

**Family:** *Fabaceae*

**Taxon:** *Prosopis glandulosa*

**Synonym:** *Prosopis chilensis* var. *glandulosa* (Torr.) Sta  
*Prosopis juliflora* var. *glandulosa* (Torr.) Coc  
*Prosopis juliflora* var. *torreyana* L. D. Benson

**Common Name:** Honey mesquite  
Western honey mesquite

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation:	H(HPWRA)
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score	19
101	Is the species highly domesticated?		y=-3, n=0		n
102	Has the species become naturalized where grown?		y=1, n=-1		
103	Does the species have weedy races?		y=1, n=-1		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"		(0-low; 1-intermediate; 2-high) (See Appendix 2)		High
202	Quality of climate match data		(0-low; 1-intermediate; 2-high) (See Appendix 2)		High
203	Broad climate suitability (environmental versatility)		y=1, n=0		y
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		n=0, y = 1*multiplier (see Appendix 2)		n
303	Agricultural/forestry/horticultural weed		n=0, y = 2*multiplier (see Appendix 2)		y
304	Environmental weed		n=0, y = 2*multiplier (see Appendix 2)		y
305	Congeneric weed		n=0, y = 1*multiplier (see Appendix 2)		y
401	Produces spines, thorns or burrs		y=1, n=0		y
402	Allelopathic		y=1, n=0		
403	Parasitic		y=1, n=0		n
404	Unpalatable to grazing animals		y=1, n=-1		n
405	Toxic to animals		y=1, n=0		
406	Host for recognized pests and pathogens		y=1, n=0		
407	Causes allergies or is otherwise toxic to humans		y=1, n=0		
408	Creates a fire hazard in natural ecosystems		y=1, n=0		
409	Is a shade tolerant plant at some stage of its life cycle		y=1, n=0		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	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	y=1, n=-1	y
604	Self-compatible or apomictic	y=1, n=-1	n
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	3
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	
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	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)	y=1, n=-1	
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)	y=-1, n=1	

Designation: H(HPWRA)

WRA Score 19

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**Supporting Data:**

101	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Is the species highly domesticated? No] "Prosopis species exhibit high levels of variability in morphological characters. Variations are observed principally in native populations. In invading populations, clinal variations are obscured because of the rapid and widespread dispersal of diverse genetic material by humans and animals over a range of site and climatic conditions."
102	2012. WRA Specialist. Personal Communication.	NA
103	2012. WRA Specialist. Personal Communication.	NA
201	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Species suited to tropical or subtropical climate(s) 2-High] "P. glandulosa is a small to medium-sized thorny evergreen tree, native to northern Mexico (P. glandulosa is one of the most common tree species in Mexico) and the southwestern USA, mainly from California to Texas."
202	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Quality of climate match data 2-High]
203	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Broad climate suitability (environmental versatility)? Yes] "P. glandulosa is able to survive in areas with exceptionally low annual rainfall or very lengthy dry periods but only if roots are able to tap ground water or another permanent water source within the first few years, or if sufficient atmospheric moisture is available as in many coastal desert areas with persistent trade winds or seasonal fog. P. glandulosa is known to survive severe frosts to -20°C in the USA (Felker et al. 1982), but can also tolerate some of the highest temperatures in the world, being one of the few tree species growing in Death Valley, California, USA, with temperatures often exceeding 50°C. Climatic amplitude (estimates) - Altitude range: 50 - 1200 m - Mean annual rainfall: 50 - 1200 mm - Rainfall regime: summer; winter; bimodal - Dry season duration: 6 - 12 months - Mean annual temperature: 20 - 30°C - Mean maximum temperature of hottest month: 20 - 40°C - Mean minimum temperature of coldest month: 5 - 15°C - Absolute minimum temperature: > -20°C"
204	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Native or naturalized in regions with tropical or subtropical climates? Yes] "P. glandulosa is a small to medium-sized thorny evergreen tree, native to northern Mexico (P. glandulosa is one of the most common tree species in Mexico) and the southwestern USA, mainly from California to Texas."
205	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Does the species have a history of repeated introductions outside its natural range? Yes] "It has also been widely introduced, but is most common as an exotic in Australia and South Africa."
301	2011. Queensland Government. Weeds of Australia - Honey mesquite, <i>Prosopis glandulosa</i> var. <i>glandulosa</i> . <a href="http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Prosopis_glandulosa_var._glandulosa.htm">http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Prosopis_glandulosa_var._glandulosa.htm</a>	[Naturalized beyond native range Yes] "This species is widely naturalised in Australia, but has a scattered distribution. It is present in many parts of Queensland and well as in northern Western Australia and south-western New South Wales. Also naturalised overseas in southern Africa, western Asia (i.e. Saudi Arabia), the Indian Sub-continent (i.e. India and Pakistan), south eastern Asia (i.e. Burma) and tropical Southern America."
302	2012. WRA Specialist. Personal Communication.	[Garden/amenity/disturbance weed? No. Rangeland and environmental weed]
303	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Agricultural/forestry/horticultural weed? Yes] "Introduction of livestock in the Southwest resulted in overgrazing, dispersal of mesquite seed by cattle, and a reduction of range fires due to insufficient fuels, factors which allowed honey mesquite to increase in density and spread into grasslands [33]. Of Texas's 34.7 million acres of native grassland, 61% have become mesquite dominated (greater than 10% canopy cover). This spread reduces herbaceous forage available for livestock and makes moving and handling livestock more difficult [53]. " ... "Honey mesquite has increased on millions of acres of grazing land. Because it reduces grass production, land managers and ranchers often attempt to remove it. Livestock management practices can improve the success of honey mesquite control programs. Due to its reproductive potential and regenerative capabilities, honey mesquite will probably never be eliminated from sites where it has become established [43]. Dahl [43] suggests that a proper rotation grazing system in coordination with controlled burning may be most effective. In shortgrass communities where grasses are less competitive, grazing management is most critical to suppression of western honey mesquite invasion [90,188]."

303	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Agricultural/forestry/horticultural weed? Yes] "P. glandulosa is very invasive, and is seen as a weed on Mexican livestock ranges, in the USA, and where introduced." ... "P. glandulosa is a declared noxious weed in Australia and South Africa, and the genus as a whole is regulated in several other countries. The seed is still available from mail order companies; however, its infamy as an invasive species has led to several governments banning the importation of seed, and the risk of further introduction is perceived as low. The losses to the livestock industry solely from P. glandulosa invasion in the southern states of the USA, notably Texas, are counted in many millions of dollars due to the reduction in the availability of forage grasses (Jacoby and Ansley, 1991). Although the financial costs of eradication are also very high, it was seen for many decades to be rewarded by the increase in stocking densities afforded by control. The thorns also cause injury to livestock, and consumptions of the pods, when they may up the bulk of the animal's diet, can lead to ill health and even death. A similar situation to that of the south western USA exists in Australia and South Africa, where P. glandulosa is called the number one scourge of livestock farmers."
304	2011. Queensland Government. Weeds of Australia - Honey mesquite, <i>Prosopis glandulosa</i> var. <i>glandulosa</i> . <a href="http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Prosopis_glandulosa_var._glandulosa.htm">http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Prosopis_glandulosa_var._glandulosa.htm</a>	[Environmental weed? Yes] "...regarded as an environmental weed in Queensland and Western Australia, and as a potential environmental weed or "sleeper weed " in many other parts of Australia. In addition to this, the mesquites ( <i>Prosopis</i> spp.) are one of the 20 Weeds of National Significance (WoNS) in Australia. Honey mesquite ( <i>Prosopis glandulosa</i> var. <i>glandulosa</i> ) is listed in the Global Invasive Species Database (GISD), and is regarded to be among the top 100 of the world s worst invasive alien species."
305	2003. Weber, E.. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[Congeneric weed? Yes] " <i>Prosopis juliflora</i> " ... "The tree rapidly forms dense thorny thickets that reduce native species richness and wildlife habitat." [Introduced or invasive in tropical Africa, temperate and tropical Asia, Australia, the Caribbean, the Mascarenes and the Hawaiian Islands]
401	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Produces spines, thorns or burrs? Yes] "P. glandulosa is a small to medium-sized thorny evergreen tree, native to northern Mexico (P. glandulosa is one of the most common tree species in Mexico) and the southwestern USA, mainly from California to Texas. " ... "P. glandulosa is a tree up to 9 m tall, with a trunk diameter up to 1 m, though larger specimens are recorded. Spines are axillary, uninodal, 1-4.5 cm long, mostly solitary, sometimes very few, solitary or paired, sometimes with solitary and paired thorns on different nodes of the same twig. "
402	1990. Bush, J.K./van Auken, O.W.. Growth and Survival of <i>Prosopis glandulosa</i> Seedlings Associated with Shade and Herbaceous Competition. Botanical Gazette. 151(2): 234-239.	[Allelopathic? Potentially] "Elevated nutrient levels below the P. glandulosa canopy might be expected to stimulate plant growth, but this does not happen for P. glandulosa seedlings. Although we cannot rule out allelopathy, the relevance of the toxicity of aqueous extracts to plant growth and survival in the field is doubted (Fowler 1986; Keeley 1988)."
402	1990. Nimbale, C.I./Patil, V.S./Panchal, Y.C.. Studies on allelopathic effects of honey mesquite. Journal of Maharashtra Agricultural Universities. 15(3): 390-391.	[Allelopathic? Potentially] "Root exudates collected from honey mesquite ( <i>Prosopis juliflora</i> var. <i>glandulosa</i> [P. glandulosa]) seedlings under laboratory conditions inhibited germination and radicle growth of sorghum cv. CSH-8R and SPV 104, wheat cv. DW-544, maize cv. Deccan-101 and safflower cv. A-1. Bengal gram [chickpeas] cv. A-1 and cowpeas cv. C-152 showed a reduction in radicle growth but not in germination, while the reverse was true in groundnuts cv. DH-3.30."
403	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Parasitic? No] "P. glandulosa is a small to medium-sized thorny evergreen tree..." [Fabaceae]
404	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Unpalatable to grazing animals? No] "The sweet, nutritious seed pods of honey mesquite are highly palatable to all types of livestock and to numerous small and large wildlife species. For both livestock and wildlife, the palatability of leaves and twigs is relatively low. Livestock browse small amounts of leaves and twigs as they green up in the spring, but honey mesquite browse is otherwise seldom eaten [43,100]. Leaf consumption may increase during drought years when other forage is lacking or following a killing frost in the fall [64,68]. "
404	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Unpalatable to grazing animals? No] "In Mexico it is also used as forage for domestic animals, it serves as habitat for wildlife, it is used for bee forage, and its fruit is edible. The main uses of this species where exotic are for fodder, fuelwood, as a roadside, hedging, ornamental or shade tree, for dune retention, and for timber for cheap furniture."
405	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Toxic to animals? Potentially] "Toxicity: Mesquite pods are normally considered excellent feed for cattle and horses; however, when cattle consume large amounts of beans continuously over a 2- month period, serious digestive disturbances or death may occur [51]. An excessive buildup of mesquite beans in the rumen apparently destroys the rumen bacteria that digest cellulose and synthesize B vitamins [51]. "

406	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Host for recognized pests and pathogens? Potentially] "Beetles of the family Bruchidae are responsible for destroying a substantial percentage of seeds produced by <i>P. glandulosa</i> in its native range, and dispersal mechanisms may be an evolutionary response to destruction by such insects. Of the species of beetles found to feed on the pods of native American <i>Prosopis</i> , 93% were obligately restricted to <i>Prosopis</i> , showing a high degree of specialization. Herbivory is an important factor, with an estimated 40% of immature <i>P. glandulosa</i> leaves removed by insects and 35% of shoots removed by rodents or insects (Nilsen et al., 1987). Defoliating insects vary in their severity of attack but have been found to be a major factor affecting the timing of bud break in North America. Locusts are not uncommon and twig girdlers ( <i>Oncideres</i> spp.) are damaging in some areas with adult beetles girdling small branches before ovipositing. Wood-boring beetles are also frequently found in the sapwood of fallen or cut trees but their effect on living trees is unknown. Nematodes are known to attack the roots of <i>P. glandulosa</i> (Freckman and Virginia, 1989), while occasionally infesting neighbouring crops. Pests recorded Insects: <i>Algarobius bottimeri</i> (weevil, kiawe) <i>Algarobius prosopis</i> <i>Anthonomus grandis</i> (Mexican cotton boll weevil) <i>Epicauta nigritarsus</i> <i>Mimosetes protractus</i> <i>Neltumius arizonensis</i> <i>Oncideres cingulata</i> (twig girdler) <i>Prosopidosylla flava</i> Nematodes: <i>Rotylenchulus reniformis</i> (reniform nematode) Fungus diseases: <i>Botryodiplodia Pestalotia</i> "
407	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Causes allergies or is otherwise toxic to humans? Potentially in susceptible individuals] "Honey mesquite causes an allergic contact dermatitis in some humans [109]."
408	1996. Csurhes, S. (ed.). Mesquite ( <i>Prosopis</i> spp.) in Queensland. Pest Status Review Series - Land Protection Branch. Department of Natural Resources and Mines, Queensland	[Creates a fire hazard in natural ecosystems? Possibly No] "Dense growth of <i>P. pallida</i> can preclude the accumulation of sufficient grass and debris to fuel a fire, even when grazing animals are removed and this may restrict the use of fire as an effective control for this species." [ <i>P. glandulosa</i> may act in a similar fashion, suppressing growth of flammable grasses]
408	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Creates a fire hazard in natural ecosystems? Historically No, but possibly in invaded ranges where densities of trees increase] "Fire regimes: More is known about historic fire regimes in communities of the typical variety of honey mesquite than in western honey mesquite communities. Western honey mesquite occurs in the Mojave and Sonora deserts; not much is known of their fire histories. It is assumed that fuels in these desert were so discontinuous in the past that fire was infrequent [121]. In former desert grassland communities that honey mesquite has invaded in southeastern Arizona, southern New Mexico, and southwestern Texas, fires occurred at "rather frequent intervals" prior to livestock introduction [90]. McPherson [121] states that it is difficult to know detailed fire history in desert grasslands but indirect evidence, primarily accounts of European-American settlers, suggests that fires occurred at least every 10 years. Also, based on known rates of velvet mesquite establishment and growth in grasslands, McPherson [121] concluded that fires had to have occurred at 7 to 10 year intervals to prevent its establishment. Using a similar analysis, Paysen and others [135] concluded that the likely historic average fire return interval in mesquite savannas was 10 years. There were large numbers of livestock in some areas of the desert grassland as early as 1880, and fire frequency was reduced due to lack of fuel rather than fire suppression [90]. Honey mesquite also grows in dune fields that, because of low fuel loading, have seldom if ever burned. An example of such a habitat is the Wild Horse Desert of southern Texas, a sandy rangeland where fuel is discontinuous and honey mesquite grows 15 to 20 feet (4.6 6.1 m) tall [90]."
408	2003. Weber, E.. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[Creates a fire hazard in natural ecosystems? Unknown] "It transforms invaded grassland into woodlands and forms thorny thickets that tolerate only few species and reduce wildlife habitat. Loss in grass cover under its canopies cause soil erosion and sand dune formation." [Thickets could increase fuel loads, but suppression of grasses may decrease fire risk]

409	1990. Bush, J.K./van Auken, O.W.. Growth and Survival of <i>Prosopis glandulosa</i> Seedlings Associated with Shade and Herbaceous Competition. <i>Botanical Gazette</i> . 151(2): 234-239.	[Is a shade tolerant plant at some stage of its life cycle? No] "Both shade and herbaceous competition reduced the germination and growth of <i>Prosopis glandulosa</i> Torr. (honey mesquite). Natural and artificial shade was used and herbaceous competition was manipulated by clipping and herbicide. Greatest growth of <i>P. glandulosa</i> seedlings was in full sunlight when there were no competitors. Plants in shade without competitors or in full sunlight with competitors had intermediate growth, while those in shade with competitors were the smallest. Natural shading by <i>P. glandulosa</i> trees caused similar trends, although significant differences were not always found. <i>Prosopis glandulosa</i> germination in the laboratory was 93 + 5% versus 2% 19% in the field. No <i>P. glandulosa</i> seedlings survived after one growing season in two grassland plots with high biomass, compared with 8% in the herbicided plot. Lack of <i>P. glandulosa</i> seedling germination and growth under mature <i>P. glandulosa</i> trees appears to be the result of reduced light levels and herbaceous plant competition. These factors also result in low numbers of seedlings in grasslands and, coupled with herbivory or fire, could account for their absence."
410	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Tolerates a wide range of soil conditions ? Yes] "Soils: Mesquites are adapted to most soil types, but in Texas, honey mesquite tends to grow best on medium to fine-textured soils. In areas of western Texas and southern New Mexico, honey mesquite grows on hummocky sand dunes [44]. Honey mesquite can grow rapidly to keep photosynthetic and reproductive structures above rising sand level [110]. On the Jornada Experimental Range near Las Cruces, New Mexico, honey mesquite is found on all soil types including loamy sand, sandy loam, calcareous silt loam, noncalcareous silt loam, gravelly sand loam, deep sandy loam, and calcareous clay [37]."
410	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Tolerates a wide range of soil conditions ? Yes] "Prosopis species occupy soils overlying a variety of geological formations with no specific affinities; <i>P. glandulosa</i> prefers clay soils but tolerates a wide variety of soil types. Soil nutrient status is rarely a limiting factor to distribution."
411	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Climbing or smothering growth habit? No] " <i>P. glandulosa</i> is a tree up to 9 m tall, with a trunk diameter up to 1 m, though larger specimens are recorded."
412	2003. Weber, E.. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[Forms dense thickets? Yes] "It transforms invaded grassland into woodlands and forms thorny thickets that tolerate only few species and reduce wildlife habitat. Loss in grass cover under its canopies cause soil erosion and sand dune formation."
412	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Forms dense thickets? Yes] "It has shown itself to be a very aggressive invader, especially in arid and semi arid natural grasslands, both in its native range and where introduced. It is a nitrogen-fixing species and very drought and salt tolerant, rapidly out-competing other vegetation. Thorniness and a bushy habit enable it to quickly block paths and make whole areas impenetrable."
501	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Aquatic? No] Terrestrial
502	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Grass? No] Fabaceae
503	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Nitrogen fixing woody plant? Yes] " <i>P. glandulosa</i> is an excellent soil improver; <i>P. glandulosa</i> foliage deposit an important layer of organic material as it fixes atmospheric nitrogen and its roots control the movement of dunes." ... "Like many legume genera, <i>Prosopis</i> has evolved a symbiotic relationship with Rhizobium and other nitrogen-fixing bacteria and also mycorrhizal associations to varying degrees. More Rhizobium strains are noted in native stands in the Americas than in areas where it has been introduced in Africa, possibly due to evolutionary adaptations favouring symbiotic relationships, with 98 strains of both fast-growing and slow growing Bradyrhizobium types identified in association with <i>P. glandulosa</i> (Jenkins et al., 1987). Mycorrhizal fungi have been isolated from <i>Prosopis</i> roots, and their presence has positive benefits on plant survival and growth."
504	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] " <i>P. glandulosa</i> is a tree up to 9 m tall, with a trunk diameter up to 1 m, though larger specimens are recorded."

601	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Evidence of substantial reproductive failure in native habitat? No] "Several seeds are encased within an indehiscent fruit. The reproductive potential of honey mesquite is often greatly reduced by seed-feeding insects, but honey mesquite produces pods in such abundance that numerous viable seeds are still produced [103]. Insects using flowers (leaf-footed bugs and thrips) reduced pod production from a mean of 131 pods per tree on insecticide sprayed trees to 97 pods per tree on unsprayed trees in western Texas. Bruchid beetles (weevils) are dependent on mesquite pods. In a southern California study, western honey mesquite had an average of 12 seeds per pod, of which an average of 5 were destroyed by bruchid beetles [133]."
602	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Produces viable seed? Yes] "Legume straight, 8-20 cm long by 0.7-1.3 cm broad, rarely subfalcate, compressed to subterete, submoniliform, glabrous, straw coloured or tinged with violet, short-stalked, with strong, varyingly acuminate. There are 5 18 seeds per pod, seeds 6-7 mm long, oblique to longitudinal."
603	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Hybridizes naturally? Yes] "Extensive populations of <i>P. glandulosa</i> x <i>P. velutina</i> hybrids have been identified in Australia and South Africa, where both species have been introduced."
604	1996. Csurhes, S. (ed.). Mesquite ( <i>Prosopis</i> spp.) in Queensland. Pest Status Review Series - Land Protection Branch. Department of Natural Resources and Mines, Queensland	[Self-compatible or apomictic? Presumably Yes] "Several <i>Prosopis</i> species of the section <i>Algarobia</i> are known to be self incompatible and require cross-fertilisation between plants (Hunziker et al. 1986). This may explain field observations made at certain locations in Queensland, where mature, isolated specimens of <i>Prosopis</i> do not appear to have produced any seedlings."
604	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Self-compatible or apomictic? Presumably Yes] "Prosopis species are generally assumed to be self-incompatible (Solbrig and Cantino, 1975). Self-incompatibility has probably been positively selected in desert environments, with obligate outcrossing leading to high variability in the progeny produced, both within and between natural populations."
604	2009. De La Barrera, E./Smith, W.K.. Perspectives in Biophysical Plant Ecophysiology: A Tribute to Park S. Nobel. UNAM, Mexico	[Self-compatible or apomictic? Presumably Yes] "With the exception of the atypical shrubby <i>P. strombulifera</i> , with low gene heterozygosity that spreads by rhizomes (Hunziker et al. 1986), all the species studies to date are self-incompatible (Simpson 1977; Keye and Smith 1994)."
605	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Requires specialist pollinators? No] "Pollination: As is typical of insect pollinated plants, honey mesquite flowers develop simultaneously with the leaves, are high in nectar, and are scented. Honey mesquite is pollinated primarily by bees. At least 160 species of bees are associated with mesquites in the American Southwest. Although mesquite inflorescences contain hundreds of flowers, only a few fruits develop per inflorescence. Most flowers are pollinated by numerous insect visitors, but self abortion prevents most ovules from maturing. This ensures that adequate resources are available for the fruits that do develop [160]."
605	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Requires specialist pollinators? No] "Flowers yellow, racemes 5-14 cm long, multiflorous, petals 2.5-3.5 mm long, ovary stalked, villous." ... "Prosopis species are primarily insect pollinated, and this is facilitated by nutritional rewards. Flowers attract large numbers of potential pollinators with the production of copious amounts of pollen." [No evidence from floral morphology]
606	1996. Csurhes, S. (ed.). Mesquite ( <i>Prosopis</i> spp.) in Queensland. Pest Status Review Series - Land Protection Branch. Department of Natural Resources and Mines, Queensland	[Reproduction by vegetative fragmentation? No] "Mesquite reproduces primarily by seed. Field observations in Queensland suggest that plants generally produce their first flowers and seeds when they are between 2 5 years of age. Flowering occurs in spring. Pods takes two to three months to mature and fall in late summer. Plants generally produce a single crop of seeds per season, although up to three crops in one year have been recorded (Carroll, 1992)."
607	1983. Duke, J.A.. Handbook of Energy Crops - <i>Prosopis glandulosa</i> . <a href="http://www.hort.purdue.edu/newcrop/duke_energy/prosopis_glandulosa.html">http://www.hort.purdue.edu/newcrop/duke_energy/prosopis_glandulosa.html</a>	[Minimum generative time (years)? 3+] "Bearing fruits in 3 to 4 years, the trees are usually harvested by hand, often after the fruits have fallen."
607	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Minimum generative time (years)? 3] "Honey mesquite plants generally produce seed by 3 years of age [75]."

701	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Historically an important dispersal vector] "Isolated populations of the typical variety occur in southeastern Arizona, southern California, and near Shreveport Louisiana, all thought to be introductions, possibly from livestock-dispersed seed along railways or stage routes, or by other human introductions [20,91,92,95]. Similar isolated populations of western honey mesquite occur in the San Joaquin Valley, California [21,89]. "
702	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Propagules dispersed intentionally by people? Yes] "It has also been widely introduced, but is most common as an exotic in Australia and South Africa."
703	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Propagules likely to disperse as a produce contaminant? No] "The flattened, straight, or curved legume-type pods are 4 to 8 inches (10 20 cm) long and occur in drooping clusters [178]. The seeds are oval, 0.2 inch (5 mm) wide, 0.28 inch (7 mm) long, and 0.08 inch (2 mm) thick [125]." ... "Seed dispersal: Pods are eaten and then dispersed by domestic and wild animals. When honey mesquite pods were fed to livestock, 97%, 79%, and 16% of the seeds passed through the digestive tracts of horses, yearling steers, and ewes, respectively, with the greatest number of seeds passing through between 42 and 60 hours after consumption [64]." [Internal dispersal by animals, and movement by water, are the likeliest method of dispersal]
704	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Propagules adapted to wind dispersal? No] "The flattened, straight, or curved legume-type pods are 4 to 8 inches (10-20 cm) long and occur in drooping clusters [178]. The seeds are oval, 0.2 inch (5 mm) wide, 0.28 inch (7 mm) long, and 0.08 inch (2 mm) thick [125]."
705	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Propagules water dispersed? Yes] "Floods are also a common means of seed dispersal [69]."
705	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Propagules water dispersed? Yes] "In arid and semi-arid zones it is particularly important that seeds are dispersed to sites with preferable water status. Water is an important dispersal agent in desert ecosystems. Water dispersal ensures widespread dissemination of seed during flooding or other high rainfall events when seedling establishment is favoured. <i>Prosopis</i> species are often found colonizing ephemeral watercourses and dispersal is aided by water flow in the rainy season, particularly during very wet years (Solbrig and Cantino, 1975)."
706	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Propagules bird dispersed? Yes] "Birds, bats, reptiles and ants also feed on <i>Prosopis</i> fruits and are potential, if only minor, agents of dispersal."
707	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Propagules dispersed by other animals (externally)? No] "The flattened, straight, or curved legume-type pods are 4 to 8 inches (10 20 cm) long and occur in drooping clusters [178]. The seeds are oval, 0.2 inch (5 mm) wide, 0.28 inch (7 mm) long, and 0.08 inch (2 mm) thick [125]." ... "Seed dispersal: Pods are eaten and then dispersed by domestic and wild animals. When honey mesquite pods were fed to livestock, 97%, 79%, and 16% of the seeds passed through the digestive tracts of horses, yearling steers, and ewes, respectively, with the greatest number of seeds passing through between 42 and 60 hours after consumption [64]." [Internal dispersal by animals, and movement by water, are the likeliest method of dispersal]
708	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Propagules survive passage through the gut? Yes] "Seed dispersal: Pods are eaten and then dispersed by domestic and wild animals. When honey mesquite pods were fed to livestock, 97%, 79%, and 16% of the seeds passed through the digestive tracts of horses, yearling steers, and ewes, respectively, with the greatest number of seeds passing through between 42 and 60 hours after consumption [64]. In southern Texas, Brown and Archer [33] found honey mesquite seedlings in 75% of cattle dung piles sampled in September, but no seedlings on sites fenced to exclude cattle. On sites without cattle, no seeds were found away from parent trees. Because it takes days for seeds to pass through the digestive tracts of domestic animals, seeds are dispersed great distances. Mesquite seedlings commonly germinate from uneaten seeds in rodent caches."

708	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Propagules survive passage through the gut? Yes] "Livestock, except pigs and sheep, are now the primary dispersal agents, although the fruit are also avidly consumed by a wide variety of wild animals which play a major role in seed dispersal. The hard seeds tend to survive passage through the gut of an animal and, although there are conflicting reports on the effects of this passage on seed germination, it is generally accepted that the fruits and seeds are specialised for animal dispersion. Pods are eaten off the tree or off the ground and seeds are deposited in the faeces. However, removal of the endocarp is by no means ensured. Voided seed are given a positive advantage by being placed in faeces, with its improved water-holding capacity and high levels of nutrients. Livestock may tend to spend more time on better pasture or by water sources but voiding of seed in preferential locations is not guaranteed. However, different animals have very different effects on seed survival. Seed with the endocarp shell removed were common in the faeces of goats and cattle but rarely seen in the faeces of horses or foxes (Solbrig and Cantino, 1975). Passage through an animal is also thought to destroy seed-eating insects, but some survival of bruchid beetles has been noted (Kingsolver et al., 1977)."
801	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Prolific seed production (>1000/m2)? Possibly No] "Seed production: Honey mesquite plants generally produce seed by 3 years of age [75]. Several seeds are encased within an indehiscent fruit. The reproductive potential of honey mesquite is often greatly reduced by seed-feeding insects, but honey mesquite produces pods in such abundance that numerous viable seeds are still produced [103]. Insects using flowers (leaf-footed bugs and thrips) reduced pod production from a mean of 131 pods per tree on insecticide sprayed trees to 97 pods per tree on unsprayed trees in western Texas. Bruchid beetles (weevils) are dependent on mesquite pods. In a southern California study, western honey mesquite had an average of 12 seeds per pod, of which an average of 5 were destroyed by bruchid beetles [133]."
801	2003. Weber, E.. <i>Invasive Plant Species of the World. A Reference Guide to Environmental Weeds</i> . CAB International, Wallingford, UK	[Prolific seed production (>1000/m2)? Possibly Yes] "The tree is a prolific seed producer..."
802	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Evidence that a persistent propagule bank is formed (>1 yr)? Yes] "Seed banking: Most seeds of a closely related species, velvet mesquite, germinated within 3 years after pod segments were buried 1 inch (2.5 cm) below the soil surface of an Arizona site. About 35%, 9%, and 1% of germination occurred 1, 2, and 3 years after planting. Honey mesquite seeds in dry storage can remain viable for decades. Sixty percent viability was reported for 44-year-old velvet mesquite seeds taken from herbarium specimens [171]."
802	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Evidence that a persistent propagule bank is formed (>1 yr)? Yes] "Seeds of <i>P. glandulosa</i> possess an inherently high level of dormancy. The hard seed coat must be broken or weakened to allow water absorption by the seed and for germination to occur. Hard seed coats will also degrade over time and older seed that is still viable tends to germinate without pre-treatment (Pasicznik and Felker, 1992). Freshly harvested seeds gave germination rates of 90%, assumed to be because the seed coat has not yet hardened. Seeds in their endocarp shells exhibit decreased germination, thought to be due to the endocarp impeding water uptake by the seeds. The passage of seeds through different animals has varying effects on germination, through the removal of the mesocarp or endocarp, or other mechanical or chemical factors." ... "Seeds of <i>P. glandulosa</i> have been reported to maintain more than 50% viability over 10-15 years when stored in their pods (Pasicznik and Felker, 1992)."
803	1996. Csurhes, S. (ed.). <i>Mesquite (Prosopis spp.) in Queensland. Pest Status Review Series - Land Protection Branch. Department of Natural Resources and Mines, Queensland</i>	[Well controlled by herbicides? Yes] "Good chemical control options are available for mesquite. The most effective method of control will vary depending on the size, age, density and habitat of the target plants. For example, tall dense infestations may require mechanical control, followed by fire and foliar spraying of seedlings. Isolated multiple stemmed plants such as the hybrid, may require foliar sprays and are generally more difficult to treat. Isolated, single stemmed plants can be treated using basal bark or cut stump techniques. The high cost of herbicides and associated labour is often quoted by landholders as an obstacle to control. Research is underway at the Tropical Weeds Research Centre (Queensland Department of Natural Resources and Mines) to investigate chemical control options further."

803	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Well controlled by herbicides? Yes] "Chemical control: Clopyralid often results in 50% to 85% mortality of honey mesquite [93,94,144]. Taller plants may be less susceptible to herbicides than shorter ones [97]. In 1997, the effect of herbicide application timing was tested for a 0.75% solution of clopyralid. Nearly all applications, whether done in June, July, August or September, caused 100% top-kill and no resprouts were observed the following year (because of rain after application, 1 treatment in August was less damaging; only 20% did not resprout the following year.) [128]. In general, many-stemmed plants are more resistant to foliar applied herbicides than single- to few stemmed plants [144]. Detailed information concerning the response of honey mesquite to various herbicides is available [24,25,26,87,93,94,97,144,187]. "
803	2003. Motooka, P./Castro, L./Nelson, D./Nagai, G./Ching,L.. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI <a href="http://www.ctahr.hawaii.edu/invweed/weedsHi.html">http://www.ctahr.hawaii.edu/invweed/weedsHi.html</a>	[Well controlled by herbicides? Yes] "Mainland researchers report good results on <i>Prosopis glandulosa</i> Torr. with mixtures of triclopyr and clopyralid and with tebuthiuron"
803	2003. Weber, E.. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[Well controlled by herbicides? Yes] "Seedlings and saplings can be pulled or dug out, roots must be removed. Cutting trees below the ground may prevent resprouting. Effective herbicides are clopyralid, picloram, triclopyr, or 2,4-D amine. Follow-up programmes are necessary to treat seedlings and regrowth."
803	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Well controlled by herbicides? Yes] "The most effective chemical for high tree kill of <i>P. glandulosa</i> in the USA is clopyralid, but dicamba, picloram and triclopyr have also been successfully used, either alone or in combination (Jacoby and Ansley, 1991). "
804	2001. Steinberg, P.D.. <i>Prosopis glandulosa</i> . In: Fire Effects Information System, [Online]. USA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, <a href="http://www.fs.fed.us/database/feis/plants/tree/progla/all.html">http://www.fs.fed.us/database/feis/plants/tree/progla/all.html</a>	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Fire mortality is usually low in honey mesquite. Following most range fires, honey mesquite is top-killed and then resprouts."
804	2003. Weber, E.. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "The tree resprouts vigorously after damage."
805	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown for Hawaiian Islands] "Beetles of the family Bruchidae are responsible for destroying a substantial percentage of seeds produced by <i>P. glandulosa</i> in its native range, and dispersal mechanisms may be an evolutionary response to destruction by such insects. Of the species of beetles found to feed on the pods of native American <i>Prosopis</i> , 93% were obligately restricted to <i>Prosopis</i> , showing a high degree of specialization. Herbivory is an important factor, with an estimated 40% of immature <i>P. glandulosa</i> leaves removed by insects and 35% of shoots removed by rodents or insects (Nilsen et al., 1987). Defoliating insects vary in their severity of attack but have been found to be a major factor affecting the timing of bud break in North America. Locusts are not uncommon and twig girdlers ( <i>Oncideres</i> spp.) are damaging in some areas with adult beetles girdling small branches before ovipositing. Wood-boring beetles are also frequently found in the sapwood of fallen or cut trees but their effect on living trees is unknown. Nematodes are known to attack the roots of <i>P. glandulosa</i> (Freckman and Virginia, 1989), while occasionally infesting neighbouring crops." [Bruchid beetles are present in the Hawaiian Islands]

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- 805 2010. Gallaher, T./Merlin, M.. Biology and Impacts of Pacific Island Invasive Species. 6. *Prosopis pallida* and *Prosopis juliflora* (Algarroba, Mesquite, Kiawe) (Fabaceae). Pacific Science. 64(4): 489-526.
- [Effective natural enemies present locally (e.g. introduced biocontrol agents)? Impacts on *P. glandulosa* unknown] "The early 1900s also saw an increase in the number of pests of *Prosopis* found in Hawai'i, including a scale insect, a moth, and a number of seed-eating and wood-boring beetles (Van Dine 1909b, Fullaway 1912, Carpenter 1919, Delobel et al. 2003). The most destructive of these pests were seed-eating bruchid beetles." ... "By the late 1920s, Swezey (1928:675) indicated that *Prosopis* pods in Hawai'i were "mostly free from serious injury." ... "Anacamptodes fragilaria (Geometridae), the "kiawe moth," was first collected in Hawai'i in 1944 and was reported to defoliate *P. pallida*. A larval parasite of this moth species, *Apanteles praesens* (Hymenoptera: Braconidae), was introduced in 1946. Although the introduced parasite apparently did not become established, two predatory wasps, *Eumenes latreillei petiolaris* and *E. pyriformis philippinensis* (Hymenoptera: Vespidae), that were probably accidental introductions to Hawai'i were found to control populations of *A. fragilaria* in the Islands (Pemberton 1964). Before 1953, the moth *Ithome concolorella* (Cosmopterigidae), also known as the "kiawe flower moth," was accidentally introduced to Hawai'i and resulted in substantial declines in honey production (Namba 1956). In 1965, *Agathis cincta* (Braconidae), a parasitoid wasp, was introduced as a biological control for *I. concolorella* (Funasaki et al. 1988). The monkeypod-kiawe caterpillar or cutworm, *Melipotis indomita* (Noctuidae), which is known to cause defoliation of *Prosopis* spp. in the south-western United States, was first collected in Hawai'i in 1969 (Oda and Mau 1974, Cuda et al. 1990); in response, a species of *Eucelatoria* (Diptera, Tachinidae) was released in 1974 as a biocontrol for this alien caterpillar (Funasaki et al. 1988). Another bruchid, *Mimosestes insularis* has been more recently reported from Hawaii (Kingsolver and Johnson 1978)."
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## **Summary of Risk Traits**

### **High Risk / Undesirable Traits**

- Naturalized several locations worldwide
- Serious weed of rangelands and the environment
- Possessed thorns
- Tolerates many soil conditions (and potentially able to exploit many different habitat types)
- Thicket-forming
- Hybridizes with other Prosopis species
- Reaches maturity in 3 years or more
- Pods & seeds eaten and dispersed by animals (livestock)
- Pods & seeds moved by water
- Forms a persistent seed bank
- Resprouts vigorously after damage, including cutting and fires

### **Low Risk / Desirable Traits**

- Fodder tree for livestock
- Mostly shade-intolerant
- Self-incompatible
- Timber tree