

Australia/New Zealand Weed Risk Assessment adapted for Florida.

Data used for analysis published in: Gordon, D.R., D.A. Onderdonk, A.M. Fox, R.K. Stocker, and C. Gantz. 2008. Predicting Invasive Plants in Florida using the Australian Weed Risk Assessment. *Invasive Plant Science and Management* 1: 178-195.

<i>Buddleja officinalis</i> (butterfly bush)			
Question number	Question	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)	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)		
2.04	Native or naturalized in habitats with periodic inundation	n	0
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	n	-2
3.02	Garden/amenity/disturbance weed	n	0
3.03	Weed of agriculture	n	0
3.04	Environmental weed	n	0
3.05	Congeneric weed	y	0
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	n	0
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals		
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	n	0
4.09	Is a shade tolerant plant at some stage of its life cycle	n	0
4.1	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils)	y	1
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	n	0
5.01	Aquatic	n	0
5.02	Grass	n	0
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte		
6.01	Evidence of substantial reproductive failure in native habitat		
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 fragmentation		
6.07	Minimum generative time (years)	2	0
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	y?	1
7.05	Propagules water dispersed	n	-1
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	n	-1
8.01	Prolific seed production		
8.02	Evidence that a persistent propagule bank is formed (>1 yr)		
8.03	Well controlled by herbicides		
8.04	Tolerates, or benefits from, mutilation or cultivation	y	1
8.05	Effective natural enemies present in Florida, or east of the continental divide		
Total Score			1

Outcome	Accept*
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*Used secondary screen from: Daehler, C. C., J.L. Denslow, S. Ansari, and H. Kuo. 2004. A risk assessment system for screening out harmful invasive pest plants from Hawaii's and other Pacific islands. *Conserv. Biol.* 18: 360-368.

section	# questions answered	satisfy minimum?
A	7	yes
B	11	yes
C	14	yes
total	32	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01		used horticulturally, but no evidence of selection for reduced weediness
1.02		
1.03		
2.01		
2.02		
2.03		
2.04	Huxley (1992) <i>The New Royal Horticultural Society Dictionary of Gardening</i> . The MacMillan Press, London.	"A large genus...from a diversity of natural habitats characterized, even when essentially moist, by

		good drainage". <i>B. officinalis</i> "found in dry, rocky areas".
2.05	1. Watkins, Sheehan, and Black (2005) Florida Landscape Plants: Native and Exotic. University Press of Florida. 2. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	used horticulturally (1, 2)
3.01		no evidence
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	<i>B. davidii</i> considered an environmental weed in Europe, Australia, and New Zealand.
4.01	Leeuwenberg (1979) The Loganiaceae of Africa XVIII. <i>Buddleja</i> L. II. Revision of the African and Asiatic species. H. Veenman & Zonen B.V., Wageningen, the Netherlands.	no description of these traits
4.02		no evidence
4.03	Leeuwenberg (1979) The Loganiaceae of Africa XVIII. <i>Buddleja</i> L. II. Revision of the African and Asiatic species. H. Veenman & Zonen B.V., Wageningen, the Netherlands.	no description of this
4.04		
4.05		no evidence
4.06	1. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. 2. Watkins, Sheehan, and Black (2005) Florida Landscape Plants: Native and Exotic. University Press of Florida.	1. <i>Buddleja</i> susceptible to the figwort weevil, capsid bugs, caterpillars of the vapourer moth, red spider mites, the chrysanthemum eelworm, and cucumber mosaic virus. 2. "susceptible to nematode attack"
4.07	Flora of China, vol. 15 (http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200017828).	<i>B. officinalis</i> is a source of food.
4.08		no evidence
4.09	1. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. 2. Watkins, Sheehan, and Black (2005) Florida Landscape Plants: Native and Exotic. University Press of Florida. 3. Leeuwenberg (1979) The Loganiaceae of Africa XVIII. <i>Buddleja</i> L. II. Revision of the African and Asiatic species. H. Veenman & Zonen B.V., Wageningen, the Netherlands.	1. "Grow all species [of <i>Buddleja</i>] in full sun" 2. "full sun for compact habit and best flowering" 3. "Ecology: Forest edges, on riverbanks in the mountains."
4.1	1. Watkins, Sheehan, and Black (2005) Florida Landscape Plants: Native and Exotic. University Press of Florida. 2. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	1. "tolerant of light, sandy soils" 2. <i>B. officinalis</i> found in dry, rocky areas
4.11	1. USDA, NRCS. 2005. The PLANTS Database, Version	1. growth habit: shrub 2. shrub

	3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA. 2. Leeuwenberg (1979) The Loganiaceae of Africa XVIII. <i>Buddleja</i> L. II. Revision of the African and Asiatic species. H. Veenman & Zonen B.V., Wageningen, the Netherlands.	1-2 m high
4.12		no evidence
5.01		terrestrial
5.02	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	Buddlejaceae
5.03	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	Buddlejaceae
5.04		
6.01		
6.02	Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	"Seed will germinate readily"
6.03	Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	"most species [of <i>Buddleja</i>] will hybridize" [but unclear whether this is in nature or not]
6.04		
6.05	Haynes, McLaughlin, Vasquez, and Hunsberger (2001) Low-maintenance landscape plants for south Florida. ENH854, University of Florida, IFAS Extension (http://edis.ifas.ufl.edu/pdf/EP/EP10700.pdf).	"highly attractive to butterflies"
6.06		
6.07	Watkins, Sheehan, and Black (2005) Florida Landscape Plants: Native and Exotic. University Press of Florida.	"Butterfly bush grows rapidly"
7.01		
7.02	1. Watkins, Sheehan, and Black (2005) Florida Landscape Plants: Native and Exotic. University Press of Florida. 2. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	used horticulturally (1, 2)
7.03		no evidence
7.04	Leeuwenberg (1979) The Loganiaceae of Africa XVIII. <i>Buddleja</i> L. II. Revision of the African and Asiatic species. H. Veenman & Zonen B.V., Wageningen, the Netherlands.	seeds winged all around
7.05		no evidence
7.06		wind dispersed
7.07	Watkins, Sheehan, and Black (2005) Florida Landscape Plants: Native and Exotic. University Press of Florida.	fruits are inconspicuous capsules [no evidence of any means of attachment]
7.08		wind dispersed
8.01		
8.02		
8.03		

8.04	Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	"All species [of <i>Buddleja</i>] are amenable to rejuvenative pruning, all will re-sprout from old wood if cut hard back".
8.05		