Keywords: Low Risk, Tropical bamboo, Sympodial, Clumping, Edible shoots

Family: ***Poaceae***

Taxon: ***Gigantochloa pseudoarundinacea***

Synonym: *Bambusa pseudoarundinacea Steud.*
Bambusa verticillata Willd.
Gigantochloa verticillata auct.
Gigantochloa maxima Kurz

Common Name: greater giant bamboo
West Java pipe bamboo

Questionaire : current 20090513 **Assessor:** HPWRA OrgData **Designation:** L
Status: Assessor Approved **Data Entry Person:** HPWRA OrgData **WRA Score 0**

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**	**y**
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**	**?**
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**	

410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y=1, n=0**	**n**
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**	**y**
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**	
602	**Produces viable seed**	**y=1, n=-1**	**y**
603	**Hybridizes naturally**	**y=1, n=-1**	**y**
604	**Self-compatible or apomictic**	**y=1, n=-1**	
605	**Requires specialist pollinators**	**y=-1, n=0**	**n**
606	**Reproduction by vegetative fragmentation**	**y=1, n=-1**	**n**
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**	**y**
705	**Propagules water dispersed**	**y=1, n=-1**	
706	**Propagules bird dispersed**	**y=1, n=-1**	**n**
707	**Propagules dispersed by other animals (externally)**	**y=1, n=-1**	**n**
708	**Propagules survive passage through the gut**	**y=1, n=-1**	
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**	**y**
805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	**y=-1, n=1**	

Designation: L **WRA Score** **0**

Supporting Data:

101	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Is the species highly domesticated? No] "G. pseudoarundinacea is one of the large diameter bamboos, and is one of the most useful bamboos in Java. It is only found in cultivation." [No evidence, despite only being known from cultivation]
102	2013. WRA Specialist. Personal Communication.	NA
103	2013. WRA Specialist. Personal Communication.	NA
201	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Species suited to tropical or subtropical climate(s) - 2-High] "DISTRIBUTION Asia-tropical: Malesia."
202	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Quality of climate match data 2-High]
203	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Broad climate suitability (environmental versatility)? Yes] "It can be found growing in the perhumid tropics from sea-level up to about 1200 m altitude, in areas with annual rainfall of 2350 4200 mm." [Elevation range exceeds 1000 m, demonstrating environmental versatility]
204	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Native or naturalized in regions with tropical or subtropical climates? Yes] "DISTRIBUTION Asia-tropical: Malesia."
205	1995. Widjaja, E.A.. Gigantochloa pseudoarundinacea (Steudel) Widjaja [Internet] Record from Proseabase. PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia http://www.proseanet.org. [Accessed 17 Apr 2013]	[Does the species have a history of repeated introductions outside its natural range? ?]"The origin of Gigantochloa pseudoarundinacea is not known; it is only found in cultivation. It is widely cultivated in Indonesia (Java, Bali, Sumatra, Mentawai Islands) and has been introduced to Peninsular Malaysia and India."
301	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Naturalized beyond native range? No] "It is only found in cultivation."
301	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? No] No evidence
302	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Garden/amenity/disturbance weed? No] No evidence
303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No] No evidence
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No] No evidence
305	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Congeneric weed? No] Several Gigantochloa species are listed as naturalized, but there is no evidence or references to them as invasive weeds

401	1995. Widjaja, E.A.. Gigantochloa pseudoarundinacea (Steudel) Widjaja [Internet] Record from Proseabase. PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia http://www.proseanet.org. [Accessed 17 Apr 2013]	[Produces spines, thorns or burrs? No] "A densely tufted, sympodial bamboo, with the centre of the clump irregularly raised above the ground. Culm 7—30 m tall, 5—13 cm in diameter, wall up to 2 cm thick; internodes up to 40—45(—60) cm long, green to yellow green, yellow striped, initially with scattered appressed brown hairs on the upper parts, glabrous and smooth when older; lower nodes with verticillate aerial roots. Branches arising from all nodes above 2—3 m from the ground with one dominant branch at each node. Culm sheath truncate, 35 cm long or longer, deciduous, when young, dark green and papery at the margin and brown hairy becoming glabrous with age; blade ovate oblong, acute at the apex, about as long as the sheath, hirsute at base, spreading to reflexed; ligule up to 5 mm long, dentate, fine hairy at top; auricles up to 4 mm tall and 17 mm long in lateral extent, with a variable low and wavy rim, when young with up to 5 mm long bristles. Young shoots yellow-green, flushed with orange on the sheath apices and green striped, with appressed, acute, brown to golden brown hairs. Leaf blade lanceolate, 22—25 cm x 2.5—5 cm, glabrous or finely hairy at lower surface; lower sheaths with slightly emarginate collar-like callus; ligule up to 2 mm long, irregularly toothed with fine hairs; auricles firm, raised at the end up to 1 mm and joined to the ligule."
402	2013. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymolog. CRC Press, Boca Raton, FL	[Parasitic? No] Poaceae
404	2011. Benton, A./Thomson, L./Berg, P./Ruskin, S.. Farm and Forestry Production and Marketing Profile for Bamboo (various species). In Elevitch, C.R. (ed.) Specialty Crops for Pacific Island Agroforestry. Permanent Agriculture Resources (PAR), Holualoa, HI	[Unpalatable to grazing animals? Unknown] "Bamboo leaves make excellent fodder for livestock including cows, horses and pigs." [Probably palatable, but no specific information on G. pseudoarundinacea found]
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Toxic to animals? No] No evidence from genus
406	1995. Widjaja, E.A.. Gigantochloa pseudoarundinacea (Steudel) Widjaja [Internet] Record from Proseabase. PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia http://www.proseanet.org. [Accessed 17 Apr 2013]	[Host for recognized pests and pathogens?] "Diseases and pests Gigantochloa pseudoarundinacea is usually attacked by a witches' broom (Epichloe bambusae) but this disease has no harmful effect on culm production. The most serious pest causing much damage is Dinoderus minutus, a borer attacking harvested culms." [Importance of pests to other bamboos unknown]
406	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Host for recognized pests and pathogens?] "Pests recorded Fungus diseases: Epichloe bambusae"
407	1998. Seethalakshmi, K.K./Muktesh Kumar, M.S.. Bamboos of India: A Compendium. INBAR, Beijing, China	[Causes allergies or is otherwise toxic to humans? No] "This is an important source of edible shoots in Java."
407	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Causes allergies or is otherwise toxic to humans? No] "The culms are used for building material, water pipes, furniture, household utensils, chopsticks and toothpicks. The young shoots are eaten as a vegetable." [No evidence]
407	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Causes allergies or is otherwise toxic to humans? No] No evidence
408	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Creates a fire hazard in natural ecosystems? No] "It can be found growing in the perhumid tropics from sea-level up to about 1200 m altitude, in areas with annual rainfall of 2350 4200 mm." [No direct evidence, and grows in areas of relatively high rainfall]
409	2013. Dave's Gardern. PlantFiles: Bamboo - Gigantochloa pseudoarundinacea. http://davesgarden.com/guides/pf/go/66373/ [Accessed 17 Apr 2013]	[Is a shade tolerant plant at some stage of its life cycle?] "Sun Exposure: Full Sun. Sun to Partial Shade"
410	1995. Widjaja, E.A.. Gigantochloa pseudoarundinacea (Steudel) Widjaja [Internet] Record from Proseabase. PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia http://www.proseanet.org. [Accessed 17 Apr 2013]	[Tolerates a wide range of soil conditions? No] "It occurs on sandy loams and alluvial soils."

410	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Tolerates a wide range of soil conditions ? No] "Soil descriptors - Soil texture: light; medium - Soil drainage: free - Soil reaction: neutral"
411	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Climbing or smothering growth habit? No] "It is a sympodial bamboo with erect culms of 7-30 m tall with the diameter of 5-13 cm and thick walls."
412	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Forms dense thickets? No] "It is a sympodial bamboo with erect culms of 7-30 m tall with the diameter of 5-13 cm and thick walls." [No evidence. A clumping bamboo only known in cultivation]
501	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Aquatic? No] Terrestrial
502	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymolog. CRC Press, Boca Raton, FL	[Grass? Yes] Poaceae
503	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymolog. CRC Press, Boca Raton, FL	[Nitrogen fixing woody plant? No] Poaceae
504	2010. Gordon, D.R./Mitterdorfer, B./Pheloung, P.C. et al.. Guidance for addressing the Australian Weed Risk Assessment questions. Plant Protection Quarterly. 25(2): 56-74.	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "This question relates to perennial plants with tubers, corms or bulbs. This question is specifically to deal with plants that have specialized organs and should not include plants merely with rhizomes/ stolons"
601	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Evidence of substantial reproductive failure in native habitat? Unknown] "G. pseudoarundinacea is one of the large diameter bamboos, and is one of the most useful bamboos in Java. It is only found in cultivation."
602	1998. Vivekanandan K./Rao, A.N./Rao, V.R. (eds.). Bamboo and Rattan Genetic Resources in Certain Asian Countries. IPGRI-APO, Serdang, Malaysia	[Produces viable seed? "Genetic variations among bamboo appears to be very high, especially when they are propagated by seed. Gigantochloa pseudoarundinacea normally does not produce seeds in Indonesia. This phenomenon is also true with Dendrocalamus asper and Dendrocalamus latiflorus. However, rarely Gigantochloa pseudoarundinacea flowers and produces seeds. New plants produced are different from the parent."
602	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Produces viable seed? Yes] "FRUIT Caryopsis with adherent pericarp." [Presumably yes after long life cycle of 50+ years]
603	1998. Rao, A.N./Rao, V.R./Williams, J.T. (eds.). Priority Species of Bamboo and Rattan. IPGRI-APO, Serdang, Malaysia	[Hybridizes naturally? Yes] "Natural hybrids on Sumatra have been observed to produce seeds."
604	1995. Widjaja, E.A.. Gigantochloa pseudoarundinacea (Steudel) Widjaja [Internet] Record from Proseabase. PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia http://www.proseanet.org. [Accessed 17 Apr 2013]	[Self-compatible or apomictic? Unknown] "Inflorescences appearing on leafless culms, up to 75 cm long, with clustered pseudospikelet groups 1—9 cm apart and up to 148 pseudospikelets in a cluster; spikelet ovoid, subacute, 7.5—10 mm long, with 4 perfect and 1 sterile florets. Caryopsis unknown."
605	1994. Zomlefer, W.B.. Guide to Flowering Plant Families. The University of North Carolina Press, Chapel Hill & London	[Requires specialist pollinators? No] Poaceae [anemophilous. Wind-pollinated]
606	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Reproduction by vegetative fragmentation? No] "This bamboo is propagated vegetatively by rhizome, culm and branch cuttings." [No evidence]
607	1995. Widjaja, E.A.. Gigantochloa pseudoarundinacea (Steudel) Widjaja [Internet] Record from Proseabase. PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia http://www.proseanet.org. [Accessed 17 Apr 2013]	[Minimum generative time (years)? 50+] "Flowering occurs when the clump is 50—60 years old; it flowers gregariously, after which the clump dies."
701	1995. Widjaja, E.A.. Gigantochloa pseudoarundinacea (Steudel) Widjaja [Internet] Record from Proseabase. PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia http://www.proseanet.org. [Accessed 17 Apr 2013]	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "The origin of Gigantochloa pseudoarundinacea is not known; it is only found in cultivation." … "Caryopsis unknown." … "Flowering occurs when the clump is 50—60 years old; it flowers gregariously, after which the clump dies." [No evidence, and effectively not given lack of seed production until end of long life cycle]

702	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Propagules dispersed intentionally by people? Yes] " It is only found in cultivation." … "This bamboo is propagated vegetatively by rhizome, culm and branch cuttings." … "The culms are used for building material, water pipes, furniture, household utensils, chopsticks and toothpicks. The young shoots are eaten as a vegetable."
703	1995. Widjaja, E.A.. Gigantochloa pseudoarundinacea (Steudel) Widjaja [Internet] Record from Proseabase. PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia http://www.proseanet.org. [Accessed 17 Apr 2013]	[Propagules likely to disperse as a produce contaminant? No] "The origin of Gigantochloa pseudoarundinacea is not known; it is only found in cultivation." … "Caryopsis unknown." … "Flowering occurs when the clump is 50—60 years old; it flowers gregariously, after which the clump dies." [No evidence, and not likely given lack of seed production until possible at the end of a long life cycle]
704	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Propagules adapted to wind dispersal? Yes] "FRUIT - Caryopsis with adherent pericarp. " [When produced, seeds presumably wind or gravity dispersed]
705	2013. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown] Perhaps possible if occurring along riverbanks, as is typical of other Gigantochloa species. Any water dispersal of propagules would be limited by the infrequent occurrence of flowering & seed set of this and other long lived bamboo taxa
706	2013. WRA Specialist. Personal Communication.	[Propagules bird dispersed? No] Not fleshy fruited, and only flowers after 50+ years
707	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Propagules dispersed by other animals (externally)? No] "FRUIT - Caryopsis with adherent pericarp." [Seeds, when produced, lack means of external attachment]
708	2013. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown] Seeds rarely produced, and unlikely to be consumed or internally dispersed
801	1998. Vivekanandan K./Rao, A.N./Rao, V.R. (eds.). Bamboo and Rattan Genetic Resources in Certain Asian Countries. IPGRI-APO, Serdang, Malaysia	[Prolific seed production (>1000/m2)? No] "Gigantochloa pseudoarundinacea normally does not produce seeds in Indonesia. This phenomenon is also true with Dendrocalamus asper and Dendrocalamus latiflorus. However, rarely Gigantochloa pseudoarundinacea flowers and produces seeds. New plants produced are different from the parent." … "Most of the Indonesian species rarely flower, for eg., Bambusa vulgaris, Dendrocalamus asper, Gigantochloa pseudoarundinacea, and even after flowering they do not produce seeds" [Effectively no, but large seed numbers may be produced when this bamboo eventually flowers]
802	2013. Dave's Gardern. PlantFiles: Bamboo - Gigantochloa pseudoarundinacea. http://davesgarden.com/guides/pf/go/66373/ [Accessed 17 Apr 2013]	[Evidence that a persistent propagule bank is formed (>1 yr)?] "Seed does not store well; sow as soon as possible"
803	2013. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	1995. Widjaja, E.A.. Gigantochloa pseudoarundinacea (Steudel) Widjaja [Internet] Record from Proseabase. PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia http://www.proseanet.org. [Accessed 17 Apr 2013]	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Harvesting First harvesting may start 3 years after planting, preferably in the dry season (April—October in Java). It is recommended to harvest only 3-year-old culms and to cut just above the ground. To promote regeneration, it is recommended to earth up and to mulch the base of the harvested culms. For East Java, a half clear-felling system in a cycle of 3 years is recommended. Yield The annual yield of mature culms from a plantation with 275 clumps per ha (6 m x 6 m) is estimated at 1650 per ha or about 6 culms per clump. If converted to charcoal, about 18% good charcoal and 4% brand and broken charcoal are produced." [Will resprout after repeated cutting]
805	2013. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk / Undesirable Traits

- Thrives in tropical climates
- Natural hybrids on Sumatra have been observed to produce seeds.
- May produce viable seeds that can be dispersed by gravity, wind or people
- Will resprout after repeated cutting or harvesting of shoots & culms (may be difficult to remove from unwanted areas)

Low Risk / Desirable Traits

- No negative impacts have been documented
- Non-toxic
- Edible shoots
- Landscaping and ornamental value
- A sympodial, or clumping bamboo
- Flowering occurs rarely
- Lack of seed production until end of long life cycle