

Assessment date 12 February 2015

<i>Dendrocalamus hamiltonii</i> (syn. <i>Sinocalamus hamiltonii</i>)-Tama bamboo, maggar bamboo, Pao, Wah 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)		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?	n	
3.01	Naturalized beyond native range	n	2
3.02	Garden/amenity/disturbance weed		2
3.03	Weed of agriculture		
3.04	Environmental weed		
3.05	Congeneric weed		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	
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens	y	0
4.07	Causes allergies or is otherwise toxic to humans		0
4.08	Creates a fire hazard in natural ecosystems	?	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.		0
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	unk	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		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)	30	-1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		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	n	1
7.06	Propagules bird dispersed	n	
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	n	
8.01	Prolific seed production		-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-1
8.03	Well controlled by herbicides		-1
8.04	Tolerates, or benefits from, mutilation or cultivation	y	1
8.05			
Total Score			-3
Implemented Pacific Second Screening			no
Risk Assessment Results			Low

section	# questions answered	satisfy minimum?
A		6 yes
B		7 yes
C		18 yes
total		31 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. Tropicos, Missouri Botanical Garden (www.tropicos.org [accessed 22 Jan 2014]). 2. Clayton et al. (2006 onwards) Grassbase-the Online World Grass Flora. (http://www.kew.org/data/grasses-db.html [accessed 22 Jan 2014]). 3. Flora of China (http://flora.huh.harvard.edu/china/index.html [accessed 22 Jan 2014]).	No computer analysis performed. 1. Distribution Bhutan, Burma, Yunnan (China), India, Laos, Nepal, Thailand, Vietnam. Asia temperate and Asia tropical
2.02		No computer analysis performed. Native range is well known. Refer to 2.01 source data.
2.03	1. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf). 2. eMonocot (http://emonocot.org/taxon/urn:kew.org:wcs:taxon:407452 [accessed 4 Feb 2014]). . Jackson et al. (1994) Manual of afforestation in Nepal. Nepal-UK Forestry Research Project, Forest Survey and Research Office, Department of Forest, Kathmandu, Nepal (bamboo-identification.co.uk [accessed 8 Feb 2014]).3See source data for 2.01.	1 & 2. Distribution in at least 3 climatic groups (Cfa, Am, Aw, Af). 2. Common in eastern, central and western Nepal from 300 to 2000 m.
2.04	1. 3. Flora of China (http://flora.huh.harvard.edu/china/index.html [accessed 22 Jan 2014]). 2. World Climate Maps (http://www.climate-charts.com [accessed 29 Jan 2014]).	1. Native distribution in temperate and tropical Asia. 2. Native range fall within 18.8-58.1 inches of annual precipitation (possibly more).
2.05		No Evidence. All distribution maps show species in native range.
3.01		No Evidence
3.02		No Evidence
3.03		No Evidence
3.04		No Evidence
3.05		No Evidence
4.01		No Evidence
4.02	1. LiuChi (2009) Screening for Allelopathic Potential and Herbicidal Activity of Bamboo Leaves. Dissertation thesis. Anhui Agricultural University, Anhui Province, China.	1. Extracts from leaves inhibited root growth of <i>Lactuca sativa</i> L. and <i>Brassica chinensis</i> L. - See more at: http://www.research-degree-thesis.com/showinfo-7-41285-0.html#sthash.axmn4cpQ.dpuf
4.03		No Evidence
4.04	1. Bag et al. (2012) Somatic embryogenesis in 'maggar' bamboo (<i>Dendrocalamus hamiltonii</i>) and field performance of regenerated plants. <i>Current Science</i> 102:1279-1287. 2. Jackson et al. (1994) Manual of afforestation in Nepal. Nepal-UK Forestry Research Project, Forest Survey and Research Office, Department of Forest, Kathmandu, Nepal (bamboo-identification.co.uk [accessed 8 Feb 2014]).	1. Source of green fodder for cattle. 2. " <i>Dendrocalamus hamiltonii</i> in particular has been highlighted as one of the most important sources of fodder in neighbouring Himachal Pradesh"
4.05	1. Bag et al. (2012) Somatic embryogenesis in 'maggar' bamboo (<i>Dendrocalamus hamiltonii</i>) and field performance of regenerated plants. <i>Current Science</i> 102:1279-1287. 2. Jackson et al. (1994) Manual of afforestation in Nepal. Nepal-UK Forestry Research Project, Forest Survey and Research Office, Department of Forest, Kathmandu, Nepal (bamboo-identification.co.uk [accessed 8 Feb 2014]).	1. Source of green fodder for cattle. 2. " <i>Dendrocalamus hamiltonii</i> in particular has been highlighted as one of the most important sources of fodder in neighbouring Himachal Pradesh"

4.06	1. Sittichaya et al. (2009) An illustrated key to powder post beetles (Coleoptera, Bostrichidae) associated with rubberwood in Thailand, with new records and a checklist of species found in Southern Thailand. ZooKeys 26:33-51. 2. Plantwise Knowledge Bank: bamboo borer (<i>Dinoderus minutus</i>) (http://www.plantwise.org/KnowledgeBank/Datasheet.aspx?dsid=19035 [8 Feb 2014]).	1. <i>Dinoderus minutus</i> breeds primarily in bamboos. Found in <i>D. hamiltonii</i> in native range. 2. found in both <i>Dendrocalamus</i> sp. and sugar cane.
4.07		No Evidence
4.08	1. Keeley & Bond (1999) Mast flowering and semelparity in bamboos: the bamboo fire cycle hypothesis. <i>Am Nat</i> 154:383-391.	1. Post masting event, standing dead culms can become fuel for fires. Documented for <i>D. strictus</i> , not <i>D. hamiltonii</i> .
4.09	1. Toky & Ramakrishnan (1983) Secondary succession following slash and burn agriculture in north eastern India. <i>J Ecol</i> 71:735-745. 2. Rao & Ramakrishnan (1987) Comparative Analysis of the Population Dynamics of Two Bamboo Species, <i>Dendrocalamus hamiltonii</i> and <i>Neohouzeua dulloo</i> , in a Successional Environment. <i>For Ecol Manag</i> 21:177-189.	Many nursery sites indicate grows in full sun to partial shade, but no definitive evidence of shade tolerance. 1. Described as shade-intolerant, secondary successional species. 2. "species that are strictly light-demanding, such as <i>Dendrocalamus hamiltonii</i> , get eliminated as light availability in the community declines after a period"
4.10		No evidence
4.11		No Evidence
4.12		Other species of bamboo (both clumping and running) known to form dense thickets, no definitive evidence that <i>D. hamiltonii</i> forms thickets.
5.01	1. USDA/ARS-GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?405679 [accessed 22 Jan 2014]). 2. Clayton et al. (2006 onwards) Grassbase-the Online World Grass Flora. (http://www.kew.org/data/grasses-db.html [accessed 22 Jan 2014]).	No evidence of aquatic growth habit. 1 & 2. Family Poaceae
5.02	1. USDA/ARS-GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?405679 [accessed 22 Jan 2014]). 2. Clayton et al. (2006 onwards) Grassbase-the Online World Grass Flora. (http://www.kew.org/data/grasses-db.html [accessed 22 Jan 2014]).	1 & 2. Family Poaceae
5.03	1. USDA/ARS-GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?405679 [accessed 22 Jan 2014]). 2. Clayton et al. (2006 onwards) Grassbase-the Online World Grass Flora. (http://www.kew.org/data/grasses-db.html [accessed 22 Jan 2014]).	1 & 2. Family Poaceae
5.04	1. Ziv & Noar (2006) Flowering of geophytes in vitro. <i>Propagation of Ornamental Plants</i> 6: 3-16.	1. Geophyte
6.01	1. Jackson et al. (1994) Manual of afforestation in Nepal. Nepal-UK Forestry Research Project, Forest Survey and Research Office, Department of Forest, Kathmandu, Nepal (bamboo-identification.co.uk [accessed 8 Feb 2014]). 2. Rao & Ramakrishnan (1987) Comparative Analysis of the Population Dynamics of Two Bamboo Species, <i>Dendrocalamus hamiltonii</i> and <i>Neohouzeua dulloo</i> , in a Successional Environment. <i>For Ecol Manag</i> 21:177-189.	1. produce large amounts of seed when cross—pollinated. As most flowerings are sporadic, or involve clumps which are quite separated, completely effective cross—pollination does not usually occur. Consequently seed production is low and the clumps do not use up all their reserves. When many genetically different clumps flower close together cross—pollination is fully effective and the clumps will often die after producing great amounts of seed. 2. "Seedling recruitment in <i>D. hamiltonii</i> was poor"

6.02	1. Jackson et al. (1994) Manual of afforestation in Nepal. Nepal-UK Forestry Research Project, Forest Survey and Research Office, Department of Forest, Kathmandu, Nepal (bamboo-identification.co.uk [accessed 8 Feb 2014]).	1. "from observation of <i>Dendrocalamus hamiltonii</i> in Nepal that many bamboos are self—incompatible and can only produce large amounts of seed when cross—pollinated."
6.03	1. Jackson et al. (1994) Manual of afforestation in Nepal. Nepal-UK Forestry Research Project, Forest Survey and Research Office, Department of Forest, Kathmandu, Nepal (bamboo-identification.co.uk [accessed 8 Feb 2014]).	No Evidence 1." As most flowerings are sporadic, or involve clumps which are quite separated, completely effective cross—pollination does not usually occur." This would apply to the possibility of both inter and intra species pollination.
6.04	1. Jackson et al. (1994) Manual of afforestation in Nepal. Nepal-UK Forestry Research Project, Forest Survey and Research Office, Department of Forest, Kathmandu, Nepal (bamboo-identification.co.uk [accessed 8 Feb 2014]).	1. "from observation of <i>Dendrocalamus hamiltonii</i> in Nepal that many bamboos are self—incompatible and can only produce large amounts of seed when cross—pollinated."
6.05	1. 1. Nadgauda RS et al. 1997. A comparison of in vitro and in vivo flowering in bamboo: <i>Bambusa arundinaceae</i> . Plant Cell, Tissue and Organ Culture, 48: 181-187. 2. Stapleton (1994) The bamboos of Nepal and Bhutan: Part 1. Edinb J Bot 51:1-32.	1. In general, members of the grass family are wind pollinated.2. <i>Dendrocalamus</i> and <i>Bambusa</i> wind pollinated
6.06	1. Rao & Ramakrishnan (1987) Comparative Analysis of the Population Dynamics of Two Bamboo Species, <i>Dendrocalamus hamiltonii</i> and <i>Neohouzeua dulloa</i> , in a Successional Environment. For Ecol Manag 21:177-189.	1. <i>D. hamiltonii</i> had extensive vegetative reproduction in a successional environment.
6.07	1. Janzen (1976) Why bamboos wait so long to flower. Ann Rev Ecol Syst 7:347-391. 2. Jackson et al. (1994) Manual of afforestation in Nepal. Nepal-UK Forestry Research Project, Forest Survey and Research Office, Department of Forest, Kathmandu, Nepal (bamboo-identification.co.uk [accessed 8 Feb 2014]). 3. Rao & Ramakrishnan (1987) Comparative Analysis of the Population Dynamics of Two Bamboo Species, <i>Dendrocalamus hamiltonii</i> and <i>Neohouzeua dulloa</i> , in a Successional Environment. For Ecol Manag 21:177-189.	1. Flowering cycle of roughly 30 years. 2. known in native range to sporadically flower and produce seed. 3. 30-40 years
7.01		No evidence found, but transportation of rhizome pieces in garden refuse could spread plants as is the case with other rhizomatous plants (i.e. <i>Arundo donax</i>).
7.02	1.Sood et al. (2013) Nutritional Characterization of Shoots and other Edible Products of an Edible Bamboo - <i>Dendrocalamus hamiltonii</i> . Curr Res Nutr Food Sci 2013: http://dx.doi.org/10.12944/CRNFSJ.1.2.08 . 1 2. Bamboos of Thailand (https://sites.google.com/site/bamboosthailand/ [accessed 8 Feb 2014]) 3. Tropical bamboo Nursery (http://www.tropicalbamboo.com [accessed 8 Feb 2014]).	Proposed for use as biomass plantin 1.Variety of multipurpose bamboo which is mainly cultivated as wood substitute, fodder and edible shoots used for making pickles. 2.Culms used for making pillars and containers, and not for weaving; leaves for fodder. 3. Seeds and plants for sale online
7.03		Contamination unlikely based on the growth form, biology, ecology, or habitat of the species.
7.04		No evidence
7.05		No evidence
7.06		No evidence
7.07		No evidence
7.08		No evidence

8.01		Conflicting evidence indicates both sporadic and gregarious flowering events (see source data 6.07). 1. produce large amounts of seed when cross—pollinated. As most flowerings are sporadic, involve clumps which are quite separated, completely effective cross—pollination does not usually occur. Consequently seed production is low and the clumps do not use up all their reserves. When many genetically different clumps flower close together cross—pollination is fully effective and the clumps will often die after producing great amounts of seed.
8.02	1. Jackson et al. (1994) Manual of afforestation in Nepal. Nepal-UK Forestry Research Project, Forest Survey and Research Office, Department of Forest, Kathmandu, Nepal (bamboo-identification.co.uk [accessed 8 Feb 2014]). 2. Shanmughavel & Francis (1997) Balance and turnover of nutrients in a bamboo plantation (<i>Bambusa bambos</i>) of different ages. <i>Biol Fertil Soils</i> 25:69-74.	1. "Germination in <i>D. hamiltonii</i> is very prompt with fresh seed (2—7 days), but takes 6-8 weeks after over one year." 2. In general, bamboo seeds possess a short period of viability (a few days to 1 month),
8.03		No Evidence
8.04	1. Darabant et al.(2012) Harvesting method optimizing shoot and culm production in <i>Dendrocalamus hamiltonii</i> . The 9th World Bamboo Congress Proceedings, World Bamboo International (www.worldbamboo.net/wbcix/presentation/Darabant,%20Andreas.pdf [3 Feb 2014]).	1. "Number of culms harvested strongly influences number of shoots recruited the following year"
8.05		No evidence