

**Family:** *Poaceae*

**Taxon:** *Dendrocalamus brandisii*

**Synonym:** *Arundarbor brandisii* (Munro) Kuntze  
*Bambusa brandisii* Munro  
*Sinocalamus brandisii* (Munro) Keng f.

**Common Name:** velvetleaf bamboo  
 bo shi tian long zhu

Questionnaire :	current 20090513	Assessor:	HPWRA OrgData	Designation:	EVALUATE
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		?
301	Naturalized beyond native range		y = 1*multiplier (see Appendix 2), n= question 205		
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		n
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		
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	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	
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: EVALUATE

WRA Score 2

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**Supporting Data:**

101	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Is the species highly domesticated? No] "The origin of <i>Dendrocalamus brandisii</i> is not known. Its native area extends from northeastern India (Manipur), Myanmar, to northern Thailand, Indo-China, China (Yunnan Province) and the Andaman Islands (India). It is also frequently planted in botanical and experimental gardens in the tropics and subtropics."
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] " <i>Dendrocalamus brandisii</i> is a tall clump forming bamboo principally from forests in subtropical mountains of SW China and Indo China. It has valuable large-diameter culms, and is widely cultivated from Manipur in northeastern India through Myanmar, Thailand and Indo-China to Yunnan. "
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] [- Altitude range: 500 - 1800 m - Mean annual rainfall: > 1000 mm - Rainfall regime: summer; uniform - Dry season duration: 0 - 7 months - Mean annual temperature: 15 - 40°C - Mean maximum temperature of hottest month: 25 - 50°C - Mean minimum temperature of coldest month: 10 - 30°C - Absolute minimum temperature: > 0°C]- Altitude range: 500 - 1800 m - Mean annual rainfall: > 1000 mm - Rainfall regime: summer; uniform - Dry season duration: 0 - 7 months - Mean annual temperature: 15 - 40°C - Mean maximum temperature of hottest month: 25 - 50°C - Mean minimum temperature of coldest month: 10 - 30°C - Absolute minimum temperature: > 0°C] [Elevation range exceeds 1000 m]
204	1998. Rao, A.N./Rao, V.R./Williams, J.T. (eds.). Priority Species of Bamboo and Rattan. IPGRI-APO, Serdang, Malaysia	[Native or naturalized in regions with tropical or subtropical climates? Yes] "Mostly in South and N E India and Myanmar, introduced to S E Asia, cultivated, found in Yunnan"
205	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Does the species have a history of repeated introductions outside its natural range? Unknown] "The origin of <i>Dendrocalamus brandisii</i> is not known. Its native area extends from north-eastern India (Manipur), Myanmar, to northern Thailand, Indo-China, China (Yunnan Province) and the Andaman Islands (India). It is also frequently planted in botanical and experimental gardens in the tropics and subtropics."
301	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? Unknown] "nc - unconfirmed naturalization" [Listed as present In Philippines, but naturalization status unknown]
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 <i>Dendrocalamus</i> species are listed as naturalized

401	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. 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>	[Produces spines, thorns or burrs? No] "HABIT Perennial; caespitose. Rhizomes short; pachymorph. Culms erect; 1900–3300 cm long; 130–200 mm diam.; woody; with aerial roots from the nodes. Culm-internodes terete; thick walled; 30–38 cm long; grey. Lateral branches dendroid. Buds or branches present on lower quarter of culm. Culm-sheaths 40–60 cm long; 2 times as long as wide; coriaceous; pubescent; with white hairs; concave at apex; auriculate. Culm-sheath ligule 10–20 mm high; lacerate. Culm-sheath blade lanceolate; reflexed; 15–46 cm long; 80–130 mm wide; pubescent. Leaf-sheaths striately veined; pubescent. Leaf-sheath oral hairs scanty; deciduous. Ligule a ciliate membrane. Leaf blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, or oblong; 20–30 cm long; 25–50 mm wide. Leaf-blade venation with 10–12 secondary veins. Leaf blade surface pubescent; hairy abaxially. Leaf blade apex acuminate."
402	2013. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. 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>	[Parasitic? No] Poaceae
404	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Unpalatable to grazing animals? No] "The large leaves are good for animal fodder."
405	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Toxic to animals? No] "The large leaves are good for animal fodder." [No evidence]
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Toxic to animals?] No current references or evidence of toxicity to animals
406	2002. Mohanan, C.. Diseases of Bamboos in Asia: An Illustrated Manual. International Network for Bamboo and Rattan (INBAR), New Delhi	[Host for recognized pests and pathogens?] "Leaf rust of bamboo seedlings is widespread in nurseries in Kerala, India (Mohanan 1990, 1994a,b). The disease has been recorded in 4 to 8-month old bareroot as well as container seedlings of <i>Bambusa bambos</i> , <i>Dendrocalamus brandisii</i> ,..." ... "Leaf blight, affecting both young and mature leaves of 2 to 18-month-old seedlings, has been reported as widespread in bamboo nurseries in Kerala, India (Mohanan 1990, 1994a,b). The disease was recorded in bareroot and container seedlings of <i>Bambusa bambos</i> , <i>Dendrocalamus strictus</i> , <i>D. brandisii</i> ,..." ... "In <i>Dendrocalamus membranaceus</i> , <i>D. brandisii</i> , <i>D. strictus</i> , <i>Ochlandra wightii</i> and <i>Thyrsostachys siamensis</i> seedlings, <i>Bipolaris</i> leaf blight produces dark brown lesions with greyish brown centres." ... "Dactylaria leaf spot is widespread in bamboo nurseries in Kerala, India. The disease was recorded in 1 to 10- month-old bareroot and container seedlings of <i>Bambusa bambos</i> and <i>Dendrocalamus strictus</i> in most nurseries raised during 1987-92, and seedlings of <i>D. brandisii</i> ,..." [Importance of pathogens in natural populations unknown]
407	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Causes allergies or is otherwise toxic to humans? No] "Culms are generally split to provide a basic local constructional material. The brittle culms make it less suitable for woven products. Shoots are edible but of low quality. The large leaves are good for animal fodder. This species is very similar to <i>D. hookeri</i> of the eastern Himalayas." [Humand & animal uses with no evidence of toxicity]
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 of toxicity in genus
408	2007. Kigomo, B.N.. Guidelines for Growing Bamboo. KEFRI Guideline Series: No. 4. Kenya Forestry Research Institute, Nairobi, Kenya	[Creates a fire hazard in natural ecosystems? No] "Thrives in wet, evergreen tropical forest, up to 1300 m absl." [No evidence, and unlikely given wet habitat]
409	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Is a shade tolerant plant at some stage of its life cycle? Yes] "- Tolerates shade"
410	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Tolerates a wide range of soil conditions? Yes] "Soil descriptors - Soil texture: medium; heavy - Soil drainage: free - Soil reaction: acid; neutral; alkaline"
411	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Climbing or smothering growth habit? No] "Loosely tufted, sympodial bamboo."
412	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Forms dense thickets? No] "Loosely tufted, sympodial bamboo." [A sympodial - clumping (i.e. non running) bamboo]
412	1998. Seethalakshmi, K.K./Muktesh Kumar, M.S.. Bamboos of India: A Compendium. INBAR, Beijing, China	[Forms dense thickets? No] "This species is found growing in the tropical forests, chiefly on calcareous rocks up to an altitude of 1300 m." [No evidence]

501	1998. Seethalakshmi, K.K./Muktesh Kumar, M.S.. Bamboos of India: A Compendium. INBAR, Beijing, China	[Aquatic? No] "This species is found growing in the tropical forests, chiefly on calcareous rocks up to an altitude of 1300 m."
502	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. 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>	[Grass? Yes] Poaceae
503	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. 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>	[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	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Evidence of substantial reproductive failure in native habitat? No] "The origin of <i>Dendrocalamus brandisii</i> is not known. Its native area extends from northeastern India (Manipur), Myanmar, to northern Thailand, Indo-China, China (Yunnan Province) and the Andaman Islands (India). It is also frequently planted in botanical and experimental gardens in the tropics and subtropics." [Although native range unknown, no evidence of substantial reproductive failure]
602	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. 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>	[Produces viable seed? Yes] "FRUIT Caryopsis with adherent pericarp; ovoid; 2.5–4 mm long."
603	2013. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	1993. Nadgauda, R.S./John, C.K./Mascarenhas, A.F.. Floral biology and breeding behavior in the bamboo <i>Dendrocalamus strictus</i> Nees.. Tree physiology. 13(4): 401-408.	[Self-compatible or apomictic? Unknown] " <i>Dendrocalamus strictus</i> is wind pollinated. There are reports that some bamboos may be self compatible (Kondas et al. 1973, Venkatesh 1984). In <i>D. strictus</i> , protogyny effectively prevents self pollination." [Biology of related species prevents self-pollination]
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	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Reproduction by vegetative fragmentation? No] "Loosely tufted, sympodial bamboo." [A sympodial - clumping (i.e. non running) bamboo]
606	2007. Kigomo, B.N.. Guidelines for Growing Bamboo. KEFRI Guideline Series: No. 4. Kenya Forestry Research Institute, Nairobi, Kenya	[Reproduction by vegetative fragmentation? No] "Remember that for many species, the propagation success rate by culm cuttings can be difficult or very low! For example, it is very difficult to propagate species such as <i>Dendrocalamus giganteus</i> and <i>Dendrocalamus brandisii</i> by means of culm cuttings." [No evidence]
607	1998. Seethalakshmi, K.K./Muktesh Kumar, M.S.. Bamboos of India: A Compendium. INBAR, Beijing, China	[Minimum generative time (years)? 4+] "The species is known to flower sporadically as well as gregariously. It was collected in flower from Myanmar is 1862 by Brandis, in 1870 by Kurz and in 1890 and 1894 by Oliver. Gregarious flowering was reported from Coorg during 1961-62 and from Manipur in 1987-88."
701	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "Caryopsis ovoid, 2-5 mm long, hairy above, tipped with the persistent style, pericarp crustaceous." [No evidence & unlikely given the infrequent interval of flowering]
702	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Propagules dispersed intentionally by people? Yes] "It is also frequently planted in botanical and experimental gardens in the tropics and subtropics."
703	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Propagules likely to disperse as a produce contaminant? No] "Caryopsis ovoid, 2-5 mm long, hairy above, tipped with the persistent style, pericarp crustaceous." [No evidence & unlikely given the infrequent interval of flowering]
704	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Propagules adapted to wind dispersal? Yes] "Caryopsis ovoid, 2-5 mm long, hairy above, tipped with the persistent style, pericarp crustaceous." [When produced, seeds presumably wind or gravity dispersed]
705	2013. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown] Seeds, when produced may be moved by water
706	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Propagules bird dispersed? No] "Caryopsis ovoid, 2-5 mm long, hairy above, tipped with the persistent style, pericarp crustaceous." [Not fleshy-fruited]

707	1995. Dransfield, S./Widjaja, E.A. (eds.). Plant Resources of South-East Asia No. 7, Bamboos. Backhuys Publishers, Leiden, the Netherlands	[Propagules dispersed by other animals (externally)? No] "Caryopsis ovoid, 2-5 mm long, hairy above, tipped with the persistent style, pericarp crustaceous." [No evidence, and when produced, seeds lack an obvious means of external attachment]
708	2013. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown]
801	1998. Seethalakshmi, K.K./Muktesh Kumar, M.S.. Bamboos of India: A Compendium. INBAR, Beijing, China	[Prolific seed production (>1000/m <sup>2</sup> )? Unknown] "The species is known to flower sporadically as well as gregariously."
802	1990. Boonarutee, P./Somboon, K./Turnbull, J.W.. Effects of temperature & seed moisture content on the storage of <i>Dendrocalamus brandisii</i> seeds Tropical tree seed research. Proc. of Int. workshop. Forestry Training Centre, Gympie, Qld, 21-24 Aug 1989. 28:	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown] "D. brandisii seeds with m.c. of either 5.23 or 11.75% were stored at 23-40°C or 2-4°C for up to 18 months. Initial m.c. had little effect on storage life. However, at high temp. germination % dropped rapidly, with no viable seed after 9 (11.75% m.c.) or 15 months (5.23% m.c.), while low temp. maintained viability over the 18 month experimental period (initial germination 83-85%, after 18 months 75 82%)."
802	2008. Royal Botanic Gardens Kew. Seed Information Database (SID). Version 7.1. <a href="http://data.kew.org/sid/">http://data.kew.org/sid/</a>	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown] "Storage Behaviour: Orthodox?"
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? Possibly Yes] "Observations 24 months after treatment (Table 1) showed that the following bamboo species were eradicated by basal application of monuron at the rate of 1.6 pounds of chemical in 2 gallons of water per 50 culms: <i>B. tulda</i> , <i>B. textilis</i> , <i>G. apus</i> , <i>D. asper</i> , and <i>D. strictus</i> . <i>P. meyeri</i> was more sensitive and was killed at the 0.8-pound rate. <i>B. textilis</i> , <i>D. asper</i> , and <i>D. strictus</i> also were eradicated with dalapon at the 1.6-pound rate." [No information on herbicide efficacy or chemical control of this species, but related taxa are effectively controlled with herbicides]
804	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "- Ability to sucker; regenerate rapidly; coppice"
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**

- Broad elevational distribution within native range (500 - 1800 m)
- Possibly naturalized in the Philippines (unconfirmed)
- Shade tolerant
- Tolerates many different soil types
- Seeds dispersed by gravity, people and probably wind
- Possibly prolific seed production when maturity is reached
- Will resprout after repeated cutting or harvesting of shoots & culms (may be difficult to remove from unwanted areas)
- Missing ecological information makes accurate risk prediction difficult

### **Low Risk / Desirable Traits**

- No negative impacts have been documented
- Non-toxic
- Edible shoots
- Landscaping and ornamental value
- A sympodial, or clumping bamboo
- Long time to reproductive maturity
- Lack of seed production until possibly at the end of long life cycle