Family: ***Proteaceae***

Taxon: ***Telopea speciosissima***

Synonym: *Embothrium speciosissimum Sm. (basionym)* ***Common Name:*** New South Wales waratah
waratah

Questionaire : current 20090513 **Assessor:** Chuck Chimera **Designation:** L
Status: Assessor Approved **Data Entry Person:** Chuck Chimera **WRA Score -8**

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**	**y**
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**	**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**	**n**
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**	
410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y=1, n=0**	**n**
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**	**y**
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**	**y**
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**	**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)**	**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** **-8**

Supporting Data:

101	2010. Australian National Botanic Gardens. Floral Emblems of Australia - Waratah - Telopea speciosissima. http://www.anbg.gov.au/emblems/nsw.emblem.html	[Is the species highly domesticated? No] "Flowers are usually crimson, but a rare creamy white form, Telopea 'Wirrimbirra White', has been cultivated successfully as a horticultural curiosity. Manipulated hybrids of T. speciosissima have been produced combining the grandeur of its flowers with the greater frost tolerance of other Telopea species. Hybrids between T. speciosissima and the Braidwood Waratah, T. mongaensis, have smaller flowers but are usually more floriferous with a compact shape and attractive foliage. One of these hybrids is the registered cultivar, Telopea 'Braidwood Brilliant', a spectacular garden plant developed at the Australian National Botanic Gardens." [No evidence from type species, but cultivars may have been significantly modified]
102	2011. WRA Specialist. Personal Communication.	NA
103	2011. WRA Specialist. Personal Communication.	NA
201	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Species suited to tropical or subtropical climate(s) - 1-intermediate] "The NSW waratah, T. speciosissima (Sm.) R. Br. (Proteaceae) is a shrub, generally 2–4-m tall, common in dry sclerophyll forest and woodlands on the central coast and central and southern tablelands of New South Wales in southeastern Australia (Harden 2002)."
202	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Quality of climate match data? 2-high] "The NSW waratah, T. speciosissima (Sm.) R. Br. (Proteaceae) is a shrub, generally 2–4-m tall, common in dry sclerophyll forest and woodlands on the central coast and central and southern tablelands of New South Wales in southeastern Australia (Harden 2002)."
203	2010. Australian National Botanic Gardens. Floral Emblems of Australia - Waratah - Telopea speciosissima. http://www.anbg.gov.au/emblems/nsw.emblem.html	[Broad climate suitability (environmental versatility)? Yes] "The species is fairly widespread on the central coast and adjoining mountains of New South Wales, occurring from the Gibraltar Range, north of Sydney, to Conjola in the south. It grows mainly in the shrub understorey in open forest developed on sandstone and adjoining volcanic formations, from sea level to above 1000 metres in the Blue Mountains." [elevation range >1000 m, exhibiting environmental versatility]
204	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Native or naturalized in regions with tropical or subtropical climates? No] "The NSW waratah, T. speciosissima (Sm.) R. Br. (Proteaceae) is a shrub, generally 2–4-m tall, common in dry sclerophyll forest and woodlands on the central coast and central and southern tablelands of New South Wales in southeastern Australia (Harden 2002)."
205	2009. Australian Native Plant Society. Telopea speciosissima and Cultivars. http://anpsa.org.au/t-spec.html	[Does the species have a history of repeated introductions outside its natural range? Yes] "The genus Telopea contains five species all confined to east coast regions from northern New South Wales to Tasmania. Telopea speciosissima is the floral emblem of New South Wales and one of Australia's most beautiful and spectacular native plants. It was one of the first Australian plants to be collected for cultivation in Europe as it was common in the sandstone country around the first European settlement at Port Jackson...The waratah is almost the ideal cut flower, being long lasting with flowers occurring terminally on long straight stems. The species is widely cultivated for the cut flower market both in Australia and overseas."
205	2010. Australian National Botanic Gardens. Floral Emblems of Australia - Waratah - Telopea speciosissima. http://www.anbg.gov.au/emblems/nsw.emblem.html	[Does the species have a history of repeated introductions outside its natural range? Yes] "They are grown in Israel, New Zealand and Hawaii for the cut flower trade. It was introduced to England in 1789 but cannot survive English winters out of doors except in the south-west coastal regions, and it rarely flowers in glasshouses. It is also cultivated in California."
205	2011. Australian Native Plants Nursery. Telopea speciosissima. http://www.australianplants.com/plants.aspx?id=1438	[Does the species have a history of repeated introductions outside its natural range? Yes] "Very frost tolerant. Prefers container growing in southern California as I don't think it likes the alkaline soils and water. Grows beautifully in northern California. "
301	2007. Randall, R.P.. Global Compendium of Weeds - Telopea speciosissima [Online Database]. http://www.hear.org/gcw/species/telopea_speciosissima/	[Naturalized beyond native range? No] No evidence
302	2000. Benson, D./McDougall, L.. Ecology of Sydney plant species. Part 7b. Dicotyledon families Proteaceae to Rubiaceae. Cunninghamia. 6(4): 1016-1202.	[Garden/amenity/disturbance weed? No] Listed as a weed of undetermined status in the South-Eastern Australian Bushland, an area to which Teleopea speciossisima is native.

303	2007. Randall, R.P.. Global Compendium of Weeds - Telopea speciosissima [Online Database]. http://www.hear.org/gcw/species/telopea_speciosissima/	[Agricultural/forestry/horticultural weed? No] No evidence
304	2007. Randall, R.P.. Global Compendium of Weeds - Telopea speciosissima [Online Database]. http://www.hear.org/gcw/species/telopea_speciosissima/	[Environmental weed? No] No evidence
305	2007. Randall, R.P.. Global Compendium of Weeds - Telopea oreades [Online Database]. http://www.hear.org/gcw/species/telopea_oreades/	[Congeneric weed? No] Telopea oreades listed as naturalized.
401	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Produces spines, thorns or burrs? No] "T. speciosissima (Sm.) R. Br. (Proteaceae) is a shrub, generally 2–4-m tall"
401	2010. Australian National Botanic Gardens. Floral Emblems of Australia - Waratah - Telopea speciosissima. http://www.anbg.gov.au/emblems/nsw.emblem.html	[Produces spines, thorns or burrs? No] "The Waratah is a stout, erect shrub which may grow to 4 metres. The dark green leathery leaves, 13-25 cm in length, are arranged alternately and tend to be coarsely toothed. The flowers are grouped in rounded heads 7 to 10 cm in diameter surrounded by crimson bracts, about 5 to 7 cm long."
402	2000. Benson, D./McDougall, L.. Ecology of Sydney plant species. Part 7b. Dicotyledon families Proteaceae to Rubiaceae. Cunninghamia. 6(4): 1016-1202.	[Allelopathic? No] "Vegetation: Woodland and open-forest e.g. with Eucalyptus sieberi, E. piperita, E. sclerophylla, shrubby understorey e.g. with Lambertia formosa, Leptospermum trinervium, Persoonia levis, Banksia spinulosa." [No evidence, and occurs in diverse native community]
403	2000. Benson, D./McDougall, L.. Ecology of Sydney plant species. Part 7b. Dicotyledon families Proteaceae to Rubiaceae. Cunninghamia. 6(4): 1016-1202.	[Parasitic? No] "Multistemmed, shrub to 3 m high, with lignotuber; leaves usually toothed and with raised veins." [Proteaceae]
404	2011. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2002. Matthews, L.J.. The protea book: a guide to cultivated Proteaceae. Timber Press, Portland, OR	[Toxic to animals? No evidence]
405	2010. Australian National Botanic Gardens. Floral Emblems of Australia - Waratah - Telopea speciosissima. http://www.anbg.gov.au/emblems/nsw.emblem.html	[Toxic to animals? No evidence]
406	2001. Myerscough, P.J./Whelan, R.J./Bradstock, R.A.. Ecology of Proteaceae with special reference to the Sydney region. Cunninghamia. 6(4): 951-1015.	[Host for recognized pests and pathogens? Possibly] "Fungal diseases, and some of the fungi causing them, are known among local Proteaceae, particularly among those of horticultural interest such as Telopea speciosissima. In Telopea speciosissima, the identity of several fungi entering plants through the root in horticultural conditions is known (Summerell et al. 1992), and so is the identity of the fungus causing crown and stem canker (Summerell et al. 1990) and of fungi that are leaf pathogens (Crous et al. 2000). Phytophthora cinnamoni has been isolated from Royal National Park (Keith McDougall pers. comm.). In eastern Australia, some Proteaceae (e.g. Telopea speciosissima) seem to be susceptible to this pathogen, but not to the same extent as the wide range of susceptible Proteaceae in Western Australia. Leaf spot occurs among wild populations in Proteaceae in the Sydney region, as in Hakea dactyloides, but what pathogens are in such populations and whether there are patterns in the association of particular parasitic micro organisms with Proteaceae in the region are unknown." [diseases could affect commercial Protea farms]
407	2002. Matthews, L.J.. The protea book: a guide to cultivated Proteaceae. Timber Press, Portland, OR	[Causes allergies or is otherwise toxic to humans? No] No evidence
407	2010. eHow. Plants in the Blue Mountains. http://www.ehow.com/list_6786063_plants-blue-mountains.html	[Causes allergies or is otherwise toxic to humans? No] "Waratah (Telopea speciosissima) is a well known Australian native. Though some species of the plant are toxic, aboriginal Australians used the seeds of some species of waratah as a food source. Waratah grows naturally in hilly areas. The plant has been used as the floral emblem of New South Wales since 1961." [other species may have toxic seeds, but no evidence for T. speciosissima

408	2000. Benson, D./McDougall, L.. Ecology of Sydney plant species. Part 7b. Dicotyledon families Proteaceae to Rubiaceae. Cunninghamia. 6(4): 1016-1202.	[Creates a fire hazard in natural ecosystems? Unknown] "Fire response: Stems killed, resprouts from lignotuber. Percentage of plants in flower, average number of flowers/inflorescence and average number of fruits/inflorescence appear to peak 2 years after a summer fire and decline thereafter. The average height of the inflorescence above the ground increases following fire (Pyke, 1983). Juveniles take 8 years to become resistant to low intensity fire (Bradstock & Auld 1987). Fire regimes of less than 10 years will result in a decline in population size (Bradstock 1995)." [benefits from fire, and native to fire prone ecosystems, but unknown if plants can increase fire frequency]
409	2005. Burke, D.. The complete Burke's backyard: the ultimate book of fact sheets. Murdoch Books, Millers Point, Australia	[Is a shade tolerant plant at some stage of its life cycle? Possibly] "Waratahs grow naturally in dappled light. They prefer a position in part shade with morning sunshine.
409	2009. Australian Native Plant Society. Telopea speciosissima and Cultivars. http://anpsa.org.au/t-spec.html	[Is a shade tolerant plant at some stage of its life cycle? Possibly] "A sunny or lightly shaded position is preferred and plants will not thrive in heavily shaded areas or within the canopy of large established trees."
410	2005. Burke, D.. The complete Burke's backyard: the ultimate book of fact sheets. Murdoch Books, Millers Point, Australia	[Tolerates a wide range of soil conditions? No] '"Waratahs must have deep, free-draining, sandy loam soil. Soils with a high clay content are not suitable as drainage will be poor. Basalt soils are best. If you do not provide these growing conditions, waratahs will eventually die."
410	2009. Australian Native Plant Society. Telopea speciosissima and Cultivars. http://anpsa.org.au/t-spec.html	[Tolerates a wide range of soil conditions? No] "Some of the best plants in cultivation have been observed growing in deep sand or sandy loam with excellent drainage but assured moisture. However, they are adaptable to other soils types. For example, they grow extremely well in the basaltic soils in the Dandenong Ranges east of Melbourne (see footnote)."
410	2010. Australian National Botanic Gardens. Floral Emblems of Australia - Waratah - Telopea speciosissima. http://www.anbg.gov.au/emblems/nsw.emblem.html	[Tolerates a wide range of soil conditions? No] "Soils within its range tend to be sandy and low in plant nutrients."
411	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	Climbing or smothering growth habit? No] "T. speciosissima (Sm.) R. Br. (Proteaceae) is a shrub, generally 2–4-m tall…"
412	2001. Myerscough, P.J./Whelan, R.J./Bradstock, R.A.. Ecology of Proteaceae with special reference to the Sydney region. Cunninghamia. 6(4): 951-1015.	[Forms dense thickets? No] No evidence
412	2010. Australian National Botanic Gardens. Floral Emblems of Australia - Waratah - Telopea speciosissima. http://www.anbg.gov.au/emblems/nsw.emblem.html	[Forms dense thickets? No] No evidence
501	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Aquatic? No] "...a shrub, generally 2–4-m tall, common in dry sclerophyll forest and woodlands on the central coast and central and southern tablelands of New South Wales in southeastern Australia…"
502	2002. Harden, G.J. (ed.). Flora of New South Wales, Volume 2. 2nd edn.. UNSW Press, Sydney	[Grass? No] Proteaceae
503	2002. Harden, G.J. (ed.). Flora of New South Wales, Volume 2. 2nd edn.. UNSW Press, Sydney	[Nitrogen fixing woody plant? No] Proteaceae
504	2009. Australian Native Plant Society. Telopea speciosissima and Cultivars. http://anpsa.org.au/t-spec.html	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? Yes] "The plant then regenerates from an underground lignotuber and may become multi-stemmed. " [not herbaceous, but functionally acts as a geophyte]
601	2000. Benson, D./McDougall, L.. Ecology of Sydney plant species. Part 7b. Dicotyledon families Proteaceae to Rubiaceae. Cunninghamia. 6(4): 1016-1202.	[Evidence of substantial reproductive failure in native habitat? No] "Flowers: Red, rarely white in a large compact head surrounded by conspicuous pink to red bracts. September – October on coast, November – December on higher mountains. Pollinated by honeyeater birds. Flowers abundantly only after fire (Keith 1996)."

602	2009. Australian Native Plant Society. Telopea speciosissima and Cultivars. http://anpsa.org.au/t-spec.html	[Produces viable seed? Yes] "Propagation of T. speciosissima is best from seed which should germinate within 4-6 weeks if it is viable. No special pretreatment is necessary but seedlings are susceptible to damping off (a fungal disease) and need to be kept under observation. T. speciosissima can also be grown from cuttings by experienced growers. Propagation of selected, named cultivars and hybrids MUST be carried out from cuttings (or other asexual methods) as seedlings from these cultivars will not produce plants true to type."
603	2000. Benson, D./McDougall, L.. Ecology of Sydney plant species. Part 7b. Dicotyledon families Proteaceae to Rubiaceae. Cunninghamia. 6(4): 1016-1202.	[Hybridizes naturally? Unknown] "There is one record of a hybrid T. speciosissima X mongaensis collected from the wild (P. Weston pers. comm.)."
603	2002. Matthews, L.J.. The protea book: a guide to cultivated Proteaceae. Timber Press, Portland, OR	[Hybridizes naturally? Unknown] "A Telopea cultivar (T. speciosissima x T. oreades) used as a hedge to screen off an unwanted view." [Artificial hybrids possible, but ability to naturally hybridize unknown]
603	2009. Australian Native Plant Society. Telopea speciosissima and Cultivars. http://anpsa.org.au/t-spec.html	[Hybridizes naturally? Unknown] "A number of selected forms of T. speciosissima and hybrids with other Telopea species are being brought into cultivation. These exhibit variations in the colour of the flowers and/or the bracts and include:" [Artificial hybrids possible, but ability to naturally hybridize unknown]
604	1989. Whelan, R.J./Goldingay, R.L.. Factors Affecting Fruit-Set in Telopea Speciosissima (Proteaceae): The Importance of Pollen Limitation. Journal of Ecology. 77(4): 1123-1134.	[Self-compatible or apomictic? No] "Exclusion of pollinators from inflorescences and self-pollination by hand (using whole-plant treatments) produced no fruit, indicating self-incompatibility."
604	2004. Offord, C.A.. An Examination of the Reproductive Biology of Telopea speciosissima (Proteaceae) with Emphasis on the Nature of Protandry and the Role of Self-Pollination in Fruit Set. International Journal of Plant Sciences. 165(1): 73-83.	[Self-compatible or apomictic? No] "Despite the presence of pollen tubes in all parts of the pistil and the early growth of a small number of fruits in self-pollinated treatments, only cross-pollinated treatments resulted in mature fruits containing viable seeds. This evidence confirms late-acting gametophytically controlled self-incompatibility as the main nonvector mechanism for outbreeding in this species."
605	1989. Whelan, R.J./Goldingay, R.L.. Factors Affecting Fruit-Set in Telopea Speciosissima (Proteaceae): The Importance of Pollen Limitation. Journal of Ecology. 77(4): 1123-1134.	[Requires specialist pollinators? Yes] "Telopea speciosissima has conspicuous, large, red inflorescenc...T. speciosissima inflorescences are visited extensively by several species of honeyeaters (Aves: Meliphadiae; Pyke 1981; Pyke & Paton 1983)...Ineffective pollination could result from the manner in which honeyeaters forage at inflorescences. In T. speciosissima anthesis progresses from the base of the inflorescence (acropetally). Honeyeaters were frequently observed perching on the stem beneath the inflorescence and probing flowers from the side. This feeding position avoided contact with the stigma"
606	2009. Australian Native Plant Society. Telopea speciosissima and Cultivars. http://anpsa.org.au/t-spec.html	[Reproduction by vegetative fragmentation? No] "Propagation of T. speciosissima is best from seed which should germinate within 4-6 weeks if it is viable. No special pretreatment is necessary but seedlings are susceptible to damping off (a fungal disease) and need to be kept under observation. T. speciosissima can also be grown from cuttings by experienced growers. Propagation of selected, named cultivars and hybrids MUST be carried out from cuttings (or other asexual methods) as seedlings from these cultivars will not produce plants true to type." [no evidence]
607	2000. Benson, D./McDougall, L.. Ecology of Sydney plant species. Part 7b. Dicotyledon families Proteaceae to Rubiaceae. Cunninghamia. 6(4): 1016-1202.	[Minimum generative time (years)? 4+] "Primary juvenile period: 5 years to flowering"
701	2000. Benson, D./McDougall, L.. Ecology of Sydney plant species. Part 7b. Dicotyledon families Proteaceae to Rubiaceae. Cunninghamia. 6(4): 1016-1202.	[Propagules likely to be dispersed unintentionally? No evidence] "Diaspore: winged seed, wind-dispersed locally (Westoby et al. 1990). Seed with no dormancy (Offord 1993)."
702	2004. Offord, C.A.. An Examination of the Reproductive Biology of Telopea speciosissima (Proteaceae) with Emphasis on the Nature of Protandry and the Role of Self-Pollination in Fruit Set. International Journal of Plant Sciences. 165(1): 73-83.	[Propagules dispersed intentionally by people? Yes] "The waratah Telopea speciosissima R.Br. (family Proteaceae) occurs on the eastern seaboard of Australia around the Sydney region. It is cultivated by the cut-flower industry for its spectacular inflorescences that are generally red." [ornamental]
702	2009. Australian Native Plant Society. Telopea speciosissima and Cultivars. http://anpsa.org.au/t-spec.html	[Propagules dispersed intentionally by people? Yes] "The waratah is almost the ideal cut flower, being long lasting with flowers occurring terminally on long straight stems. The species is widely cultivated for the cut flower market both in Australia and overseas."
703	2000. Benson, D./McDougall, L.. Ecology of Sydney plant species. Part 7b. Dicotyledon families Proteaceae to Rubiaceae. Cunninghamia. 6(4): 1016-1202.	[Propagules likely to disperse as a produce contaminant? No evidence] "Diaspore: winged seed, wind-dispersed locally (Westoby et al. 1990). Seed with no dormancy (Offord 1993)."

703	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Propagules likely to disperse as a produce contaminant? No evidence] "The seeds are non-dormant and germinate as soon as soil moisture is adequate…"
704	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Propagules adapted to wind dispersal? Yes] "Seeds have wings facilitating wind dispersal over short distances (Denham and Auld 2002)."
704	2010. Australian National Botanic Gardens. Floral Emblems of Australia - Waratah - Telopea speciosissima. http://www.anbg.gov.au/emblems/nsw.emblem.html	[Propagules adapted to wind dispersal? Yes] "Large winged seeds are released when the brown leathery pods split along one side."
705	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Propagules water dispersed? No evidence] "Seeds have wings facilitating wind dispersal over short distances (Denham and Auld 2002)."...In contrast to many species in fire prone habitats, seeds of T. speciosissima have no secondary dispersal mechanisms, such as an elaiosome, nor are its predators known or expected to move or cache seeds in other locations."
706	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Propagules bird dispersed? No] "Seeds have wings facilitating wind dispersal over short distances (Denham and Auld 2002)."...In contrast to many species in fire prone habitats, seeds of T. speciosissima have no secondary dispersal mechanisms, such as an elaiosome, nor are its predators known or expected to move or cache seeds in other locations."
707	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Propagules dispersed by other animals (externally)? No] "Seeds have wings facilitating wind dispersal over short distances (Denham and Auld 2002)."...In contrast to many species in fire prone habitats, seeds of T. speciosissima have no secondary dispersal mechanisms, such as an elaiosome, nor are its predators known or expected to move or cache seeds in other locations."
708	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	"In contrast to many species in fire prone habitats, seeds of T. speciosissima have no secondary dispersal mechanisms, such as an elaiosome, nor are its predators known or expected to move or cache seeds in other locations."
801	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Prolific seed production (>1000/m2)? No] "Seed production by T. speciosissima within plots varied from approximately 0.31 seeds/m2 at Site 1 in 2004 to 0 seeds/m2 at Site 2 in 2005." [probably not]
802	2008. Denham, A.J.. Seed predation limits post-fire recruitment in the waratah (Telopea speciosissima). Plant Ecology. 199: 9–19.	[Evidence that a persistent propagule bank is formed (>1 yr)? No] "The seeds are non-dormant and germinate as soon as soil moisture is adequate (Bradstock 1995)...Its seeds are non-dormant and must either germinate on the soil surface or ultimately face loss of viability or predation by vertebrates or invertebrates...In contrast, for species such as T. speciosissima that do not form a seed bank, the impacts of predation observed in the few post-fire seasons when fruiting occurs will influence recruitment for the entire fire cycle."
803	2011. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No evidence that this species is being chemically controlled, and no information available on herbicide efficacy.
804	1989. Whelan, R.J./Goldingay, R.L.. Factors Affecting Fruit-Set in Telopea Speciosissima (Proteaceae): The Importance of Pollen Limitation. Journal of Ecology. 77(4): 1123-1134.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "It is a long-lived, perennial shrub that resprouts from a lignotuber after fire. Within a few years of fire, terminal inflorescences are borne on many of the resprouting stems, which continue to elongate annually…"
804	2002. Harden, G.J. (ed.). Flora of New South Wales, Volume 2. 2nd edn.. UNSW Press, Sydney	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "The species survives fire by having dormant buds protected in an underground lignotuber (Bradstock 1995). Aerial stems are completely regrown after each fire. After resprouting, mature individuals usually flower between the second and fourth spring after the fire."
804	2002. Matthews, L.J.. The protea book: a guide to cultivated Proteaceae. Timber Press, Portland, OR	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Very hard pruning, with removal of virtually the entire flowering stem, encourages multiple growing shoots from lower within the bush, resulting in a compact, bushy habit and far more flowering stems next season. Some commercial waratah growers have even been known to take mature bushes with chainsaws to promote maximum regeneration."
805	2011. WRA Specialist. Personal Communication.	[Effective natural enemies present locally? Unknown]