

Family: *Poaceae*

Taxon: *Bambusa multiplex*

Synonym: *Arundo multiplex* Lour. (*basionym*)

Bambusa glaucescens (Willd.) Siebold ex Hol

Bambusa nana Roxb.

Common Name Chinese dwarf bamboo

Chinese-goddess bamboo

hedge bamboo

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation:	EVALUATE
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score	5
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	y
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)	
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)	y
401	Produces spines, thorns or burrs			y=1, n=0	n
402	Allelopathic			y=1, n=0	n
403	Parasitic			y=1, n=0	n
404	Unpalatable to grazing animals			y=1, n=-1	n
405	Toxic to animals			y=1, n=0	n
406	Host for recognized pests and pathogens			y=1, n=0	n
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	y

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	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	y
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	n
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	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: EVALUATE

WRA Score **5**

Supporting Data:

101	2001. Meredith, T.. Bamboo for gardens. Timber Press, Portland, OR	This species has long been cultivated in many areas, and a number of distinctive ornamental cultivars have developed over time.
101	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	An enormously variable species, <i>B. multiplex</i> has at least eight named cultivars, cultivated plants in Hawaii seem to match 'Riviereorum'...Other cultivars may also be grown here. [some cultivars rarely, if ever, produce seeds, but specific information on particular fertility of different cultivars is lacking]
201	1998. Riffle, R. L.. The Tropical Look - An Encyclopedia of Dramatic Landscape Plants. Timber Press, Portland, OR	native to southeastern China
201	2010. USDA, ARS, National Genetic Resources Program.. <i>Bambusa multiplex</i> - Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl	widely cultivated in tropics
202	2010. USDA, ARS, National Genetic Resources Program.. <i>Bambusa multiplex</i> - Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl	widely cultivated in tropics [Quality of climate match data High]
203	1998. Riffle, R. L.. The Tropical Look - An Encyclopedia of Dramatic Landscape Plants. Timber Press, Portland, OR	It is also one of the hardiest of the clumping bamboos and is successful in zones 9 through 11 as are its varieties and cultivars.
203	2001. Meredith, T.. Bamboo for gardens. Timber Press, Portland, OR	suited to a broad range of climate conditions, from the tropics to northern California and coastal climates even farther north.
203	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	<i>B. multiplex</i> grows on various soil types up to an altitude of 1800 m. It is more frost resistant than any other <i>Bambusa</i> species and survives temperatures down to -5°C on sandy loam soils.
204	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	Indochina, Southern China [native to these tropical and subtropical areas]
205	1998. Riffle, R. L.. The Tropical Look - An Encyclopedia of Dramatic Landscape Plants. Timber Press, Portland, OR	It is the most commonly planted bamboo in Florida, the Gulf States, and California, where it is called hedge bamboo.
301	1979. Smith, A.C.. Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 1.. Pacific Tropical Botanical Garden, Lawai, HI	It is common in Fiji as a cultivated plant and, in some places, as an escape, even though it is seldom collected.
301	2000. Edgar, E./Connor, H.. Flora of New Zealand, vol. V: Gramineae. Manaaki Whenua Press, Lincoln, New Zealand	Naturalised from south China...N.: Hamilton East (Waikato River bank). Roadside bank and nearby gully, in scrub dominated by naturalised spp.; probably originating from cast out garden refuse. [New Zealand]
301	2003. Wunderlin, R.P./Hansen, B.F.. Guide to the Vascular Plants of Florida. University Press of Florida, Gainesville, FL	Disturbed sites. Occasional...Escaped from cultivation [Florida]
301	2008. Foxcroft, L.C./Richardson, D.M./Wilson, J.R.U.. Ornamental Plants as Invasive Aliens: Problems and Solutions in Kruger National Park, South Africa. Environmental Management. 41: 32-51.	<i>Bambusa multiplex</i> listed as having evidence of naturalization [South Africa]
302	2007. Randall, R.P.. Global Compendium of Weeds - <i>Bambusa multiplex</i> . Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/bambusa_multiplex/	Listed as a weed, but no evidence of negative impacts on agriculture or environment found so far.
302	2010. California Invasive Plant Council. Don't Plant a Pest - Aquatic plants of the State of California region. http://www.cal-ipc.org/landscaping/dpp/plantpage.php?region=state&type=Aquatic%20plants	Useful as a hedge or screen. Rhizomes of clumping species stay close to the plant and will not invade surrounding soil. Height varies by cultivar, up to 35 feet. Do not plant running bamboos, which spread aggressively. [var. 'Alphonso-Karr' recommended in California landscapes]

303	2007. Randall, R.P.. Global Compendium of Weeds - Bambusa multiplex. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/bambusa_multiplex/	No evidence of negative impacts to agriculture or forestry
304	2007. Randall, R.P.. Global Compendium of Weeds - Bambusa multiplex. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/bambusa_multiplex/	No evidence of negative impacts as an environmental weed
305	2008. Global Invasive Species Database. Bambusa vulgaris. National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG), http://www.issg.org/database/species/ecology.asp?si=1399&fr=1&sts=&lang=EN	Bambusa vulgaris forms extensive monospecific stands where it occurs, excluding other plant species. B. vulgaris colonises along streams into forest...Control of Bambusa vulgaris infestation is difficult. "Best to cut down and spray the regrowth"
401	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	No spines, thorns, or burrs
402	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	No evidence of allelopathic properties, and widely used in the landscape
403	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Not parasitic
404	2000. Elevitch, C.R./Wilkinson, K.M.. Agroforestry guides for Pacific Islands. Permanent Agriculture Resources, Holoaloe, HI	Listed as a potential fodder crop for animals [no evidence that this bamboo is not palatable]
405	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	No evidence of toxicity to animals or people
406	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Mealybugs can be a problem; they can be dislodged with a strong spray of water, or an insecticidal soap can be applied. [mealybugs are a common pest, and no evidence that Bambusa is an important alternate host]
407	2001. Meredith, T.. Bamboo for gardens. Timber Press, Portland, OR	The shoots are not amenable to the table, being quite bitter [but no evidence of toxicity]
408	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	No evidence of increased fire risk
409	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	Tolerates shade
409	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Full sun or partial shade is ideal and plants require no special care.
409	2006. Crompton, D.. Ornamental bamboos. Timber Press, Portland, OR	Tolerates shade but is best grown in good sunlight; otherwise the habit becomes very lax
410	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	B. multiplex grows on various soil types up to an altitude of 1800 m.
411	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Shrubby bamboo 1-15 feet tall [not climbing or smothering]
412	2000. Edgar, E./Connor, H.. Flora of New Zealand, vol. V: Gramineae. Manaaki Whenua Press, Lincoln, New Zealand	Dense clump-forming; habit spreading. Culms very numerous, 3-5 m × 1-2 cm diam. (except in small cultivated forms) [dense habit, but no indication that forms impenetrable thickets]
412	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	becomes nearly impenetrable as a hedge [in cultivation]

501	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Terrestrial bamboo
502	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	Poaceae
503	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Poaceae [not a nitrogen fixing woody plant]
504	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Not a geophyte [although does have rhizomes]
601	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	No evidence of substantial reproductive failure in native habitat
602	1993. McClure, F.A.. The Bamboos. Smithsonian Institution Press, Washington and London	Plants of <i>Bambusa multiplex</i> , representing two different accessions to my bamboo garden in Canton, China, flowered and produced a heavy crop of viable seeds. Without making any further vegetative growth, the plants produced a lighter crop of flowers and fruits the second year, then died.
602	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	Caryopsis elliptic, furrowed, roughly hairy above, with a short beak [description of seed]...It has been reported to have flowered in Germany in 1808 and 1839; Bangladesh in 1851 and 1879; Sri Lanka in 1863; India (Calcutta) in 1890, Singapore in 1892 (Gamble, 1896 and Holttum, 1956). During 1977-1985, it flowered sporadically in Bangladesh. [sporadically flowers outside native range. Seed production is therefore rare, if it occurs at all]
602	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Propagation is by division of rhizomes from mature clumps or by stems [seeds rarely produced in cultivation]
602	2010. Plants for a Future Database. <i>Bambusa multiplex</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Bambusa+multiplex	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. They sometimes die after flowering, but if left alone they will usually recover though they will look very poorly for a few years...Seed - surface sow as soon as it is ripe in a greenhouse at about 20°C. Do not allow the compost to dry out. Germination usually takes place fairly quickly so long as the seed is of good quality, though it can take 3 - 6 months. Grow on in a lightly shaded place in the greenhouse until large enough to plant out. Seed is rarely available.
603	2010. WRA Specialist. Personal Communication.	Ability to hybridize unknown
604	2001. Koshy, K.C./Jee, G.. Studies on the absence of seed set in <i>Bambusa vulgaris</i> . Current Science. 81 (4): 375-378.	In spite of germination, the pollen tube did not find its way into the style, to effect fertilization. This appears to be the result of self-incompatibility. Self incompatibility can be confirmed only when pollen grains of a different clone are available for effective cross pollination [description is for <i>B. vulgaris</i> , a related species. Unknown for <i>B. multiplex</i>]
605	2010. Plants for a Future Database. <i>Bambusa multiplex</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Bambusa+multiplex	The flowers are hermaphrodite (have both male and female organs) and are pollinated by Wind.
606	2010. California Invasive Plant Council. Don't Plant a Pest - Ornamental grasses of the Central Valley region. http://www.cal-ipc.org/landscaping/dpp/plantpage.php	Rhizomes of clumping bamboo stay close to the plant, making it less invasive than the running species.
607	2010. Plants for a Future Database. <i>Bambusa multiplex</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Bambusa+multiplex	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.
701	2000. Edgar, E./Connor, H.. Flora of New Zealand, vol. V: Gramineae. Manaaki Whenua Press, Lincoln, New Zealand	Naturalised from south China...N.: Hamilton East (Waikato River bank). Roadside bank and nearby gully, in scrub dominated by naturalised spp.; probably originating from cast out garden refuse. [indicates unintentional dispersal of plant from vegetative material, rather than seeds]

702	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Planted ornamentally
702	2005. Zhou, B-Z/Fu, M-Y/Xie, J-Z/Yang, X-S/Li, Z-C. Ecological functions of bamboo forest: Research and Application. Journal of Forestry Research. 16 (2): 143-147.	For erosion control purpose, bamboo is generally planted in the specific places vulnerable to erosion. However, this is not the only way to do it. In southwestern Japan, the introduced <i>Bambusa multiplex</i> is widely planted in coastal areas facing the Pacific Ocean. Especially in Kagoshima prefecture, it has been utilized as the materials of culm weaving works, a kind of hillside fencing, called 'Karami' for erosion control for more than 100 years (Shibata 2001).
703	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	flowers infrequently, and when it does the flowers are peculiarly deformed, with carpel-like structures in place of stamens [seeds not formed in cultivation, so no evidence of contamination of produce]
704	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	Caryopsis elliptic, furrowed, roughly hairy above, with a short beak [hairs probably aid in wind-dispersal]
705	2010. WRA Specialist. Personal Communication.	No evidence of water dispersal
706	2010. WRA Specialist. Personal Communication.	Does not produce seeds in cultivation, and even if it did, fruits are not fleshy or adapted for bird dispersal
707	2010. WRA Specialist. Personal Communication.	No evidence of external dispersal by animals. Flowering, and seed production is rare, and no means of external attachment on seeds, when produced.
708	2010. WRA Specialist. Personal Communication.	Unknown if propagules survive gut passage [unlikely seeds would be consumed, and seed production extremely rare]
801	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	Inflorescence rare (if produced, usually deformed) [therefore, does not produce prolific seed numbers]
801	2010. Plants for a Future Database. <i>Bambusa multiplex</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Bambusa+multiplex	Seed is rarely available.
802	2010. WRA Specialist. Personal Communication.	Longevity of soil seed bank unknown
803	1961. Cruzado, H.J./Muzik, T.J./Kennard, W.C.. Control of Bamboo in Puerto Rico by Herbicides. Weeds. 9 (1): 20-26.	The combination of TCA and monuron at the rate of 0.8 and 0.4 pounds, respectively, per 50 culms, gave excellent kill in <i>Bambusa multiplex</i> and <i>Dendrocalamus strictus</i> .
804	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	- Ability to sucker; regenerate rapidly; coppice
804	2005. Staples, G. W./Herbst, D. R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI.	The plants are often pruned severely, promoting a dense, twiggy growth that becomes nearly impenetrable as a hedge.