

<b>Taxon:</b> <i>Retama raetam</i> (Forssk.) Webb & Berthel.	<b>Family:</b> Fabaceae
<b>Common Name(s):</b> retem white weeping broom	<b>Synonym(s):</b> <i>Genista raetam</i> Forssk. <i>Genista retama</i> G. Nicholson <i>Genista rhodorhizoides</i> Webb & Berthel <i>Lygos raetam</i> (Forssk.) Heywood <i>Retama raetam</i> subsp. <i>raetam</i>

<b>Assessor:</b> Chuck Chimera	<b>Status:</b> Assessor Approved	<b>End Date:</b> 24 Jul 2019
<b>WRA Score:</b> 10.0	<b>Designation:</b> H(HPWRA)	<b>Rating:</b> High Risk

**Keywords:** Desert Shrub, Weedy, N-Fixing, Prolific Seeder, Seed Bank

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	?
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)	y
303	Agricultural/forestry/horticultural weed		
304	Environmental weed		
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		
405	Toxic to animals	y=1, n=0	y
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	y

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	y=1, n=0	n
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		
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	y
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)		
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	y=-1, n=1	y
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
	Duke, J. A. (2008). Duke's Handbook of Medicinal Plants of the Bible. CRC Press, Boca Raton, FL	[Long history of use, but no evidence of domestication] " <i>Retama raetam</i> ... It is called juniper in the KJV, broom in the RSV, a certain broom in the NWT, and white broom by Zohary, who adds that it is a common tall shrub in the Arabian, Israeli, and Saharan deserts. Bedouins indicate their respect for plants "by the life of the plant and our worshiped Lord." Small wonder they prohibit the felling of desert shrubs like <i>Acacia</i> , <i>Pistacia</i> , and <i>Retama</i> . In some places, <i>Retama</i> is the only shade-casting tree on the desert. And it makes the finest charcoal, which burns with intense heat. Arabs claim it holds its heat for a year. In the Cairo market, it fetches a much higher price than any other fuel species. The expressions "coals of Juniper" used in Psalms 120, "burning coals," "live brown coals," "coals of broom," and "coals that lay waste" in biblical books indicate the popularity of the wood for charcoal. One legend suggests that when Jesus was praying in Gethsemane, he was disturbed by the cracking of the broom in the breeze. When finally led off by the soldiers, he said to the broom: "May you always burn with as much noise as you are making now." Another legend has it that the crackling of broom plants among which they hid almost revealed Mary and baby Jesus to Herod's soldiers. The branches are used in desert homes as coarse cords. At weddings and other ceremonies, Bedouins fasten sprigs of green plants like white broom to the tent entrance. Green, the color of live plants, is a symbol of life and vitality. The roots are used to insulate the handles of Bedouin coffee pots. Bedouins use the plant to make pins that fasten their curtains and as pins for their camel saddles (BIB)."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	NA

Qsn #	Question	Answer
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, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 22 Jul 2019]	"Native Africa MACARONESIA: Spain [Canary Islands (Gran Canaria)] NORTHERN AFRICA: Algeria, Egypt, Libya, Morocco, Tunisia Asia-Temperate WESTERN ASIA: Egypt, [Sinai] Israel, Jordan, Lebanon Europe SOUTHEASTERN EUROPE: Italy [Sicilia (s.)]"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 22 Jul 2019]	

Qsn #	Question	Answer
203	<b>Broad climate suitability (environmental versatility)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Dave's Garden. (2019). <i>Retama</i> Species, Portugese Broom, White Weeping Broom. <i>Retama raetam</i> . <a href="https://davesgarden.com">https://davesgarden.com</a> . [Accessed 23 Jul 2019]	"Hardiness: USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)"
	Emms, J., Virtue, J. G., Preston, C., & Bellotti, W. D. (2006). Is <i>Retama raetam</i> (Forsskal) Webb a legitimate alert list species. Pp. 735-738 In Proceedings of the 15th Australian Weeds Conference, eds C. Preston, JH Watts, and ND Crossman	"It appears that <i>R. raetam</i> is climatically suited to much of southern Australia, but particularly to the lower rainfall regions with alkaline soils."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	"Preferred Climate/s: Dryland, Mediterranean"
	Kriticos, D.J., Crossman, N.D., Ota, N. & Scott, J.K. (2010) <i>Climate change and invasive plants in South Australia</i> . CSIRO Climate Adaptation Flagship, Canberra, Australia	" <i>Retama raetam</i> is native to Mediterranean and desert regions of North Africa and West Asia (Figure 11.4-2). In part, this distribution explains the CLIMEX model having a high EI value for all of South Australia (Figure 11.4-1). There is a possible edaphic limit to the distribution that remains to be tested. The plants in WA and SA are found on soils with high pH. Further research is needed to establish the role of edaphic factors, as these will redefine more closely the area of Australia at risk (Scott et al., 2008). Impact of climate change The climatic suitability projections for 2080 indicate that the climate of South Australia will remain suitable for <i>R. raetam</i> (Figure 11.4-3), despite the decrease in EI values in the arid interior (Figure 11.4-4)."
	IUCN Centre for Mediterranean Cooperation. 2005. <i>A Guide to Medicinal Plants in North Africa</i> . IUCN, Malaga, Spain	" <i>Retama raetam</i> , grows on sandy soils (dune slope/dune base) and in dry conditions (rainfall around 100 mm. per year)."

204	<b>Native or naturalized in regions with tropical or subtropical climates</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	IUCN Centre for Mediterranean Cooperation. 2005. <i>A Guide to Medicinal Plants in North Africa</i> . IUCN, Malaga, Spain	"Global: The plant is native on maritime sands in the Mediterranean region and on sandy sites in the Sahara."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	"Preferred Climate/s: Dryland, Mediterranean"

Qsn #	Question	Answer
205	Does the species have a history of repeated introductions outside its natural range?	?
	Source(s)	Notes
	Emms, J., Virtue, J. G., Preston, C., & Bellotti, W. D. (2006). Is <i>Retama raetam</i> (Forsskal) Webb a legitimate alert list species. Pp. 735-738 In Proceedings of the 15th Australian Weeds Conference, eds C. Preston, JH Watts, and ND Crossman	" <i>Retama raetam</i> was introduced to Australia as an ornamental, being first recorded as early as 1845 (Kloot 1986). It has continued to be used as a garden ornamental, prized for its profuse white perfumed flowers."
	Dave's Garden. (2019). <i>Retama</i> Species, Portugese Broom, White Weeping Broom. <i>Retama raetam</i> . <a href="https://davesgarden.com">https://davesgarden.com</a> . [Accessed 23 Jul 2019]	"This plant has been said to grow in the following regions: Richmond, California"

301	Naturalized beyond native range	y
	Source(s)	Notes
	Bettink, K. A., & Brown, K. L. (2011). Determining Best Control Methods for the National Environmental Alert List Species, ' <i>Retama raetam</i> (Forssk.) Webb (White Weeping Broom) in Western Australia. <i>Plant Protection Quarterly</i> , 26(1), 36-38	"Naturalized populations are recorded in south-western Western Australia and South Australia, and specimens have been collected north of Brisbane and King Island off the northwest of Tasmania (AVH 2010). In Western Australia, <i>R. raetam</i> is naturalized from Bunbury, 180 km south of Perth, north to Two Rocks, with the majority of populations in this western corridor of the Swan Coastal Plain within a 30 km radius of the city of Perth. These sites are typically disturbed, with sandy, coastal, alkaline soils. Naturalized populations are interspersed with roadside amenity plantings and plants in private gardens. It is currently still sold in commercial nurseries."
	Emms, J., Virtue, J. G., Preston, C., & Bellotti, W. D. (2006). Is <i>Retama raetam</i> (Forsskal) Webb a legitimate alert list species. Pp. 735-738 In Proceedings of the 15th Australian Weeds Conference, eds C. Preston, JH Watts, and ND Crossman	" <i>Retama raetam</i> (Forsskal) Webb ( white weeping broom) is a leguminous shrub from the Mediterranean basin that was first recorded in Australia in the 1840s. It has a history as a garden plant, but has escaped and naturalised at several locations around Perth in Western Australia and in various locations in South Australia."

302	Garden/amenity/disturbance weed	y
	Source(s)	Notes
	Victorian Resources Online. (2019). Invasiveness Assessment - White weeping broom ( <i>Retama raetam</i> ) in Victoria. <a href="http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/invasive_white_weeping_broom">http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/invasive_white_weeping_broom</a> . [Accessed 23 Jul 2019]	"Infests grazing land and invades deserts and grasslands, sheoak woodlands (CRC Weed Management, 2003), stabilized and semi-mobile dunes (Izhaki & Ne'eman, 1997). These ecosystems tend to be minor to highly disturbed."
	Emms, J., Virtue, J. G., Preston, C., & Bellotti, W. D. (2006). Is <i>Retama raetam</i> (Forsskal) Webb a legitimate alert list species. Pp. 735-738 In Proceedings of the 15th Australian Weeds Conference, eds C. Preston, JH Watts, and ND Crossman	[A weedy shrub with potential environmental impacts] "However, recent studies reported here demonstrate naturalised <i>R. raetam</i> has copious seed production, a high amount of seed dormancy and displays juvenile drought tolerance. These results along with the severity of a handful of current infestations suggest that <i>R. raetam</i> warrants control before eradication becomes infeasible."

303	Agricultural/forestry/horticultural weed	

Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	CRC Weed Management. (2003). Weed Management Guide. White weeping broom ( <i>Retama raetam</i> ). <a href="https://www.environment.gov.au">https://www.environment.gov.au</a> . [Accessed 23 Jul 2019]	"It may infest grazing land and prevent access to stock. It is also probably the least palatable to stock of the exotic brooms." [Potentially impacts grazing lands]

304	Environmental weed	
	<b>Source(s)</b>	<b>Notes</b>
	Csurhes, S. & Edwards, R. 1998. Potential environmental weeds in Australia: Candidate species for preventative control. Biodiversity Group, Environment Australia, Canberra, Australia	" <i>Retama raetam</i> is a shrub (to c. 3m tall) native to the Mediterranean. Reproduction occurs from seeds. It is very closely related to <i>Retama monosperma</i> and the names are used interchangeably by the nursery industry. It is a weed in California and Oregon in the United States. Naturalised populations exist on the Eyre and Yorke Peninsulas, South Australia, in scrub and woodland on coastal, sandy soils (Swarbrick and Skarratt 1994). The plant is grown as a garden ornamental."
	Emms, J., Virtue, J. G., Preston, C., & Bellotti, W. D. (2006). Is <i>Retama raetam</i> (Forsskal) Webb a legitimate alert list species. Pp. 735-738 In Proceedings of the 15th Australian Weeds Conference, eds C. Preston, JH Watts, and ND Crossman	[Potential environmental weed] "However, recent studies reported here demonstrate naturalised <i>R. raetam</i> has copious seed production, a high amount of seed dormancy and displays juvenile drought tolerance. These results along with the severity of a handful of current infestations suggest that <i>R. raetam</i> warrants control before eradication becomes infeasible."

305	Congeneric weed	y
	<b>Source(s)</b>	<b>Notes</b>
	CRC Weed Management. (2003). Weed Management Guide. White weeping broom ( <i>Retama raetam</i> ). <a href="https://www.environment.gov.au">https://www.environment.gov.au</a> . [Accessed 23 Jul 2019]	"In California the closely related species <i>Retama monosperma</i> displaces native plants, threatening the survival of several animal species that rely on the native vegetation. It can also increase the severity of bushfires if it dies off in large stands."
	California Invasive Pest Council. (2019). <i>Genista monosperma</i> . <a href="https://www.cal-ipc.org/plants/profile/retama-monosperma-profile/">https://www.cal-ipc.org/plants/profile/retama-monosperma-profile/</a> . [Accessed 23 Jul 2019]	"Synonyms: <i>Retama monosperma</i> ; <i>Spartium monosperma</i> , <i>Lygos monosperma</i> Common names: bridal veil broom <i>Genista monosperma</i> (bridal veil broom) is an escaped ornamental plant in the family Fabaceae. Although it is currently invasive in only one population in San Diego County, Cal-IPC lists it as an alert species due to its invasiveness in other areas with climates similar to California. In six years, this one infestation spread in size from approximately 1 acre (4 ha) to 1980 ac (800 ha). Like Scotch and French brooms, bridal veil broom can produce thousands of seeds per plant that may then be carried long distances by birds."

Qsn #	Question	Answer
401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	IUCN Centre for Mediterranean Cooperation. 2005. A Guide to Medicinal Plants in North Africa. IUCN, Malaga, Spain	[No evidence] "An evergreen stem-assimilating desert plant, the white weeping broom is a shrub that grows to about 3 m. and may be 6 m. across. The plants are grey-green with slender, drooping branches; the young plants are wispy, with a single stem and strong taproot. The leaves, which are very small (about 6-7 mm. long), simple, subsessile and narrow (only 1 mm. wide). drop quickly and the plant remains leafless for most of the year. The flowers are 8-10 mm. long, white and pea-like, appearing close to the stem in clusters of 3-15."

402	Allelopathic	
	Source(s)	Notes
	Salama, M., El-Kenany, E. T., Abdellatif, A. A., & Hady, E. N. F. A. (2018). Allelopathic prospective of <i>Retama raetam</i> L. against the noxious weed <i>Phalaris minor</i> Retz. growing in <i>Triticum aestivum</i> L. fields. <i>Rendiconti Lincei. Scienze Fisiche e Naturali</i> , 29(1), 155-163	[Potentially allelopathic. Field evaluation needed] "The effect of the aqueous extracts and crude powder of the aerial shoots of <i>Retama raetam</i> (donor species, Fabaceae) on germination and some growth and physiological parameters as well as protein profile and antioxidants of both <i>Triticum aestivum</i> and <i>Phalaris minor</i> (recipient species, Poaceae) was evaluated. The experiments were applied in pure and mixed cultures through germination and growth bioassays. The phytochemical screening of <i>Retama raetam</i> indicated the presence of some water-soluble phytotoxins (allelochemicals) allowing this plant to be an alternative management (bioherbicide) of <i>Phalaris minor</i> in wheat fields. Data revealed that germination percentages (GP) of <i>T. aestivum</i> and <i>P. minor</i> grains significantly ( $p \leq 0.05$ ) decreased with increasing the concentration of the aqueous extract. Notably, GP decrement varied according to the species as well as the treatment, but in all cases 40% concentration level was shown to be the most effective concentration. Seedling length (SL), fresh (FW) and dry (DW) weights of <i>T. aestivum</i> and <i>P. minor</i> grains in pure and mixed cultures experiments 21 days after sowing were also affected by <i>R. raetam</i> crude powder. Furthermore, protein expression of both <i>T. aestivum</i> and <i>P. minor</i> as affected with <i>R. raetam</i> crude powder was noticeable and new proteins have been expressed in the treated plants as compared to control. The use of allelopathic potential of the invasive species under the present study has been suggested as a viable option in sustainability as bioherbicide." ... "In conclusion, the present laboratory bioassays confirmed the presence of some water-soluble allelochemicals that leach from the shoots of <i>R. raetam</i> into the water. These allelochemicals allow the opportunity to <i>R. raetam</i> to be not only an alternative herbicide of <i>P. minor</i> in wheat fields, but also a biofertilizer for wheat. Further work is, however, needed to specify and verify the allelochemicals produced by <i>R. raetam</i> and validate its biological activity under actual field conditions in its habitat."

403	Parasitic	n
	Source(s)	Notes



Qsn #	Question	Answer
	IUCN Centre for Mediterranean Cooperation. 2005. A Guide to Medicinal Plants in North Africa. IUCN, Malaga, Spain	"An evergreen stem-assimilating desert plant, the white weeping broom is a shrub that grows to about 3 m. and may be 6 m. across." [Fabaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	Barakat, N. A., Laudadio, V., Cazzato, E., & Tufarelli, V. (2013). Potential contribution of <i>Retama raetam</i> (Forssk.) Webb & Berthel as a forage shrub in Sinai, Egypt. <i>Arid Land Research and Management</i> , 27(3), 257-271	"Based on our findings, <i>R. raetam</i> appears to represent a valuable candidate as forage resource in the studied region. This fodder species should be considered valuable nonconventional forage in the Mediterranean arid ecosystem. However, further research is needed to assess the effects of climatic changes on the nutritional value of <i>R. raetam</i> in order to assess the plant's nutrient status under extreme dry conditions."
	Sanad, M. N. M. E. (2005). Genetic evaluation of some range plants used as fodders in the north western coastal zone in Egypt. MS Thesis. Ain Sham University, Cairo, Egypt	"It is low palatable because of its low content of ash among all studied halophytic and xerophytes plants. Although <i>R. raetam</i> contains alkaloids (Krishchenko et al 1983 and El-Shazly et al 1996), and was reviewed as a poisonous common plant in arid countries using livestock (El-Bahri et al 1999), local livestock use it in desert hard times when there are no other palatable plants."
	CRC Weed Management. (2003). Weed Management Guide. White weeping broom ( <i>Retama raetam</i> ). <a href="https://www.environment.gov.au">https://www.environment.gov.au</a> . [Accessed ]	[May be less palatable than other species, leading to a competitive advantage in grazing lands] "It may infest grazing land and prevent access to stock. It is also probably the least palatable to stock of the exotic brooms."

405	Toxic to animals	y
	Source(s)	Notes
	El Bahri, L., Djegham, M., & Bellil, H. (1999). <i>Retama raetam</i> W: a poisonous plant of North Africa. <i>Veterinary and Human Toxicology</i> , 41(1): 33-35	"Poisoning of livestock by ingestion of <i>Retama raetam</i> W, a common plant in arid countries of North Africa, is reviewed."
	IUCN Centre for Mediterranean Cooperation. 2005. A Guide to Medicinal Plants in North Africa. IUCN, Malaga, Spain	"The fruits of <i>Retama raetam</i> are considered toxic and thought to provoke hallucinations. Ingesting the plant to produce an abortion has sometimes led to poisoning and even death."
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	"Toxicity. Leaves, flowers and fruit toxic."
	Sanad, M. N. M. E. (2005). Genetic evaluation of some range plants used as fodders in the north western coastal zone in Egypt. MS Thesis. Ain Sham University, Cairo, Egypt	[Possibly toxic to animals] "Although <i>R. raetam</i> contains alkaloids (Krishchenko et al 1983 and El-Shazly et al 1996), and was reviewed as a poisonous common plant in arid countries using livestock (El-Bahri et al 1999), local livestock use it in desert hard times when there are no other palatable plants."

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown

Qsn #	Question	Answer
407	Causes allergies or is otherwise toxic to humans	y
	Source(s)	Notes
	IUCN Centre for Mediterranean Cooperation. 2005. A Guide to Medicinal Plants in North Africa. IUCN, Malaga, Spain	"The fruits of <i>Retama raetam</i> are considered toxic and thought to provoke hallucinations. Ingesting the plant to produce an abortion has sometimes led to poisoning and even death."
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	"Toxicity. Leaves, flowers and fruit toxic."

408	Creates a fire hazard in natural ecosystems	
	Source(s)	Notes
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	"Fire response. Plants may be killed by very hot fire, however are likely to survive and resprout following less severe fires. Fire can also break seed dormancy, resulting in mass germination of seedlings." [Could increase fire risk in dry, fire prone habitats]
	CRC Weed Management. (2003). Weed Management Guide. White weeping broom ( <i>Retama raetam</i> ). <a href="https://www.environment.gov.au.">https://www.environment.gov.au.</a> [Accessed 24 Jul 2019]	[Could increase fire risk if establishing in high densities] "Fire effectively kills plants and can help to break seed dormancy. Experience using fire to control other species of broom indicates that it kills a large proportion of seeds but lightly scorched plants may resprout. Follow-up chemical treatment after fire will probably be needed for many years until the seedbank is depleted. Usually though, fire is not recommended to control broom in Australia due to the risk of out-of-control fires and because it leaves the land initially unusable, with many burnt stems remaining in the ground."

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Aerulean. (2019). <i>Retama raetam</i> . <a href="https://aerulean.com/plants/3359">https://aerulean.com/plants/3359</a> . [Accessed 24 Jul 2019]	"Exposure: sun"
	Dave's Garden. (2019). <i>Retama</i> Species, Portugese Broom, White Weeping Broom. <i>Retama raetam</i> . <a href="https://davesgarden.com">https://davesgarden.com</a> . [Accessed 24 Jul 2019]	"Sun Exposure: Full Sun"
	Danin, A. (1996). <i>Plants of Desert Dunes</i> . Springer-Verlag, Berlin Heidelberg	[Grows in open, arid, and presumably high-light environments] "R. <i>raetam</i> grows in a diffused pattern (i.e., it is not restricted to wadis; mode diffuse, Monod 1931) of open, monospecific stands. Its crown may be free of or nearly covered by sand."

Qsn #	Question	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	<b>Source(s)</b>	<b>Notes</b>
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	"Prefers calcareous soils in coastal and inland areas."
	Aerulean. (2019). <i>Retama raetam</i> . <a href="https://aerulean.com/plants/3359">https://aerulean.com/plants/3359</a> . [Accessed 24 Jul 2019]	"Soil type: wide range"

411	Climbing or smothering growth habit	n
	<b>Source(s)</b>	<b>Notes</b>
	IUCN Centre for Mediterranean Cooperation. 2005. A Guide to Medicinal Plants in North Africa. IUCN, Malaga, Spain	"An evergreen stem-assimilating desert plant, the white weeping broom is a shrub that grows to about 3 m. and may be 6 m. across. The plants are grey-green with slender, drooping branches; the young plants are wispy, with a single stem and strong taproot."

412	Forms dense thickets	
	<b>Source(s)</b>	<b>Notes</b>
	CRC Weed Management. (2003). Weed Management Guide. White weeping broom ( <i>Retama raetam</i> ). <a href="https://www.environment.gov.au">https://www.environment.gov.au</a> . [Accessed 24 Jul 2019]	[Excludes other vegetation] "Like many of the broom plants, it invades nutrient-poor to fertile, well-drained soils where it can fix nitrogen and form a scrub layer that can outcompete and shade out native plants. This species is possibly the most drought tolerant of the exotic brooms in Australia, making it a particular threat in dry regions and during drought years. It may infest grazing land and prevent access to stock."
	Danin, A. (1996). <i>Plants of Desert Dunes</i> . Springer-Verlag, Berlin Heidelberg	[Forms open, monospecific stands, probably because other plants are unable to establish in the harsh conditions] "Sites where sand depth is 1-2m are populated with stands of <i>Retama raetam</i> (Fig. 79). The most common habitats of this species in the Sinai desert are wadis where additional water is below ground. In the sands of this habitat (Fig. 78, number 6.6.2), <i>R. raetam</i> grows in a diffused pattern (i.e., it is not restricted to wadis; mode diffuse, Monod 1931) of open, monospecific stands. Its crown may be free of or nearly covered by sand."

501	Aquatic	n
	<b>Source(s)</b>	<b>Notes</b>
	IUCN Centre for Mediterranean Cooperation. 2005. A Guide to Medicinal Plants in North Africa. IUCN, Malaga, Spain	[Terrestrial] " <i>Retama raetam</i> , grows on sandy soils (dune slope/dune base) and in dry conditions (rainfall around 100 mm. per year)."

502	Grass	n
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 22 Jul 2019]	Family: Fabaceae (alt.Leguminosae) Subfamily: Faboideae Tribe: Genisteae

503	Nitrogen fixing woody plant	y
	Source(s)	Notes
	Mahdhi, M., Nzoué, A., de Lajudie, P., & Mars, M. (2008). Characterization of root-nodulating bacteria on <i>Retama raetam</i> in arid Tunisian soils. <i>Progress in Natural Science</i> , 18(1), 43-49	" <i>Retama raetam</i> is a spontaneous shrub legume belonging to the Fabaceae; it is one of the most important plants in the east Mediterranean deserts." ... "Due to their capacity to enter into symbiosis with legume nodulating bacteria (LNB) collectively called rhizobia, <i>R. raetam</i> could play an important role in the nitrogen cycle. They may be used to restore or increase fertility of degraded and eroded soils."

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	IUCN Centre for Mediterranean Cooperation. 2005. A Guide to Medicinal Plants in North Africa. IUCN, Malaga, Spain	"The plants are grey-green with slender, drooping branches; the young plants are wispy, with a single stem and strong taproot."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	IUCN Centre for Mediterranean Cooperation. 2005. A Guide to Medicinal Plants in North Africa. IUCN, Malaga, Spain	"According to the IUCN criteria this Saharo-Mediterranean species falls into the "C" category. The plant is not threatened and appears on the floristic list of several protected sites listed by the UNEP World Conservation Monitoring Centre."

602	Produces viable seed	y
	Source(s)	Notes
	Danin, A. (1996). <i>Plants of Desert Dunes</i> . Springer-Verlag, Berlin Heidelberg	"The diaspore is the entire fruit, which remains closed when ripe and contains 1-3 seeds. It is dispersed by rolling on the sand, by animals eating the fruits and excreting the seeds, and by flood water in wadis (Danin 1983)."
	CRC Weed Management. (2003). <i>Weed Management Guide</i> . White weeping broom ( <i>Retama raetam</i> ). <a href="https://www.environment.gov.au">https://www.environment.gov.au</a> . [Accessed 23 Jul 2019]	"White weeping broom reproduces from seed. Each plant produces hundreds of seed pods and up to thousands of seeds on larger plants. The seeds drop when the seed pods split open, and can be further spread by water."

603	Hybridizes naturally	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown. No evidence found

Qsn #	Question	Answer
604	<b>Self-compatible or apomictic</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Victorian Resources Online. (2019). Invasiveness Assessment - White weeping broom ( <i>Retama raetam</i> ) in Victoria. <a href="http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/invasive_white_weeping_broom">http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/invasive_white_weeping_broom</a> . [Accessed 23 Jul 2019]	"Flower is closed (see picture in CRC Weed Management, 2003), and attract insects (Whitinger, 2006) suggesting cross-pollination is required."
	Rodríguez-Riaño, T., Ortega-Olivencia, A., & Devesa, J. A. (1999). Reproductive biology in two Genisteae (Papilionoideae) endemic of the western Mediterranean region: <i>Cytisus striatus</i> and <i>Retama sphaerocarpa</i> . <i>Canadian Journal of Botany</i> , 77(6), 809-820	[Related species may be self-incompatible] "A study of the pollen-pistil interaction indicated that there exists prezygotic self-incompatibility in these two species, probably of the gametophytic type, but some self-pollen tubes escape this control and self-fertilize some ovules. However, after hand self-pollination, fruit and seed set is very low for both species. This suggests the existence of a postzygotic rejection mechanism, which could be due either to the existence of late-acting self-incompatibility or to an early action of inbreeding depression, although there are lines of evidence that seem to point to the second possibility. Hand cross pollination led to an increased number of fruit and seeds per plant relative to the control plants, indicating that reproduction is pollen limited."

605	Requires specialist pollinators	n
	<b>Source(s)</b>	<b>Notes</b>
	Albaba, I. (2015). A list of important honeybee nectariferous and polleniferous plant species in the West Bank Governorates, Palestine. <i>Journal of Agricultural Science and Technology</i> , 5, 114-121	"Annex 1 A list of important honeybee nectariferous and polleniferous plant species of the West Bank Governorates, Palestine" [Includes <i>Retama raetam</i> which is a source of nectar and pollen for honeybees]
	IUCN Centre for Mediterranean Cooperation. 2005. A Guide to Medicinal Plants in North Africa. IUCN, Malaga, Spain	"The flowers are 8-10 mm. long, white and pea-like, appearing close to the stem in clusters of 3-15." [Flower morphology not specialized]
	Duke, J. A. (2008). <i>Duke's Handbook of Medicinal Plants of the Bible</i> . CRC Press, Boca Raton, FL	"The pea-like flowers are pollinated by bees"

606	Reproduction by vegetative fragmentation	n
	<b>Source(s)</b>	<b>Notes</b>
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	"Reproduction. Seed." ... "Vegetative regeneration strategy. Resprouts."

607	Minimum generative time (years)	2
	<b>Source(s)</b>	<b>Notes</b>
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	"Time to first flowering. 2 years."

Qsn #	Question	Answer
701	<b>Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	[Dispersed inadvertently] "Dispersal. Soil, water, garden waste, rabbits, inappropriate plantings, possibly also dispersed by ants."

702	<b>Propagules dispersed intentionally by people</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Emms, J., Virtue, J. G., Preston, C., & Bellotti, W. D. (2006). Is <i>Retama raetam</i> (Forsskal) Webb a legitimate alert list species. Pp. 735-738 In Proceedings of the 15th Australian Weeds Conference, eds C. Preston, JH Watts, and ND Crossman	" <i>Retama raetam</i> was introduced to Australia as an ornamental, being first recorded as early as 1845 (Kloot 1986). It has continued to be used as a garden ornamental, prized for its profuse white perfumed flowers. Its ability to withstand drought (Mittler et al. 2001) may also make it popular in the recent trend of 'water wise' gardening."
	Dave's Garden. (2019). <i>Retama</i> Species, Portugese Broom, White Weeping Broom. <i>Retama raetam</i> . <a href="https://davesgarden.com">https://davesgarden.com</a> . [Accessed 23 Jul 2019]	[Cultivated as an ornamental] "This plant has been said to grow in the following regions: Richmond, California"

703	<b>Propagules likely to disperse as a produce contaminant</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	[Not cultivated with produce, but if able to invade pastures, could be accidentally dispersed with fodder or forage plants in the future] "Dispersal. Soil, water, garden waste, rabbits, inappropriate plantings, possibly also dispersed by ants." ... "Seedbank persistence. Soil, long, 5+ years. Sets prolific, hard coated seed with medium to long term persistence up to 20 years."

704	<b>Propagules adapted to wind dispersal</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Izhaki, I., & Ne'eman, G. (1997). Hares ( <i>Lepus</i> spp.) as seed dispersers of <i>Retama raetam</i> (Fabaceae) in a sandy landscape. <i>Journal of Arid Environments</i> , 37(2), 343-354	" <i>Retama</i> pods were never observed at a distance from mother plants. Their seeds are round shaped and relatively heavy and are not transported by winds."
	IUCN Centre for Mediterranean Cooperation. 2005. A Guide to Medicinal Plants in North Africa. IUCN, Malaga, Spain	"The hairless grape-shaped seed pod (10-15 mm. diameter) contains one or two kidney-shaped seeds, which are about 6.5 mm. long and may be yellow, green, brown or black. The fruit is an indehiscent pod with one seed of a dark colour, 12-15 mm. long and 7 -10 mm. wide."

Qsn #	Question	Answer
705	Propagules water dispersed	y
	Source(s)	Notes
	Danin, A. (1996). Plants of Desert Dunes. Springer-Verlag, Berlin Heidelberg	"The diaspore is the entire fruit, which remains closed when ripe and contains 1-3 seeds. It is dispersed by rolling on the sand, by animals eating the fruits and excreting the seeds, and by flood water in wadis (Danin 1983)."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	"Dispersal. Soil, water, garden waste, rabbits, inappropriate plantings, possibly also dispersed by ants."

707	Propagules dispersed by other animals (externally)	
	Source(s)	Notes
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	[Possibly dispersed by ants by external transport] "Dispersal. Soil, water, garden waste, rabbits, inappropriate plantings, possibly also dispersed by ants."

708	Propagules survive passage through the gut	y
	Source(s)	Notes

Qsn #	Question	Answer
	Izhaki, I., & Ne'eman, G. (1997). Hares ( <i>Lepus</i> spp.) as seed dispersers of <i>Retama raetam</i> (Fabaceae) in a sandy landscape. <i>Journal of Arid Environments</i> , 37(2), 343-354	"Hares in the sandy ecosystem of the Mediterranean coastal plain in Israel consume pods of the widespread desert plant <i>Retama raetam</i> . The aim of this study was to explore some of its qualities as a dispersal agent of such an important component of the vegetation of Mediterranean arid habitats. Although the pericarp acts as the nutritious 'reward', the hares do not select the most profitable pods with the highest pericarp/seed mass ratio. Of the 718 randomly collected hare pellets 43% contained <i>R. raetam</i> seeds. More than half (55%) of those containing seeds had only one seed, 43% contained two to three seeds and the other 2% contained four to five seeds. Seeds from hare pellets imbibed water more slowly than either exposed seeds which were collected from the sand surface, or manually scarified seeds, but faster than intact seeds which were removed from pods. Untreated seeds from pods had low germination (6%), but most were alive, as indicated by high (70%) germination when scarified. While only 6% of seeds obtained from hare pellets germinated, 44% of them germinated after scarification. Thus, hares did not have a lethal effect on seed viability. It should be emphasized that the difference between these two values (38%) is added to the soil seed bank as 'exposed seeds'. The height and growth rate of seedlings that emerged from hare pellets in pots did not differ from those of seedlings receiving other treatments. Hence, the hypothesis that seedlings in pellets may be favoured by the nutrient pool available to them was not confirmed. We conclude that hares have the potential to act as a legitimate dispersal agent for <i>R. raetam</i> , especially as a carrier of seeds away from the parent plant." ... "Dispersal of <i>R. raetam</i> seeds by endozoochory is unique in that its dry fruits are actively foraged, and thus it belongs to a special group of perennial legumes like <i>Acacia</i> spp. (Miller, 1994), <i>Prosopis</i> spp. (Peinetti et al., 1993) and <i>Ceratonia siliqua</i> L. (Ortiz et al., 1995)."
	Gutterman, Y. (1993). <i>Seed Germination in Desert Plants</i> . Springer-Verlag, Berlin Heidelberg	" <i>Retama raetam</i> (Fabaceae) is a large evergreen shrub of the Sahara-Arabian and Irano-Thranian geographical region. It inhabits wadi beds and slopes, as well as stable and shifting sands on the Mediterranean coast (Zohary 1972). The pods, including the seeds, are consumed by Leporidae ( <i>Lepus capensis</i> and <i>L. europeus</i> ) and goats. The undamaged seeds are found in their faeces (Fig. 75). These seeds germinate much faster (500/70) than seeds that have not been eaten. Of the latter, only 2% germinated experimentally (Charif, Y., pers. comm.)." ... "On the sandy Mediterranean seashore of Israel, hard seeds of <i>Retama raetam</i> that have passed through the digestive system of animals and have been removed from their faeces, germinate to a much higher percentage (500/0) than seeds collected in the same area from pods (2%) (see Sect. 3.2.3; Fig. 75)."
	Danin, A. (1996). <i>Plants of Desert Dunes</i> . Springer-Verlag, Berlin Heidelberg	"The diaspore is the entire fruit, which remains closed when ripe and contains 1-3 seeds. It is dispersed by rolling on the sand, by animals eating the fruits and excreting the seeds, and by flood water in wadis (Danin 1983)."

801	Prolific seed production (>1000/m2)	y
	Source(s)	Notes



Qsn #	Question	Answer
	Emms, J., Virtue, J. G., Preston, C., & Bellotti, W. D. (2006). Is <i>Retama raetam</i> (Forsskal) Webb a legitimate alert list species. Pp. 735-738 In Proceedings of the 15th Australian Weeds Conference, eds C. Preston, JH Watts, and ND Crossman	"The production of a large number of propagules increases the chance of successful recruitment. At all sites except for Blyth, <i>R. raetam</i> surface seed banks exceeded 3000 seeds m <sup>-2</sup> . Large seed production also, along with suitable seed dormancy, contributes to the formation of large persistent seed banks."
	CRC Weed Management. (2003). Weed Management Guide. White weeping broom ( <i>Retama raetam</i> ). <a href="https://www.environment.gov.au">https://www.environment.gov.au</a> . [Accessed ]	"White weeping broom is an aggressive invader which spreads by seed, each plant producing a large number of seeds"

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	Notes
	CRC Weed Management. (2003). Weed Management Guide. White weeping broom ( <i>Retama raetam</i> ). <a href="https://www.environment.gov.au">https://www.environment.gov.au</a> . [Accessed 23 Jul 2019]	"A hard seed coat renders most seeds dormant initially, but as the seed coat wears away germination can take place. Seeds remain viable in the soil for several years."
	Emms, J., Virtue, J. G., Preston, C., & Bellotti, W. D. (2006). Is <i>Retama raetam</i> (Forsskal) Webb a legitimate alert list species. Pp. 735-738 In Proceedings of the 15th Australian Weeds Conference, eds C. Preston, JH Watts, and ND Crossman	"Large seed production also, along with suitable seed dormancy, contributes to the formation of large persistent seed banks. These are able to disperse the population in time and help guard against severe events to the parent population such as drought, fire or deliberate weed control. <i>R. raetam</i> appears to be well adapted to achieve this in the sites studied."
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	"Seedbank persistence. Soil, long, 5+ years. Sets prolific, hard coated seed with medium to long term persistence up to 20 years."

803	Well controlled by herbicides	y
	Source(s)	Notes
	CRC Weed Management. (2003). Weed Management Guide. White weeping broom ( <i>Retama raetam</i> ). <a href="https://www.environment.gov.au">https://www.environment.gov.au</a> . [Accessed 23 Jul 2019]	"No herbicides are registered for control of white weeping broom. In the case of <i>Cytisus scoparius</i> , chemical control is effective in the short term but is expensive and needs to be followed up for many years until the seedbank has been depleted. There is also a risk of damage to non-target species."
	Bettink, K. A., & Brown, K. L. (2011). Determining Best Control Methods for the National Environmental Alert List Species, ' <i>Retama raetam</i> (Forssk.) Webb (White Weeping Broom) in Western Australia. <i>Plant Protection Quarterly</i> , 26(1), 36-38	[Some herbicides and methods are more effective than others] "This study tested a range of physical and chemical treatments, with results indicating that two treatments were highly effective on mature plants. Both the cut and paint method with 50% glyphosate and basal bark with triclopyr at 1.25 L 60 L <sup>-1</sup> resulted in 100% mortality 12 months after application. Basal bark with triclopyr and picloram (1.25 L 60 L <sup>-1</sup> ) was less effective than triclopyr on its own, achieving only 70% mortality. Less effective again was the felling method, resulting in mortality in 50% of plants, the remaining 50% vigorously resprouting within five months. Foliar spraying with triclopyr (17 mL 10 L <sup>-1</sup> ) and stem-injection with 50% glyphosate were less effective again, resulting in 40% and 50% mortality respectively 12 months after treatment."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y

Qsn #	Question	Answer
	Source(s)	Notes
	CRC Weed Management. (2003). Weed Management Guide. White weeping broom ( <i>Retama raetam</i> ). <a href="https://www.environment.gov.au">https://www.environment.gov.au</a> . [Accessed 23 Jul 2019]	"Cutting stems off near the ground with saws will stress the plant but cut plants resprout vigorously, so cutting alone will not kill them." ... "Fire effectively kills plants and can help to break seed dormancy. Experience using fire to control other species of broom indicates that it kills a large proportion of seeds but lightly scorched plants may resprout. Follow-up chemical treatment after fire will probably be needed for many years until the seedbank is depleted. Usually though, fire is not recommended to control broom in Australia due to the risk of out-of-control fires and because it leaves the land initially unusable, with many burnt stems remaining in the ground."
	Bettink, K. A., & Brown, K. L. (2011). Determining Best Control Methods for the National Environmental Alert List Species, 'Retama raetam (Forssk.) Webb (White Weeping Broom) in Western Australia. <i>Plant Protection Quarterly</i> , 26(1), 36-38	"Less effective again was the felling method, resulting in mortality in 50% of plants, the remaining 50% vigorously resprouting within five months." ... "Felling The felling treatment resulted in 50% mortality by the end of the trial. One plant showed coppicing at three months and by five months 50% of plants were vigorously coppicing. The remaining 50% of plants did not go on to coppice."
	Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. <a href="https://florabase.dpaw.wa.gov.au/">https://florabase.dpaw.wa.gov.au/</a> . [Accessed 24 Jul 2019]	"Vegetative regeneration strategy. Resprouts."... "Fire response. Plants may be killed by very hot fire, however are likely to survive and resprout following less severe fires. Fire can also break seed dormancy, resulting in mass germination of seedlings."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown

**Summary of Risk Traits:**

High Risk / Undesirable Traits

- Naturalized and invasive in Australia, with potential negative impacts to native ecosystems (may compete with and exclude native vegetation)
- Other *Retama* species are invasive
- May be toxic to animals and people if ingested
- Edible, despite potential toxicity, but palatability is low
- May increase fire risk in arid environments
- Tolerates many soil types
- Nitrogen fixing (may modify soil nutrients)
- Reproduces by seeds
- Reaches maturity in 2+ years
- Seeds dispersed by water, internally by animals, as a soil contaminant, and intentionally by people
- Prolific seed production (up to 3000/m<sup>2</sup>)
- Forms a persistent seed bank (5-20 years longevity)
- Resprouts after cutting, and low intensity fires

Low Risk Traits

- Unarmed (no spines, thorns, or burrs)
- Provides fodder for livestock (palatable despite reports of toxicity)
- Grows in arid, high light environments (may be unable to spread into dense, intact forest)
- Not reported to spread vegetatively
- Herbicides may provide effective control