Keywords: Low Risk, Agroforestry, Tropical Tree, Shade-tolerant, Bird Dispersed, Edible Nut, Medicinal

Family: ***Burseraceae***

Taxon: ***Canarium indicum***

Synonym: *Canarium amboinense Hochr.*
Canarium commune L.
Canarium mehenbethene Gaertn.
Canarium moluccanum Blume

Common Name: canarium-nut
galip
galipnut
Java-olive

Questionaire : current 20090513 **Assessor:** Patti Clifford **Designation:** L
Status: Assessor Approved **Data Entry Person:** Patti Clifford **WRA Score -1**

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**	**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**	**n**
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**	
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**	**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**	
412	**Forms dense thickets**	**y=1, n=0**	
501	**Aquatic**	**y=5, n=0**	**n**
502	**Grass**	**y=1, n=0**	**n**
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**	**n**
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**	**n**
705	**Propagules water dispersed**	**y=1, n=-1**	
706	**Propagules bird dispersed**	**y=1, n=-1**	**y**
707	**Propagules dispersed by other animals (externally)**	**y=1, n=-1**	**n**
708	**Propagules survive passage through the gut**	**y=1, n=-1**	**y**
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**	**n**
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: L **WRA Score** **-1**

Supporting Data:

101	2007. Nevenimo, T./Moxon, J./Wemin, J./Johnston, M./Bunt, C./Leakey, R.R.B.. Domestication potential and marketing of Canarium indicum nuts in the Pacific: A literature review. 69: 117-134.	[Is the species highly domesticated? No] Local varieties have been developed through selection of trees on the basis of their kernel size and taste, thin pericarp and oil content. [domestication has not reduced invasive traits]
102	2012. WRA Specialist. Personal Communication.	[Has the species become naturalized where grown? NA]
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"? 2 - High] Native distribution: Indonesia - Irian Jaya, Moluccas; Papua New Guinea; Solomon Islands; Vanuatu.
202	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Quality of climate match data? 2 - High] Native distribution: Indonesia - Irian Jaya, Moluccas; Papua New Guinea; Solomon Islands; Vanuatu.
203	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Broad climate suitability (environmental versatility)? No] Lowland, subhumid to humid tropics, very warm temperatures throughout the year, elevation 0–600 m (0–2000 ft), annual rainfall 1800–4000 mm (70–160 in).
203	2007. Nevenimo, T./Moxon, J./Wemin, J./Johnston, M./Bunt, C./Leakey, R.R.B.. Domestication potential and marketing of Canarium indicum nuts in the Pacific: A literature review. 69: 117-134.	[Broad climate suitability (environmental versatility)? No] "In Papua New Guinea, Solomon Islands and Vanuatu, C. indicum is a species of the lowland rainforest, but can be grown up to about 1,000 m in Papua New Guinea."
204	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Native or naturalized in regions with tropical or subtropical climates? Yes] Native distribution: Indonesia - Irian Jaya, Moluccas; Papua New Guinea; Solomon Islands; Vanuatu.
205	2012. WRA Specialist. Personal Communication.	[Does the species have a history of repeated introductions outside its natural range? No] No evidence of repeated introductions. [is used as an agroforestry species]
301	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? No] No evidence.
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] No evidence.
401	2009. Orwa, C./Mutua, A./Kindt, R./Jamnadass, R./Simons, A.. Agroforestree Database:a tree reference and selection guide version 4.0. World Agroforestry Centre, (http://www.worldagroforestry.org/af/treedb/)	[Produces spines, thorns or burrs No] "Canarium indicum is an evergreen, dioecious, medium-sized to fairly large tree to 40 m tall and a diameter of up to 100 cm. The crown is large, dense crown and buttresses are up to m high. The bark is grey or brownish-grey to yellow-brown, smooth to scaly and dippled; inner bark laminated, reddish-brown to pinkish-brown, exuding a milky resin. Leaves imparipinnate, arranged spirally with 7-15 opposite leaflets; leaflets oblong, 13.5-36 by 4.4-21 cm, base rounded and slightly asymmetrical, apex acuminate, margin entire, glabrous; petiole 9 cm long. The stipule ovate to oblong, persistent, large and prominently dentate, rarely inserted on the petiole."
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]

403	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Parasitic? No] Burseraceae.
403	2010. Nickrent, D.. The parasitic plant connection. Department of Plant Biology, Southern Illinois University, Carbondale http://www.parasiticplants.siu.edu/index.html	[Parasitic? No] Burseraceae.
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2012. WRA Specialist. Personal Communication.	[Toxic to animals? Unknown] [not widely cultivated outside native distribution]
406	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Host for recognized pests and pathogens?] The species does not appear to be highly susceptible or damaged by any particular pest or disease. Recorded insect pests include Amblypelta cocophaga, Coccus hesperidum and C. longulus, Ectatorhinus magicus, Pinnaspis buxi, and Pseudococcus solomonensis. Fungal diseases include Coleophoma sp., Phellinus noxius, Phyllachora canarii, and Skierka canarii.
406	2009. Orwa, C./Mutua, A./Kindt, R./Jamnadass, R./Simons, A.. Agroforestree Database:a tree reference and selection guide version 4.0. World Agroforestry Centre, (http://www.worldagroforestry.org/af/treedb/)	[Host for recognized pests and pathogens?] Trees are badly damaged by Amblypelta cocophaga (shoot feeding bug) leading to serious shoot dieback.
407	2007. Nevenimo, T./Moxon, J./Wemin, J./Johnston, M./Bunt, C./Leakey, R.R.B.. Domestication potential and marketing of Canarium indicum nuts in the Pacific: A literature review. 69: 117-134.	[Causes allergies or is otherwise toxic to humans? No] The kernels of Canarium are eaten and the kernel oil is used in cooking, medicinally and in cosmetics. The shell is carved into jewelry and pipes. The resin of the tree is used to calk boats. The wood is used as timber for canoes and cabinetry.
407	2009. Orwa, C./Mutua, A./Kindt, R./Jamnadass, R./Simons, A.. Agroforestree Database:a tree reference and selection guide version 4.0. World Agroforestry Centre, (http://www.worldagroforestry.org/af/treedb/)	[Causes allergies or is otherwise toxic to humans? No] The nuts and young shoots are edible. The timber is used for construction, house framing, and canoes. The oil is used for cooking, the bark and leaves are used medicinally.
408	2012. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? No] No evidence.
409	2006. Elevitch, C.R./Abbott, I.A./Leakey, R.R.B.. Traditional trees of Pacific Islands: their culture, environment, and use. Permanent Agriculture Resources, Honolulu, HI	[Is a shade tolerant plant at some stage of its life cycle? Yes] In this agroforestry intercropping system in the Solomon Islands, Flueggea flexuosa (poumuli) provides early shade for Canarium indicum.
409	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Is a shade tolerant plant at some stage of its life cycle? Yes] Trees can tolerate 25-70% shade.
410	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Yes] Soil tolerances: medium and heavy soils loams, sandy clay loams, clays, clay loams and sandy clays. Prefers neutral to alkaline soils (pH 6.1-7.4)
410	2009. Orwa, C./Mutua, A./Kindt, R./Jamnadass, R./Simons, A.. Agroforestree Database:a tree reference and selection guide version 4.0. World Agroforestry Centre, (http://www.worldagroforestry.org/af/treedb/)	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Yes] Soil type: C. indicum does not have strict soil requirements, and is known to thrive on a wide range of soil types and over a wide range of climatic conditions but for optimum production deep, fertile and well drained soils are ideal.
411	2012. WRA Specialist. Personal Communication.	[Climbing or smothering growth habit? Unknown]
412	2012. WRA Specialist. Personal Communication.	[Forms dense thickets? Unknown]
501	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Aquatic? No] Terrestrial; tree.

502	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Grass? No] Tree.
503	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Nitrogen fixing woody plant? No] Burseraceae.
504	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] Tree; woody.
601	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Evidence of substantial reproductive failure in native habitat? No] "Canarium nut is reasonably widespread throughout its native range in lowland rainforest, secondary forest, and old garden areas and is widely planted around villages and settlements."
602	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Produces viable seed? Yes] The species is readily propagated from seed, either as nursery-raised seedlings or by direct-seeding into the field.
602	2007. Nevenimo, T./Moxon, J./Wemin, J./Johnston, M./Bunt, C./Leakey, R.R.B.. Domestication potential and marketing of Canarium indicum nuts in the Pacific: A literature review. 69: 117-134.	[Produces viable seed? Yes] Canarium is mainly propagated by seed.
603	2012. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	2007. Nevenimo, T./Moxon, J./Wemin, J./Johnston, M./Bunt, C./Leakey, R.R.B.. Domestication potential and marketing of Canarium indicum nuts in the Pacific: A literature review. 69: 117-134.	[Self-compatible or apomictic? No] Dioecious species.
605	2011. Ingram, W.. Melliferous plants for Cameroon Highlands and Adamaoua Plateau honey. Center for International Forestry Research (CIFOR), www.cifor.cgiar.org	[Requires specialist pollinators? No] The flowers of Canarium indicum are melliferous.
606	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Reproduction by vegetative fragmentation? No] Vegetative propagation by grafting.
606	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Reproduction by vegetative fragmentation? No] Propagate by seeds. Cuttings are difficult to root.
607	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Minimum generative time (years)? 4+] Trees begin to flower and fruit more heavily and regularly from about age 7–8 years.
607	2007. Nevenimo, T./Moxon, J./Wemin, J./Johnston, M./Bunt, C./Leakey, R.R.B.. Domestication potential and marketing of Canarium indicum nuts in the Pacific: A literature review. 69: 117-134.	[Minimum generative time (years)? 4+] Trees flower in 5-7 years after germination.
701	2012. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] No evidence.
702	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Propagules dispersed intentionally by people? Yes] Canarium is widely planted around villages and settlements.

703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
704	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Propagules adapted to wind dispersal ? No] "The fleshy mesocarp of the fruit is an important food for many animals, in particular flying foxes and pigeons, who act as seed dispersal agents." The nut-in-shell (NIS) is three- to six-sided or rounded with one (or sometimes two or three) kernels.
705	2012. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown]
706	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Propagules bird dispersed? Yes] "The fleshy mesocarp of the fruit is an important food for many animals, in particular flying foxes and pigeons, who act as seed dispersal agents."
707	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Propagules dispersed by other animals (externally)? No] "The fleshy mesocarp of the fruit is an important food for many animals, in particular flying foxes and pigeons, who act as seed dispersal agents." The nut-in-shell (NIS) is three- to six-sided or rounded with one (or sometimes two or three) kernels.
708	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Propagules survive passage through the gut? Yes] "The fleshy mesocarp of the fruit is an important food for many animals, in particular flying foxes and pigeons, who act as seed dispersal agents."
801	2007. Nevenimo, T./Moxon, J./Wemin, J./Johnston, M./Bunt, C./Leakey, R.R.B.. Domestication potential and marketing of Canarium indicum nuts in the Pacific: A literature review. 69: 117-134.	[Prolific seed production (>1000/m2)? No] "In Papua New Guinea, the yields of C. indicum planted at Lowlands Agricultural Experiment Station of the National Agricultural Research Institute at Keravat in East New Britain indicate that young trees produce 800–1200 fruits per tree per year."
802	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Evidence that a persistent propagule bank is formed (>1 yr)? No] Canarium seed is recalcitrant, which means it does not retain viability when dried or stored for extended periods. Seeds should be sown as soon as possible after collection.
802	2007. Nevenimo, T./Moxon, J./Wemin, J./Johnston, M./Bunt, C./Leakey, R.R.B.. Domestication potential and marketing of Canarium indicum nuts in the Pacific: A literature review. 69: 117-134.	[Evidence that a persistent propagule bank is formed (>1 yr)? No] " The loss of germination during even short-term storage means that the seeds can be classified as recalcitrant.
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	2006. Thomson, L.A.J./Evans, B.. Canarium indicum var. indicum and C. harveyi (canarium nut), ver. 2.1 In: Elevitch, C.R. (ed.) Species profiles for Pacific Island agroforestry. Permanent Agriculture Resources (PAR), Holualoa, Hawaii www.traditionaltree.o	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] Trees display intermediate self-pruning ability. Trees regrow well following removal of large branches either during harvesting of nuts or breakage during cyclones.
804	2009. Orwa, C./Mutua, A./Kindt, R./Jamnadass, R./Simons, A.. Agroforestree Database:a tree reference and selection guide version 4.0. World Agroforestry Centre, (http://www.worldagroforestry.org/af/treedb/)	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Seedling, grafted and budded trees initially tend to grow upright and need to be trained at an early age to induce the formation of lateral branches. This is done by pinching off the terminal bud when the tree is about 0.5-1 m tall. This should be done repeatedly on all the subsequent shoots, until the youngest set of shoots becomes reproductive, a process that may take 5-6 years. Once the tree starts fruiting, very little pruning is necessary."
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk:

- Native range is in tropical region
- Shade tolerant species (can germinate in native forests)
- Thrives on wide range of soil types
- Viable seeds
- Seed dispersed by birds and other animals
- Benefits from pruning

Low Risk:

- Does not have a broad climate tolerance
- Not naturalized or weedy elsewhere
- Unarmed (no spines, thorns, burrs)
- Non-toxic to humans
- Medicinal, edible nut and oil
- Does not reproduce vegetatively
- Late-maturity (5-8 years before flowers)
- No seed bank