

**Family:** *Proteaceae*

**Taxon:** *Banksia integrifolia*

**Synonym:** *Banksia compar* R. Br.

**Common Name:** coast banksia  
white-honeysuckle

<b>Questionnaire :</b>	current 20090513	<b>Assessor:</b>	Patti Clifford	<b>Designation:</b> H(HPWRA)
<b>Status:</b>	Assessor Approved	<b>Data Entry Person:</b>	Patti Clifford	<b>WRA Score</b> 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)	Intermediate
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	n
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	
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	n
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	y
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	y
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	
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	y
604	Self-compatible or apomictic	y=1, n=-1	y
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	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	
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: H(HPWRA)

WRA Score 5

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**Supporting Data:**

101	2010. WRA Specialist. Personal Communication.	No evidence.
201	2010. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	Native distribution: Australia - New South Wales, Queensland, Victoria
202	2010. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	Native distribution: Australia - New South Wales, Queensland, Victoria
203	2010. Dave's Garden. Coastal Banksia - Banksia integrifolia. Dave's Garden, <a href="http://davesgarden.com/guides/pf/go/56990/">http://davesgarden.com/guides/pf/go/56990/</a>	USDA zone: 9a.
203	2010. Florabank. Banksia integrifolia. Florabank, <a href="http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm">http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm</a>	Mean annual rainfall: 850-1200 mm Rainfall distribution pattern: summer, uniform or winter Mean annual temperature: 6-27 °C Mean max. temperature of the hottest month: 27-32 °C Mean min. temperature of the coldest month: 3-13 °C Frosts (approx. no. per year): frost free or more or less frost free or up to 20 Frost intensity: light to moderate (0 to -5°C) Altitude: 0-200 metres
204	2000. Cameron, E.K.. The naturalization of Banksia integrifolia in New Zealand; time for action!. New Zealand Botanical Society Newsletter. 59: 15-18. <a href="http://www.nzbotanicalsociety.org.nz/newsletter/NZBotSoc-2000-59.pdf">http://www.nzbotanicalsociety.org.nz/newsletter/NZBotSoc-2000-59.pdf</a>	Naturalized on the north and south islands of New Zealand.
205	2010. WRA Specialist. Personal Communication.	No evidence of a history of repeated introductions.
301	2000. Cameron, E.K.. The naturalization of Banksia integrifolia in New Zealand; time for action!. New Zealand Botanical Society Newsletter. 59: 15-18. <a href="http://www.nzbotanicalsociety.org.nz/newsletter/NZBotSoc-2000-59.pdf">http://www.nzbotanicalsociety.org.nz/newsletter/NZBotSoc-2000-59.pdf</a>	Naturalized on the north and south islands of New Zealand.
302	2007. Randall, R.. Global Compendium of Weeds. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>	No evidence of being a garden/disturbance/amenity weed.
303	2007. Randall, R.. Global Compendium of Weeds. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>	No evidence of being an agricultural weed.
304	2007. Randall, R.. Global Compendium of Weeds. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>	No evidence of being an environmental weed.
305	2007. Randall, R.. Global Compendium of Weeds. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>	Numerous Banksias spp. Are listed in the Global Compendium of Weeds as weed or naturalized species. There is no evidence of control of or impact s from these species.
401	2010. ABRs. Banksia integrifolia L.f.. <a href="http://www.anbg.gov.au/abrs/online-resources/flora/redirect.jsp">http://www.anbg.gov.au/abrs/online-resources/flora/redirect.jsp</a>	"Tree to 25 m tall, fire tolerant. Bark roughly tessellated. Stems pubescent and pilose, glabrescent, pale brown. Leaves in whorls of 3–5; petiole 4–10 mm long; lamina narrowly obovate to narrowly elliptic, 4–20 cm long, 10–26 mm wide, obtuse or emarginate; margins not or slightly recurved, entire; upper surface dull green, pubescent, glabrescent; lower surface closely white-woolly. Inflorescence 5–12 cm long; involucre bracts 2–10 mm long, tomentose. Flowers pale yellow, including styles. Perianth 22–25 mm long including limb of 3.5–4.5 mm, closely pubescent outside, glabrous inside. Pistil straight or slightly curved, 27–32 mm long, glabrous; pollen presenter 0.5–1 mm long, scarcely thickened. Old flowers soon falling. Follicles up to c. 60, narrowly elliptic, 7–15 mm long, 3–10 mm high, 3–6 mm wide; valves semi-elliptic, smooth, tomentose, glabrescent. Seed obovate, 10–20 mm long; seed body ±cuneate, 6–10 mm long, ±smooth."
402	2010. WRA Specialist. Personal Communication.	Unknown.

403	2010. ABRs. <i>Banksia integrifolia</i> L.f.. <a href="http://www.anbg.gov.au/abrs/online-resources/flora/redirect.jsp">http://www.anbg.gov.au/abrs/online-resources/flora/redirect.jsp</a>	Not parasitic.
404	2010. WRA Specialist. Personal Communication.	Unknown.
405	2010. National Center for Biotechnology Information. PubMed. U.S. National Library of Medicine, Bethesda, Maryland <a href="http://www.ncbi.nlm.nih.gov/sites/entrez">http://www.ncbi.nlm.nih.gov/sites/entrez</a>	No evidence of toxicity found in PubMed.
405	2010. Specialized Information Services, U.S. National Library of Medicine. TOXNET Toxicology Data Network [Online Database]. National Institutes of Health, <a href="http://toxnet.nlm.nih.gov/">http://toxnet.nlm.nih.gov/</a>	No evidence of toxicity found in ToxNet.
406	2010. WRA Specialist. Personal Communication.	Unknown.
407	2010. National Center for Biotechnology Information. PubMed. U.S. National Library of Medicine, Bethesda, Maryland <a href="http://www.ncbi.nlm.nih.gov/sites/entrez">http://www.ncbi.nlm.nih.gov/sites/entrez</a>	No evidence.
407	2010. Specialized Information Services, U.S. National Library of Medicine. TOXNET Toxicology Data Network [Online Database]. National Institutes of Health, <a href="http://toxnet.nlm.nih.gov/">http://toxnet.nlm.nih.gov/</a>	No evidence.
408	2010. WRA Specialist. Personal Communication.	Unknown
409	2010. Plants for a Future Database. <i>Banksia integrifolia</i> . Plants for a Future Database, <a href="http://www.pfaf.org/database/plants.php?Banksia+integrifolia">http://www.pfaf.org/database/plants.php?Banksia+integrifolia</a>	Can not tolerate shade.
410	2010. Dave's Garden. Coastal <i>Banksia</i> - <i>Banksia integrifolia</i> . Dave's Garden, <a href="http://davesgarden.com/guides/pf/go/56990/">http://davesgarden.com/guides/pf/go/56990/</a>	Soil pH requirements: 6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral) 7.6 to 7.8 (mildly alkaline)
410	2010. Plants for a Future Database. <i>Banksia integrifolia</i> . Plants for a Future Database, <a href="http://www.pfaf.org/database/plants.php?Banksia+integrifolia">http://www.pfaf.org/database/plants.php?Banksia+integrifolia</a>	"The plant prefers light (sandy) and medium (loamy) soils, requires well-drained soil and can grow in nutritionally poor soil. The plant prefers acid and neutral soils and can grow in very acid soil." Requires lime-free soil.
411	2010. ABRs. <i>Banksia integrifolia</i> L.f.. <a href="http://www.anbg.gov.au/abrs/online-resources/flora/redirect.jsp">http://www.anbg.gov.au/abrs/online-resources/flora/redirect.jsp</a>	Tree.
412	2010. Auckland Regional Council. Pest plant coast <i>Banksia</i> . Auckland Regional Council, <a href="http://www.arc.govt.nz/albany/index.cfm?63E0F20E-14C2-3D2D-B905-50098EBBE4B9&amp;plantcode=Banint">http://www.arc.govt.nz/albany/index.cfm?63E0F20E-14C2-3D2D-B905-50098EBBE4B9&amp;plantcode=Banint</a>	"Threat to well-drained sites especially sand dunes. Forms dense thickets."
501	2010. ABRs. <i>Banksia integrifolia</i> L.f.. <a href="http://www.anbg.gov.au/abrs/online-resources/flora/redirect.jsp">http://www.anbg.gov.au/abrs/online-resources/flora/redirect.jsp</a>	Terrestrial.
502	2010. ABRs. <i>Banksia integrifolia</i> L.f.. <a href="http://www.anbg.gov.au/abrs/online-resources/flora/redirect.jsp">http://www.anbg.gov.au/abrs/online-resources/flora/redirect.jsp</a>	Proteaceae.
503	1989. Logan, V.S./Clarke, P.J./Allaway, W.G.. Mycorrhizas and root attributes of plants of coastal sand-dunes of New South Wales. Australian Journal of Plant Physiology. 16: 141-146.	This study on sand-dune species of New South Wales indicated that <i>Banksia integrifolia</i> 's roots had Vesicular arbuscular mycorrhiza as well as internal and external hyphae in nonproteoid roots. "Apparently this species can simultaneously employ two root specialisations -- one symbiotic, and the other the proteoid roots more characteristic of the Proteacea."
503	2010. Florabank. <i>Banksia integrifolia</i> . Florabank, <a href="http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm">http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm</a>	Fixes nitrogen via root symbiont.

504	2010. ABRIS. <i>Banksia integrifolia</i> L.f. <a href="http://www.anbg.gov.au/abris/online-resources/flora/redirect.jsp">http://www.anbg.gov.au/abris/online-resources/flora/redirect.jsp</a>	Tree.
601	2010. WRA Specialist. Personal Communication.	No evidence.
602	2010. Plants for a Future Database. <i>Banksia integrifolia</i> . Plants for a Future Database, <a href="http://www.pfaf.org/database/plants.php?Banksia+integrifolia">http://www.pfaf.org/database/plants.php?Banksia+integrifolia</a>	Propagate by seed.
603	2007. Molyneux, W.M./Forrester, S.G.. <i>Banksia croajingolensis</i> (Protaceae) a new species from East Gippsland, Victoria. <i>Telopea</i> . 11: 419-426.	"It would appear from both physical observations and morphometric measurements that <i>B. integrifolia</i> , <i>B. marginata</i> and <i>B. paludosa</i> have influenced the development of <i>B. croajingolensis</i> and that this species may have resulted from various crossings and back crossings between them. In seedling trials conducted from 2006 to 2007, there was no apparent segregation in the offspring of <i>B. croajingolensis</i> . It is genetically segregated from the other three species because it is self perpetuating and clonal, and forms a substantial population. This cannot be said of the other three species as it can be demonstrated that there is clear hybridization between all of them, which has resulted in long standing confusion regarding the identity of certain specimens. Over approximately eight years of field study on the banksias of south-eastern NSW and far eastern Victoria from Green Cape in NSW to Shipwreck Creek and Sandpatch heathlands in Victoria, the authors have noted a number of these apparent hybrid swarms. In 1972 one of us (WMM) collected seed of a 'robust' <i>B. paludosa</i> among typical specimens on the middle south-west slopes of Green Cape. The few progeny which resulted from their germination appeared to share characters of <i>B. paludosa</i> and <i>B. integrifolia</i> , which are closely related. In 2004 the authors discovered a small population of a large spreading banksia up to ± 2 m tall on the lower south-west slopes of Green Cape. This small stand grew sympatrically with both dwarfed <i>B. paludosa</i> and small tree forms of <i>B. integrifolia</i> . Investigations of major characters such as branchlet indumentum, leaf undersurface indumentum, flower colour, the degree of spent flower retention and of long or short term seed retention, indicated that these stands should be regarded as hybrids between the two species."
604	1991. Cunningham, S.A.. Experimental evidence for pollination of <i>Banksia</i> spp. by non-flying mammals. <i>Oecologia</i> . 87: 86-90.	"Coast banksia appears to be self fertile because a single cultivated specimen in the remote abandoned lighthouse garden on Burgess Island, Mokohinau Islands, January 1984 produced seedlings which were collected in 1992 and 1993 (AK226968,218538)."
605	1991. Cunningham, S.A.. Experimental evidence for pollination of <i>Banksia</i> spp. by non-flying mammals. <i>Oecologia</i> . 87: 86-90.	This study on pollinators of <i>Banksia integrifolia</i> showed that non-flying mammals including Possums ( <i>Cercartetus nanus</i> ) were frequent nocturnal visitors. Birds, especially honeyeaters ( <i>Meliphagidae</i> ) were frequent diurnal visitors.
606	2010. Plants for a Future Database. <i>Banksia integrifolia</i> . Plants for a Future Database, <a href="http://www.pfaf.org/database/plants.php?Banksia+integrifolia">http://www.pfaf.org/database/plants.php?Banksia+integrifolia</a>	Propagate by seed.
607	1991. Cunningham, S.A.. Experimental evidence for pollination of <i>Banksia</i> spp. by non-flying mammals. <i>Oecologia</i> . 87: 86-90.	Plants grow rapidly and are capable of reproducing in 3-5 years.
701	2010. WRA Specialist. Personal Communication.	Not likely to be dispersed unintentionally.
702	2010. Florabank. <i>Banksia integrifolia</i> . Florabank, <a href="http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm">http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm</a>	"Potential farm use: good ornamental attributes. Specialty products: flowers produce nectar for honey production, pollen has value for apiculture or foliage, fruits have potential for floriculture. Urban use: good as an ornamental or amenity plant, ideal maintenance free street tree. Wildlife value: flowers are especially attractive to birds Wood products: boat building, craftwood (for turnery etc.), high quality fuelwood, light construction, panelling, speciality timber for quality furniture."
703	2010. WRA Specialist. Personal Communication.	No evidence of produce contamination.
704	1991. Cunningham, S.A.. Experimental evidence for pollination of <i>Banksia</i> spp. by non-flying mammals. <i>Oecologia</i> . 87: 86-90.	Seed is winged and wind-dispersed.

705	2010. WRA Specialist. Personal Communication.	Unknown.
706	1991. Cunningham, S.A.. Experimental evidence for pollination of <i>Banksia</i> spp. by non-flying mammals. <i>Oecologia</i> . 87: 86-90.	Wind dispersed seed.
707	1991. Cunningham, S.A.. Experimental evidence for pollination of <i>Banksia</i> spp. by non-flying mammals. <i>Oecologia</i> . 87: 86-90.	Wind dispersed. [no means of external attachment]
708	2010. WRA Specialist. Personal Communication.	Unknown.
801	2010. Florabank. <i>Banksia integrifolia</i> . Florabank, <a href="http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm">http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm</a>	"The fruits usually produce two seeds per follicle which are often released spontaneously, usually within a year after maturation. There are about 40 viable seeds per gram."
802	2010. Florabank. <i>Banksia integrifolia</i> . Florabank, <a href="http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm">http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm</a>	"There are about 40 viable seeds per gram; seeds start to germinate in about 7 days if grown at 25°C and no pretreatment is required."
803	2010. Auckland Regional Council. Pest plant coast <i>Banksia</i> . Auckland Regional Council, <a href="http://www.arc.govt.nz/albany/index.cfm?63E0F20E-14C2-3D2D-B905-50098EBBE4B9&amp;plantcode=Banint">http://www.arc.govt.nz/albany/index.cfm?63E0F20E-14C2-3D2D-B905-50098EBBE4B9&amp;plantcode=Banint</a>	Stump paint with Vigilant gel (picloram). Seedlings are difficult to pull out. [source does not mention the effectiveness of herbicide]
804	2010. ABRIS. <i>Banksia integrifolia</i> L.f.. <a href="http://www.anbg.gov.au/abris/online-resources/flora/redirect.jsp">http://www.anbg.gov.au/abris/online-resources/flora/redirect.jsp</a>	Fire tolerant.
804	2010. Florabank. <i>Banksia integrifolia</i> . Florabank, <a href="http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm">http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Banksia_integrifolia.htm</a>	Vigorous coppicing ability, responds to pruning.
805	2010. WRA Specialist. Personal Communication.	Unknown.