

Assessment date 12 February 2015

<i>Phyllostachys nigra</i> Henon 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)	y	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?	y	
3.01	Naturalized beyond native range	y	2
3.02	Garden/amenity/disturbance weed	n	0
3.03	Weed of agriculture	n	0
3.04	Environmental weed	y	4
3.05	Congeneric weed	y	2
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	y	1
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	n	-1
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens	y	1
4.07	Causes allergies or is otherwise toxic to humans	n	0
4.08	Creates a fire hazard in natural ecosystems		
4.09	Is a shade tolerant plant at some stage of its life cycle		
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	y	1
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	?	
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	n	0
6.02	Produces viable seed	y	1

6.03	Hybridizes naturally		
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)	60	-1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
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		
7.06	Propagules bird dispersed		
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)		
8.01	Prolific seed production	n	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	N	-1
8.03	Well controlled by herbicides		
8.04	Tolerates, or benefits from, mutilation or cultivation	y	1
8.05			
Total Score			7
Implemented Pacific Second Screening			no
Risk Assessment Results			High

section	# questions answered	satisfy minimum?
A		8 yes
B		7 yes
C		17 yes
total		32 yes

	Reference	Source data
1.01		
1.02		
1.03		
2.01	1. USDA-GRIN taxonomy for plants (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?28177 [Accessed 2/8/2013]) 2. Ohrnberger D & Goerrings J (1990) Bamboos of the World. International Book Distributers, Dehra Dun, Ind 3. Guoging L (1985) Improved cultivation techniques of bamboo in N. China in Recent Research on Bamboos (Proceedings of the International Bamboo Workshop. 4. Bamboo Garden (http://www.bamboogarden.com/Phyllostachys%20nigra%20%27Henon%27.htm [Accessed 2/8/2013]) 5. USDA-ARS (http://planthardiness.ars.usda.gov/PHZMWeb/ [Accessed 2/8/2013])	1. No Computer analysis performed. 2. Distributed in central and southwestern China 3. Origin in temperate Asia (Japan & China) and Subtropic/humid areas 4. Suited for USDA Zone 7a-10b (possibly 6b) overlapping zones 8a-10b in Florida
2.02		1. No computer analysis was performed. Native range is well known; refer to 2.01 source data.
2.03	1. Dave's Garden (http://davesgarden.com/guides/pf/go/81050/ [Accessed 2/11/2012]) 2. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf). 3. Zhao-hua L, Ben-yuan Z, Zhao-quan Z (2003) Species and distribution of mountain bamboos in Shennongjia, Central China. J Forestry Research 14:35 4. Refer to all references in question 2.01.-38. 5. Ohrnberger D & Goerrings J (1990) Bamboos of the World. International Book Distributers, Dehra Dun, India.	1. Suitable for USDA zones 7a-10b. 2. Distribution in the native and cultivated ranges is widespread and occurs in at least 3 climatic groups (cfa, cwa, dwa, dfb, dfa, etc.). 3. Occurs in mountains between 500-1840m.
2.04	1. Zhao-hua L, Ben-yuan Z, Zhao-quan Z (2003) Species and distribution of mountain bamboos in Shennongjia, Central China. J Forestry Research 14:351.	1. Annual precipitation in native range 27-67 inches
2.05	1. Ohrnberger D & Goerrings J (1990) Bamboos of the World. International Book Distributers, Dehra Dun, Ind 2. Australia's virtual herbarium (http://avh.ala.org.au/occurrence/75a440eed862-44c5-858c-e57ec8aa0c78 [Accessed 2/11/2013]) 3. Sykes WR (1996) Checklist of bamboos (Poaceae) naturalized in New Zealand. New Zealand J of Botany 34:153-156	1. Cultivated in Japan (Okinawa Island to southern Hokkaido), Korea (in southern part), Europe (originally in France), United States, India, and Philippines 2. Cultivated in Barbour Lathrop Plant Introduction Garden, Savannah Georgia. 3. Listed as naturalized in New Zealand.
3.01	1. Howell C and Sawyer JWD (2006) "New Zealand Naturalized Vascular Plant Checklist" 2. Usambara Invasive Plants (http://www.tropical-biology.org/research/dip/species/Phyllostachys%20nigra.htm [Accessed 2/13/2013]) 2. 1999 Wagner, WL, Herbst DR, Sohmer SH. Manual of the Flowering Plants of Hawaii (Revised edition). University of Hawaii Press and Bishop Museum Press	1. Listed as "Fully Naturalized" in New Zealand 2. "Introduced range: Invasive in Tanzania, Australia and Hawaii. Introduced in New Zealand, USA and parts of Europe, especially Mediterranean countries and the UK." 3. P. nigra plants in Hawaii are likely var. henonionis described as having green culms
3.02		No evidence.
3.03		No evidence.
3.04		1. See 3.01. Type of weed uncertain

3.05	1. Penuelas et al. 2010 2. Motooka et al. 2003 (Weeds of Hawaii's Pastures and Protected Areas). 2. 1999 Wagner, WL, Herbst DR, Sohmer SH. Manual of the Flowering Plants of Hawaii (Revised edition). University of Hawaii Press and Bishop Museum Press, Honolulu, HI. 4. IFAS-CAIPS Golden Bamboo (http://plants.ifas.ufl.edu/node/324 [Accessed 2/11/2013]) 4. Csurhes S and Edwards R (1998) "NATIONAL WEEDS PROGRAM POTENTIAL ENVIRONMENTAL WEEDS IN AUSTRALIA; CANDIDATE SPECIES FOR PREVENTATIVE CONTROL"	1. <i>P. nigra</i> in Hawaii (listed as high invasiveness), 2. <i>P. nigra</i> plants in Hawaii are likely var. <i>henonionis</i> described as having green culms 2. <i>P. aurea</i> is listed as a category II invasive on IFAS list 4. "A species of <i>Phyllostachys</i> has naturalised on Lord Howe Island where it is preventing regeneration of lowland palm forest (Pickard 1983). It persists in abandoned gardens and is naturalised in several areas of central coast New South Wales (Harden 1993)."
4.01		
4.02		1. No evidence on this species, however other species in this genus display traits of allelopathy.
4.03		
4.04	1. Zhao-hua L, Denich M, Borsch T (2005) Growth behavior of <i>Phyllostachys nigra</i> var. <i>henonis</i> (Bambusoideae) in central China. <i>J Forestry Research</i> 16:163-168 2. 2. Motooka et al. 2003 (Weeds of Hawaii's Pastures and Protected Areas).	1. Rodent predation responsible for 14% total shoot mortality Shennongjia National Nature Reserve of Central China 2. Related <i>P. nigra</i> "Does not invade grazed land, because cattle will graze the invading bamboo shoots, but animals cannot clear established stands."
4.05	1. Mid Atlantic Bamboo (http://www.midatlanticbamboo.com/bamboo-frames/bamboo-0018.htm [Accessed 2/13/2013])	1. Edible 2. See above
4.06	1. Invasive Species Compendium http://www.cabi.org/isc/?compid=5&dsid=19035&loadmodule=datasheet&page=481&site=144 [Accessed 11/5/2012])	1. Cogener <i>P. edulis</i> is host to <i>Dinoderus minutus</i> (bamboo borer). It also damages sugarcane, cassava, and rice. Listed as invasive in Florida.
4.07		
4.08	1. Smith MC (2011) Predicting plant naturalizations in the Pacific Northwest: the fate of bamboos in the understory of coniferous forests. Washington State University	1. Bamboos in Asia, Africa, Australia, and N. S. America can alter fire frequency. Dead culms provide fuel and green culms can provide ladder to canopy. However, no direct evidence for <i>P. nigra</i> Henon
4.09	1. CAES publications "Growing Bamboo in Georgia" University of Georgia (http://www.caes.uga.edu/publications/pubDetail.cfm?pk_id=7830 [Accessed 2/11/2013])	1. Full sun/partial shade
4.10	1. USDA, National Resources Conservation Services (NRCS), Soil Survey Division, World Soil Resources (http://soils.usda.gov/use/worldsoils/mapindex/order.html).	1. significant portion of native range falls in the soil order Ultisol characterized by acid soil with most nutrients in the upper few inches and low capacity to retain fertilizer or lime. 2. Where present in North America also Ultisols.
4.11		
4.12	1. Tropical Biology Association (http://keys.lucidcentral.org/keys/v3/eafrinet/weeds/key/weeds/Media/Html/Phyllostachys_nigra_%28Black_Bamboo%29.htm [Accessed 2/13/2013])	1. <i>P. nigra</i> forms dense stands, excluding other vegetation, but no direct evidence for Henon
5.01	1. USDA-GRIN taxonomy for plants (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?28177 [Accessed 2/8/2013]) 2. TROPICOS (http://www.tropicos.org/NameSearch.aspx?name=Phyllostachys+nigr+var+henonis [Accessed 2/8/2013])	1. Terrestrial; Family Poaceae
5.02	1. USDA-GRIN taxonomy for plants (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?28177 [Accessed 2/8/2013]) 2. TROPICOS (http://www.tropicos.org/NameSearch.aspx?name=Phyllostachys+nigr+var+henonis [Accessed 2/8/2013])	1. Family Poaceae

5.03	1. USDA-GRIN taxonomy for plants (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?28177 [Accessed 2/8/2013]) 2. TROPICOS (http://www.tropicos.org/NameSearch.aspx?name=Phyllostachys+nigr+var+henonis [Accessed 2/8/2013])	1. Family Poaceae (not woody)
5.04	1. USDA-GRIN taxonomy for plants (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?28177 [Accessed 2/8/2013]) 2. TROPICOS (http://www.tropicos.org/NameSearch.aspx?name=Phyllostachys+nigr+var+henonis [Accessed 2/8/2013])	1. Family Poaceae
6.01		No evidence
6.02		
6.03	1. Janzen 1976 Why bamboos wait so long to flower. Annual Review Ecological Systems 7:347-391	1. Only flowers every 60 years, unlikely to hybridize
6.04	1. Janzen 1976 Why bamboos wait so long to flower. Annual Review Ecological Systems 7:347-391	
6.05	1. PFAF (http://www.pfaf.org/user/Plant.aspx?LatinName=Phyllostachys+nigra+henonis [Accessed 2/11/2013]) 2. 1. Janzen 1976 Why bamboos wait so long to flower. Annual Review Ecological Systems 7:347-391	1. Wind pollinated
6.06	1. 1. Ohrnberger D & Goerrings J (1990) Bamboos of the World. International Book Distributers, Dehra Dun, Ind 2. PFAF (http://www.pfaf.org/user/Plant.aspx?LatinName=Phyllostachys+nigra+henonis [Accessed 2/11/2013])	1. Spread by growth from rhizomes
6.07	1. Janzen 1976 Why bamboos wait so long to flower. Annual Review Ecological Systems 7:347-391	1. Synchronized, mast seeding plant
7.01	1. Bay of Plenty Regional Council (New Zealand) (http://www.boprc.govt.nz/environment/pests/pest-plants-and-weeds/weed-index/grasses/bamboo/ [Accessed 2/13/2013])	1. Spread as garden rubbish.
7.02	1. Scurlock et al. 2000 Bamboo: an overlooked biomass resource? Biomass and Bioenergy 19:229-244 3. Liese and Hamburg 1987 Research on bamboo. Wood Science and Technology 21:189-209	1. Cultivated for erosion control, windbreaks, building material, food, bamboo fiber clothes, etc. 2. Also, has been proposed as a source for pulp for paper and possible biofuel source.
7.03		No evidence
7.04	1. 1999 Wagner, WL, Herbst DR, Sohmer SH. Manual of the Flowering Plants of Hawaii (Revised edition). University of Hawaii Press and Bishop Museum Press, Honolulu, HI. 2. Bamboo, Books, Wildlife, and Other Trees (http://uros-bamboo.blogspot.com/2011/08/bamboo-diary-sowing-phyllostachys.html [Accessed 2/7/2013]) 3. 1. Ohrnberger D & Goerrings J (1990) Bamboos of the World. International Book Distributers, Dehra Dun, Ind	1. Caryopsis, no adaptations for wind dispersal, heavy
7.05		
7.06	1. 1999 Wagner, WL, Herbst DR, Sohmer SH. Manual of the Flowering Plants of Hawaii (Revised edition). University of Hawaii Press and Bishop Museum Press, Honolulu, HI. 2. Bamboo, Books, Wildlife, and Other Trees (http://uros-bamboo.blogspot.com/2011/08/bamboo-diary-sowing-phyllostachys.html [Accessed 2/7/2013]) 3. 1. Ohrnberger D & Goerrings J (1990) Bamboos of the World. International Book Distributers, Dehra Dun, Ind	1. Caryopsis, no information on bird dispersal, but seeds are consumed in large quantities by birds during masting events.

7.07	1. 1999 Wagner, WL, Herbst DR, Sohmer SH. Manual of the Flowering Plants of Hawaii (Revised edition). University of Hawaii Press and Bishop Museum Press, Honolulu, HI. 2. Bamboo, Books, Wildlife, and Other Trees (http://uros-bamboo.blogspot.com/2011/08/bamboo-diary-sowing-phylostachys.html [Accessed 2/7/2013]) 3. 1. Ohrnberger D & Goerrings J (1990) Bamboos of the World. International Book Distributers, Dehra Dun, Ind	1. Caryopsis, no adaptations for attachment
7.08		No evidence.
8.01		
8.02	1. Janzen 1976 Why bamboos wait so long to flower. Annual Review Ecological Systems 7:347-391	1. Some evidence that bamboo seeds can be dormant for several months if kept dry, there is no evidence of dormancy for wetted bamboo seeds.
8.03	1. Czarnota and Derr 2007 Controlling bamboo (<i>Phyllostachys</i> spp.) with herbicides. Weed Technology 21:80-83 2. Motooka et al. 2003 (Weeds of Hawaii's Pastures and Protected Areas).	1. Repeat applications (Glyphosate and imazapyr) and mechanical removal effective for cogener <i>P. aurea</i> 2. Foliar application difficult on tall plants. Basal application of imazapyr promising. Most effective treatment requires mechanical removal followed by herbicide application to control resprouts.
8.04	1. Bamboo Farming USA (http://www.bamboofarmingusa.com/Phyllostachys-Nigra-%27Heron%27-4th-to-Shoot.html [Accessed 2/13/2013])	1. "Before thinning there were leaners and many yellowish leaves. After thinning, the groves looked green and fresh and the canes were upright" Additionally, this is a species cultivated for human uses (see 7.02) and resprouts after harvest.
8.05		