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|--|---|
| Taxon: <i>Eucalyptus nicholii</i> Maiden & Blakely | Family: Myrtaceae |
| Common Name(s): narrow-leaf black peppermint narrow-leaf peppermint small-leaf peppermint willow peppermint willow-leaf peppermint | Synonym(s): <i>Eucalyptus acaciiformis</i> var. <i>linearis</i> <i>Myrtus nicholii</i> |

| | | |
|--------------------------------|----------------------------------|--|
| Assessor: Chuck Chimera | Status: Assessor Approved | End Date: 16 Dec 2020 |
| WRA Score: -1.0 | Designation: L | Rating: Low Risk |

Keywords: Temperate Tree, Naturalized Elsewhere, Non-toxic, Wind-Dispersed. Coppices

| Qsn # | Question | Answer Option | Answer |
|-------|---|--|--------------|
| 101 | Is the species highly domesticated? | y=-3, n=0 | n |
| 102 | Has the species become naturalized where grown? | | |
| 103 | Does the species have weedy races? | | |
| 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 | n |
| 205 | Does the species have a history of repeated introductions outside its natural range? | y=-2, ?=-1, n=0 | y |
| 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) | y |
| 401 | Produces spines, thorns or burrs | y=1, n=0 | n |
| 402 | Allelopathic | | |
| 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 | | |
| 407 | Causes allergies or is otherwise toxic to humans | y=1, n=0 | n |

| Qsn # | Question | Answer Option | Answer |
|-------|--|---------------|--------|
| 408 | Creates a fire hazard in natural ecosystems | | |
| 409 | Is a shade tolerant plant at some stage of its life cycle | | |
| 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 | n |
| 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 | | |
| 604 | Self-compatible or apomictic | | |
| 605 | Requires specialist pollinators | y=-1, n=0 | n |
| 606 | Reproduction by vegetative fragmentation | y=1, n=-1 | n |
| 607 | Minimum generative time (years) | | |
| 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 | n |
| 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 | n |
| 801 | Prolific seed production (>1000/m2) | | |
| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | | |
| 803 | Well controlled by herbicides | | |
| 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) | | |

Supporting Data:

| Qsn # | Question | Answer |
|-------|--|--|
| 101 | Is the species highly domesticated? | n |
| | Source(s) | Notes |
| | Harden, G. J. (ed.). Flora of New South Wales, Volume 2. Revised Edition. UNSW Press, Sydney | [No evidence of domestication] "Restricted and uncommon, in grassy or sclerophyll woodland on shallow relatively infertile soils on shales, slates, granite and porphyrite; Niangala to Glen Innes. NT." |

| 102 | Has the species become naturalized where grown? | |
|-----|---|-------|
| | Source(s) | Notes |
| | WRA Specialist. (2020). Personal Communication | NA |

| 103 | Does the species have weedy races? | |
|-----|--|-------|
| | Source(s) | Notes |
| | WRA Specialist. (2020). Personal Communication | NA |

| 201 | Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical" | Intermediate |
|-----|--|---|
| | Source(s) | Notes |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 15 Dec 2020] | "Native Australasia AUSTRALIA: Australia [New South Wales (n.e.)]" |
| | Smart Approved WaterMark. (2020). Narrow-leaved Peppermint Gum (<i>Eucalyptus nicholii</i>). https://www.smartwatermark.org . [Accessed 15 Dec 2020] | "Zones: Semi-arid with winter rain, Moist temperate with warm summers, Winter rains with dry summers, Moist temperate with hot summers" |

| 202 | Quality of climate match data | High |
|-----|--|-------|
| | Source(s) | Notes |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 15 Dec 2020] | |

| 203 | Broad climate suitability (environmental versatility) | n |
|-----|---|-------------------------------|
| | Source(s) | Notes |
| | SelecTree. (2020). "Eucalyptus nicholii Tree Record." 1995-2020. https://selectree.calpoly.edu/tree-detail/eucalyptus-nicholii . [Accessed 16 Dec 2020] | "USDA Hardiness Zones 8 - 10" |

| Qsn # | Question | Answer |
|-------|--|--|
| 204 | Native or naturalized in regions with tropical or subtropical climates | n |
| | Source(s) | Notes |
| | Mason, J. (2013). Landscaping with Australian Plants. ACS Distance Education, Nerang, Queensland | "Eucalyptus nicholii - A shapely tree to about 6m, with rough bark and fine blue-green leaves and a graceful habit. Grows well in most temperate areas." |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 15 Dec 2020] | "Native Australasia AUSTRALIA: Australia [New South Wales (n.e.)]" |
| | Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI | No evidence |

| Qsn # | Question | Answer |
|-------|--|--|
| 205 | Does the species have a history of repeated introductions outside its natural range? | y |
| | Source(s) | Notes |
| | Verdcourt, B. (2001). Flora of Tropical East Africa - Myrtaceae. A.A. Balkema, Rotterdam, Netherlands | "List of Eucalyptus known to have been cultivated in East Africa" [Includes Eucalyptus nicholii] |
| | SelecTree. (2020). "Eucalyptus nicholii Tree Record." 1995-2020. https://selectree.calpoly.edu/tree-detail/eucalyptus-nicholii . [Accessed] | [California] "Photo Locations: San Luis Obispo, CA and Cal Poly Campus - San Luis Obispo, CA" |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | [New Zealand] "References: Australia-E-380, New Zealand- N-823, New Zealand-U-919, New Zealand- U-2048." |

| Qsn # | Question | Answer |
|-------|---|---|
| 301 | Naturalized beyond native range | y |
| | Source(s) | Notes |
| | Heenan, P. B., de Lange, P. J., Cameron, E. K., & Champion, P. D. 2002. Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 199 –2000. New Zealand Journal of Botany, 40(2): 155-174 | "Eucalyptus nicholii Maiden & Blakely narrow-leaved black peppermint NEW RECORD: CHR 518468, P. B. Heenan & P. J. de Lange, 9 Feb 1999, Canterbury, Christchurch, Blenheim Road stock yards. NOTES: Several seedlings and saplings established in brick and stone paving near a row of parent trees." |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | [Naturalizing in New Zealand] "References: Australia-E-380, New Zealand- N-823, New Zealand-U-919, New Zealand- U-2048." |
| | Howell, C. J., & Sawyer, J. W. (2006). New Zealand naturalised vascular plant checklist. New Zealand Plant Conservation Network, Wellington, NZ | Eucalyptus nicholii - Casual |
| | Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI | No evidence |

| Qsn # | Question | Answer |
|-------|---|-------------|
| 302 | Garden/amenity/disturbance weed | n |
| | Source(s) | Notes |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | No evidence |

| | | |
|-----|---|-------------|
| 303 | Agricultural/forestry/horticultural weed | n |
| | Source(s) | Notes |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | No evidence |

| | | |
|-----|---|--|
| 304 | Environmental weed | n |
| | Source(s) | Notes |
| | Grotkopp, E., Erskine-Ogden, J., & Rejmánek, M. (2010). Assessing potential invasiveness of woody horticultural plant species using seedling growth rate traits. <i>Journal of Applied Ecology</i> , 47(6), 1320-1328 | "Comparative seedling RGR studies show that this measure has potential as a screening tool for new exotic plant species. Unfortunately, more easily measurable components of RGR do not consistently predict invasiveness, as previously thought. Using seedling RGR analysis as an invasive species' screening tool requires growing a species proposed for introduction with related invasive and non-invasive species. If the tested species' RGR is higher or not significantly different from its known invasive counterpart, it should be considered highly likely to become invasive, and excluded from further consideration as a potential horticultural species. Seedling RGR could potentially produce a useful, straightforward screening tool when phylogenetically related species or cultivars are available." [RGR of <i>Eucalyptus nicholii</i> compared to invasive species in this study] |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | "Major Pathway/s: Herbal, Ornamental Dispersed by: Humans References: Australia-E-380, New Zealand- N-823, New Zealand-U-919, New Zealand- U-2048." [Cited in Mulvaney (1991) as an environmental weed, but a subsequent review of the publication gives no indication that <i>Eucalyptus nicholii</i> is an environmental weed in Australia, or elsewhere] |
| | Virtue, J. G., Spencer, R. D., Weiss, J. E., & Reichard, S. E. (2008). Australia's Botanic Gardens weed risk assessment procedure. <i>Plant Protection Quarterly</i> , 23(4), 166-178 | "Table 1. List of taxa that were assessed by the three botanic gardens, ordered from lowest to highest Average BG Score." [Eucalyptus nicholii - Average BG Score = 14.7 ; Low weed risk = 2 to 15, indicating <i>Eucalyptus nicholii</i> is low risk for invasiveness] |

| | | |
|-----|-----------------|-------|
| 305 | Congeneric weed | y |
| | Source(s) | Notes |

| Qsn # | Question | Answer |
|-------|---|--|
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CAB International, Wallingford, UK | "Eucalyptus globulus ... The tree invades neighbouring plant communities from initial plantings. By building dense bushes and forests, it displaces native plant species and their associated wildlife with extremely species-poor stands of blue gum. The trees produce a thick litter layer consisting of leaves, bark strips and branch lees, preventing germination and establishment of understorey plants. This is aided by allelochemicals released from leaves (Bossard et al., 2000). Litter of blue gum is highly flammable and the trees accumulate large amounts of litter, increasing fire hazards. Drifting burning material is common in eucalyptus stands, thus the potential to ignite spot fires is very high" |
| | Forsyth, G. G., Richardson, D. M., Brown, P. J., & Van Wilgen, B. W. (2004). A rapid assessment of the invasive status of Eucalyptus species in two South African provinces: working for water. South African Journal of Science, 100(1-2), 75-77 | "Gum trees, or eucalypts (Eucalyptus species), have been targeted for invasive alien plant clearing programmes in many parts of South Africa. This has caused some dissatisfaction where the species concerned also have useful characteristics, and stakeholders contend that some of these useful species are not invasive. A rapid assessment of the invasive status of Eucalyptus species at 82 sites in South Africa (54 in the Western Cape and 28 in Mpumalanga) indicated that only Red River gum (<i>E. camaldulensis</i>) and flooded gum (<i>E. grandis</i>) are clearly invasive." |
| | Simberloff, D. & Rejmánek, M. (2011). Encyclopedia of Biological Invasions. University of California Press, Berkeley & Los Angeles | "Over 800 species of eucalypts (<i>Angophora</i> , <i>Corymbia</i> , and <i>Eucalyptus</i>) are native to Australia and a few Pacific islands. These genera include some of the most important solid timber and paper pulp forestry trees in the world. Besides pines, eucalypts are the most commonly and widely cultivated exotic trees. Almost 20 million ha (200,000 km ²) of eucalyptus plantations exist in tropical, subtropical, and temperate countries. In many countries, eucalypts are the most common and conspicuous nonnative trees. Over 70 species are naturalized (reproduce and maintain their populations) outside their native ranges. However, given the extent of cultivation, eucalypts are markedly less invasive than many other widely cultivated trees and shrubs. Reasons for this relatively low invasiveness are still not completely understood. Conclusions about positive or negative environmental and economic impacts of eucalypts are often anecdotal, highly controversial, and context-dependent." |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | A large number of species are cited as naturalized and/or weeds |

| 401 | Produces spines, thorns or burrs | n |
|-----|--|---|
| | Source(s) | Notes |
| | Ritter, M. (2014). Field Guide to the Cultivated Eucalypts (Myrtaceae) and How to Identify Them. Annals of the Missouri Botanical Garden, 99(4), 642-687 | "Trees; bark rough, brown, fibrous to the smallest branches, not shedding in ribbons from smaller branches. Juvenile leaves green or grayish green, linear to narrowly lanceolate, sessile or shortly petioled, entire; adult leaves alternate, concolorous, narrowly lanceolate. Inflorescences axillary umbels; buds 7 per umbel; operculum scar present. At anthesis, flowers white. Fruits pedicellate, hemispherical; disk of fruit thin, slightly ascending; valves exerted." |

| | | |
|-----|--------------|--|
| 402 | Allelopathic | |
|-----|--------------|--|

| Qsn # | Question | Answer |
|-------|---|--|
| | Source(s) | Notes |
| | Coppen, J.J.W. (2002). <i>Eucalyptus: The Genus Eucalyptus</i> . Taylor and Francis, London | [Potentially] "Trees of the genus <i>Eucalyptus</i> are frequently surrounded by a grass-free zone and this has led to a search for possible allelochemicals in <i>Eucalyptus</i> species. The results to date indicate that eucalypts may well be a practical, commercial source of such chemicals in the future. In its simplest form this might entail use of the powdered leaves as a natural herbicide. Alternatively, and with a greater understanding of their mode of action, the allelochemicals themselves or suitable derivatives could be used as selective herbicides." |

| 403 | Parasitic | n |
|-----|--|---|
| | Source(s) | Notes |
| | Mason, J. (2013). <i>Landscaping with Australian Plants</i> . ACS Distance Education, Nerang, Queensland | "A shapely tree to about 6m, with rough bark and fine blue-green leaves and a graceful habit." [Myrtaceae. No evidence] |

| 404 | Unpalatable to grazing animals | n |
|-----|--|--|
| | Source(s) | Notes |
| | SelecTree. (2020). "Eucalyptus nicholii Tree Record." 1995-2020. https://selecttree.calpoly.edu/tree-detail/eucalyptus-nicholii . [Accessed 16 Dec 2020] | "Not Deer Palatable" |
| | NSW Government. (2020). <i>Narrow-leaved Black Peppermint - profile</i> . Office of Environment and Heritage, Parramatta NSW. https://www.environment.nsw.gov.au/threatenedspeciesapp/ . [Accessed 16 Dec 2020] | <p>"Threats</p> <ul style="list-style-type: none"> Clearing and fragmentation of habitat for agriculture and grazing. Inappropriate fire regimes. There is a risk of population decline with short fire intervals of less than 10 years or long fire free intervals of more than a few decades where seedling recruitment is lacking. Destruction and disturbance of habitat for roadside management. Grazing by domestic stock. Collection of firewood. Collection of seed for horticulture. Distrubance from feral browsers, particularly goats." <p>" Activities to assist this species</p> <ul style="list-style-type: none"> Protect dry grassy woodland habitat from clearing and fragmentation. Identify roadside populations and protect during road-works. Support local Landcare groups raise awareness of the species and implement on-ground protection add habitat restoration activities . Practice sustainable grazing in areas of habitat and protect regenerating trees from grazing stock. Manage fire to promote regeneration. Only buy seed from appropriately licensed dealers. Limit firewood collection in areas where this species occurs. Maintain viable ex-situ seed bank and/or live collection." |
| | WRA Specialist. (2020). Personal Communication | Reported to be palatable to livestock (Australia) but not deer (California) |

| 405 | Toxic to animals | n |
|-----|------------------|---|
|-----|------------------|---|

| Qsn # | Question | Answer |
|-------|---|---|
| | Source(s) | Notes |
| | NSW Government. (2020). Narrow-leaved Black Peppermint - profile. Office of Environment and Heritage, Parramatta NSW. https://www.environment.nsw.gov.au/threatenedspeciesapp/ . [Accessed 16 Dec 2020] | "Threats ... Grazing by domestic stock" [No evidence] |
| | Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL | No evidence |

| 406 | Host for recognized pests and pathogens | |
|-----|---|--|
| | Source(s) | Notes |
| | CABI. (2020). <i>Eucalyptus nicholii</i> (willow-leaved peppermint). In: Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc | "Major host of: <i>Leptocybe invasa</i> (blue gum chalcid); <i>Phylacteophaga froggatti</i> (leafblister sawfly) Minor host of: <i>Glycaspis brimblecombei</i> (red gum lerp psyllid); <i>Paropsis charybdis</i> (eucalyptus tortoise beetle); <i>Thaumastocoris peregrinus</i> (bronze bug) Wild host of: Mundulla yellows (Mundulla Yellows dieback) Host of (source - data mining): <i>Uraba lugens</i> (eucalypt leaf skeletonizer) |
| | SelecTree. (2020). " <i>Eucalyptus nicholii</i> Tree Record." 1995-2020. https://selectree.calpoly.edu/tree-detail/eucalyptus-nicholii . [Accessed 16 Dec 2020] | "Pests & Disease Information - Resistant to Texas Root Rot and Verticillium. Susceptible to Beetle Borers, Armillaria and Root Rot." |

| 407 | Causes allergies or is otherwise toxic to humans | n |
|-----|---|--------------|
| | Source(s) | Notes |
| | Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL | No evidence |
| | Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL | No evidence |

| 408 | Creates a fire hazard in natural ecosystems | |
|-----|---|---|
| | Source(s) | Notes |
| | NSW Government. (2020). Narrow-leaved Black Peppermint - profile. Office of Environment and Heritage, Parramatta NSW. https://www.environment.nsw.gov.au/threatenedspeciesapp/ . [Accessed 16 Dec 2020] | [Fire part of the ecology of the species. Unknown if trees themselves modify fire regimes or increase fire risks] "Threats ... Inappropriate fire regimes. There is a risk of population decline with short fire intervals of less than 10 years or long fire free intervals of more than a few decades where seedling recruitment is lacking." |

| 409 | Is a shade tolerant plant at some stage of its life cycle | |
|-----|---|--------------|
| | Source(s) | Notes |

| Qsn # | Question | Answer |
|-------|---|---------------------------------------|
| | SelecTree. (2020). "Eucalyptus nicholii Tree Record." 1995-2020. https://selectree.calpoly.edu/tree-detail/eucalyptus-nicholii . [Accessed 16 Dec 2020] | "Exposure Full Sun to Partial Shade." |
| | The Royal Horticultural Society. (2020). Eucalyptus nicholii - narrow-leaved black peppermint. https://www.rhs.org.uk . [Accessed 16 Dec 2020] | "Sunlight Full Sun" |

| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | y |
|-----|--|---|
| | Source(s) | Notes |
| | SelecTree. (2020). "Eucalyptus nicholii Tree Record." 1995-2020. https://selectree.calpoly.edu/tree-detail/eucalyptus-nicholii . [Accessed 16 Dec 2020] | "Clay, Loam or Sand Texture. Highly Acidic to Highly Alkaline Soil pH." |
| | Shoot Gardening. (2020). Eucalyptus nicholii (Narrow-leaved black peppermint). https://www.shootgardening.co.uk/plant/eucalyptus-nicholii . [Accessed 16 Dec 2020] | "Cultivation: Grows best in fertile, neutral to slightly acid soil that does not dry out. Site in full sun with shelter from cold, drying winds. Soil type: Chalky, Clay, Loamy, Sandy (will tolerate most soil types)" |
| | NSW Government. (2020). Narrow-leaved Black Peppermint - profile. Office of Environment and Heritage, Parramatta NSW. https://www.environment.nsw.gov.au/threatenedspeciesapp/ . [Accessed 16 Dec 2020] | "Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock." |

| 411 | Climbing or smothering growth habit | n |
|-----|--|--|
| | Source(s) | Notes |
| | Ritter, M. (2014). Field Guide to the Cultivated Eucalypts (Myrtaceae) and How to Identify Them. <i>Annals of the Missouri Botanical Garden</i> , 99(4), 642-687 | "Trees; bark rough, brown, fibrous to the smallest branches, not shedding in ribbons from smaller branches." |

| 412 | Forms dense thickets | n |
|-----|--|---|
| | Source(s) | Notes |
| | NSW Government. (2020). Narrow-leaved Black Peppermint - profile. Office of Environment and Heritage, Parramatta NSW. https://www.environment.nsw.gov.au/threatenedspeciesapp/ . [Accessed 16 Dec 2020] | " Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock. Seedling recruitment is common, even in disturbed soils, if protected from grazing and fire. Tends to grow on lower slopes in the landscape." |
| | Harden, G. J. (ed.). <i>Flora of New South Wales</i> , Volume 2. Revised Edition. UNSW Press, Sydney | [No evidence] "Restricted and uncommon, in grassy or sclerophyll woodland on shallow relatively infertile soils on shales, slates, granite and porphyrite" |

| 501 | Aquatic | n |
|-----|--|---|
| | Source(s) | Notes |
| | Harden, G. J. (ed.). <i>Flora of New South Wales</i> , Volume 2. Revised Edition. UNSW Press, Sydney | [Terrestrial] "Restricted and uncommon, in grassy or sclerophyll woodland on shallow relatively infertile soils on shales, slates, granite and porphyrite; Niangala to Glen Innes. NT." |

| Qsn # | Question | Answer |
|-------|---|---|
| | NSW Government. (2020). Narrow-leaved Black Peppermint - profile. Office of Environment and Heritage, Parramatta NSW. https://www.environment.nsw.gov.au/threatenedspeciesapp/ . [Accessed 15 Dec 2020] | [Terrestrial] "Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock." |

| 502 | Grass | n |
|-----|---|---|
| | Source(s) | Notes |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 15 Dec 2020] | Genus: Eucalyptus Subgenus: Symphyomyrtus Section: Maidenaria Family: Myrtaceae Subfamily: Myrtoideae Tribe: Eucalypteae |

| 503 | Nitrogen fixing woody plant | n |
|-----|---|---|
| | Source(s) | Notes |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 15 Dec 2020] | Genus: Eucalyptus Subgenus: Symphyomyrtus Section: Maidenaria Family: Myrtaceae Subfamily: Myrtoideae Tribe: Eucalypteae |

| 504 | Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers) | n |
|-----|--|---|
| | Source(s) | Notes |
| | Harden, G. J. (ed.). Flora of New South Wales, Volume 2. Revised Edition. UNSW Press, Sydney | "Tree to 18 m high; bark persistent on trunk and larger branches or throughout, grey to grey-brown, truck, shortly fibrous, smooth above, grey, shedding in short ribbons." |

| 601 | Evidence of substantial reproductive failure in native habitat | n |
|-----|---|---|
| | Source(s) | Notes |
| | NSW Government. (2020). Narrow-leaved Black Peppermint - profile. Office of Environment and Heritage, Parramatta NSW. https://www.environment.nsw.gov.au/threatenedspeciesapp/ . [Accessed 16 Dec 2020] | " Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock. Seedling recruitment is common, even in disturbed soils, if protected from grazing and fire. Tends to grow on lower slopes in the landscape." |

| 602 | Produces viable seed | y |
|-----|----------------------|-------|
| | Source(s) | Notes |
| | | |

| Qsn # | Question | Answer |
|-------|---|---|
| | Shoot Gardening. (2020). <i>Eucalyptus nicholii</i> (Narrow-leaved black peppermint). https://www.shootgardening.co.uk/plant/eucalyptus-nicholii . [Accessed 16 Dec 2020] | "Propagation methods: Seed" |
| | The Royal Horticultural Society. (2020). <i>Eucalyptus nicholii</i> - narrow-leaved black peppermint. https://www.rhs.org.uk . [Accessed 16 Dec 2020] | "Propagation Propagate by seed in spring or summer " |

| 603 | Hybridizes naturally | |
|-----|---|---|
| | Source(s) | Notes |
| | Doran, J. C. (2002). Genetic improvement of eucalypts With special reference to oil-bearing species. In J. J.W. Coppen (ed.). <i>Eucalyptus The Genus Eucalyptus</i> . Taylor & Francis | [Unknown. Possible within genus] "Hybridising ability: Griffin et al. (1988) reviewed the occurrence of natural and manipulated inter-specific hybrids within the genus <i>Eucalyptus</i> , and confirmed the long-standing hypothesis that within sub-genera there are generally no strong barriers to the production of hybrid seed following cross pollination. Hybrids may be desirable because they are heterotic or because they combine traits that were not found together in either parental species (Griffin 1989b). Sites which are marginal for pure species have provided, so far, the most successful habitats for use of eucalypt hybrids. For example, hybrids of <i>E. grandis</i> with hardier species such as <i>E. urophylla</i> , <i>E. camaldulensis</i> and <i>E. tereticornis</i> are showing great promise on sites in South Africa which, because of drought, are marginal for growing pure <i>E. grandis</i> (Van Wyk et al. 1989)." |

| 604 | Self-compatible or apomictic | |
|-----|---|--|
| | Source(s) | Notes |
| | Potts, B. M., & Gore, P. L. (1995). Reproductive biology and controlled pollination of <i>Eucalyptus</i> -a review. School of Plant Science, University of Tasmania, Hobart, Tasmania | [Unknown for <i>E.nicholii</i>] "Eucalypts are generally preferentially outcrossing (Pryor 1976; Griffin et al 1987), with high outcrossing rates (e.g. 0.69- 0.84 Moran and Bell 1983; Prober et al. 1990) maintained by varying degrees of self-fertility (Pryor 1976), aided by protandry (Griffin and Hand 1979; Fig. 3.2) and reinforced by selection against the products of self-fertilization in later stages of the life cycle (Potts et at. 1987; Hardner and Potts 1995). Self fertility Most species exhibit a marked reduction in seed yield following selfpollination compared to outcrossing, although within species there is considerable variation in the level of self-fertility (Pryor 1957; Pryor 1976; Table 4.2). In most of the species examined to date, the majority of individuals are partially self-fertile, but individuals range from fully self incompatible to fully self-fertile. Post-mating barriers to self-fertilization are thus rarely complete, and (Eldridge 1976) notes that "persistent attempts at artificial self-pollination have been successful to some degree on almost every tree tested". |

| 605 | Requires specialist pollinators | n |
|-----|---------------------------------|-------|
| | Source(s) | Notes |
| | | |

| Qsn # | Question | Answer |
|-------|---|---|
| | Grafton Nursery & Hardy Eucalyptus. (2020). <i>Eucalyptus nicholii</i> . https://www.hardy-eucalyptus.com/product-page/eucalyptus-nicholii . [Accessed 16 Dec 2020] | "Flowers: White flowers in clusters of 7, appear late summer to early autumn, ours is in flower from end of August onwards well into October - great for the bees" |
| | Roubik, D.W. 1995. Pollination of cultivated plants in the tropics. FAO Services Bulletin 118. FAO, Rome, Italy | "Over 523 species of gum trees, <i>Eucalyptus</i> , exist in Australia and Indonesia. While birds alone are not exclusive pollinators of eucalyptus, they contribute to pollination of about half the species, and are the main pollinators of perhaps 2%. Nearly 200 species are grown on 3.4 million hectares elsewhere, from highland temperate to tropical climates in Africa, South and North America and the Indian subcontinent, primarily for timber and firewood with added value as windbreaks, shade, erosion control, livestock fodder, and bee forage, depending on the species. Insect visitors of the open brush-cup flowers -include honeybees, stingless bees, solitary bees, and birds. At least 20 species are recognized as important sources of nectar or pollen for honeybees. A number of eucalyptus are recommended for planting as bee forage -in the tropics and subtropics in Africa, South America, and India. This suggests that honeybees visit their flowers freely, but we still do not know how well the honeybee pollinates these flowers." |
| | Harden, G. J. (ed.). Flora of New South Wales, Volume 2. Revised Edition. UNSW Press, Sydney | [Unspecialized flowers] "Umbellasters 7-flowered; peduncle terete, 5-8 mm long; pedicels terete, 2-3 mm long. Buds ovoid or fusiform, 3-5 mm long, 2-3 mm diam., scar present; calyptra conical, shorter than to as long as and as wide as hypanthium." |

| 606 | Reproduction by vegetative fragmentation | n |
|-----|--|--|
| | Source(s) | Notes |
| | The Royal Horticultural Society. (2020). <i>Eucalyptus nicholii</i> - narrow-leaved black peppermint. https://www.rhs.org.uk . [Accessed 16 Dec 2020] | "Propagate by seed in spring or summer " |

| 607 | Minimum generative time (years) | |
|-----|---|--|
| | Source(s) | Notes |
| | SelecTree. (2020). "Eucalyptus nicholii Tree Record." 1995-2020. https://selectree.calpoly.edu/tree-detail/eucalyptus-nicholii . [Accessed 16 Dec 2020] | "Growth Rate: 36 or More Inches per Year." |
| | Grafton Nursery & Hardy Eucalyptus. (2020). <i>Eucalyptus nicholii</i> . https://www.hardy-eucalyptus.com/product-page/eucalyptus-nicholii . [Accessed 16 Dec 2020] | "Rate of Growth: medium to fast, 1.0-1.5 metres per year in optimum conditions Height in maturity, if left unpruned: 12-15m, but can be kept smaller with occasional pruning" |

| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | n |
|-----|---|---|
| | Source(s) | Notes |
| | Williams, J.E. & Woinarski, J. (1997). <i>Eucalypt Ecology: Individuals to Ecosystems</i> . Cambridge University Press, Cambridge, UK | "The movement of seed once deposited on the ground is probably fairly limited in most species (see, for example, Battaglia and Reid 1993a), although extensive seed harvesting by ants (reviewed by Stoneman 1994) no doubt results in some effective dispersal." |

| Qsn # | Question | Answer |
|-------|--|---|
| 702 | Propagules dispersed intentionally by people | y |
| | Source(s) | Notes |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | "Major Pathway/s: Herbal, Ornamental Dispersed by: Humans" |
| | The Royal Horticultural Society. (2020). <i>Eucalyptus nicholii</i> - narrow-leaved black peppermint. https://www.rhs.org.uk . [Accessed 16 Dec 2020] | "Suggested planting locations and garden types Low Maintenance Architectural" |

| 703 | Propagules likely to disperse as a produce contaminant | n |
|-----|---|---|
| | Source(s) | Notes |
| | Williams, J.E. & Woinarski, J. (1997). <i>Eucalypt Ecology: Individuals to Ecosystems</i> . Cambridge University Press, Cambridge, UK | [Generic description] "Seed is mainly dispersed by wind and gravity following release from canopy--stored capsules (Cremer 1977). The distance of seed fall is essentially proportional to canopy height, seed weight (i.e. terminal velocity) and wind speed (Cremer 1977), with virtually all seed deposited within a radius of twice the tree or canopy height (Cremer 1966). The movement of seed once deposited on the ground is probably fairly limited in most species (see, for example, Battaglia and Reid 1993a), although extensive seed harvesting by ants (reviewed by Stoneman 1994) no doubt results in some effective dispersal." |

| 704 | Propagules adapted to wind dispersal | y |
|-----|--|--|
| | Source(s) | Notes |
| | Simberloff, D. & Rejmánek, M. (2011). <i>Encyclopedia of Biological Invasions</i> . University of California Press, Berkeley & Los Angeles | "Seeds of planted eucalypts are very small, but they have no adaptations for dispersal (wings or fleshy tissues) that would help them to proceed from local establishment (naturalization) to invasion. The passive release of seeds is undoubtedly aided by wind. However, all rigorous studies of eucalypt seed dispersal and seedling spatial distribution show that in general, seeds are dispersed over quite short distances." |
| | Williams, J.E. & Woinarski, J. (1997). <i>Eucalypt Ecology: Individuals to Ecosystems</i> . Cambridge University Press, Cambridge, UK | [Generic description] "Seed is mainly dispersed by wind and gravity following release from canopy--stored capsules (Cremer 1977). The distance of seed fall is essentially proportional to canopy height, seed weight (i.e. terminal velocity) and wind speed (Cremer 1977), with virtually all seed deposited within a radius of twice the tree or canopy height (Cremer 1966)." |

| 705 | Propagules water dispersed | n |
|-----|--|---|
| | Source(s) | Notes |
| | Harden, G. J. (ed.). <i>Flora of New South Wales, Volume 2</i> . Revised Edition. UNSW Press, Sydney | "Restricted and uncommon, in grassy or sclerophyll woodland" [Buoyancy of seeds unknown, but not naturally occurring in riparian areas] |

| Qsn # | Question | Answer |
|-------|---|---|
| | Williams, J.E. & Woinarski, J. (1997). <i>Eucalypt Ecology: Individuals to Ecosystems</i> . Cambridge University Press, Cambridge, UK | [Generic description] "Seed is mainly dispersed by wind and gravity following release from canopy--stored capsules (Cremer 1977). The distance of seed fall is essentially proportional to canopy height, seed weight (i.e. terminal velocity) and wind speed (Cremer 1977), with virtually all seed deposited within a radius of twice the tree or canopy height (Cremer 1966). The movement of seed once deposited on the ground is probably fairly limited in most species (see, for example, Battaglia and Reid 1993a), although extensive seed harvesting by ants (reviewed by Stoneman 1994) no doubt results in some effective dispersal." |

| 706 | Propagules bird dispersed | n |
|-----|--|--|
| | Source(s) | Notes |
| | Harden, G. J. (ed.). <i>Flora of New South Wales, Volume 2. Revised Edition</i> . UNSW Press, Sydney | [No evidence. Not fleshy-fruited] "Fruit hemispherical or conical, 2-5 mm long, 3-4 mm diam.; disc flat or slightly raised; valves exerted." |

| 707 | Propagules dispersed by other animals (externally) | n |
|-----|---|---|
| | Source(s) | Notes |
| | Williams, J.E. & Woinarski, J. (1997). <i>Eucalypt Ecology: Individuals to Ecosystems</i> . Cambridge University Press, Cambridge, UK | [Generic description] "Seed is mainly dispersed by wind and gravity following release from canopy--stored capsules (Cremer 1977). The distance of seed fall is essentially proportional to canopy height, seed weight (i.e. terminal velocity) and wind speed (Cremer 1977), with virtually all seed deposited within a radius of twice the tree or canopy height (Cremer 1966). The movement of seed once deposited on the ground is probably fairly limited in most species (see, for example, Battaglia and Reid 1993a), although extensive seed harvesting by ants (reviewed by Stoneman 1994) no doubt results in some effective dispersal." |

| 708 | Propagules survive passage through the gut | n |
|-----|--|---|
| | Source(s) | Notes |
| | Harden, G. J. (ed.). <i>Flora of New South Wales, Volume 2. Revised Edition</i> . UNSW Press, Sydney | "Fruit hemispherical or conical, 2-5 mm long, 3-4 mm diam.; disc flat or slightly raised; valves exerted." [No evidence of consumption or internal dispersal] |

| 801 | Prolific seed production (>1000/m2) | n |
|-----|--|--|
| | Source(s) | Notes |
| | Harden, G. J. (ed.). <i>Flora of New South Wales, Volume 2. Revised Edition</i> . UNSW Press, Sydney | [Unknown] "Fruit hemispherical or conical, 2-5 mm long, 3-4 mm diam.; disc flat or slightly raised; valves exerted." |

| Qsn # | Question | Answer |
|-------|--|--|
| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | |
| | Source(s) | Notes |
| | Royal Botanic Gardens Kew. (2020) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/ . [Accessed 16 Dec 2020] | "Storage Behaviour: No data available for species. Of 360 known taxa of genus <i>Eucalyptus</i> , 100.00% Orthodox(p/?)" |

| 803 | Well controlled by herbicides | |
|-----|--|---|
| | Source(s) | Notes |
| | WRA Specialist. (2020). Personal Communication | Unknown. No information on herbicide efficacy or chemical control of this species |

| 804 | Tolerates, or benefits from, mutilation, cultivation, or fire | y |
|-----|---|---|
| | Source(s) | Notes |
| | Grafton Nursery & Hardy Eucalyptus. (2020). <i>Eucalyptus nicholii</i> . https://www.hardy-eucalyptus.com/product-page/eucalyptus-nicholii . [Accessed 16 Dec 2020] | " <i>E. nicholii</i> responds well to coppicing and produces excellent cut foliage for flower-arranging." |

| 805 | Effective natural enemies present locally (e.g. introduced biocontrol agents) | |
|-----|---|---------|
| | Source(s) | Notes |
| | WRA Specialist. (2020). Personal Communication | Unknown |

Summary of Risk Traits:

High Risk / Undesirable Traits

- Casual (naturalizing) in New Zealand
- Other *Eucalyptus* species are invasive
- Unpalatable to deer
- Tolerates many soil types
- Reproduces by seeds
- Seeds dispersed by wind, gravity, and intentionally by people
- Able to coppice and resprout after cutting

Low Risk Traits

- No reports of negative impacts where cultivated
- Unarmed (no spines, thorns, or burrs)
- Palatable to grazing stock
- Not reported to spread vegetatively