

| current 20090513 3/23/2010 | | Assessor Approved | Assessor: Chuck Data Entry Person: Chuck | Designation: L 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) | y |
| 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 | 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 | |
| 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 |

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| 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 | y |
| 706 | Propagules bird dispersed | y=1, n=-1 | |
| 707 | Propagules dispersed by other animals (externally) | y=1, n=-1 | |
| 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 | |
| 805 | Effective natural enemies present locally (e.g. introduced biocontrol agents) | y=-1, n=1 | |
| Designation: L | | WRA Score -1 | |

Supporting Data:

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| 101 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | No evidence of domestication |
| 201 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | Plants suitable for use in tropical areas |
| 201 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: Terminalia melanocarpa. State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | Coastal Qld from Townsville to Marlborough; often on rocks close to the sea. |
| 202 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: Terminalia melanocarpa. State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | Coastal Qld from Townsville to Marlborough; often on rocks close to the sea. |
| 203 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: Terminalia melanocarpa. State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | Distribution: Coastal areas of northern Australia and northern N.S.W. , in open forest [no indication that species is tolerant of anything but coastal, tropical environments] |
| 204 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: Terminalia melanocarpa. State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | Coastal Qld from Townsville to Marlborough; often on rocks close to the sea. [native to tropical climate of Queensland, Australia] |
| 205 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | No evidence of repeated use or introductions outside native range |
| 301 | 2007. Randall, R.. Global Compendium of Weeds. http://www.hear.org/gcw/ | No evidence of naturalization |
| 302 | 2007. Randall, R.. Global Compendium of Weeds. http://www.hear.org/gcw/ | No evidence of weediness or invasiveness |
| 303 | 2007. Randall, R.. Global Compendium of Weeds. http://www.hear.org/gcw/ | No evidence of weediness or invasiveness |
| 304 | 2007. Randall, R.. Global Compendium of Weeds. http://www.hear.org/gcw/ | No evidence of weediness or invasiveness |
| 305 | 2007. FLEPPC. List of Florida's Invasive Plant Species. Florida Exotic Pest Plant Council.. Wildland Weeds. 10: .http://www.fleppc.org/07list.htm | Terminalia catappa...CATEGORY II Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. These species may become ranked Category I, if ecological damage is demonstrated. |
| 305 | 2008. Swearingen, J. M.. Survey of Invasive Plants Impacting National Parks in the United States. National Park Service, Center for Urban Ecology,, Washington, DC http://www.invasive.org/weedus/surveynps.pdf | Survey of invasive plants occurring on National Park Service lands, 2000-2007 [includes T. catappa] |
| 305 | 2010. DOFAW. Hawaii's Most Invasive Horticultural Plants: tropical almond, Terminalia catappa. DLNR, http://www.state.hi.us/dlnr/dofaw/hortweeds/species/tercat.htm | Terminalia catappa listed among Hawaii's Most Invasive Horticultural Plants |
| 305 | 2010. Florida Gardening. Invasive Plants to Avoid. The Florida Nursery, Growers & Landscape Association, http://www.floridagardening.org/invasive.asp | Invasive Plants to Avoid...Here are the plant species on the "do not sell" list released in 2001 by the Florida Nursery, Growers & Landscape Association. [includes Terminalia catappa] |

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| 401 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: Terminalia melanocarpa. State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | A tree to 10m high; deciduous. [no evidence of spines, thorns, or burrs] |
| 402 | 1997. Bhatt, B. P., M. Kumar, and N. P. Todaria. Studies on the Allelopathic Effects of Terminalia Species of Garhwal Himalaya. Journal of Sustainable Agriculture. 11: 71 - 84. | The allelopathic influences of Terminalia belerica Roxh., T. chebula Retz., and T. tomentosa Wight & Arn were tested by growing crops of Eleusine coracana, Brassica campestris, Hordeum vulgare, and Glycine max in rhizosphere soil collected from woodlots or on field soil either mulched with dry leaves or fruit pulp of Terminalia spp. Growth of the tested crops was depressed significantly in all the growth media. Percent germination & radicle extension of all test crops was also significantly reduced by exposure to aqueous extracts of dried leaves & fruit pulp of Terminalia spp. In bioassay studies. Moreover, total ground cover of woodlots remained significantly low as compared to biomass of control plots, though there was no competition for growth resources like moisture, light & soil nutrients between control plots & understory plots. Laboratory & field tests indicated that all of the tree crops examined were phytotoxic to growing food crops as well as to understory vegetation. [allelopathic potential of T. melanocarpa unknown] |
| 403 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | Small to medium-sized deciduous tree to 15m [no evidence of parasitism] |
| 404 | 1983. Rekhate, D. H. and J. Honmode. Studies on forage vegetations with reference to selective grazing in sheep.. Transactions of Indian Society of Desert Technology and University Centre of Desert Studies. 8: 72-75. | The preference of sheep for different fodders was determined by 3 methods. Sheep relished velvet bean [Mucuna deeringiana] & oats among fodder crops and grasses, & Leucaena leucocephala and Sesbania grandiflora among shrubs. Leaves of Terminalia catappa were palatable to ewes, Bauhinia variegata to rams & Ficus virens to lambs. [T. melanocarpa ecologically similar, probably also palatable] |
| 405 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | No evidence of toxicity to animals or humans |
| 406 | 2010. WRA Specialist. Personal Communication. | Pests or pathogens unknown |
| 407 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | No evidence of toxicity to animals or humans |
| 408 | 2010. Anonymous. Beach almond & red tailed black cockatoo. http://www.soe-townsville.org/magneticisland/beachalmondredtailedblackcockatoo.html | Beach almonds (Terminalia spp.), common along the North Queensland coast, get their name from their beach location and the almond-shaped fruit they produce. In the wet season they have large oval leaves on layered branches that provide shade and protection. In the dry season they are deciduous, lose all their leaves and are easily distinguishable from other local trees by their leafless layered limbs...Six species of beach almond occur on Magnetic Island - Terminalia catappa, Terminalia arenicola; Terminalia muelleri; Terminalia melanocarpa; Terminalia porphyrocarpa and Terminalia sericocarpa. All species grow close to the coast and all six species can be seen in Nelly Bay. [coastal plants with no evidence of flammability or increased fire risks] |
| 409 | 2005. CAB International. Forestry Compendium.. CAB International, Wallingford, UK | T. catappa seedlings are shade-tolerant during early growth (the first 1-2 years). Thereafter they should receive full overhead light for optimal growth, although the tree may grow under moderate shade (Kadambi, 1954) [T. melanocarpa, with a similar distribution and coastal habitat, probably also shade-tolerant] |
| 410 | 2010. WRA Specialist. Personal Communication. | Soil requirements unknown |
| 411 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: Terminalia melanocarpa. State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | A tree to 10m high; deciduous. |
| 412 | 2005. CAB International. Forestry Compendium.. CAB International, Wallingford, UK | No evidence that other species of Terminalia form thickets |

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| 412 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: Terminalia melanocarpa. State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | No evidenc of thicket formation from native habitat |
| 501 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | Terrestrial |
| 502 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | Combretaceae |
| 503 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | Combretaceae [not N-fixing] |
| 504 | 2005. Staples, G. W. and D. R. Herbst. A Tropical Garden Flora. Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI. | Tree to 50 feet tall [not a geophyte] |
| 601 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | No evidence of substancial reproductive failure from native habitat |
| 602 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: Terminalia melanocarpa. State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | Cultivation/Notes: Propagate from fresh seed. |
| 603 | 2010. WRA Specialist. Personal Communication. | Ability to hybridize unknown |
| 604 | 1996. Srivastav, P.K., P. Ranjan and S.S. Sinha. CONSERVATION OF TERMINALIA GENETIC RESOURCES: THE PRINCIPAL SOURCE OF NON-WOOD FOREST PRODUCTS IN INDIA. Forest Genetic Resources. 24: .FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, Rome http:// | Species of Terminalia found in India belong to the sections Catappa, Myrobalanus, Chuncea and Pentaptera. Terminalias are predominantly outcrossing (Srivastav 1993; Parkinson 1936), and sexual recombination and segregation, together with mutations, and acted on by natural selection, are the sources of inter- as well as intraspecific variation in this genus. [probably self-incompatible] |
| 605 | 1993. Srivatava, P. K.. Pollination mechanisms in genus Terminalia Linn. Indian Forester. 119: 147-150. | Studies on the pollination mechanisms of four species of genus Terminalia Linn. conducted at Central Tasar Research Training Institute, Ranchi revealed that pollination is entomophilous. Out of 22 insect pollinators collected a maximum number belonged to Lepidoptera (6), Diptera (6) and Hymenoptera (6) and bees play very important role in pollination." |
| 605 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: Terminalia melanocarpa. State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | Flowers: 5 petalled, about 0.6cm diameter, borne on dense spikes 5 - 12cm long. [floral morphology does not suggest requirement of specialist pollinators] |
| 606 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | No evidence of reproduction by vegetative fragmentation |
| 606 | 2005. CAB International. Forestry Compendium.. CAB International, Wallingford, UK | No evidence of reproduction by vegetative fragmentation in related species of Terminalia |
| 607 | 2005. CAB International. Forestry Compendium.. CAB International, Wallingford, UK | T. catappa should be highly amenable to breeding programmes, given the high level of variation in nut characteristics and the young age, about 3-4 years, at which plants flower and fruit, and accessibility of flowers for controlled pollination, although the latter are small and crowded. [time to reproductive maturity probably similar for T. melanocarpa] |

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| 607 | 2005. Staples, G. W. and D. R. Herbst. A Tropical Garden Flora. Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI. | Generally similar to <i>T. catappa</i> , <i>T. melanocarpa</i> is, however, noticeably smaller in size...Little is recorded about its horticultural requirements, but treating it like <i>T. catappa</i> seems a safe bet. |
| 701 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: <i>Terminalia melanocarpa</i> . State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | Fruit:: Egg-shaped to globular, not beaked, succulent, smooth, green, 2 - 3cm x 1.5 - 2cm; immature fruit compressed, with a continuous wing about 0.5cm wide. [inadvertent dispersal unlikely, large fruits with no means of external attachment] |
| 702 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | Planted as an ornamental |
| 703 | 1996. Wrigley, J. W. and M. Fagg. Australian Native Plants: Propagation, Cultivation and Use in Landscaping. 4th Edition. Reed Books, Australia | Fruits to 3 cm [no evidence of produce contamination, and fruits fairly large] |
| 704 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: <i>Terminalia melanocarpa</i> . State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | Fruit:: Egg-shaped to globular, not beaked, succulent, smooth, green, 2 - 3cm x 1.5 - 2cm; immature fruit compressed, with a continuous wing about 0.5cm wide. [large fruit without adaptations for wind dispersal] |
| 705 | 2010. Townsend, K.. Urban Nature Program Fact Sheet: <i>Terminalia melanocarpa</i> . State of Environment, Townsville, Australia. http://www.soe-townsville.org/plants_species_list/terminalia_melanocarpa.html | Coastal Qld from Townsville to Marlborough; often on rocks close to the sea. [coastal distribution, and water dispersal of other <i>Terminalia</i> spp. Suggests water dispersal of seeds] |
| 706 | 1883. Anonymous. The Proceedings of the Linnean Society of New South Wales. Linnean Society of New South Wales, Sydney, Australia | It grows quite close to the sea and on the coral islets, where the pigeons { <i>Parophaea apilorhoa</i>) greedily devour its fruits. These are about an inch long with a very large hard stone, in fact there is scarcely any sarcocarp, so that one wonders how the birds find any nourishment in it. The taste is bitter & unpleasant. [but no evidence as to whether birds disperse the fairly large seeds] |
| 707 | 2010. WRA Specialist. Personal Communication. | External dispersal by animals unknown |
| 708 | 1883. Anonymous. The Proceedings of the Linnean Society of New South Wales. Linnean Society of New South Wales, Sydney, Australia | It grows quite close to the sea and on the coral islets, where the pigeons { <i>Parophaea apilorhoa</i>) greedily devour its fruits. These are about an inch long with a very large hard stone, in fact there is scarcely any sarcocarp, so that one wonders how the birds find any nourishment in it. The taste is bitter & unpleasant. [but no evidence as to whether birds disperse the seeds, or if there is any internal seed passage] |
| 801 | 2005. Staples, G. W. and D. R. Herbst. A Tropical Garden Flora. Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI. | Fruit a drupe... Seed usually one...[genus description]...Fruit ellipsoid, 0.8-1.25 inches long, 0.6-0.8" wide [<i>T. melanocarpa</i> description] [prolific seed production unlikely given fairly large fruit size with single seeds] |
| 802 | 2010. WRA Specialist. Personal Communication. | Longevity of seeds in seed bank unknown |
| 803 | 2010. WRA Specialist. Personal Communication. | Information on effectiveness of herbicides unknown [no information found on control] |
| 804 | 2010. WRA Specialist. Personal Communication. | Unknown whether <i>T. melanocarpa</i> tolerates, or benefits from, mutilation, cultivation, or fire |
| 805 | 2010. WRA Specialist. Personal Communication. | Unknown whether any effective natural enemies present locally |