

Taxon: <i>Cyperus fulvus</i> R.Br.	Family: Cyperaceae
Common Name(s): sticky sedge	Synonym(s): <i>Cyperus ochroleucus</i> Boeckeler <i>Cyperus sieberi</i> Kunth <i>Mariscus fulvus</i> (R.Br.) C.B.Clarke

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 13 Nov 2019
WRA Score: 8.0	Designation: H(HPWRA)	Rating: High Risk

Keywords: Tropical Sedge, Perennial, Naturalized, Palatable, Rhizomatous

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	n
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed		
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	y=1, n=-1	n
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
408	Creates a fire hazard in natural ecosystems		
409	Is a shade tolerant plant at some stage of its life cycle		

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)		
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	y
607	Minimum generative time (years)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
702	Propagules dispersed intentionally by people	y=1, n=-1	n
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	y
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed		
707	Propagules dispersed by other animals (externally)		
708	Propagules survive passage through the gut		
801	Prolific seed production (>1000/m ²)		
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
	Harden, G.J. (ed.). (1990). Flora of New South Wales, Volume 4. UNSW Press, Kensington, NSW	[No evidence of domestication or cultivation] "Mostly in open woodland or forest, often in a grassy understorey."

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

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
	KewScience. (2019). Plants of the World Online - <i>Cyperus fulvus</i> . http://powo.science.kew.org . [Accessed 12 Nov 2019]	"This species is accepted, and its native range is New Guinea to N. & E. Australia."

202	Quality of climate match data	High
	Source(s)	Notes
	KewScience. (2019). Plants of the World Online - <i>Cyperus fulvus</i> . http://powo.science.kew.org . [Accessed 12 Nov 2019]	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[Occurs across a broad range of latitudes, from temperate to tropical] "Sandy to loam soils; generally in open woodland or forest, often associated with a grassy understorey, over a wide latitudinal range"

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	KewScience. (2019). Plants of the World Online - <i>Cyperus fulvus</i> . http://powo.science.kew.org . [Accessed 12 Nov 2019]	"This species is accepted, and its native range is New Guinea to N. & E. Australia."

Qsn #	Question	Answer
	Oppenheimer, H. & Bogner, K.K. (2020). New Hawaiian plant records from Lānaʻi for 2019. Bishop Museum Occasional Papers 129: 21-25	"This species, known as sticky sedge, is native to New Guinea and northern and eastern Australia. It has not been previously recorded in Hawaiʻi. Over 100 plants were found scattered across several sites in degraded Dodonaea Lowland Dry Shrubland, and with more search effort additional plants probably could be found. Material examined. LĀNAʻI: Kaʻa, vicinity of Kapukaloa, 530 m, 11 Oct 2018, Oppenheimer, K. Bogner, & M. Kier #H101808 (BISH, US)."

205	Does the species have a history of repeated introductions outside its natural range?	n
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in Cyperus section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	"Widespread in Queensland and New South Wales; also in southern New Guinea. Figure 31b. Probst (1949) lists this species as a wool-alien at Derendingen, Switzerland, in 1930. Ryves (1976) may be referring to this species when he records the tropical species <i>C. sporobolus</i> as a wool-alien at Blackmoor, England."
	Oppenheimer, H. & Bogner, K.K. (2020). New Hawaiian plant records from Lānaʻi for 2019. Bishop Museum Occasional Papers 129: 21-25	[No evidence of intentional introduction] "This species, known as sticky sedge, is native to New Guinea and northern and eastern Australia. It has not been previously recorded in Hawaiʻi. Over 100 plants were found scattered across several sites in degraded Dodonaea Lowland Dry Shrubland, and with more search effort additional plants probably could be found."
	WRA Specialist. (2019). Personal Communication	No evidence

301	Naturalized beyond native range	y
	Source(s)	Notes
	Oppenheimer, H. & Bogner, K.K. (2020). New Hawaiian plant records from Lānaʻi for 2019. Bishop Museum Occasional Papers 129: 21-25	"This species, known as sticky sedge, is native to New Guinea and northern and eastern Australia. It has not been previously recorded in Hawaiʻi. Over 100 plants were found scattered across several sites in degraded Dodonaea Lowland Dry Shrubland, and with more search effort additional plants probably could be found. Material examined. LĀNAʻI: Kaʻa, vicinity of Kapukaloa, 530 m, 11 Oct 2018, Oppenheimer, K. Bogner, & M. Kier #H101808 (BISH, US)."

302	Garden/amenity/disturbance weed	
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	[Cited as a weed of unspecified impacts] "Cyperus fulvus R.Br. Cyperaceae Total N° of Refs: 2 Habit: perennial Grass Origin: Aust References: Global-W-1070, Colombia-A-87."
	Oppenheimer, H. & Bogner, K.K. (2020). New Hawaiian plant records from Lānaʻi for 2019. Bishop Museum Occasional Papers 129: 21-25	[Occurs in disturbed, degraded shrubland] "Over 100 plants were found scattered across several sites in degraded Dodonaea Lowland Dry Shrubland, and with more search effort additional plants probably could be found."

Qsn #	Question	Answer
303	Agricultural/forestry/horticultural weed	
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Cited as an agricultural weed. Impacts unknown] "Cyperus fulvus R.Br. Cyperaceae Total N° of Refs: 2 Habit: perennial Grass Origin: Aust References: Global-W-1070, Colombia-A-87."

304	Environmental weed	
	Source(s)	Notes
	Oppenheimer, H. & Bogner, K.K. (2020). New Hawaiian plant records from Lānaʻi for 2019. Bishop Museum Occasional Papers 129: 21-25	[Possibly. Occurs in degraded native shrubland] "Over 100 plants were found scattered across several sites in degraded Dodonaea Lowland Dry Shrubland, and with more search effort additional plants probably could be found."

305	Congeneric weed	y
	Source(s)	Notes
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Cyperus eragrostis ... Once established, the plant is very persistent and forms dense infestations blocking channels and drains, reducing native species diversity and impeding growth of desired species. It colonizes small streams with quiet water and alters the vegetation structure of riparian plant communities. The plant has an extensive root system of coarse fibrous roots. It is an important agricultural weed (Parsons and Cuthbertson, 2001)." ... "Cyperus rotundus ... The plant is one of the most serious agricultural weeds in tropical regions, where it infests at least 52 different crop systems (Holm et al., 1977). ... Besides being an agricultural weed the plant is also an environmental weed capable of invading native forests (Staples and Cowie, 2001). Once established, the plant forms dense colonies crowding out other species and competing for nutrients."
	USDA NRCS. 2019. Hawaii State-listed Noxious Weeds. https://plants.usda.gov/java/noxious?rptType=State&statefips=15 . [Accessed 13 Nov 2019]	Cyperus esculentus listed as a Hawaii state noxious weed

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Harden, G.J. (ed.). (1990). Flora of New South Wales, Volume 4. UNSW Press, Kensington, NSW	[No evidence] "Slender tufted perennial, occasionally viscid. Culms trigonous or triquetrous, smooth or scabrous, with bases sometimes bulbous, 25-50 cm high, 0.9-2.5 mm diam. Leaves usually septate-odulose, often curly, often slightly shorter than culms, to 6 mm wide."

402	Allelopathic	
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Qsn #	Question	Answer
	Source(s)	Notes
	Bryson, C. T., & Carter, R. 2008. The significance of Cyperaceae as weeds. Pp. 15-101. in Naczi, R.F.C. & Ford, B.A. (eds). Sedges, uses, diversity, and systematic of the Cyperaceae, Missouri Botanical Garden Press, St. Louis, MO	[Unknown for <i>C. fulvus</i>] "To varying degrees, the following characteristics undoubtedly contribute to the aggressive, invasive tendencies of <i>Cyperus</i> spp. and other sedges: large numbers of small, readily dispersed achenes; vegetative reproduction; longevity of tubers, rhizomes, or other subterranean structures; production of allelopathic compounds; paucity of pathogens; short life reproductive cycle, especially in annual species; tolerance of broad ranges of environmental conditions; C4 photosynthesis; and resistance to control with herbicides and cultural methods, including tillage."
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[Unknown. Co-occurs with other vegetation] "Sandy to loam soils; generally in open woodland or forest, often associated with a grassy understorey, over a wide latitudinal range (dominant tree species in the various regions include <i>Eucalyptus melanophloia</i> , <i>E. polycarpa</i> s.lat., <i>E. populnea</i> , <i>E. maculata</i> , <i>E. tereticornis</i> , <i>E. crebra</i> , <i>Callitris glaucophylla</i> and <i>Angophora leiocarpa</i>). Occasionally on coastal cliffs, in inland rocky gullies, along drainage lines around rock outcrops."

403	Parasitic	n
	Source(s)	Notes
	Harden, G.J. (ed.). (1990). <i>Flora of New South Wales</i> , Volume 4. UNSW Press, Kensington, NSW	"Slender tufted perennial, occasionally viscid." [Cyperaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	Notes
	McIntyre, S., & Lavorel, S. (2001). Livestock grazing in subtropical pastures: steps in the analysis of attribute response and plant functional types. <i>Journal of Ecology</i> , 89(2), 209-226	"Table 6 Grass and forb functional types derived from (i) univariate trait analysis (Tables 5 and 9) constrained by actual plant response (canonical correspondence analysis) (bold typeface) and (ii) univariate trait analysis broadly related to natural attribute combinations and constrained by actual plant response (see Tables 3 and 7)" ... Medium-sized, moderately leafy sedge, with non-plastic grazing response - <i>Cyperus fulvus</i> "
	Mcintyre, S., Heard, K. M., & Martin, T. G. (2003). The relative importance of cattle grazing in subtropical grasslands: does it reduce or enhance plant biodiversity?. <i>Journal of Applied Ecology</i> , 40(3), 445-457	"Table 8. Plant taxa for which a grazing response was identified." [<i>Cyperus fulvus</i> classified among the "Grazing generalists", or those species for which "no grazing preference detected"]

Qsn #	Question	Answer
405	Toxic to animals	n
	Source(s)	Notes
	Mcintyre, S., Heard, K. M., & Martin, T. G. (2003). The relative importance of cattle grazing in subtropical grasslands: does it reduce or enhance plant biodiversity?. <i>Journal of Applied Ecology</i> , 40(3), 445-457	[No evidence] "Table 8. Plant taxa for which a grazing response was identified." [Cyperus fulvus classified among the "Grazing generalists", or those species for which "no grazing preference detected"]
	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

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

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	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
	Wilson, K. L. (1991). Systematic studies in Cyperus section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[May burn, but unknown if contributions to fuel load would increase fire risk] "Sandy to loam soils; generally in open woodland or forest, often associated with a grassy understorey, over a wide latitudinal range (dominant tree species in the various regions include Eucalyptus melanophloia, E. polycarpa s.lat., E. populnea, E. maculata, E. tereticornis, E. crebra, Callitris glaucophyUa and Angophora leiocarpa). Occasionally on coastal cliffs, in inland rocky gullies, along drainage lines around rock outcrops. On sandy riverbanks or in floodways in NW Queensland (and very occasionally so in other regions)."
	Hunter, J. T. (2008). Vegetation and Floristics of Warrabah National Park. A Report to the New South Wales National Parks and Wildlife Service	[Resprouts following fire. Unknown if contributions to fuel load increase fire risk] "Table 4: Known fire responses and traits of taxa found in Warrabah NP. NPFR refers to National Fire Register. Fire responses are based on published information, some of which is contradictory. Possible reasons for these contradictions are in the discussion." [Cyperus fulvus - Response = Resprouter; Notes = Survives 100% scorch - basal sprouts]

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	Notes

Qsn #	Question	Answer
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[In open woodland. Shade tolerance unknown] "Sandy to loam soils; generally in open woodland or forest, often associated with a grassy understorey"
	Oppenheimer, H. & Bogner, K.K. (2020). New Hawaiian plant records from Lānaʻi for 2019. Bishop Museum Occasional Papers 129: 21-25	[Occurs in degraded shrubland, with presumably high light levels. Shade tolerance unknown] "Over 100 plants were found scattered across several sites in degraded Dodonaea Lowland Dry Shrubland, and with more search effort additional plants probably could be found."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	"Sandy to loam soils; generally in open woodland or forest, often associated with a grassy understorey,"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Harden, G.J. (ed.). (1990). Flora of New South Wales, Volume 4. UNSW Press, Kensington, NSW	"Slender tufted perennial, occasionally viscid."

412	Forms dense thickets	n
	Source(s)	Notes
	Oppenheimer, H. & Bogner, K.K. (2020). New Hawaiian plant records from Lānaʻi for 2019. Bishop Museum Occasional Papers 129: 21-25	[No evidence at time of publication] "Over 100 plants were found scattered across several sites in degraded Dodonaea Lowland Dry Shrubland, and with more search effort additional plants probably could be found."
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[No evidence] "HABITAT: Sandy to loam soils; generally in open woodland or forest, often associated with a grassy understorey, over a wide latitudinal range (dominant tree species in the various regions include <i>Eucalyptus melanophloia</i> , <i>E. polycarpa</i> s.lat., <i>E. populnea</i> , <i>E. maculata</i> , <i>E. tereticornis</i> , <i>E. crebra</i> , <i>Callitris glaucophyUa</i> and <i>Angophora leiocarpa</i>). Occasionally on coastal cliffs, in inland rocky gullies, along drainage lines around rock outcrops. On sandy riverbanks or in floodways in NW Queensland (and very occasionally so in other regions)."

501	Aquatic	n
	Source(s)	Notes
	Harden, G.J. (ed.). (1990). Flora of New South Wales, Volume 4. UNSW Press, Kensington, NSW	[Terrestrial] "Mostly in open woodland or forest, often in a grassy understorey"
	Oppenheimer, H. & Bogner, K.K. (2020). New Hawaiian plant records from Lānaʻi for 2019. Bishop Museum Occasional Papers 129: 21-25	[Terrestrial] "Over 100 plants were found scattered across several sites in degraded Dodonaea Lowland Dry Shrubland, and with more search effort additional plants probably could be found."

502	Grass	n
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Qsn #	Question	Answer
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 12 Nov 2019]	Family: Cyperaceae Subfamily: Cyperoideae Tribe: Cypereae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 12 Nov 2019]	Family: Cyperaceae Subfamily: Cyperoideae Tribe: Cypereae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section <i>Pinnati</i> (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[Culms may be thickened into a bulb which may aid in regeneration] "Slender perennial, tufted with bases sometimes subbulbously thickened, 25-50(-80) cm high, occasionally viscid."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section <i>Pinnati</i> (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	"Widespread in Queensland and New South Wales; also in southern New Guinea."
	PlantNET. (2019). New South Wales Flora Online - <i>Cyperus fulvus</i> . National Herbarium of NSW, Royal Botanic Garden, Sydney. http://plantnet.rbgsyd.nsw.gov.au . [Accessed 12 Nov 2019]	[No evidence] "Distribution and occurrence: Widespread, south to Mittagong - Burcher - Roto, only at Mootwingee on NFWP."

602	Produces viable seed	y
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section <i>Pinnati</i> (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	"Nut trigonous (generally with the angles very rounded), obovate to broad-elliptic with broad-acute apex, faces convex to flat, yellow-brown, colliculate to smooth and reticulate-areolate, shining, 1.5-2.0 mm long, 7/8 as long as to equalling the glume, 0.6-0.9 mm diam., falling with glume."
	Oppenheimer, H. & Bogner, K.K. (2020). New Hawaiian plant records from Lānaʻi for 2019. <i>Bishop Museum Occasional Papers</i> 129: 21-25	[Presumably spread by seed] "This species, known as sticky sedge, is native to New Guinea and northern and eastern Australia. It has not been previously recorded in Hawaiʻi. Over 100 plants were found scattered across several sites in degraded Dodonaea Lowland Dry Shrubland, and with more search effort additional plants probably could be found."

Qsn #	Question	Answer
603	Hybridizes naturally	
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	Unknown. No evidence, but putative hybrids suspected in section Pinnati (e.g. <i>Cyperus carinatus</i> X <i>C. centralis</i>)

604	Self-compatible or apomictic	
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	"The species are outbreeding so far as known; flowers are protogynous. Specimens are often found with half-mature nuts as well as pre-anthetic anthers in the same flower."
	Bryson, C. T., & Carter, R. 2008. The significance of Cyperaceae as weeds. Pp. 15-101. in Naczi, R.F.C. & Ford, B.A. (eds). <i>Sedges, uses, diversity, and systematic of the Cyperaceae</i> , Missouri Botanical Garden Press, St. Louis, MO	[Unknown] "Although there is a paucity of information, it is suspected that most sedges are cross-pollinated (allogamous). For example, <i>Cyperus esculentus</i> is self-incompatible, and therefore an obligate outcrosser (Brown & Marshall, 1981) with greater genetic variability within sexually reproducing populations than <i>C. rotundus</i> , which rarely produces viable seed (Horak & Holt, 1986; Horak et al., 1987)."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	"The Cyperaceae are clearly adapted to anemophily, as is evidenced by their small, inconspicuous flowers and hidden or reduced perianth, the long stigmatic branches, the filaments elongating considerably during anthesis, and anthers shedding abundant pollen."
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	"Wind is thought to be the pollinating agent (as in most members of the Cyperaceae)."

606	Reproduction by vegetative fragmentation	y
	Source(s)	Notes
	Flora Malesiana. (2019). <i>Cyperus fulvus</i> . http://portal.cybertaxonomy.org/flora-malesiana . [Accessed 13 Nov 2019]	"Perennial with very short rhizome." [May be able to spread by rhizomes]
	Flora Malesiana. (2019). Cyperaceae. http://portal.cybertaxonomy.org/flora-malesiana . [Accessed 13 Nov 2019]	[Family traits] "Local extension by vegetative growth and even propagation is a very common feature in Cyperaceae, on account of the frequent occurrence of rhizomes, runners and more rarely bulbs."

607	Minimum generative time (years)	
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[Probably 1-2 years to maturity or less] "Slender perennial, tufted with bases sometimes subbulbously thickened, 25-50(-80) cm high, occasionally viscid."

Qsn #	Question	Answer
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[Small seeds (nuts) could possibly be dispersed by attaching to footwear or equipment] "Dispersal units - At maturity, dispersal of propagules in section Pinnati takes place in one of three ways: (i) the glumes and nuts fall (together or separately), leaving the persistent rachilla;" ... "In section Pinnati, twenty-three species exhibit more than one of these modes, the most common combination being (i) and (ii). All three modes are found in <i>C. microcephalus</i> , while nine species, including <i>C. hesperius</i> , <i>C. sporobolus</i> and <i>C. fulvus</i> , show only the first mode." ... "Nut trigonous (generally with the angles very rounded), obovate to broad-elliptic with broad-acute apex, faces convex to flat, yellow-brown, colliculate to smooth and reticulate-areolate, shining, 1.5-2.0 mm long"

702	Propagules dispersed intentionally by people	n
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	No evidence that this plant has been cultivated or introduced intentionally

703	Propagules likely to disperse as a produce contaminant	y
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	"Probst (1949) lists this species as a wool-alien at Derendingen, Switzerland, in 1930. Ryves (1976) may be referring to this species when he records the tropical species <i>C. sporobolus</i> as a wool-alien at Blackmoor, England."

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[No adaptations for wind dispersal] "Dispersal units - At maturity, dispersal of propagules in section Pinnati takes place in one of three ways: (i) the glumes and nuts fall (together or separately), leaving the persistent rachilla;" ... "In section Pinnati, twenty-three species exhibit more than one of these modes, the most common combination being (i) and (ii). All three modes are found in <i>C. microcephalus</i> , while nine species, including <i>C. hesperius</i> , <i>C. sporobolus</i> and <i>C. fulvus</i> , show only the first mode." ... "Nut trigonous (generally with the angles very rounded), obovate to broad-elliptic with broad acute apex, faces convex to flat, yellow-brown, colliculate to smooth and reticulate-areolate, shining, 1.5-2.0 mm long"

705	Propagules water dispersed	y
	Source(s)	Notes

Qsn #	Question	Answer
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[In riparian habitats] "Occasionally on coastal cliffs, in inland rocky gullies, along drainage lines around rock outcrops. On sandy riverbanks or in floodways in NW Queensland (and very occasionally so in other regions)."
	Chalmers, A. C., Erskine, W. D., Keene, A. F., & Bush, R. T. 2012. Relationship between vegetation, hydrology and fluvial landforms on an unregulated sand-bed stream in the Hunter Valley, Australia. <i>Austral Ecology</i> , 37(2): 193-203	[Probably yes. Occurs in streambeds] "Species that lie towards the top left-hand corner of the ordination (Fig. 2) were abundant on sites with a shallow watertable and lower than average canopy cover. <i>Aster subulatus</i> , <i>Cyperus fulvus</i> , <i>J. articulatus</i> , <i>Lythrum hyssopifolia</i> , <i>Persicaria decipens</i> , <i>P. australis</i> and <i>Pseudognaphalium luteoalbum</i> were associated with the shallowest watertables"

706	Propagules bird dispersed	
	Source(s)	Notes
	Flora Malesiana. (2019). Cyperaceae. http://portal.cybertaxonomy.org/flora-malesiana . [Accessed 13 Nov 2019]	[Family description. External bird dispersal may be possible] "Epizoid dispersal by birds is assumed to be more important, as many sedges have very small seed which may adhere, with mud, to feet, beak and feathers of wading birds."

707	Propagules dispersed by other animals (externally)	
	Source(s)	Notes
	Flora Malesiana. (2019). Cyperaceae. http://portal.cybertaxonomy.org/flora-malesiana . [Accessed 13 Nov 2019]	[Unknown. Family description] "Epizoid dispersal by birds is assumed to be more important, as many sedges have very small seed which may adhere, with mud, to feet, beak and feathers of wading birds."

708	Propagules survive passage through the gut	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown. Browsed by grazing animals, but unclear whether or not seeds are consumed, and if so, whether or not they remain viable

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Wilson, K. L. (1991). Systematic studies in <i>Cyperus</i> section Pinnati (Cyperaceae). <i>Telopea</i> , 4(3), 361-496	[Numbers unknown] "Nut trigonous (generally with the angles very rounded), obovate to broad-elliptic with broad-acute apex, faces convex to flat, yellow-brown, colliculate to smooth and reticulate-areolate, shining, 1.5-2.0 mm long"

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown

803	Well controlled by herbicides	y
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Qsn #	Question	Answer
	Source(s)	Notes
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[No evidence that <i>C. fulvus</i> is being controlled with herbicides, but those used to control highly invasive <i>Cyperus</i> species would presumably be effective] "Cyperus eragrostis ... Chemical control can be achieved by spraying with 2,4-D or other non-selective herbicides." ... "Cyperus rotundus ... The most effective herbicide is glyphosate applied to actively growing plants in the flowering stage (Parsons and Cuthbertson, 2001; Webster et al., 2008)."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	Hunter, J. T. (2008). Vegetation and Floristics of Warrabah National Park. A Report to the New South Wales National Parks and Wildlife Service	[Resprouts following fire] "Table 4: Known fire responses and traits of taxa found in Warrabah NP. NPFR refers to National Fire Register. Fire responses are based on published information, some of which is contradictory. Possible reasons for these contradictions are in the discussion." [Cyperus fulvus - Response = Resprouter; Notes = Survives 100% scorch - basal sprouts]

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

- Broad climate suitability and latitudinal range
- Grows in tropical climates
- Naturalized on Lanai (Hawaiian Islands)
- Potential agricultural and environmental weed
- Other *Cyperus* species are invasive
- Tolerates many soil types
- Reproduces by seeds and vegetatively by rhizomes
- Seeds dispersed as a contaminant in wool, by water, and possibly by other means
- Able to resprout after fire
- Gaps in biological and ecological information reduce accuracy of risk prediction

Low Risk Traits

- Unarmed (no spines, thorns, or burrs)
- Palatable to grazing animals
- Non-toxic
- Herbicides may provide effective control