Taxon: Acacia cyclops

Family: Fabaceae

Common Name(s): coastal wattle
redeye
rooikrans

Synonym(s): Acacia cyclopsis G. Don
Acacia eglandulosa DC.
Acacia mirbelii Dehnh.

Assessor: Chuck Chimera **Status:** Approved **End Date:** 20 Jun 2025

WRA Score: 15.0 **Designation:** H(HPWRA) **Rating:** High Risk

Keywords: Naturalized, Environmental Weed, N-Fixing, Thicket-forming, Bird-dispersed

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)	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	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n = question 205	y
302	Garden/amenity/disturbance weed	y = 1*multiplier (see Appendix 2), n = 0	n
303	Agricultural/forestry/horticultural weed	y = 2*multiplier (see Appendix 2), n = 0	n
304	Environmental weed	y = 2*multiplier (see Appendix 2), n = 0	y
305	Congeneric weed	y = 1*multiplier (see Appendix 2), n = 0	y
401	Produces spines, thorns or burrs	y = 1, n = 0	n
402	Allelopathic	y = 1, n = 0	y
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	n
407	Causes allergies or is otherwise toxic to humans	y = 1, n = 0	n
408	Creates a fire hazard in natural ecosystems		
409	Is a shade tolerant plant at some stage of its life cycle	y = 1, n = 0	n

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y = 1, n = 0	y
411	Climbing or smothering growth habit	y = 1, n = 0	n
412	Forms dense thickets	y = 1, n = 0	y
501	Aquatic	y = 5, n = 0	n
502	Grass	y = 1, n = 0	n
503	Nitrogen fixing woody plant	y = 1, n = 0	y
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y = 1, n = 0	n
601	Evidence of substantial reproductive failure in native habitat	y = 1, n = 0	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)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	2
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y = 1, n = -1	y
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	n
706	Propagules bird dispersed	y = 1, n = -1	y
707	Propagules dispersed by other animals (externally)	y = 1, n = -1	y
708	Propagules survive passage through the gut	y = 1, n = -1	y
801	Prolific seed production (>1000/m2)	y = 1, n = -1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)	y = 1, n = -1	y
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y = 1, n = -1	n
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**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	No evidence

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. (2025). Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. (2014). 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"**	**High**
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"A. cyclops is native to southwestern Australia, Perth District. In the Lake Warden System, at the western end, it frequently grows behind Melaleuca cuticularis (Jaensch et al., 1988). It is currently spreading from sandy or sandstone soils into coastal bush and heathland (NAS, 1980; Duke, 1983)." ... "A. cyclops is found in arid and semiarid subtropical areas with an annual rainfall of 200-1400 mm. It is slightly tolerant of frost (Little, 1983; NAS, 1980; Yantasath et al., 1993) and sensitive to waterlogging. It can live in areas with a uniform, bimodal or winter rainfall distribution in Australia, whereas it usually receives summer rainfall in Africa."

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	

Qsn #	Question	Answer
203	**Broad climate suitability (environmental versatility)**	**n**
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"A. cyclops is found in arid and semiarid subtropical areas with an annual rainfall of 200-1400 mm. It is slightly tolerant of frost (Little, 1983; NAS, 1980; Yantasath et al., 1993) and sensitive to waterlogging. It can live in areas with a uniform, bimodal or winter rainfall distribution in Australia, whereas it usually receives summer rainfall in Africa. Climatic amplitude (estimates) - Altitude range: 0 - 300 m - Mean annual rainfall: 200 - 1400 mm - Rainfall regime: summer - Dry season duration: 2 - 12 months - Mean annual temperature: 14 - 19ºC - Mean maximum temperature of hottest month: 26 - 33ºC - Mean minimum temperature of coldest month: 3 - 10ºC - Absolute minimum temperature: > 1ºC"

204	**Native or naturalized in regions with tropical or subtropical climates**	**y**
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"A. cyclops is native to southwestern Australia, Perth District. In the Lake Warden System, at the western end, it frequently grows behind Melaleuca cuticularis (Jaensch et al., 1988). It is currently spreading from sandy or sandstone soils into coastal bush and heathland (NAS, 1980; Duke, 1983)." ... "A. cyclops is found in arid and semiarid subtropical areas with an annual rainfall of 200 1400 mm."

205	**Does the species have a history of repeated introductions outside its natural range?**	**y**
	Source(s)	**Notes**
	CABI. 2014. Acacia cyclops In: Invasive Species Compendium. www.cabi.org/isc	"Henderson (2001) reports that it is invasive in South African forest gaps, dunes and along roadsides and watercourses. Binggeli (1999) classed A. cyclops as a highly invasive species. It is a category 2 declared invader in South Africa according to the Department of Agriculture, Conservation of Agricultural Resources Act, 1983 (Government of South Africa, 1983; Henderson, 2001). It is present in California, USA (USDA-NRCS, 2002) and Cronk and Fuller (1995) report that this species has is invasive there though this requires verification. It is also present in Portugal and is exhibiting invasive characteristics in Europe." ... "A. cyclops has become a very successful colonizer in South Africa and is classified as a weed there (Moll and Trinder-Smith, 1992; Henderson, 1998; Higgins et al., 1999). Cronk and Fuller (1995) speculate that it first arrived in South Africa when introduced to Baron von Ludwig's private garden in the 1830s and was used to plant the Cape Flats from approximately 1847. It has been widely introduced outside its native range, particularly across Africa, where it has been used for dune stabilization, for firewood, as a fodder tree and as an ornamental. It has also been introduce to coastal Portugal and the Mediterranean."

301	**Naturalized beyond native range**	**y**
	Source(s)	**Notes**
	CABI. 2014. Acacia cyclops In: Invasive Species Compendium. www.cabi.org/isc	"A. cyclops has become a very successful colonizer in South Africa and is classified as a weed there (Moll and Trinder-Smith, 1992; Henderson, 1998; Higgins et al., 1999)."

Qsn #	Question	Answer
	Pasta, S., Badalamenti, E., & La Mantia, T. (2012). Acacia cyclops A. Cunn. ex G. Don (Leguminosae) en Italia: primeros casos de naturalización. Anales del Jardín Botánico de Madrid 69(2): 193-200	"The first two cases of naturalization of Acacia cyclops are reported for Italy. Young trees were observed growing in the wild some 15 years ago on Linosa (Pelagie Islands, Strait of Sicily). A decade later, this alien plant should no longer be considered as a casual, since a very intensive process of self-sown regeneration has been observed in some plantations on Lampedusa, the major island of the same Archipelago. The available literature suggests the need for careful monitoring of the ongoing invasion process, as A. cyclops has already shown a very invasive behaviour elsewhere within Mediterranean-type biomes due to its ability to withstand high environmental stresses. As migrating birds are suspected to have played an important role in facilitating the arrival of A. cyclops, further propagules are likely to reach the islands in the future. We recommend that new plantations of A. cyclops should be forbidden, but that extant naturalized populations should be managed instead of eradicating them. In fact, the effect of Acacia plantations warrants investigation at different scales in order to assess their impact on local plant-diversity and ecological succession processes."
	Gallaher, T.J., Brock, K., Kennedy, B.H., Imada, C.T., Imada, K., & Walvoord, N. (2025). Plants of Hawai'i. http://www.plantsofhawaii.org. [Accessed 20 Jun 2025]	No evidence
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence in the Hawaiian Islands to date

302	Garden/amenity/disturbance weed	n
	Source(s)	**Notes**
	WRA Specialist. (2025). Personal Communication	Environmental Weed

303	Agricultural/forestry/horticultural weed	n
	Source(s)	**Notes**
	WRA Specialist. (2025). Personal Communication	Environmental Weed

304	Environmental weed	y
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"A. cyclops is an extremely weedy species, although slow growing. Once established over large areas, it is difficult to remove or replace. The pods are not easily gathered because they are non deciduous (NAS, 1980, Duke, 1983, Yantasath et al., 1993)."
	CABI. 2014. Acacia cyclops In: Invasive Species Compendium. www.cabi.org/isc	"A. cyclops produces large quantities of litter which leads to increased soil nitrogen content (Weber, 2003), and Witkowski, (1991) concluded that the nitrogen status of the fynbos and strandveld ecosystems is elevated by the invasion of alien Acacia species. A. cyclops is also reported to use high volumes of water, ranking highest in its water consumption among the top twenty-five invader plant species in South Africa (Anon., 2003), and Working for Water (2003) suggest that the loss of native plants to A. cyclops thickets leaves the soil bare and vulnerable to wind and water erosion."

Qsn #	Question	Answer
	Impson, F.A.C., Moran, V.C., & Hoffmann, J.H. 2004. Biological control of an alien tree, Acacia cyclops, in South Africa: impact and dispersal of a seed-feeding weevil, Melanterius servulus. Biological Control, 29(3): 375-381	"Acacia cyclops A. Cunn. ex G. Don, is a shrubby evergreen tree (1.5-6m high), originating from southwestern Australia. It is now considered to be one of the most important invaders of coastal and lowland fynbos in the Western and Eastern Cape Provinces of South Africa (Henderson, 1995; Henderson et al., 1987; Macdonald and Richardson, 1986). The fynbos biome, which occupies some 77,172 km2 at the southern tip of Africa, is one of the six floral kingdoms of the world. The diverse plant communities within this biome are characterized by proteoid and ericoid shrubs and restioid hemicryptophytes (Macdonald and Richardson, 1986). Introduced into South Africa in approximately 1835 to stabilize drift sands (Roux, 1961; Shaughnessy, 1980), A. cyclops has become problematic and widespread, due to its prolific seed production and bird-assisted dispersal (Glyphis et al., 1981; Holmes, 1989; Middlemiss, 1963)."

305	Congeneric weed	y
	Source(s)	**Notes**
	Le Maitre, D. C., Gaertner, M., Marchante, E., Ens, E. J., Holmes, P. M., Pauchard, A., O'Farrell, P. J., Rogers, A. M., Blanchard, R., Blignaut, J. & Richardson, D. M. (2011). Impacts of invasive Australian acacias: implications for management and restoration. Diversity and Distributions, 17(5): 1015-1029	"Case studies are used to identify similarities and differences between three regions severely affected by invasions of Australian acacias: Acacia dealbata in Chile, Acacia longifolia in Portugal and Acacia saligna in South Africa." ... "Australian acacias have a wide range of impacts on ecosystems that increase with time and disturbance, transform ecosystems and alter and reduce ecosystem service delivery. A shared trait is the accumulation of massive seed banks, which enables them to become dominant after disturbances. Ecosystem trajectories and recovery potential suggest that there are important thresholds in ecosystem state and resilience. When these are crossed, options for restoration are radically altered; in many cases, autogenic (self-driven and self-sustaining) recovery to a pre-invasion condition is inhibited, necessitating active intervention to restore composition and function."

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"A. cyclops is a dense, evergreen, bushy shrub, often multistemmed. It can also grow as a small tree of 3-8 m, with a trunk of 20 cm in diameter and a rounded crown (Little, 1983; NAS, 1980). On windy coastal sites, it forms hedges less than 0.5 m high. Foliage A. cyclops has light-green foliage and simple flattened phyllodes (modified leafstalks), narrowly oblong, varnished when young, and growing in a downward vertical position. Phyllodes are 4-9 cm x 5 13 mm, nearly straight; blunt with a short, hard point curved to side, tapering to long pointed base; stiff and leathery, hairless, with 3-7 main veins arising from the base, and 1 tiny gland on the upper edge at base. Twigs are slender, angled and hairless (Little, 1983; NAS, 1980)."

402	Allelopathic	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	"A. cyclops excludes regeneration of most native plants, becomes a dominant biomass component of vegetation and has major impacts on the diversity of groundcover flora. Individual shrubs of A. cyclops have a dense canopy that extends from near ground level to their height of 2-4 m (Whibley and Symon 1992). This canopy excludes most other plant species through shading. In addition, a thick ground layer of leaf and pod litter underneath shrubs (to approx. 5 cm depth) is likely to limit establishment of native plants. Seedlings of A. cyclops readily establish in close proximity to parent plants, such that canopies merge and a dense thicket results. Leachate from A. cyclops leaves and litter has been shown to reduce growth of certain shrubs in South Africa (Rutherford and Powrie 1993)."
	Rutherford, M. C., & Powrie, L. W. (1993). Allelochemic control of biomass allocation in interacting shrub species. Journal of Chemical Ecology, 19(5): 893-906	"Aqueous leachates derived from canopy phyllodes of invasive Acacia cyclops affected growth of a range of shrub species independently of nutrient input effects. All plants showed a sublethal phytotoxic response. Root mass was generally less adversely affected than shoot mass and, while decreasing significantly in response to the 10% concentration, showed no such response to the 1% solution. Root-shoot biomass ratios increased, except in Euphorbia burmannii, which may recognize intrinsic root architecture limitations on extensive exploitation of toxin-free soil. Application of surface plant litter from under A. cyclops canopies stimulated the production of basal stems in Protasparagus capensis and Eriocephalus racemosus but was insufficient to significantly reduce root-shoot ratios. Plant growth inhibition was maximized by canopy leachate compounded by surface litter effects in Anthospermum spathulatum. The net effect of leachate at high concentration on biomass allocation in certain shrub species may help explain their patterns of association and disassociation with A. cyclops."

403	Parasitic	n
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"A. cyclops is a dense, evergreen, bushy shrub, often multistemmed."

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"Fodder is the main non-wood use of A. cyclops. Goats and antelope browse the phyllodes in South Africa. Seed may be suitable for cattle feed after it is crushed (NAS, 1980). Studies by Milton (1981) showed that annual litterfall in the South African Cape, comprising 60% foliage and 30% reproductive structures, averaged 7 Mt/ha, representing double the value of evergreen scrub communities in winter rainfall regions."
	National Research Council (U.S.). Advisory Committee on Technology Innovation. (1980). Firewood Crops: Shrub and Tree Species for Energy Production. Volume 1. National Academy of Sciences, Washington, D.C.	"Fodder. Goats and antelope browse the phyllodes. The seeds and their oily funicles are eaten by birds, primates, and rodents, and if crushed, might be suitable for cattle."

405	Toxic to animals	n
	Source(s)	**Notes**
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	"There are no known health risks to humans or animals associated with A. cyclops."

Qsn #	Question	Answer
	National Research Council (U.S.). Advisory Committee on Technology Innovation. (1980). Firewood Crops: Shrub and Tree Species for Energy Production. Volume 1. National Academy of Sciences, Washington, D.C.	[No evidence of toxicity] "Fodder. Goats and antelope browse the phyllodes. The seeds and their oily funicles are eaten by birds, primates, and rodents, and if crushed, might be suitable for cattle."

406	Host for recognized pests and pathogens	n
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"No significant pests have been recorded for A. cyclops, although members of the seed-predating genus Zulubius may be potential biocontrol agents in South Africa, where A. cyclops has become invasive (Holmes et al., 1987; Schaffner, 1987). Acizzia uncatoides, a psyllid pest, has been recorded from ornamental specimens in the Canary Islands (Siverio and Montesdeoca, 1990). Pests recorded Insects: Acizzia uncatoides Zulubius spp. [1] Fungus diseases: Armillaria luteobubalina (armillaria root rot)"
	National Research Council (U.S.). Advisory Committee on Technology Innovation. (1980). Firewood Crops: Shrub and Tree Species for Energy Production. Volume 1. National Academy of Sciences, Washington, D.C.	"Pests and Diseases These are not an important factor in South Africa; in fact, the lack of seed destroyers is partly responsible for the weediness of the species."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	**Notes**
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	"There are no known health risks to humans or animals associated with A. cyclops."

408	Creates a fire hazard in natural ecosystems	
	Source(s)	**Notes**
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	[Unknown] "It is not clear whether A. cyclops creates an increased fire risk in native vegetation. There is a build-up of leaf and pod litter on the ground and the canopy reaches down to near ground-level. A. cyclops will regenerate from seed after fire, but burning of thickets leads to high levels of seed death unless seed is below 30 mm in soil (Holmes 1989b)." ... "Fire is rare in native stands of A. cyclops in Western Australia (see Establishment above). In South Africa, A. cyclops is most prevalent in strandveld vegetation, which has less frequent fires than in fynbos (Witkowski 1994)."

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	**Notes**
	Weber, E. (2003). Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Germination is enhanced by fire; the seedlings are intolerant of shade."
	National Research Council (U.S.). Advisory Committee on Technology Innovation. (1980). Firewood Crops: Shrub and Tree Species for Energy Production. Volume 1. National Academy of Sciences, Washington, D.C.	"This species has a high light demand; it will not survive in deep shade."

Qsn #	Question	Answer
410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y**
	Source(s)	**Notes**
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	"In SA, A. cyclops occurs mainly on calcareous sands, shallow calcareous loam or brown calcareous earths (Whibley and Symon 1992). Gill (1985) notes that A. cyclops is not confined to calcareous substrates however, and in Western Australia also occurs in acidic soil types such as silicaceous sands, ironstone gravel, heavy red clay and in granite outcrops. In South Africa, A. cyclops is the dominant alien plant of the relatively phosphorus rich strandveld vegetation. Similarly, the coastal calcareous sands where it occurs in Western Australia are higher in phosphorus than the inland acidic soils. However, it was shown that A. cyclops does not show a marked requirement for soils with relatively high phosphorus and its distribution may be more indicative of a competitive ability through drought tolerance. (Witkowski 1994) PIRSA Land Information soil attributes and classes selected for A. cyclops were: • Most Common Soil Groups – calcareous soils, shallow soils on calcrete or limestone, deep sands and highly leached sands; and • Susceptibility to Waterlogging - rapidly to well-drained. Calcareous sands, calcareous loamy soils, brown calcareous earths and alkaline loam over clay soils (map units A, BB, BG, SV, DD and Lb) were selected from the Atlas of Australian Soils (Northcote et al. 1968) for A. cyclops in rangeland areas."
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"Soil and physiography A. cyclops grows well on calcareous sand or limestone and prefers well drained, sandy or quartzitic soils, but can survive on drier sites such as dune crests (NAS, 1980). Soil descriptors - Soil texture: light - Soil drainage: impeded - Soil reaction: alkaline - Special soil tolerances: sodic - Soil types: calcareous soils; sandy soils; saline soils"
	National Research Council (U.S.). Advisory Committee on Technology Innovation. (1980). Firewood Crops: Shrub and Tree Species for Energy Production. Volume 1. National Academy of Sciences, Washington, D.C.	"Soil. It grows on quartzitic or calcareous sand or limestone. It also is found in drier sites such as dune crests."

411	**Climbing or smothering growth habit**	**n**
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"A. cyclops is a dense, evergreen, bushy shrub, often multistemmed. It can also grow as a small tree of 3-8 m, with a trunk of 20 cm in diameter and a rounded crown (Little, 1983; NAS, 1980). On windy coastal sites, it forms hedges less than 0.5 m high."

412	**Forms dense thickets**	**y**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Weber, E. (2003). Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"In the native range, this tree grows in open scrub and rarely forms dense stands. Where invasive, it forms dense and impenetrable thickets that crowd out native vegetation; in South Africa, it forms a species poor dune scrub."
	Glyphis, J. P., Milton, S. J., & Siegfried, W. R. 1981. Dispersal of Acacia cyclops by birds. Oecologia, 48(1): 138 -141	[forms thickets in sandy, river valleys] "Acacia cyclops is an endemic shrub in south-western Australia (Seddon 1972). The plant was imported into South Africa during the 1840's to assist in arresting the movement of wind-blown sand in the southern Cape Province (Roux 1961 ; Stirton 1978). Since then, A. cyclops, in association with A. saligna (Labili.) H. Wendl (another shrub of south-western Australian origin), has spread over 300,000ha of coastal lowland (Taylor 1975), and inland also forms thickets in sandy, river valleys. This expansion has been attributed, in part, to dispersal of seeds by African birds (Middlemiss 1963; Winterbottom 1970); birds are thought to be responsible for dispersing A. cyclops in its Australian habitat (A.M. Gill in litt. 1979)."

501	Aquatic	n
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	[Terrestrial] "A. cyclops is found in arid and semiarid subtropical areas with an annual rainfall of 200-1400 mm."

502	Grass	n
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	Fabaceae

503	Nitrogen fixing woody plant	y
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"Ability to fix nitrogen"

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"A. cyclops is a dense, evergreen, bushy shrub, often multistemmed. It can also grow as a small tree of 3-8 m, with a trunk of 20 cm in diameter and a rounded crown (Little, 1983; NAS, 1980). On windy coastal sites, it forms hedges less than 0.5 m high. Foliage A. cyclops has light-green foliage and simple flattened phyllodes (modified leafstalks), narrowly oblong, varnished when young, and growing in a downward vertical position. Phyllodes are 4-9 cm x 5 13 mm, nearly straight; blunt with a short, hard point curved to side, tapering to long pointed base; stiff and leathery, hairless, with 3-7 main veins arising from the base, and 1 tiny gland on the upper edge at base. Twigs are slender, angled and hairless (Little, 1983; NAS, 1980)."

601	Evidence of substantial reproductive failure in native habitat	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	CABI. 2014. Acacia cyclops In: Invasive Species Compendium. www.cabi.org/isc	[No evidence] "A. cyclops is native to southern Western Australia. At the western end of the Lake Warden System, it frequently grows behind Melaleuca cuticularis (Jaensch et al., 1988), and is now currently spreading from sandy or sandstone soils into coastal bush and heathland (NAS, 1980; Duke, 1983)."

602	Produces viable seed	y
	Source(s)	**Notes**
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"Flowers are lemon yellow, in clusters of two to three. Pods are are narrowly oblong, 4-12 x 8-12 mm, flattened, curved or twisted, greyish brown to dark brown and leathery. The pods are not shed, but remain on the tree, exposing their seeds to predators and dispersers (NAS, 1980). Seeds are bean-like, elliptical, flattened, 5 mm long, dark brown and encircled by a thick, red, thread-like oily stalk or funicle (Little, 1983)."
	Holmes, P. M., Macdonald, I. A. W., & Juritz, J. (1987). Effects of clearing treatment on seed banks of the alien invasive shrubs Acacia saligna and Acacia cyclops in the southern and south western Cape, South Africa. Journal of Applied Ecology 24(3): 1045 1051	"Germination trials indicated a large range in percentage viability of A. cyclops seeds between sites (46-0-95 3%),"

603	Hybridizes naturally	
	Source(s)	**Notes**
	Gaskin, J. F. (2017). The role of hybridization in facilitating tree invasion. AoB Plants, 9(1), plw079	[Intraspecific hybrids reported] "Novel hybrid invasives that involved only non-native species include Acacia pycnantha, A. saligna and A. cyclops (intraspecific hybrids; Le Roux et al. 2011"
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	Unknown. No hybridization reported

604	Self-compatible or apomictic	
	Source(s)	**Notes**
	Gibson, M. R., Richardson, D. M., Marchante, E., Marchante, H., Rodger, J. G., Stone, G. N., ... & Wilson, J. R. (2011). Reproductive biology of Australian acacias: important mediator of invasiveness?. Diversity and Distributions, 17(5): 911-933	"Table S1 The complete set of reproductive traits for introduced Australian acacias (n=126)." [Self-compatibility of Acacia cyclops not listed]
	Millar, M. A., Coates, D. J., Byrne, M., Krauss, S. L., Jonson, J., & Hopper, S. D. (2019). Assessment of genetic diversity and mating system of Acacia cyclops restoration and remnant populations. Restoration Ecology, 27(6), 1327 -1338	[Highly outcrossing. Research indicates self-pollination does not occur] "Mating System. The primarily outcrossed mating system found here in reference populations of A. cyclops is consistent with expectations as high outcrossing is common in species of the predominant Australian subgenus Phyllodineae, all of which have protogynous flowers, a mechanism that promotes outcrossing. The high outcrossing rates in A. cyclops are comparable to values obtained from genetic studies of other Acacia species (Moran et al. 1989; Casiva et al. 2004; George et al. 2008; Millar et al. 2008; Broadhurst et al. 2008b; Millar et al. 2014)." … "Estimates of the correlation of selfing or outcrossing among loci (rtl), which, in situations of low selfing, directly estimates the fraction of inbreeding due to self-pollination (Ritland 2002), were all zero, which also implies that any inbreeding in A. cyclops was due to mating among related individuals rather than self-pollination."

Qsn #	Question	Answer
605	Requires specialist pollinators	n
	Source(s)	Notes
	Gibson, M. R., Richardson, D. M., Marchante, E., Marchante, H., Rodger, J. G., Stone, G. N., ... & Wilson, J. R. (2011). Reproductive biology of Australian acacias: important mediator of invasiveness?. Diversity and Distributions, 17(5): 911-933	"Pollinator-mediated seed production is likely to facilitate invasion of Acacia species where they are introduced but should not differ for introduced non-invasive species as Australian acacias possess similar floral morphology and attract similar (generalist) pollinator groups (e.g. Apis mellifera)."

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	"This species does not reproduce vegetatively."
	CABI. 2014. Acacia cyclops In: Invasive Species Compendium. www.cabi.org/isc	[No evidence] "A. cyclops reproduces from seed (NAS, 1980), rarely coppicing and mature trees do not survive felling. Seed germination is enhanced after fire."

607	Minimum generative time (years)	2
	Source(s)	Notes
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	"A. cyclops can produce seeds within two years from germination (H. Lamont pers. comm.)."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
	Source(s)	Notes
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	[Probably Yes] "In SA, A. cyclops was seen occasionally growing in drainage lines on roadsides, indicating probable spread by graders."

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"A. cyclops is a dense bushy shrub or small tree that can grow in very dry areas with an annual precipitation of less then 300 mm (NAS, 1980). It tolerates salt spray, wind, drought, sand-blast, and salinity (NAS, 1980; El-Lakany, 1986; Ansari et al., 1993; Yantasath et al., 1993). It is useful for stabilization of coastal dunes (NAS, 1980), and produces a dense, high-quality firewood (NAS, 1980; El-Lakany, 1986)." ... "A. cyclops is used for coastal sand dune stabilization as it is tolerant of spray, wind, sand blast and salinity (NAS, 1980). It is planted as an ornamental in the Canary Islands (Siverio and Montesdeoca, 1990)."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes

Qsn #	Question	Answer
	CABI. 2014. Acacia cyclops In: Invasive Species Compendium. www.cabi.org/isc	[Well-studied invasive tree with no history of produce contamination] "Birds and mammals, including mice and baboons, disperse seeds (Cronk and Fuller, 1995), and Weber (2003) lists ants and small mammals among the seed dispers. A. cyclops was intentionally introduced to South Africa where it has become invasive, and is an intentionally introduced exotic in many other countries."

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Glyphis, J. P., Milton, S. J., & Siegfried, W. R. 1981. Dispersal of Acacia cyclops by birds. Oecologia, 48(1): 138 -141	[Bird-dispersed] "Acacia cyclops contains its seeds in pods. The pods, borne in clusters, split along both margins as far as the peduncle in the early austral summer when they ripen, but are not shed. The dark brownish-black seeds are suspended for up to 5 months from a vividly red, arillate funicle in the open non-deciduous pod. A colour combination of red and black on a diaspora was shown to be attractive to birds (Turcek 1963),"

705	Propagules water dispersed	n
	Source(s)	Notes
	CABI. 2014. Acacia cyclops In: Invasive Species Compendium. www.cabi.org/isc	[A well-studied invasive tree with no reports of seed movement by water] "Birds and mammals, including mice and baboons, disperse seeds (Cronk and Fuller, 1995), and Weber (2003) lists ants and small mammals among the seed dispersers. A. cyclops was intentionally introduced to South Africa where it has become invasive, and is an intentionally introduced exotic in many other countries."

706	Propagules bird dispersed	y
	Source(s)	Notes
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	"A. cyclops has been observed to have spread relatively rapidly in parts of SA (N. Mallen and B. Overton pers. comm.). This is probably a result of efficient bird dispersal; A. cyclops seed is spread long-distances by birds attracted to the oil-rich, red, aril or funicle which encircles each seed in the pod. In Australia, birds which have been observed dispersing A. cyclops seed include silvereyes, red wattlebirds, grey currawongs, singing honeyeaters, brush bronzewing pigeons and magpies (Gill 1985). A. cyclops germination is enhanced by seed passage through the gut of birds (Glyphis et al. 1981). A. cyclops is also spread by birds in South Africa (Glyphis et al. 1981) and a clumped distribution pattern of the species is associated with tall plants as a result of birds defecating at these perch sites. Similar observations have been made in SA (N. Mallen, B. Overton, H. Longbottom, K. Mercer pers. comm.), with seed having been dispersed from several hundred metres to several kilometres from seed-bearing A. cyclops."
	Glyphis, J. P., Milton, S. J., & Siegfried, W. R. 1981. Dispersal of Acacia cyclops by birds. Oecologia, 48(1): 138 -141	"In South Africa seedlings of the exotic Acacia Cyclops grow in clumps. The seedlings occur beneath tall elements, or in bush clumps, of the surrounding indigenous vegetation. The tall shrubs are used as perches by birds, and the pattern of seedling distribution is a result of dispersal of seeds by birds."

Qsn #	Question	Answer
	Mokotjomela, T. M., Hoffmann, J. H., & Downs, C. T. (2015). The potential for birds to disperse the seeds of Acacia cyclops, an invasive alien plant in South Africa. Ibis, 157(3), 449-458	"Mature seeds were also harvested and fed to caged bird species to determine gut retention times and germination rates of ingested seeds. Attrition rates of seeds showed that birds continue to remove seeds but that only a proportion of the crop is taken. Only two frugivorous species (Knysna Turaco Tauraco corythaix and Red-winged Starling Onychognathus morio) and two granivorous species (Red-eyed Dove Streptopelia semitorquata and Laughing Dove Streptopelia sengalensis) ingested A. cyclops seeds during feeding trials. Ingestion by birds enhanced seed germination except for those ingested by Laughing Doves. There were no apparent effects of length of gut passage time and avian body size on seed germination rates. Despite the diminished seed resource due to biological control agents, birds continue to disperse A. cyclops seeds."

707	Propagules dispersed by other animals (externally)	y
	Source(s)	**Notes**
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	"Ants also disperse the seed over short distances (Gill 1985, Holmes 1990). They collect shed seed from the soil surface, using the aril as a food source and burying the seed in the process. Holmes (1990) considered that ants play a critical role in maintaining and accumulating acacia seedbanks and hence facilitate development of dense stands."

708	Propagules survive passage through the gut	y
	Source(s)	**Notes**
	Glyphis, J. P., Milton, S. J., & Siegfried, W. R. 1981. Dispersal of Acacia cyclops by birds. Oecologia, 48(1): 138 -141	"Germination of A. cyclops seeds was enhanced as a result of passage through the gut of a bird, or by artificial treatments simulating actions taking place in the gut of a bird. We examine properties of the seed, and the funicle which is attractive to birds, in relation to aspects of the life history of A. Cyclops and the species' success as an invasive plant in South Africa." ... "Passage through the gut of a bird makes about 30% of A. Cyclops seeds water-permeable, whereas only about 9% of fresh seeds can absorb water and germinate (Table 2). Although about onethird of the seeds in bird faeces germinate as soon as they have imbibed sufficient water, the rest remain intact and dormant."
	Mokotjomela, T. M., Hoffmann, J. H., & Downs, C. T. (2015). The potential for birds to disperse the seeds of Acacia cyclops, an invasive alien plant in South Africa. Ibis, 157(3), 449-458	"Mature seeds were also harvested and fed to caged bird species to determine gut retention times and germination rates of ingested seeds. Attrition rates of seeds showed that birds continue to remove seeds but that only a proportion of the crop is taken. Only two frugivorous species (Knysna Turaco Tauraco corythaix and Red-winged Starling Onychognathus morio) and two granivorous species (Red-eyed Dove Streptopelia semitorquata and Laughing Dove Streptopelia sengalensis) ingested A. cyclops seeds during feeding trials. Ingestion by birds enhanced seed germination except for those ingested by Laughing Doves. There were no apparent effects of length of gut passage time and avian body size on seed germination rates. Despite the diminished seed resource due to biological control agents, birds continue to disperse A. cyclops seeds."

801	Prolific seed production (>1000/m2)	y
	Source(s)	**Notes**
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	"An annual seed fall of >1000 seeds/m2 has been measured in South Africa (Milton and Hall 1981)."

Qsn #	Question	Answer
	Holmes, P. M., Macdonald, I. A. W., & Juritz, J. (1987). Effects of clearing treatment on seed banks of the alien invasive shrubs Acacia saligna and Acacia cyclops in the southern and south western Cape, South Africa. Journal of Applied Ecology 24(3): 1045 1051	"Annual seed production by A. saligna and A. cyclops is about 10 000 and 3000 seeds per 1 m2 of canopy cover, respectively (Milton & Hall 1981). Seeds can be bird-dispersed (Glyphis, Milton & Siegfried 1981), but most fall directly to the ground."

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	**Notes**
	National Research Council (U.S.). Advisory Committee on Technology Innovation. (1980). Firewood Crops: Shrub and Tree Species for Energy Production. Volume 1. National Academy of Sciences, Washington, D.C.	"Once established over large areas, it is difficult to remove or replace. There is little vegetation cover beneath an Acacia cyclops thicket. The seeds remain viable in the soil for many years."
	Holmes, P. M., Macdonald, I. A. W., & Juritz, J. (1987). Effects of clearing treatment on seed banks of the alien invasive shrubs Acacia saligna and Acacia cyclops in the southern and south western Cape, South Africa. Journal of Applied Ecology 24(3): 1045 1051	[50% of seeds survive beyond 1 year] "Seed populations of A. cyclops declined exponentially, with over 50% reduction in the first year"
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	[Seeds require scarification] "The pods are non-deciduous and are therefore difficult to harvest. To establish a stand, direct sowing of pretreated seed is required. Treatment of the seed can be done by abrasion, acid or hot water treatment (NAS, 1980). The most effective pretreatment is chipping the seed coat (Youssef et al., 1991)."

803	Well controlled by herbicides	
	Source(s)	**Notes**
	Weber, E. (2017). Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Larger plants can be cut close to the ground and stumps treated with herbicide."
	Virtue, J. G. and Melland, R. L. 2003. The Environmental Weed Risk of Revegetation and Forestry Plants. Report, DWLBC 2003/02. Department of Water, Land and Biodiversity Conservation. Report, Adelaide SA	[No herbicide needed for control] "Control is moderately difficult. Shrubs do not re-sprout if cut, hence no herbicide is necessary for weed control (R. Taylor pers. comm.). However, a small proportion of the seed bank is long-lived in the soil so control programs will require follow-up measures."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	n
	Source(s)	**Notes**
	Weber, E. (2003). Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"The tree rarely resprouts after fire damage or felling. Mechanical control can be achieved by cutting stems close to the ground. Clearing and burning stands of the tree are used to reduce the soil seed bank."
	Weber, E. (2017). Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"The tree rarely resprouts after fire damage or felling."
	CAB International. (2005). Forestry Compendium. CAB International, Wallingford, UK	"Trees may be harvested as needed, but as A. cyclops rarely coppices, mature trees do not survive felling. A harvestable size may be reached in around 7-10 years."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Weber, E. (2017). Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"In South Africa, the gall midge Dasineura dielsi (Diptera: Cecidomyiidae) and the seed-feeding weevil Melanterius servulus (Coleoptera: Curculionidae) have been released as biocontrol agents (Impson et al., 2004; Adair, 2005; Kotze et al., 2010; Post et al., 2010). The latter destroyed up to 95% of seeds at release sites in the Cape Province (Impson et al., 2004). D. dielsi reduces fruit set but appears not to severely limit vegetative growth of A. cyclops (Moseley et al., 2009)."
	CABI. 2014. Acacia cyclops In: Invasive Species Compendium. www.cabi.org/isc	[Several Acacia species in the Hawaiian Islands. Unknown if any have pests that would impact A. cyclops] "No significant pests have been recorded for this species, although members of the seed predating genus Zulubius may be potential biocontrol agents in South Africa where A. cyclops has become invasive (Holmes et al., 1987; Schaffner, 1987). Acizzia uncatoides, a psyllid pest, has been recorded from ornamental specimens in the Canary Islands (Siverio and Montesdeoca, 1990). Recent trials of Melanterius servulus, an Australian seed-feeding weevil suggest its potential as a biological control agent."

Summary of Risk Traits:

High Risk / Undesirable Traits
• Able to grow in subtropical climates
• Naturalized in South Africa, Italy, Portugal, parts of Australia outside its natural range, and possibly California
• An environmental weed in South Africa
• Other Acacia species have become serious weeds
• Allelopathic
• Tolerates many soil types
• Able to form dense thickets
• Reaches maturity in 2 years
• Seeds dispersed by birds, other frugivorous animals, ants & intentionally by people
• Prolific seed production (>1000/m2)
• Forms a persistent seed bank

Low Risk Traits
• Unarmed (no spines, thorns or burrs)
• Provides fodder for livestock
• Non-toxic
• Shade-intolerant
• Possibly self-incompatible (or strongly outcrossing)
• Not reported to spread vegetatively
• Rarely coppices or resprouts after cutting or fires.
• Mechanical control can be achieved by cutting stems close to the ground