. National Library of Medicine, Bethesda, Maryland http://www.ncbi.nlm.nih.gov/sites/entrez	[Causes allergies or is otherwise toxic to humans? No] No evidence.
407	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Causes allergies or is otherwise toxic to humans? No] No evidence.
408	2012. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? No] No evidence of biomasss accumulation that creates a fire hazard.
409	2012. Food Plants International. Torchwood, Gandhal, Nivari - Ixora pavetta. http://www.cmsvr.com/fmi/iwp/cgi?-db=FPI_DB_%202011_may&-loadframes	[Is a shade tolerant plant at some stage of its life cycle? Yes] Bright shade to full sun.
410	1994. Visalaksihi, N.. Fine root dynamics in two tropical dry evergreen forests in southern India. Journal of Bioscience. 19: 103-116.	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)?] Ixora pavetta grows on ferralitic soil in Marakkanam Forest Reserve, India.
411	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Climbing or smothering growth habit? No] Small tree.
412	2012. WRA Specialist. Personal Communication.	[Forms dense thickets? Unknown]
501	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Aquatic? No] Rubiaceae; terrestrial; tree.
502	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Grass? No] Rubiaceae; tree.
503	2010. www.nationmaster.com. Encyclopedia Nitrogen fixation. Nationmaster.com, http://www.nationmaster.com/encyclopedia/Nitrogen-fixation	[Nitrogen fixing woody plant? No] Rubiaceae.
503	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Nitrogen fixing woody plant? No] Rubiaceae.
504	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] Tree; woody.
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence.
602	2010. Nayak, K.G./Davidar, P.. Pollinator limitation and the effect of breeding systems on plant reproduction in forest fragments. Acta Oecologica. 36: 191-196.	[Produces viable seed? Yes] "There was no significant relation between number of flowering individuals and the level of natural fruit set, except for two species, Derris ovalifolia, and Ixora pavetta. In these species the natural fruit set decreased with increasing population size, again indicating pollinator limitation>"
602	2012. Food Plants International. Torchwood, Gandhal, Nivari - Ixora pavetta. http://www.cmsvr.com/fmi/iwp/cgi?-db=FPI_DB_%202011_may&-loadframes	[Produces viable seed? Yes] Can be grown from seed or greenwood cutting.
603	2012. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]

604	2010. Nayak, K.G./Davidar, P.. Pollinator limitation and the effect of breeding systems on plant reproduction in forest fragments. Acta Oecologica. 36: 191-196.	[Self-compatible or apomictic? No] Self-incompatible.
605	2010. Nayak, K.G./Davidar, P.. Pollinator limitation and the effect of breeding systems on plant reproduction in forest fragments. Acta Oecologica. 36: 191-196.	[Requires specialist pollinators? No] In this experiment on pollinator limitation and breeding systems, Ixora pavetta was visited by moths, bees and syrphid flies.
606	2012. WRA Specialist. Personal Communication.	[Reproduction by vegetative fragmentation? Unknown]
607	2012. Food Plants International. Torchwood, Gandhal, Nivari - Ixora pavetta. http://www.cmsvr.com/fmi/iwp/cgi?-db=FPI_DB_%202011_may&-loadframes	[Minimum generative time (years)?] Slow-growing.
607	2012. WRA Specialist. Personal Communication.	[Minimum generative time (years)? Unknown]
701	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] No evidence.
702	2010. Nayak, K.G./Davidar, P.. Pollinator limitation and the effect of breeding systems on plant reproduction in forest fragments. Acta Oecologica. 36: 191-196.	[Propagules dispersed intentionally by people? Yes] Widely cultivated throughout the Indo-Pakistan subcontinent.
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
704	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Propagules adapted to wind dispersal? No] Fruit globose, 2-seeded, somewhat didymous, black when ripe.
705	2012. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown]
706	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Propagules bird dispersed? Yes] Fruit globose, 2-seeded, somewhat didymous, black when ripe.
707	2012. Nazimuddin, S./Qaiser, M.. Flora of Pakistan - Rubiaceae. www.eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=242423581	[Propagules dispersed by other animals (externally)? No] Fruit globose, 2-seeded, somewhat didymous, black when ripe. [no means of attachment]
708	2012. Tadwalkar, M.D./Joglekar, A.M./Mhaskar, M./Kanade, R.B./Chavan, B./Watve, A.V./Ganeshaiah, K.N./Patwardhan, A.A.. Dispersal modes of woody species from the northern Western Ghats, India. Tropical Ecology. 53(1): 53-67.	[Propagules survive passage through the gut? Yes] Animal dispersed.
801	2012. WRA Specialist. Personal Communication.	[Prolific seed production (>1000/m2)? Unknown]
802	2012. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown]
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	2012. WRA Specialist. Personal Communication.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown]
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk:

- Native to tropical and subtropical regions
- Naturalized in Florida
- Shade tolerant
- Animal/bird dispersed seed

Low Risk:

- Not a recorded as a weed
- Does not have wide environmental tolerances
- Not toxic to humans or animals
- Is not self-compatible
- Slow-growing