

Family: *Poaceae*

Taxon: *Gigantochloa apus*

Synonym: *Bambusa apus* Schult. & Schult. f. (basionym) **Common Name:** Tabashir bamboo
cordage bamboo
bambu tali

| Questionnaire : | current 20090513 | Assessor: | HPWRA OrgData | Designation: L |
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| Status: | Assessor Approved | Data Entry Person: | HPWRA OrgData | WRA Score 2 |
| 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 | n |
| 301 | Naturalized beyond native range | | y = 1*multiplier (see Appendix 2), n= question 205 | y |
| 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 | y |
| 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 | n |
| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | | y=1, n=0 | |

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| 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 | 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 | |
| 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 | |
| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | y=1, n=-1 | n |
| 803 | Well controlled by herbicides | y=-1, n=1 | y |
| 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 2

Supporting Data:

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| 101 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Is the species highly domesticated? No] "G. apus is very important within the Indonesian rural economy because it has a wide range of uses from cooking utensils to building material. G. apus is mainly found in cultivation, especially in Java, where naturalized populations have also developed. Research is required in order to develop further utilization of this species, and to promote the introduction of this multipurpose bamboo in other countries." |
| 102 | 2013. WRA Specialist. Personal Communication. | NA |
| 103 | 2013. WRA Specialist. Personal Communication. | NA |
| 201 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Species suited to tropical or subtropical climate(s) 2-High] "It has been suggested that G. apus is native in Myanmar, and was introduced to Java during prehistoric human migration. G. apus is mainly found in cultivation, but naturalized population occur in West and East Java." |
| 202 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Quality of climate match data 2-High] |
| 203 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Broad climate suitability (environmental versatility)? Yes] "G. apus prefers a tropical humid lowland climate, but also occurs on hill slopes up to 1500 m in altitude." [Elevation range may exceed 1000 m, demonstrating environmental versatility] |
| 204 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Native or naturalized in regions with tropical or subtropical climates? Yes] "It has been suggested that G. apus is native in Myanmar, and was introduced to Java during prehistoric human migration. G. apus is mainly found in cultivation, but naturalized population occur in West and East Java." |
| 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? "DISTRIBUTION: Asia-tropical: India, Indo China, and Malesia"] |
| 205 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Does the species have a history of repeated introductions outside its natural range? No] "G. apus is mainly found in cultivation, especially in Java. A report indicates that it may have been introduced in Taiwan (Wu and Hsieh, 1990). This species has also been cultivated in botanical gardens within the tropics." |
| 301 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Naturalized beyond native range? Yes] "G. apus is mainly found in cultivation, especially in Java, where naturalized populations have also developed." |
| 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 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Produces spines, thorns or burrs? No] "G. apus is an open tufted and sympodial bamboo. Culm erect, 8-30 m in height, up to 9 cm in diameter, wall up to 15 mm thick, greyish green to bright or yellowish green, glabrous, shiny, covered with white wax when young; internodes 20-60 cm long; nodes slightly swollen. Branches arising from the upper half of the culm only. Young shoot slender, with appressed blackish hairs, light green to greyish-green, blades spreading to deflexed, tinged with yellow. Culm sheath persistent, 7-35 cm long, 8-26 cm wide, covered with dark brown hairs when young, turning yellow brown and glabrous at maturity; blade ovate-triangular, 3-18 cm long, 2-5 cm wide, spreading to deflexed when the culm elongate, ultimately deciduous, adaxial surface covered with deciduous dark brown appressed hairs; ligule 2-4 mm long, irregularly toothed; auricles 4-8 mm wide, 1-3 mm long, firm, with slender bristles along the edges. Leaf blade lanceolate, 13-49 cm long, 2-9 cm wide, slightly hairy below when young; sheath dark brown hairy along the margins; ligule 2-4 mm long, finely hairy at the edge; auricles 1-2 mm long, rounded, firm, glabrous." |
| 402 | 2013. WRA Specialist. Personal Communication. | [Allelopathic? Unknown] No evidence found |

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| 403 | 2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl | [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 <i>G. apus</i> 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 |
| 406 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Host for recognized pests and pathogens?] "Powder-post beetle, <i>Dinoderus minutus</i> , is the most typical borer attacking harvested culms. Traditionally, the harvested culms are dried before use by leaning them against a large tree for a few days. In the past, the culms were immersed in running water or mud, recent preservation methods include treatment with caustic soda or borax-boron. Pests recorded - Fungus diseases: <i>Epichloe bambusae</i> " |
| 406 | 2011. Nelson, S./Goo, M.. Kweilingia Rust of Bamboo in Hawai'i. PD-74. CTAHR, UH Manoa, Honolulu, HI | [Host for recognized pests and pathogens? Yes] [Host for recognized pests and pathogens? Yes] "Bamboo rust has been recovered in Hawai'i on <i>Bambusa vulgaris</i> , <i>Gigantochloa apus</i> , and <i>Bambusa</i> sp. Many other bamboo species are susceptible." ... "Although <i>Kweilingia</i> leaf rust may be widespread in bamboo plantations and natural stands, control measures are not usually required, as the disease is generally of low economic importance. Nevertheless, severe outbreaks on economically important bamboo species can negatively affect stand productivity and shoot quality." |
| 407 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Causes allergies or is otherwise toxic to humans? No] "Young shoots may be consumed as a vegetable. In Java, the freshly cut shoots are buried in mud for 3-4 days to remove the bitter taste." |
| 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] " <i>G. apus</i> grows well in humid tropical lowlands, but survives well on hill slopes and in drier areas. The size of the culms vary considerably, being shorter in dry areas and taller in more humid conditions." [No evidence, but would likely carry fire if grown in a drier area] |
| 409 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Is a shade tolerant plant at some stage of its life cycle? No] "...in open areas, disturbed forest and on riverbanks." |
| 410 | 2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymolog. CRC Press, Boca Raton, FL | [Tolerates a wide range of soil conditions?] "...on sandy soil or clay soil..." |
| 410 | 2013. Backyard Gardener. <i>Gigantochloa apus</i> . http://www.backyardgardener.com/plantname/pda_2f1f.html [Accessed 20 Mar 2013] | [Tolerates a wide range of soil conditions?] "pH Range: 5 to 7; Soil Range: Sandy Loam to Clay Loam" |
| 411 | 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 | [Climbing or smothering growth habit? No] "HABIT Perennial; caespitose; clumped densely. Rhizomes short; pachymorph. Culms erect; 800–2200 cm long; 40–130 mm diam.; woody." |
| 412 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Forms dense thickets? No] " <i>G. apus</i> is an open tufted and sympodial bamboo. Culm erect, 8 30 m in height, up to 9 cm in diameter, wall up to 15 mm thick, greyish green to bright or yellowish green, glabrous, shiny, covered with white wax when young; internodes 20-60 cm long; nodes slightly swollen. Branches arising from the upper half of the culm only." |
| 501 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Aquatic? No] "This species may be found growing on sandy or clayey soil, in open areas, disturbed forest and on riverbanks." |
| 502 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Grass? Yes] Poaceae |
| 503 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Nitrogen fixing woody plant? No] Poaceae |

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| 504 | 2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia | [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? No] "It has been suggested that <i>G. apus</i> is native in Myanmar, and was introduced to Java during prehistoric human migration. <i>G. apus</i> is mainly found in cultivation, but naturalized population occur in West and East Java." [Native range unclear, but no evidence of reproductive failure within known range] |
| 602 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Produces viable seed? Yes] " <i>G. apus</i> very rarely flowers, and in Indonesia the first flowers may appear 50-60 years after planting. When flowering, viable seed is produced that may be used for propagation." ... " <i>G. apus</i> may be propagated by seed, when available. However, it is most commonly propagated by rhizome, culm and branch cuttings." |
| 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] "FERTILE SPIKELETS: Spikelets comprising 3 fertile florets; with diminished florets at the apex. Spikelets ovate; laterally compressed; 13–22 mm long; 2–3 mm wide; breaking up at maturity; disarticulating above glumes but not between florets. Rhachilla internodes suppressed between florets." ... "FRUIT Caryopsis with adherent pericarp; lanceolate; sulcate on hilar side; 12 mm long; hairy at apex." |
| 602 | 2012. Poppens, R.. Tropical Bamboos Propagation Manual. International Network for Bamboo and Rattan (INBAR), Beijing | [Produces viable seed? Yes] "4.9 Propagation of Priority Species Hereafter 19 species and their propagation methods -those described in this manual - are listed." [<i>G. apus</i> propagated by seed & other methods] |
| 603 | 2013. WRA Specialist. Personal Communication. | [Hybridizes naturally? Unknown] |
| 604 | 2013. WRA Specialist. Personal Communication. | [Self-compatible or apomictic? 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] " <i>G. apus</i> may be propagated by seed, when available. However, it is most commonly propagated by rhizome, culm and branch cuttings." [No evidence of vegetative spread without human assistance] |
| 607 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Minimum generative time (years)? 50+] " <i>G. apus</i> very rarely flowers, and in Indonesia the first flowers may appear 50-60 years after planting. When flowering, viable seed is produced that may be used for propagation." |
| 701 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] " <i>G. apus</i> may be propagated by seed, when available. However, it is most commonly propagated by rhizome, culm and branch cuttings." [Unlikely, as seeds are rarely produced] |
| 702 | 1997. Bezona, N.C./Rauch, F.D.. Bamboo for Forest and Garden. CTAHR Fact Sheet. Ornamentals and Flowers no. 18. CTAHR, UH Manoa, Honolulu, HI | [Propagules dispersed intentionally by people? Yes] "Culms strong and durable. Preferred for house construction in Java as well as bridges, crafts. Highly recommended commercial species, also ornamental." |
| 703 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Propagules likely to disperse as a produce contaminant? No] " <i>G. apus</i> may be propagated by seed, when available. However, it is most commonly propagated by rhizome, culm and branch cuttings." [Unlikely, as seeds are rarely produced] |
| 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] "Perennial; caespitose; clumped densely. Rhizomes short; pachymorph. Culms erect; 800–2200 cm long; 40–130 mm diam.; woody." ... "FRUIT Caryopsis with adherent pericarp; lanceolate; sulcate on hilar side; 12 mm long; hairy at apex." [When produced, seeds presumably wind or gravity dispersed] |
| 705 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Propagules water dispersed? Possibly] "This species may be found growing on sandy or clayey soil, in open areas, disturbed forest and on riverbanks." [Distribution along riverbanks suggests seeds may be dispersed by water when bamboo infrequently flowers] |
| 706 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Propagules bird dispersed? No] "Inflorescence borne on leafy branches bearing groups of pseudospikelets at each node, 1-8.5 cm apart; spikelet 13-22 mm long, slender, with 2-3 empty glumes and 3 perfect florets. Caryopsis up to 12 mm long." [Not fleshy fruited] |
| 707 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Propagules dispersed by other animals (externally)? No] " <i>G. apus</i> may be propagated by seed, when available. However, it is most commonly propagated by rhizome, culm and branch cuttings." [Unlikely, as seeds are rarely produced and lack means of external attachment] |

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| 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 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Prolific seed production (>1000/m2)? Unknown] "G. apus very rarely flowers, and in Indonesia the first flowers may appear 50-60 years after planting. When flowering, viable seed is produced that may be used for propagation." [Possibly high seed production after long vegetative interval] |
| 802 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Evidence that a persistent propagule bank is formed (>1 yr)? No] "G. apus very rarely flowers, and in Indonesia the first flowers may appear 50-60 years after planting. When flowering, viable seed is produced that may be used for propagation." [Propagated vegetatively with effectively no seed bank until possibly at the end of the life cycle] |
| 803 | 1961. Cruzado, H.J./Muzik, T.J./Kennard, W.C.. Control of Bamboo in Puerto Rico by Herbicides. Weeds. 9 (1): 20-26. | [Well controlled by herbicides? Yes] "Observations made 9 months after application show that monuron was the most effective herbicide since 10 out of 20 clumps treated were killed with this herbicide. Those killed included all plants of B. tulda, G. apus, and B. textilis." |
| 804 | 2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK | [Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "One year after planting the vegetatively obtained propagules will emerge, approximately 10-15 culms. These are harvested after 1-3 years, depending on their use." [Culms tolerate repeated harvesting] |
| 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
- Can grow from sea level to 1500 m elevation
- In Java, naturalized populations have developed
- Produces viable seeds that may 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 despite reports of naturalized populations in Java
- Non-toxic
- Edible shoots
- Landscaping and ornamental value
- A sympodial, or clumping bamboo
- Flowering occurs in plants that are 50+ years old
- Lack of seed production until end of long life cycle