

Assessment date: 11 March 2015

<b><i>Semiarundinaria fastuosa</i> (<i>Arundinaria fastuosa</i>, <i>Bambusa fastuosa</i>, <i>Phyllostachys fastuosa</i> )-Narihira bamboo, temple bamboo</b>		<b>Answer</b>	<b>Score</b>
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 FL climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high)	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	n	0
2.04	Native or naturalized in regions with an average of 11-60 inches of annual precipitation	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	unk	
3.03	Weed of agriculture		
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		
4.06	Host for recognised pests and pathogens	unk	0
4.07	Causes allergies or is otherwise toxic to humans		
4.08	Creates a fire hazard in natural ecosystems		
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.	y	1
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	y	1
5.01	Aquatic	n	0
5.02	Grass	y	1
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	n	-1
6.04	Self-compatible or apomictic		
6.05	Requires specialist pollinators	n	0

6.06	Reproduction by vegetative propagation	y	1
6.07	Minimum generative time (years)	>4	-1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
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		
7.05	Propagules water dispersed		
7.06	Propagules bird dispersed		
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)		
8.01	Prolific seed production		
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-1
8.03	Well controlled by herbicides		
8.04	Tolerates, or benefits from, mutilation or cultivation		
8.05	Effective natural enemies present in U.S.		
<b>Total Score</b>		<b>5</b>	
<b>Implemented Pacific Second Screening</b>		<b>yes</b>	
<b>Risk Assessment Results</b>		<b>Evaluate Further</b>	

section	# questions answered	satisfy minimum?
A		8 yes
B		7 yes
C		13 yes
total		28 yes

	Reference	Source data
1.01		Cultivated, but no evidence of selection for reduced weediness.
1.02		skip to 2.01
1.03		skip to 2.01
2.01	1. PERAL NAPPFAST Global Plant Hardiness ( <a href="http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgnd.tif">http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgnd.tif</a> ). 2. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896</a> (00 Month 0000).	No computer analysis was performed. 1. Global hardiness zone: 8, 9, 10; equivalent to USDA Hardiness zones: USDA Zone 8a: to -12.2 °C (10 °F) USDA Zone 8b: to -9.4 °C (15°F) USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to 1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) . 2. Native to ASIA-TEMPERATE Japan Honshu, Kyushu, Shikoku
2.02		No computer analysis was performed. Native range is well known; refer to 2.01 source data.
2.03	1. Köppen-Geiger climate map ( <a href="http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf">http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf</a> ). 2. The Global Biodiversity Information Facility: GBIF Backbone Taxonomy, 2013-07-01. Accessed via <a href="http://www.gbif.org/species/4120602">http://www.gbif.org/species/4120602</a> on 2015-03-17	1. Distribution in the native/cultivated range occurs in Cfa, Cwa
2.04	1. World Bank <a href="http://sdwebx.worldbank.org/climateportal/index.cfm?page=country_historical_climate&amp;ThisRegion=Asia&amp;ThisCCode=CHN">http://sdwebx.worldbank.org/climateportal/index.cfm?page=country_historical_climate&amp;ThisRegion=Asia&amp;ThisCCode=CHN</a> 2. Current Results- Weather Science and Facts <a href="http://www.currentresults.com/Weather/Japan/precipitation-annual-average.php">http://www.currentresults.com/Weather/Japan/precipitation-annual-average.php</a>	51.8in to 100.3in
2.05	1. Logee's Greenhouses <a href="http://www.logees.com/temple-bamboo-semiarundinaria-fastuosa.html">http://www.logees.com/temple-bamboo-semiarundinaria-fastuosa.html</a> (1-21-2015) 2. UK - Bamboos <a href="http://www.uk-bamboos.co.uk/Detail-B/semiarundinaria_fastuosa.htm">http://www.uk-bamboos.co.uk/Detail-B/semiarundinaria_fastuosa.htm</a>	Readily available from internet nurseries.
3.01	1. New Zealand Plant Conservation Network <a href="http://www.nzpcn.org.nz/flora_details.aspx?ID=2699">http://www.nzpcn.org.nz/flora_details.aspx?ID=2699</a> (1-26-2015) 2. Preston, C.D., Pearman, D.A. and Dines, T.D. (2002) New Atlas of the British & Irish Flora. An Atlas of the Vascular Plants of Britain, Ireland, the Isle of Man and the Channel Islands. Oxford University Press 3. Davis Landscape Architecture <a href="https://davisla.wordpress.com/2014/10/22/semiarundinaria-fastuosa/">https://davisla.wordpress.com/2014/10/22/semiarundinaria-fastuosa/</a> (1-26-2015) 4. National Botanical Garden of Ireland <a href="http://www.botanicgardens.ie/glasra/aliens/282_301.pdf">http://www.botanicgardens.ie/glasra/aliens/282_301.pdf</a> (1-26-2015)	1. Naturalized in New Zealand in 1994. 2. Naturalized in the UK 3. This bamboo has become naturalised in parts of the UK 4. [identified on] side of Dingle Harbour 1976, naturalized at edge of damp wood (Ryves et al. 1996)
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05	1. Holm, LeRoy G. A Geographical Atlas of World Weeds. Malabar, FL: Krieger Pub., 1991. Print. 2. United States Department of Agriculture Animal and Plant Health Inspection Service August 20, 2012 Version 1 Weed Risk Assessment for <i>Phyllostachys aureosulcata</i> McClure (Poaceae) – Yellow groove bamboo	Synonym <i>Phyllostachys fastuosa</i> : 1. <i>Phyllostachys mitis</i> is a principle weed in New Zealand 2. <i>Phyllostachys pubescens</i> has invaded forests in Japan, forming uniform monolayers of foliage (monoculture), and dominating competing vegetation; between 1975 and 1993, this bamboo had replaced the trees in a once-mixed forest (Isagi and Torii, 1977). <i>Phyllostachys flexuosa</i> is reported to form dense stands which prevent native vegetation from growing (GISD, 2008).

4.01	Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. (2006 onwards). GrassBase - The Online World Grass Flora. <a href="http://www.kew.org/data/grasses-db.html">http://www.kew.org/data/grasses-db.html</a> . (1-26-2015)	These features are not listed in the description of the species.
4.02		no evidence
4.03	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896</a> (1-23-2015).	1. Family: Poaceae (not a parasitic family).
4.04	1. The Backyard Gardener <a href="http://www.backyardgardener.com/plantname/pda_253d.html">http://www.backyardgardener.com/plantname/pda_253d.html</a> (1-26-2015) 2. Dave's Garden <a href="http://davesgarden.com/guides/pf/go/82313/#b">http://davesgarden.com/guides/pf/go/82313/#b</a> (1-26-2015)	1. Tolerances: deer, slope 2. This plant is resistant to deer.
4.05		no evidence
4.06	Royal Horticultural Society <a href="https://www.rhs.org.uk/plants/details?plantid=1823#">https://www.rhs.org.uk/plants/details?plantid=1823#</a> (1-26-2015)	Generally pest free
4.07		no evidence
4.08	2011. Smith, M.C. Predicting plant naturalizations in the Pacific Northwest: the fate of bamboos in the understory of coniferous forests. Washington State University,	According to Smith (2010) Bamboos in Asia, Africa, Australia and the Americas have the ability to change fire frequency, dead culms provide fuel for stand replacing fires, and green bamboo can provide a ladder for fire to reach the canopy.
4.09	1. The Backyard Gardener <a href="http://www.backyardgardener.com/plantname/pda_253d.html">http://www.backyardgardener.com/plantname/pda_253d.html</a> (1-26-2015) 2. Dave's Garden <a href="http://davesgarden.com/guides/pf/go/82313/#b">http://davesgarden.com/guides/pf/go/82313/#b</a> (1-26-2015) 3.Plants for a Future <a href="http://www.pfaf.org/user/Plant.aspx?LatinName=Semiarundinaria+fastuosa">http://www.pfaf.org/user/Plant.aspx?LatinName=Semiarundinaria+fastuosa</a> (1-26-2015)	1. Light preference: Dappled to Sun 2. Sun Exposure: Full sun to partial shade 3. It can grow in semi-shade (light woodland) or no shade.
4.10	1. USDA <a href="http://www.nrcs.usda.gov/Internet/FSE_MEDIA/nrcs142p2_050722.jpg">http://www.nrcs.usda.gov/Internet/FSE_MEDIA/nrcs142p2_050722.jpg</a> (1-26-2015) 2. Plants for a Future <a href="http://www.pfaf.org/user/Plant.aspx?LatinName=Semiarundinaria+fastuosa">http://www.pfaf.org/user/Plant.aspx?LatinName=Semiarundinaria+fastuosa</a> (1-26-2015)	1. Grows in andisols, entisols, ultisols, and inceptisols. 2. Suitable for: light (sandy), medium (loamy) and heavy (clay) soils. Suitable pH: acid, neutral and basic (alkaline) soils.
4.11	2006. Wu, Z. Y., P. H. Raven & D. Y. Hong, eds.. Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis <a href="http://flora.huh.harvard.edu/china/mss/volume22/index.htm">http://flora.huh.harvard.edu/china/mss/volume22/index.htm</a>	Family: Poaceae
4.12	Flora of New Zealand <a href="http://www.nzflora.info/factsheet/Taxon/Semiarundinaria_fastuosa.html">http://www.nzflora.info/factsheet/Taxon/Semiarundinaria_fastuosa.html</a> (1-26-2015)	Thicket-forming with rhizomes shortly creeping.
5.01	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896</a> (1-23-2015).	1. Family: Poaceae.
5.02	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896</a> (1-23-2015).	1. Family: Poaceae.

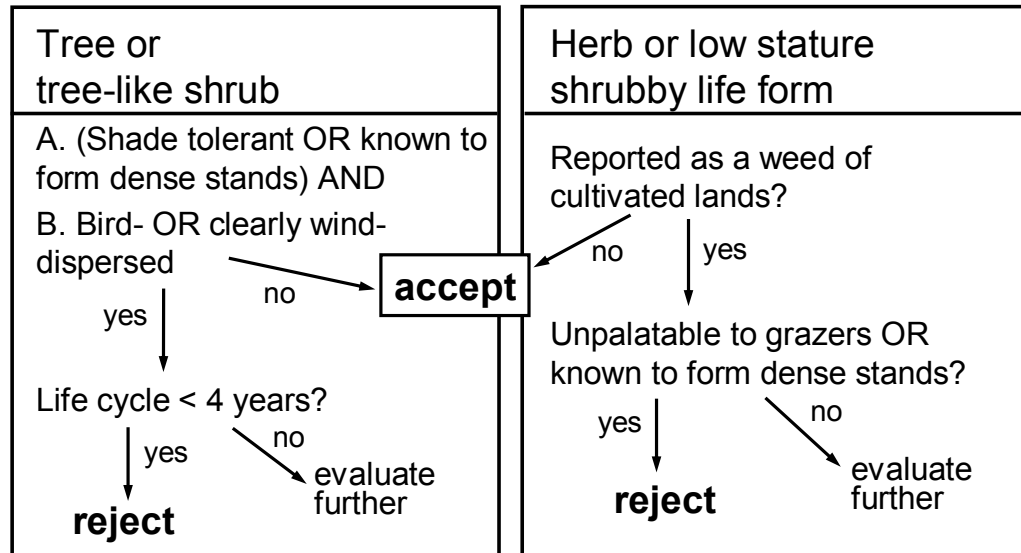
5.03	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896</a> (1-23-2015).	1. Family: Poaceae.
5.04	1. Wang, K. et al. 2010. Identification of genes related to the development of bamboo rhizome bud. <i>Journal of Experimental Botany</i> , 61(2): 551–561.	1. According to the type of the rhizome, bamboos have been divided into three groups: scattered bamboos with a monopodial rhizome, caespitose bamboos with a sympodial rhizome, and pluricaespitose bamboos with a monopodial and sympodial rhizome. The rhizome bud can either develop into a bamboo shoot which will grow into a bamboo culm in a very short period, or develop into a new rhizome which will enable the sustainable production of the bamboo grove.
6.01		no data on controlling factors
6.02	1. Plants for a Future <a href="http://www.pfaf.org/user/Plant.aspx?LatinName=Semiarundinaria+fastuosa">http://www.pfaf.org/user/Plant.aspx?LatinName=Semiarundinaria+fastuosa</a> (1-26-2015) 2. John, CK et al. 1994. Selection - A valuable method for bamboo improvement. <i>Current Science (Bangalore)</i> , 66(11): 822-824.	1. Germination usually takes place fairly quickly so long as the seed is of good quality, though it can take 3 - 6 months. 2. The most easy method of bamboo propagation is by means of seeds. Propagation of economically important bamboo species by seeds is not possible annually because of their very long inter-mast periods.
6.03	1. John, CK et al. 1994. Selection - A valuable method for bamboo improvement. <i>Current Science (Bangalore)</i> , 66(11): 822-824.	1. The peculiar flowering behaviour in bamboos make genetic improvement by hybridizations very difficult. The flowering and seeding at long intervals (7-120 years) render the overlapping of flowering in more than one species, in the same locality very difficult to obtain, making attempts at hybridizations impossible.
6.04	Plants for a Future <a href="http://www.pfaf.org/user/Plant.aspx?LatinName=Semiarundinaria+fastuosa">http://www.pfaf.org/user/Plant.aspx?LatinName=Semiarundinaria+fastuosa</a> (1-26-2015)	The flowers are hermaphrodite (have both male and female organs) and are pollinated by Wind
6.05	1. Shor, B., Southern California Chapter. From Flowers to Seedlings. American Bamboo Society. Accessed: 18 March 2014. <a href="http://www.bamboo.org/GeneralInfoPages/FromFlowersToSeedlings.html">http://www.bamboo.org/GeneralInfoPages/FromFlowersToSeedlings.html</a>	1. Most bamboos are wind-pollinated. Insects may be involved with some species.
6.06	1. Wang, K. et al. 2010. Identification of genes related to the development of bamboo rhizome bud. <i>Journal of Experimental Botany</i> , 61(2): 551–561.	1. The rhizome bud can either develop into a bamboo shoot which will grow into a bamboo culm in a very short period, or develop into a new rhizome which will enable the sustainable production of the bamboo grove.
6.07	1. Plants for a Future <a href="http://www.pfaf.org/user/Plant.aspx?LatinName=Semiarundinaria+fastuosa">http://www.pfaf.org/user/Plant.aspx?LatinName=Semiarundinaria+fastuosa</a> (1-26-2015) 2. John, CK et al. 1994. Selection - A valuable method for bamboo improvement. <i>Current Science (Bangalore)</i> , 66(11): 822-824.	Plants only flower at intervals of many years. When they do come into flower most of the plants energies are directed into producing seed and consequently the plant is severely weakened.
7.01		Nurseries suggest planting for hedging in urban or suburban places.
7.02	1. Scurlock et al. 2000 <i>Bamboo: an overlooked biomass resource?</i> <i>Biomass and Bioenergy</i> , 19:229-244. 2. Liese and Hamburg. 1987. <i>Research on bamboo</i> . <i>Wood Science and Technology</i> , 21:189-209	1. Cultivated for erosion control, windbreaks, building material, food, bamboo fiber clothes, etc. 2. Also, has been proposed as a source for pulp for paper and possible biofuel source.
7.03	1. John, CK et al. 1994. Selection - A valuable method for bamboo improvement. <i>Current Science (Bangalore)</i> , 66(11): 822-824.	1. Very unlikely. The longevity of the seeds varies from species to species, but usually only last 2-3 months under natural conditions. Furthermore, seeds must be sowed immediately in optimal conditions to prevent damping off.
7.04		no evidence found
7.05		no evidence
7.06		no evidence

7.07	Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. (2006 onwards). GrassBase - The Online World Grass Flora. <a href="http://www.kew.org/data/grasses-db.html">http://www.kew.org/data/grasses-db.html</a> . (1-26-2015)	No morphological features that would suggest bamboo seeds are adapted for attachment.
7.08		no evidence
8.01		no evidence
8.02	1. John, CK et al. 1994. Selection - A valuable method for bamboo improvement. Current Science (Bangalore), 66(11): 822-824.	1. The longevity of the seeds varies from species to species. Under natural conditions it is for 2-3 months.
8.03		no evidence
8.04		no evidence
8.05		no evidence

- A. Forms dense stands, yes
- B. Dispersal unknown, cannot continue SS= EVALUATE

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

(from Daehler *et al.* 2004)



Vines must pass both tests