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| Taxon: <i>Acanthocereus tetragonus</i> (L.) Hummelinck | Family: Cactaceae |
| Common Name(s): barbed-wire cactus chaco sword-pear triangle cactus | Synonym(s): <i>Acanthocereus occidentalis</i> Britton & <i>Acanthocereus pentagonus</i> (L.) <i>Acanthocereus pitajaya</i> sensu Croizat <i>Cactus pentagonus</i> L. <i>Cactus tetragonus</i> L. |

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|--------------------------------|----------------------------------|-----------------------------|
| Assessor: Chuck Chimera | Status: Assessor Approved | End Date: 1 Nov 2018 |
| WRA Score: 16.0 | Designation: H(HPWRA) | Rating: High Risk |

Keywords: Spiny, Agricultural Weed, Environmental Weed, Dense Thickets, Bird-Dispersed

| Qsn # | Question | Answer Option | Answer |
|-------|---|--|--------|
| 101 | Is the species highly domesticated? | y=-3, n=0 | n |
| 102 | Has the species become naturalized where grown? | | |
| 103 | Does the species have weedy races? | | |
| 201 | Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical" | (0-low; 1-intermediate; 2-high) (See Appendix 2) | High |
| 202 | Quality of climate match data | (0-low; 1-intermediate; 2-high) (See Appendix 2) | High |
| 203 | Broad climate suitability (environmental versatility) | y=1, n=0 | 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) | n |
| 401 | Produces spines, thorns or burrs | y=1, n=0 | y |
| 402 | Allelopathic | | |
| 403 | Parasitic | y=1, n=0 | n |
| 404 | Unpalatable to grazing animals | | |
| 405 | Toxic to animals | y=1, n=0 | n |
| 406 | Host for recognized pests and pathogens | | |
| 407 | Causes allergies or is otherwise toxic to humans | y=1, n=0 | n |

| Qsn # | Question | Answer Option | Answer |
|-------|--|---------------|--------|
| 408 | Creates a fire hazard in natural ecosystems | | |
| 409 | Is a shade tolerant plant at some stage of its life cycle | y=1, n=0 | y |
| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | y=1, n=0 | n |
| 411 | Climbing or smothering growth habit | y=1, n=0 | y |
| 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 | n |
| 504 | Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers) | y=1, n=0 | n |
| 601 | Evidence of substantial reproductive failure in native habitat | y=1, n=0 | n |
| 602 | Produces viable seed | y=1, n=-1 | y |
| 603 | Hybridizes naturally | | |
| 604 | Self-compatible or apomictic | | |
| 605 | Requires specialist pollinators | | |
| 606 | Reproduction by vegetative fragmentation | y=1, n=-1 | y |
| 607 | Minimum generative time (years) | | |
| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | y=1, n=-1 | n |
| 702 | Propagules dispersed intentionally by people | y=1, n=-1 | y |
| 703 | Propagules likely to disperse as a produce contaminant | y=1, n=-1 | n |
| 704 | Propagules adapted to wind dispersal | y=1, n=-1 | n |
| 705 | Propagules water dispersed | y=1, n=-1 | n |
| 706 | Propagules bird dispersed | y=1, n=-1 | y |
| 707 | Propagules dispersed by other animals (externally) | y=1, n=-1 | n |
| 708 | Propagules survive passage through the gut | y=1, n=-1 | y |
| 801 | Prolific seed production (>1000/m2) | | |
| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | | |
| 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 |
| | Anderson, E. F. (2001). The Cactus Family. Timber Press, Portland, OR | [No evidence of domestication] "Distribution: very widespread, occurring from Florida throughout the Caribbean, into Mexico, and south through Central America into northern South America. <i>Acanthocereus tetragonus</i> is variable, which has led to its receiving numerous names." |

| | | |
|-----|---|-------|
| 102 | Has the species become naturalized where grown? | |
| | Source(s) | Notes |
| | WRA Specialist. 2018. Personal Communication | NA |

| | | |
|-----|--|-------|
| 103 | Does the species have weedy races? | |
| | Source(s) | Notes |
| | WRA Specialist. 2018. Personal Communication | NA |

| | | |
|-----|---|--|
| 201 | Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical" | High |
| | Source(s) | Notes |
| | USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 24 Oct 2018] | "Native Northern America SOUTHEASTERN U.S.A.: United States [Florida] SOUTH-CENTRAL U.S.A.: United States [Texas] NORTHERN MEXICO: Mexico [San Luis Potosi, Sinaloa, Sonora, Tamaulipas] SOUTHERN MEXICO: Mexico [Campeche, Chiapas, Guerrero, Jalisco, Michoacan, Nayarit, Oaxaca, Quintana Roo, Tabasco, Veracruz, Yucatan] Southern America CARIBBEAN: Cuba, Dominica, Grenada, Guadeloupe, Martinique, Netherlands Antilles, St. Lucia, Trinidad and Tobago CENTRAL AMERICA: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama NORTHERN SOUTH AMERICA: Venezuela" |

| | | |
|-----|--|-------|
| 202 | Quality of climate match data | High |
| | Source(s) | Notes |
| | USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed] | |

| Qsn # | Question | Answer |
|-------|--|---|
| 203 | Broad climate suitability (environmental versatility) | y |
| | Source(s) | Notes |
| | Weniger, D. (1984). <i>Cacti of Texas and Neighboring States: A Field Guide</i> . University of Texas Press, Austin, TX | "This is a group of tropical, lowland cacti. They are never found far from a coast and seem to thrive best on semiarid coastal plains. However, they can tolerate much more moisture than most cacti, and when given it their rate of growth is often amazing." ... "But they are most severely limited by cold, being among the most tender of the cacti. A frost will kill the tips of the stems, and at 32 degrees Fahrenheit the whole of the plant above the ground is killed, although the roots may sprout again." |
| | World of Succulents. (2018). <i>Acanthocereus tetragonus</i> 'Fairy Castles' (Fairy Castle Cactus). https://worldofsucculents.com . [Accessed 31 Oct 2018] | "USDA hardiness zone 10a to 11b: from 25 °F (-3.9 °C) to 50 °F (+10 °C)." |

| Qsn # | Question | Answer |
|-------|---|--|
| 204 | Native or naturalized in regions with tropical or subtropical climates | y |
| | Source(s) | Notes |
| | Weniger, D. (1984). <i>Cacti of Texas and Neighboring States: A Field Guide</i> . University of Texas Press, Austin, TX | "Beautiful cactus, clearly tropical, never attaining full growth in the United States; only U.S. cactus which can outdo large <i>Opuntias</i> in rate of growth (5—6 ft. per growing season); tender to frost; mature stems 3- angled, hence name triangle cactus." |
| | USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 24 Oct 2018] | <p>"Native</p> <p>Northern America</p> <p> SOUTHEASTERN U.S.A.: United States [Florida]</p> <p> SOUTH-CENTRAL U.S.A.: United States [Texas]</p> <p> NORTHERN MEXICO: Mexico [San Luis Potosi, Sinaloa, Sonora, Tamaulipas]</p> <p> SOUTHERN MEXICO: Mexico [Campeche, Chiapas, Guerrero, Jalisco, Michoacan, Nayarit, Oaxaca, Quintana Roo, Tabasco, Veracruz, Yucatan]</p> <p>Southern America</p> <p> CARIBBEAN: Cuba, Dominica, Grenada, Guadeloupe, Martinique, Netherlands Antilles, St. Lucia, Trinidad and Tobago</p> <p> CENTRAL AMERICA: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama</p> <p> NORTHERN SOUTH AMERICA: Venezuela</p> <p>Naturalized</p> <p>Australasia</p> <p> AUSTRALIA: Australia [Queensland (c.)]</p> <p>Pacific</p> <p> NORTH-CENTRAL PACIFIC: United States [Hawaii]</p> <p> SOUTHWESTERN PACIFIC: New Caledonia"</p> |

| Qsn # | Question | Answer |
|-------|---|--------------|
| 205 | Does the species have a history of repeated introductions outside its natural range? | y |
| | Source(s) | Notes |

| Qsn # | Question | Answer |
|-------|---|--|
| | USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 30 Oct 2018] | "Naturalized Australasia AUSTRALIA: Australia [Queensland (c.)] Pacific NORTH-CENTRAL PACIFIC: United States [Hawaii] SOUTHWESTERN PACIFIC: New Caledonia" |
| | Weniger, D. (1969). Cacti of the Southwest: Texas, New Mexico, Oklahoma, Arkansas, and Louisiana. University of Texas Press, Austin, TX | "widely introduced in other places, among them Cuba, parts of the Virgin Islands, and reportedly southern Louisiana." |

| 301 | Naturalized beyond native range | y |
|-----|---|---|
| | Source(s) | Notes |
| | Lorence, D.H., Flynn, T.W. & Wagner, W.L. 1995. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers 41: 19-58 | "Escaped from cultivation, this night-blooming cactus is naturalized on the southern coast of Kauai in dry secondary scrubland dominated by <i>Leucaena leucocephala</i> , <i>Acacia farnesiana</i> (L.) Willd., and <i>Cereus uruguayanus</i> Ritter ex R. Kiesling. This species is also naturalized in Hanapepe along Moi Road just N of the junction with Hanapepe Road, near Hanapepe Heights (Flynn & Lorence, pers. comm. 1993). The native range of <i>Acanthocereus tetragonus</i> is circum-Caribbean, and this is a new naturalized record of <i>Acanthocereus</i> (Berger) Britton & Rose in Hawaii." |
| | Queensland Government. (2018). Weeds of Australia. <i>Acanthocereus tetragonus</i> . http://keyserver.lucidcentral.org . [Accessed 30 Oct 2018] | "Naturalised in central Queensland. Also naturalised overseas in Hawaii and New Caledonia." ... "Sword pear (<i>Acanthocereus tetragonus</i>) is regarded as an environmental weed in Queensland. This species currently a problem plant in the semi-arid rangelands of central Queensland, particularly in brigalow woodlands. However, it is also thought to have significant potential as an environmental weed in south-eastern Queensland and the Northern Territory. It has escaped cultivation as a garden ornamental, as have many other introduced cacti, and is most problematic in the Gogango area west of Rockhampton. Sword pear (<i>Acanthocereus tetragonus</i>) is also regarded as a priority weed species in the Emerald Shire, where it is a declared pest plant under local law. A single population is present in this shire, at Fernlees south of Emerald. Some biological control of this species is provided by a mealy bug (i.e. <i>Hypogeococcus festerianus</i>) that was introduced to control harrisia cactus (<i>Harrisia martinii</i>)." |
| | Paterson, I. D., Hoffmann, J. H., Klein, H., Mathenge, C. W., Neso, S., & Zimmermann, H. G. (2011). Biological control of Cactaceae in South Africa. <i>African Entomology</i> 19(2): 230-246 | [Naturalized in South Africa] "The taxonomic complexities and inconsistencies within in the family Cactaceae (Hunt 2006) have been a long-standing source of confusion for entomologists who study cactophagous insect species associated with very specific cactus taxa. For example <i>Acanthocereus tetragonus</i> (L.) Humik. (Cactaceae), which is naturalized in South Africa, and has the tendency to be invasive, is recorded as one of six species in the genus by Anderson (2001), while Hunt (2006) lists only one species in the genus <i>Acanthocereus</i> ." |

| Qsn # | Question | Answer |
|-------|--|--|
| 302 | Garden/amenity/disturbance weed | n |
| | Source(s) | Notes |
| | WRA Specialist. 2018. Personal Communication | Naturalized, agricultural and environmental weed |

| 303 | Agricultural/forestry/horticultural weed | y |
|-----|---|--|
| | Source(s) | Notes |
| | Brinon, L. (2008). Cactus (<i>Acanthocereus pentagonus</i>) control trials on the south-west coast of New Caledonia. Pp. 65-66 in Blanfort, V. and Orapa, W. (eds.). Ecology, Impacts and Management of Invasive Plant Species in Pastoral Areas: Proc. of the Regional Workshop on Invasive Plant Species in Pastoral Areas, 24-28 Nov 2003, Koné, New Caledonia. Secretariat of the Pacific Community | "The uncontrolled spread of the cacti (<i>Acanthocereus pentagonus</i>) on deer breeding farms in the Bouraké region of the west coast of New Caledonia is a major problem for the sustainability of such farms. Control trials combining mechanical and chemical measures have made it possible to check the spread of this species in farming environments. An attempt to introduce a biological control agent, the scale mealybug (<i>Hypogeococcus festerianus</i>), was unsuccessful and the causes for this failure are analysed." |

| 304 | Environmental weed | y |
|-----|---|---|
| | Source(s) | Notes |
| | Queensland Government. (2018). Weeds of Australia. <i>Acanthocereus tetragonus</i> . http://keyserver.lucidcentral.org . [Accessed 30 Oct 2018] | "Sword pear (<i>Acanthocereus tetragonus</i>) is regarded as an environmental weed in Queensland. This species currently a problem plant in the semi-arid rangelands of central Queensland, particularly in brigalow woodlands. However, it is also thought to have significant potential as an environmental weed in south-eastern Queensland and the Northern Territory. It has escaped cultivation as a garden ornamental, as have many other introduced cacti, and is most problematic in the Gogango area west of Rockhampton. Sword pear (<i>Acanthocereus tetragonus</i>) is also regarded as a priority weed species in the Emerald Shire, where it is a declared pest plant under local law. A single population is present in this shire, at Fernlees south of Emerald. Some biological control of this species is provided by a mealy bug (i.e. <i>Hypogeococcus festerianus</i>) that was introduced to control harrisia cactus (<i>Harrisia martinii</i>)." |

| 305 | Congeneric weed | n |
|-----|---|---|
| | Source(s) | Notes |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | <i>Acanthocephalus amplexifolius</i> listed as a weed. Now treated as <i>Harpochaena amplexifolia</i> . Two synonyms of <i>Acanthocereus tetragonus</i> also listed as weeds. |

| 401 | Produces spines, thorns or burrs | y |
|-----|--|---|
| | Source(s) | Notes |
| | Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford | "Shrubs, clambering or arching-reclining, branched near base, sometimes with well-developed trunks. Stems dark green, growing to 200 cm per season; ribs from base to rib crest 3-5 cm, less than 1 cm thick. Spines abruptly thickened at base, extremely variable." |

| Qsn # | Question | Answer |
|-------|--|----------------------------|
| 402 | Allelopathic | |
| | Source(s) | Notes |
| | WRA Specialist. 2018. Personal Communication | Unknown. No evidence found |

| 403 | Parasitic | n |
|-----|--|---|
| | Source(s) | Notes |
| | Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford | "Shrubs, clambering or arching-reclining, branched near base, sometimes with well-developed trunks." [Cactaceae. No evidence] |

| 404 | Unpalatable to grazing animals | |
|-----|--|---|
| | Source(s) | Notes |
| | Richardson, A. & King, K. (2011). Plants of Deep South Texas: A Field Guide to the Woody and Flowering Species. Texas A&M University Press, College Station, TX | "The young seems and ripe fruit are edible, after spines are removed." ... "The stems are eaten by rats and rabbits. Birds, tortoises, and coyotes eat the ripe fruit." |
| | de Garine-Wichatitsky, M., Duncan, P., Suprin, B., Chardonnet, P., & Maillard, D. (2003). A review of the diet of Rusa Deer <i>Cervus timorensis russa</i> in New Caledonia: Are the endemic plants defenceless against this introduced, eruptive ruminant?. Pacific Conservation Biology, 9(2), 136-143 | [Spines likely deter browsing for most animals. Rats and tortoises reported to eat stems] "List of plants eaten or avoided by Rusa Deer in New Caledonia. Name of plant, preference of Rusa Deer (+ + = preferred or staple food; + = little eaten; 0 = plants never eaten)." [Acanthocereus pentagonus - + = little eaten] |

| 405 | Toxic to animals | n |
|-----|---|---|
| | Source(s) | Notes |
| | Richardson, A. & King, K. (2011). Plants of Deep South Texas: A Field Guide to the Woody and Flowering Species. Texas A&M University Press, College Station, TX | "The young seems and ripe fruit are edible, after spines are removed." ... "The stems are eaten by rats and rabbits. Birds, tortoises, and coyotes eat the ripe fruit." [No evidence of toxicity] |

| 406 | Host for recognized pests and pathogens | |
|-----|--|--|
| | Source(s) | Notes |
| | Victorian Resources Online. (2018). Barbed-wire cactus (<i>Acanthocereus tetragonus</i>). http://vro.agriculture.vic.gov.au . [Accessed 31 Oct 2018] | "The genus <i>Acanthocereus</i> is known to be a host of <i>Pseudococcus jackbeardsleyi</i> (Jack Beardsley mealy bug) which affects leaves and fruits of banana plants (DAFF 2002)" [Could possibly impact bananas in Hawaiian Islands if widely established] |

| Qsn # | Question | Answer |
|-------|---|--|
| 407 | Causes allergies or is otherwise toxic to humans | n |
| | Source(s) | Notes |
| | Richardson, A. & King, K. (2011). Plants of Deep South Texas: A Field Guide to the Woody and Flowering Species. Texas A&M University Press, College Station, TX | "The young seems and ripe fruit are edible, after spines are removed." [No evidence of toxicity] |
| | Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL | No evidence |

| | | |
|-----|--|---|
| 408 | Creates a fire hazard in natural ecosystems | |
| | Source(s) | Notes |
| | Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford | "Sandy soils of dense thickets, hammocks, bottomlands of coastal areas" [Unknown. Ability to form dense thickets in arid habitats could modify fire regime] |

| | | |
|-----|---|---|
| 409 | Is a shade tolerant plant at some stage of its life cycle | y |
| | Source(s) | Notes |
| | Victorian Resources Online. (2018). Barbed-wire cactus (<i>Acanthocereus tetragonus</i>). http://vro.agriculture.vic.gov.au . [Accessed 31 Oct 2018] | "Although it can grow in shade (Faucon 2005) and has high drought tolerance (Desert Feast 2008) the germination requirements are unknown" |
| | Lady Bird Johnson Wildflower Center. (2018). <i>Acanthocereus tetragonus</i> . https://www.wildflower.org/plants/result.php?id_plant=acte4 . [Accessed 31 Oct 2018] | "Light Requirement: Part Shade" |
| | The National Gardening Association. (2018). Triangle Cactus (<i>Acanthocereus tetragonus</i>). https://garden.org . [Accessed 31 Oct 2018] | "Sun Requirements: Partial or Dappled Shade" |

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|-----|---|--|
| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | n |
| | Source(s) | Notes |
| | Lady Bird Johnson Wildflower Center. (2018). <i>Acanthocereus tetragonus</i> . https://www.wildflower.org/plants/result.php?id_plant=acte4 . [Accessed 31 Oct 2018] | "Soil Description: Sandy, moist soils" |
| | Loflin, B. & Loflin, S. (2009). Texas Cacti: A Field Guide. Texas A&M University Press, College Station, TX | "This species is found in sandy soils of dense bottomland thickets near coastal areas" |

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|-----|---|---|
| 411 | Climbing or smothering growth habit | y |
| | Source(s) | Notes |
| | Loflin, B. & Loflin, S. (2009). Texas Cacti: A Field Guide. Texas A&M University Press, College Station, TX | " <i>Acanthocereus tetragonus</i> is an erect, coarsely shrubby, and sprawling plant found clambering among other vegetation and arching unless supported." |

| Qsn # | Question | Answer |
|------------|--|---|
| | Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford | "Shrubs, clambering or arching-reclining, branched near base, sometimes with well-developed trunks." |
| 412 | Forms dense thickets | y |
| | Source(s) | Notes |
| | Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford | "Sandy soils of dense thickets, hammocks, bottomlands of coastal areas" |
| | Jones, M. T., Willey, L. L., & Charney, N. D. (2016). Box Turtles (<i>Terrapene carolina bauri</i>) on ancient, anthropogenic shell work islands in the Ten Thousand Islands Mangrove Estuary, Florida, USA. <i>Journal of Herpetology</i> , 50(1), 94-101 | "Thorny shrubs and cacti (<i>Acanthocereus tetragonus</i> L. Hummelinck and <i>Opuntia stricta</i> Haw.) occur locally throughout the hammock forests, in open barrens, and in some places form dense thickets (Schwadron, 2010; Wilder and Barry, 2012)." |
| 501 | Aquatic | n |
| | Source(s) | Notes |
| | Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford | [Terrestrial] "Sandy soils of dense thickets, hammocks, bottomlands of coastal areas; 0-10 m; Fla., Tex.; Mexico; West Indies; Central America; n South America; introduced Pacific Islands (Hawaii)." |
| 502 | Grass | n |
| | Source(s) | Notes |
| | USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 30 Oct 2018] | Family: Cactaceae Subfamily: Cactoideae Tribe: Echinocereeae |
| 503 | Nitrogen fixing woody plant | n |
| | Source(s) | Notes |
| | USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 30 Oct 2018] | Family: Cactaceae Subfamily: Cactoideae Tribe: Echinocereeae |
| 504 | Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers) | n |
| | Source(s) | Notes |
| | Weniger, D. (1984). <i>Cacti of Texas and Neighboring States: A Field Guide</i> . University of Texas Press, Austin, TX | "members of <i>Acanthocereus</i> have fibrous roots, stems always markedly ribbed, much longer spines, and fruits more nearly spherical." |
| | Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford | "Shrubs, clambering or arching-reclining, branched near base, sometimes with well-developed trunks." |

| Qsn # | Question | Answer |
|-------|---|---|
| 601 | Evidence of substantial reproductive failure in native habitat | n |
| | Source(s) | Notes |
| | Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford | [Broad native range] "Sandy soils of dense thickets, hammocks, bottomlands of coastal areas; 0-10 m; Fla., Tex.; Mexico; West Indies; Central America; n South America; introduced Pacific Islands (Hawaii)." |
| | Gómez-Hinostrosa, C., Durán, R. & Tapia, J.L. (2017). <i>Acanthocereus tetragonus</i> (amended version of 2013 assessment). The IUCN Red List of Threatened Species 2017: e.T152925A119232727. https://www.iucnredlist.org/species/152925/119232727 . [Accessed 30 Oct 2018] | IUCN Red List Category and Criteria - Least Concern |

| | | |
|-----|---|---|
| 602 | Produces viable seed | y |
| | Source(s) | Notes |
| | Urban Design, Cultural Heritage & Landscape Unit & Land for Wildlife. 2002. Guidelines for Undesirable Plants for Natural Bushland & Waterways. Information Sheet 5. https://www.goldcoast.qld.gov.au . [Accessed 30 Oct 2018] | " <i>Acanthocereus tetragonus</i> ... Spread by seed & vegetative reproduction from broken plant parts" |
| | Loflin, B. & Loflin, S. (2009). Texas Cacti: A Field Guide. Texas A&M University Press, College Station, TX | "Seeds - Shiny black to brown, obovate, slightly keeled seeds, 4.4-4.8 mm." |

| | | |
|-----|--|----------------------------|
| 603 | Hybridizes naturally | |
| | Source(s) | Notes |
| | WRA Specialist. 2018. Personal Communication | Unknown. No evidence found |

| | | |
|-----|--|---|
| 604 | Self-compatible or apomictic | |
| | Source(s) | Notes |
| | Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford | "Flowers 14-20 cm; flower tube 8-15 cm, ± tuberculate, areoles few, usually 1 spine per areole; outer tepals narrowly lanceolate to linear, 3.5-4 cm, apex acuminate; inner tepals broadly linear, 3.5-4.5 cm, apex acuminate; ovary with small scales and usually 3-5 diverging spines per areole." [Bisexual flowers. Self-compatibility unknown] |

| | | |
|-----|---|--|
| 605 | Requires specialist pollinators | |
| | Source(s) | Notes |
| | Richardson, A. & King, K. (2011). Plants of Deep South Texas: A Field Guide to the Woody and Flowering Species. Texas A&M University Press, College Station, TX | "They are pollinated by Hawk moths and bats." [Native and introduced hawk moths are present in the Hawaiian Islands, and may effectively pollinate this species] |

| | | |
|-----|---|----------|
| 606 | Reproduction by vegetative fragmentation | y |
|-----|---|----------|

| Qsn # | Question | Answer |
|-------|---|---|
| | Source(s) | Notes |
| | Loflin, B. & Loflin, S. (2009). Texas Cacti: A Field Guide. Texas A&M University Press, College Station, TX | "Acanthocereus tetragonus is an erect, coarsely shrubby, and sprawling plant found clambering among other vegetation and arching unless supported. Stems often branch near the base and sometimes root at the tips." |
| | Brinon, L. (2008). Cactus (<i>Acanthocereus pentagonus</i>) control trials on the south-west coast of New Caledonia. Pp. 65-66 in Blanfort, V. and Orapa, W. (eds.). Ecology, Impacts and Management of Invasive Plant Species in Pastoral Areas: Proc. of the Regional Workshop on Invasive Plant Species in Pastoral Areas, 24-28 Nov 2003, Koné, New Caledonia. Secretariat of the Pacific Community | "This cactus does have the ability to propagate through both cuttings and seeds but development is slow, which gives farmers time to get themselves organised (more than 8 months to reach a height of between 0.5 and 1 meter)." |

| 607 | Minimum generative time (years) | |
|-----|---|---|
| | Source(s) | Notes |
| | Brinon, L. (2008). Cactus (<i>Acanthocereus pentagonus</i>) control trials on the south-west coast of New Caledonia. Pp. 65-66 in Blanfort, V. and Orapa, W. (eds.). Ecology, Impacts and Management of Invasive Plant Species in Pastoral Areas: Proc. of the Regional Workshop on Invasive Plant Species in Pastoral Areas, 24-28 Nov 2003, Koné, New Caledonia. Secretariat of the Pacific Community | "This cactus does have the ability to propagate through both cuttings and seeds but development is slow, which gives farmers time to get themselves organised (more than 8 months to reach a height of between 0.5 and 1 meter)." [Unlikely to flower in <1 year] |

| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | n |
|-----|---|---|
| | Source(s) | Notes |
| | Weniger, D. (1984). Cacti of Texas and Neighboring States: A Field Guide. University of Texas Press, Austin, TX | "Fruits Oval to egg-shaped, about 3 in. long by 2 in. diameter, slightly tuberculate, with 1—4 spines per areole; bright red and edible when ripe; seeds obovate, about 1/8 in. (3 mm) in size, bright, shining black." [No evidence and no means of external attachment] |

| 702 | Propagules dispersed intentionally by people | y |
|-----|---|---|
| | Source(s) | Notes |
| | Lorence, D.H., Flynn, T.W. & Wagner, W.L. 1995. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers 41: 19-58 | [Cultivated intentionally] "Escaped from cultivation, this night-blooming cactus is naturalized on the southern coast of Kauai in dry secondary scrubland dominated by <i>Leucaena leucocephala</i> , <i>Acacia farnesiana</i> (L.) Willd., and <i>Cereus uruguayanus</i> Ritter ex R. Kiesling. This species is also naturalized in Hanapepe along Moi Road just N of the junction with Hanapepe Road, near Hanapepe Heights (Flynn & Lorence, pers. comm. 1993)." |
| | WRA Specialist. 2018. Personal Communication | Sold commercially online |

| 703 | Propagules likely to disperse as a produce contaminant | n |
|-----|--|---|
|-----|--|---|

| Qsn # | Question | Answer |
|-------|---|---|
| | Source(s) | Notes |
| | Weniger, D. (1984). Cacti of Texas and Neighboring States: A Field Guide. University of Texas Press, Austin, TX | "Fruits Oval to egg-shaped, about 3 in. long by 2 in. diameter, slightly tuberculate, with 1—4 spines per areole; bright red and edible when ripe; seeds obovate, about 1/8 in. (3 mm) in size, bright, shining black." [No evidence. Adapted for animal dispersal] |

| 704 | Propagules adapted to wind dispersal | n |
|-----|---|---|
| | Source(s) | Notes |
| | Weniger, D. (1984). Cacti of Texas and Neighboring States: A Field Guide. University of Texas Press, Austin, TX | "Fruits Oval to egg-shaped, about 3 in. long by 2 in. diameter, slightly tuberculate, with 1—4 spines per areole; bright red and edible when ripe; seeds obovate, about 1/8 in. (3 mm) in size, bright, shining black." |

| 705 | Propagules water dispersed | n |
|-----|--|--|
| | Source(s) | Notes |
| | Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford | "Fruits bright red, ovoid to oblong, 30-80(-100) mm, slightly tuberculate, shiny, edible, sweet." ... "Sandy soils of dense thickets, hammocks, bottomlands of coastal areas" [No evidence. Fleshy-fruited and adapted for dispersal by animals] |

| 706 | Propagules bird dispersed | y |
|-----|---|---|
| | Source(s) | Notes |
| | Euan, A. D., & Feldman, R. E. (2017). La fenología de frutos de la duna costera de la Península de Yucatán. Desde el Herbario CICY 9: 37–47 | "Cuadro 1. Especies que producen frutos comestibles para las aves" [Table 1. Species that produce edible fruits for birds.] [Includes <i>Acanthocereus tetragonus</i>] |
| | Weniger, D. (1984). Cacti of Texas and Neighboring States: A Field Guide. University of Texas Press, Austin, TX | "Fruits Oval to egg-shaped, about 3 in. long by 2 in. diameter, slightly tuberculate, with 1—4 spines per areole; bright red and edible when ripe; seeds obovate, about 1/8 in. (3 mm) in size, bright, shining black." |
| | Poulin, B., Lefebvre, G., & McNeil, R. (1994). Diets of land birds from northeastern Venezuela. The Condor 96: 354-367 | "TABLE 3. Importance of the different fruit species in the birds' diet." [Includes <i>Acanthocereus tetragonus</i>] |

| 707 | Propagules dispersed by other animals (externally) | n |
|-----|---|--|
| | Source(s) | Notes |
| | Richardson, A. & King, K. (2011). Plants of Deep South Texas: A Field Guide to the Woody and Flowering Species. Texas A&M University Press, College Station, TX | "Birds, tortoises, and coyotes eat the ripe fruit." [Internally dispersed] |

| Qsn # | Question | Answer |
|-------|---|--|
| 708 | Propagules survive passage through the gut | y |
| | Source(s) | Notes |
| | Richardson, A. & King, K. (2011). Plants of Deep South Texas: A Field Guide to the Woody and Flowering Species. Texas A&M University Press, College Station, TX | "Birds, tortoises, and coyotes eat the ripe fruit." [Presumably yes] |

| 801 | Prolific seed production (>1000/m ²) | |
|-----|---|--|
| | Source(s) | Notes |
| | Loflin, B. & Loflin, S. (2009). Texas Cacti: A Field Guide. Texas A&M University Press, College Station, TX | "Seeds: Shiny black to brown, obovate, slightly keeled seeds, 4.4-4.8 mm." [Seed densities unknown. Possibly high when plant occurs in thickets] |

| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | |
|-----|---|---------|
| | Source(s) | Notes |
| | WRA Specialist. 2018. Personal Communication | Unknown |

| 803 | Well controlled by herbicides | y |
|-----|---|---|
| | Source(s) | Notes |
| | Brinon, L. (2008). Cactus (<i>Acanthocereus pentagonus</i>) control trials on the south-west coast of New Caledonia. Pp. 65-66 in Blanford, V. and Orapa, W. (eds.). Ecology, Impacts and Management of Invasive Plant Species in Pastoral Areas: Proc. of the Regional Workshop on Invasive Plant Species in Pastoral Areas, 24-28 Nov 2003, Koné, New Caledonia. Secretariat of the Pacific Community | "We selected a few active substances that have proved to be very effective against cactus in Queensland. These active herbicides (triclopyr, picloram) were tested at Bouraké in May 2003 to see if they were effective on <i>A. pentagonus</i> . The trials were conducted using three protocols (on older cacti, on that year's re-growth and on shredded cactus) using the combined treatments (triclopyr + picloram) suggested by the Australian specialists. The best results came from a combination of triclopyr + picloram mixed with diesel oil on unshredded regrowth that was about one year old (see attached photo). Some 85 to 90% of the treated plants were destroyed by a single dose of "Access®". Combining mechanical and chemical techniques makes it possible to control the cactus problem if action is taken in time, particularly by controlling re-growth." |

| Qsn # | Question | Answer |
|-------|---|--|
| 804 | Tolerates, or benefits from, mutilation, cultivation, or fire | y |
| | Source(s) | Notes |
| | Brinon, L. (2008). Cactus (<i>Acanthocereus pentagonus</i>) control trials on the south-west coast of New Caledonia. Pp. 65-66 in Blanfort, V. and Orapa, W. (eds.). Ecology, Impacts and Management of Invasive Plant Species in Pastoral Areas: Proc. of the Regional Workshop on Invasive Plant Species in Pastoral Areas, 24-28 Nov 2003, Koné, New Caledonia. Secretariat of the Pacific Community | [Regrows after mechanical control. Requires herbicide applications for complete control] "With mechanical techniques, the goal is to destroy both the clumps of adult cacti and re-growth that is several years old. The technique consists of using heavy machinery such as bulldozers or power shovels to uproot the plants, crush them so as to cause them to dry out, pile them up and then burn them. This stage must be followed by crisscrossed sub-soiling and then use of a closer-tooth harrow in order to dig up as many roots and plant parts likely to resprout as possible. These plant materials also have to be burned. The ground is then seeded with high-density pasture grass (sorghum and other desirable species). Despite all that, re-growth will appear. This must then be controlled using chemicals." |

| 805 | Effective natural enemies present locally (e.g. introduced biocontrol agents) | |
|-----|---|---------|
| | Source(s) | Notes |
| | WRA Specialist. 2018. Personal Communication | Unknown |

Summary of Risk Traits:

High Risk / Undesirable Traits

- Grows in tropical climates
- Naturalized on Kauai (Hawaiian Islands), Queensland, Australia and New Caledonia
- A weed of deer breeding farms in New Caledonia
- An environmental weed in Australia
- Spiny
- Tolerates some shade
- Clambering over other vegetation
- Forms dense thickets
- Reproduces by seeds and vegetatively (rooting at branch tips)
- Seeds dispersed by birds, other animals and intentionally by people
- Resprouts after cutting (unless treated with herbicide)

Low Risk Traits

- Non-toxic (edible fruit and stems if spines are removed)
- Herbicides may provide effective control