

<b>Taxon:</b> <i>Schoenus apogon</i> Roem. & Schult.	<b>Family:</b> Cyperaceae
<b>Common Name(s):</b> common bog sedge fluke bog rush smooth bogrush	<b>Synonym(s):</b> <i>Chaetospora albescens</i> Franch. & Sav. <i>Helothrix imberbis</i> (R.Br.) Palla <i>Isolepis margaritifera</i> Nees <i>Scirpus margariferus</i> (Nees)

<b>Assessor:</b> Chuck Chimera	<b>Status:</b> Assessor Approved	<b>End Date:</b> 14 Aug 2019
<b>WRA Score:</b> 3.0	<b>Designation:</b> EVALUATE	<b>Rating:</b> Evaluate

**Keywords:** Annual Sedge, Sparingly Naturalized, Fodder, Self-Compatible, Persistent Seed Bank

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y=1, n=0	n
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	n
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)	n
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed		
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	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
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	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)	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	n
604	Self-compatible or apomictic	y=1, n=-1	y
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	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
702	Propagules dispersed intentionally by people		
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)		
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m <sup>2</sup> )		
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	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
	PlantNET. (2019). New South Wales Flora Online - <i>Schoenus apogon</i> . National Herbarium of NSW, Royal Botanic Garden, Sydney. <a href="http://plantnet.rbgsyd.nsw.gov.au">http://plantnet.rbgsyd.nsw.gov.au</a> . [Accessed 13 Aug 2019]	[No evidence of domestication] "Distribution and occurrence: Grows in seasonally wet habitats; extending inland to eastern Western Plains; NC CC SC NT CT ST NWS CWS SWS NWP SWP; Qld, Vic., Tas., S.A., N.Z., Japan. NSW subdivisions: NC, CC, SC, NT, CT, ST, NWS, CWS, SWS, NWP, SWP Other Australian states: Qld Vic. Tas. S.A."

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
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds.). (2010). Flora of China. Vol. 23 (Acoraceae through Cyperaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Moist coastal grasslands; near sea level. W Taiwan (Taizhong) [Japan, Vietnam; Australia]"

202	Quality of climate match data	High
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds.). (2010). Flora of China. Vol. 23 (Acoraceae through Cyperaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"[Japan, Vietnam; Australia]"

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Plant This. (2019). <i>Schoenus apogon</i> - Fluke Bog Rush. <a href="http://plantthis.com.au">http://plantthis.com.au</a> . [Accessed 14 Aug 2019]	"Hardiness zones: 9-10"

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes

Qsn #	Question	Answer
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds.). (2010). Flora of China. Vol. 23 (Acoraceae through Cyperaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Moist coastal grasslands; near sea level. W Taiwan (Taizhong) [Japan, Vietnam; Australia]."
	Strong, M. T. & Wagner, W. L. (1997). New and noteworthy Cyperaceae from the Hawaiian Islands. Bishop Museum Occasional Papers 48: 37-50	"We have seen a single Hawaiian collection representing the first record of this genus from the Hawaiian Islands, and almost certainly an inadvertent introduction by humans, judging from the habitat of the single locality." ... "Schoenus apogon is indigenous to Australia, New Zealand, and Japan, including the Ryukyu Islands. Material examined. HAWAII: "near 3500 ft" road sign, Volcano, among moss on roadside, 4 August 1976, Degener 35812 (BISH, US)."

205	Does the species have a history of repeated introductions outside its natural range?	n
	Source(s)	Notes
	Strong, M. T. & Wagner, W. L. (1997). New and noteworthy Cyperaceae from the Hawaiian Islands. Bishop Museum Occasional Papers 48: 37-50	"Schoenus apogon Roem. & Schult. We have seen a single Hawaiian collection representing the first record of this genus from the Hawaiian Islands, and almost certainly an inadvertent introduction by humans, judging from the habitat of the single locality."
	New Zealand Plant Conservation Network. (2019). Flora Details - Schoenus apogon. <a href="http://www.nzpcn.org.nz">http://www.nzpcn.org.nz</a> . [Accessed 14 Aug 2019]	"Where To Buy Not commercially available"
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence. Only reported in Hawaii and within native range

301	Naturalized beyond native range	y
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. (2019). Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. <a href="http://botany.si.edu/">http://botany.si.edu/</a> . [Accessed 13 Aug 2019]	"Schoenus apogon Roem. & Schult. Status: Naturalized Distribution: H (Volcano Village)" [Collected in 1976 and recorded as naturalized, but distribution on the island of Hawaii currently unknown. Conservatively reported as naturalized for the purposes of the assessment]
	Strong, M. T. & Wagner, W. L. (1997). New and noteworthy Cyperaceae from the Hawaiian Islands. Bishop Museum Occasional Papers 48: 37-50	"We have seen a single Hawaiian collection representing the first record of this genus from the Hawaiian Islands, and almost certainly an inadvertent introduction by humans, judging from the habitat of the single locality." ... "Schoenus apogon is indigenous to Australia, New Zealand, and Japan, including the Ryukyu Islands. Material examined. HAWAII: "near 3500 ft" road sign, Volcano, among moss on roadside, 4 August 1976, Degener 35812 (BISH, US)."

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence to date. Limited records of cultivation outside native range

303	Agricultural/forestry/horticultural weed	n
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	New Zealand Plant Conservation Network. (2019). Flora Details - <i>Schoenus apogon</i> . <a href="http://www.nzpcn.org.nz">http://www.nzpcn.org.nz</a> . [Accessed 14 Aug 2019]	"Sometimes an invasive weed of rough or poorly drained pasture. Rarely on ultramafics." [Impacts on pasture productivity unspecified]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence to date. Limited records of cultivation outside native range

304	Environmental weed	n
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence to date. Limited records of cultivation outside native range

305	Congeneric weed	n
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Citations suggest that <i>Schoenus brevifolius</i> , <i>Schoenus calostachyus</i> , <i>Schoenus ferrugineus</i> , <i>Schoenus nigricans</i> , and <i>Schoenus pauciflorus</i> may be regarded as weeds under certain conditions. Evidence of negative impacts was not corroborated at the time of this assessment

401	Produces spines, thorns or burrs	n
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds.). (2010). Flora of China. Vol. 23 (Acoraceae through Cyperaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Annuals or short-lived perennials, slender. Roots fibrous. Culms tufted, 20–40 cm tall, 0.5–1 mm thick, mostly 2-nodose, smooth. Leaves basal and cauline. Cauline leaves 2, shorter than culm; sheath reddish purple, 1–2 cm; leaf blade capillary, ca. 0.5 mm wide. Involucral bracts surpassing inflorescence; sheath reddish purple, 0.5–1 cm. Inflorescences consisting of 2– 5 distant corymbiform partial panicles, each bearing several sessile and shortly pedunculate spikelets; partial panicles 0.8– 1.5 cm and as broad. Spikelets reddish brown, narrowly ovoid, 4–6 mm, flattened, 1- or 2(or 3)-flowered. Glumes sanguineous with pale margin, lanceolate to ovate-lanceolate, 3–4 mm, papery, apex obtuse; basal 2 or 3 glumes empty, rather short. Perianth bristles 6, ca. 2 mm, antrorsely scabrous. Stamens 3. Style ca. 1.5 mm, base glabrous; stigmas 3, as long as style. Nutlet whitish, globose-obovoid, ca. 1 mm, obtusely 3-sided, sides convex, shiny, and minutely reticulate."

402	Allelopathic	n
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. (2019). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	Strong, M. T. & Wagner, W. L. (1997). New and noteworthy Cyperaceae from the Hawaiian Islands. Bishop Museum Occasional Papers 48: 37-50	"Tufted perennial, slender. Culms filiform, 5–25 cm long, ribbed, 1–3 nodose below the inflorescence." [Cyperaceae. No evidence]
<b>404</b>	<b>Unpalatable to grazing animals</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Hunter, J. T. (2008). Vegetation and Floristics of Bidson State Conservation Area. A Report to the New South Wales National Parks and Wildlife Service.	[Presumably Palatable] "Appendix F: Traditional and other uses of plants found within the reserve." [Schoenus apogon - Agric. Use = Fodder]
<b>405</b>	<b>Toxic to animals</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Plant This. (2019). Schoenus apogon - Fluke Bog Rush. <a href="http://plantthis.com.au">http://plantthis.com.au</a> . [Accessed 14 Aug 2019]	"No hazards currently listed."
	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
<b>406</b>	<b>Host for recognized pests and pathogens</b>	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. (2019). Personal Communication	Unknown
<b>407</b>	<b>Causes allergies or is otherwise toxic to humans</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	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
	Plant This. (2019). Schoenus apogon - Fluke Bog Rush. <a href="http://plantthis.com.au">http://plantthis.com.au</a> . [Accessed 14 Aug 2019]	No hazards currently listed.
<b>408</b>	<b>Creates a fire hazard in natural ecosystems</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	PlantNET. (2019). New South Wales Flora Online - Schoenus apogon. National Herbarium of NSW, Royal Botanic Garden, Sydney. <a href="http://plantnet.rbgsyd.nsw.gov.au">http://plantnet.rbgsyd.nsw.gov.au</a> . [Accessed 14 Aug 2019]	"Grows in seasonally wet habitats; extending inland to eastern Western Plains" [Unlikely if growing in wet habitats]
	New Zealand Plant Conservation Network. (2019). Flora Details - Schoenus apogon. <a href="http://www.nzpcn.org.nz">http://www.nzpcn.org.nz</a> . [Accessed 14 Aug 2019]	"Preferring open, seasonally damp or poorly drained ground, usually within gumland, tea tree scrub or within pakihi or on the margins of low moor peat bogs." [No evidence. Unlikely given damp habitat]
<b>409</b>	<b>Is a shade tolerant plant at some stage of its life cycle</b>	<b>n</b>

Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Yarra Ranges Shire Council. (2019). <i>Schoenus apogon</i> . <a href="http://fe.yarraranges.vic.gov.au">http://fe.yarraranges.vic.gov.au</a> . [Accessed 14 Aug 2019]	"Full sun, semi shade."
	Plant This. (2019). <i>Schoenus apogon</i> - Fluke Bog Rush. <a href="http://plantthis.com.au">http://plantthis.com.au</a> . [Accessed 14 Aug 2019]	"Sunlight: hot overhead sun"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	<b>Source(s)</b>	<b>Notes</b>
	Plant This. (2019). <i>Schoenus apogon</i> - Fluke Bog Rush. <a href="http://plantthis.com.au">http://plantthis.com.au</a> . [Accessed 14 Aug 2019]	"Soil: ordinary soil, sand, mildly acidic to mildly alkaline"
	Understorey Network. (2019). Municipalities - <i>Schoenus apogon</i> . <a href="http://www.understorey-network.org.au">http://www.understorey-network.org.au</a> . [Accessed 14 Aug 2019]	"Usually in damp places, abundant in a range of soils, from coasts to mountains."

411	Climbing or smothering growth habit	n
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds.). (2010). Flora of China. Vol. 23 (Acoraceae through Cyperaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Annuals or short-lived perennials, slender. Roots fibrous. Culms tufted, 20–40 cm tall, 0.5–1 mm thick, mostly 2-nodose, smooth. Leaves basal and cauline. Cauline leaves 2, shorter than culm; sheath reddish purple, 1–2 cm; leaf blade capillary, ca. 0.5 mm wide. Involucral bracts surpassing inflorescence; sheath reddish purple, 0.5–1 cm."

412	Forms dense thickets	n
	<b>Source(s)</b>	<b>Notes</b>
	New Zealand Plant Conservation Network. (2019). Flora Details - <i>Schoenus apogon</i> . <a href="http://www.nzpcn.org.nz">http://www.nzpcn.org.nz</a> . [Accessed 14 Aug 2019]	[No evidence] "Coastal to montane (up to 500 m a.s.l.). Preferring open, seasonally damp or poorly drained ground, usually within gumland, tea tree scrub or within pakihi or on the margins of low moor peat bogs. Sometimes an invasive weed of rough or poorly drained pasture. Rarely on ultramafics."
	Yarra Ranges Shire Council. (2019). <i>Schoenus apogon</i> . <a href="http://fe.yarraranges.vic.gov.au">http://fe.yarraranges.vic.gov.au</a> . [Accessed 14 Aug 2019]	[No evidence] "Growing Conditions: Seasonally moist to wet soils in swampy and riparian communities. Full sun, semi shade. Garden Use: An interesting little plant, leaves and flowers contrasting. Once established around margins of water areas will regenerate annually without being a problem."

501	Aquatic	n
	<b>Source(s)</b>	<b>Notes</b>
	PlantNET. (2019). New South Wales Flora Online - <i>Schoenus apogon</i> . National Herbarium of NSW, Royal Botanic Garden, Sydney. <a href="http://plantnet.rbgsyd.nsw.gov.au">http://plantnet.rbgsyd.nsw.gov.au</a> . [Accessed 13 Aug 2019]	[Terrestrial, but occurs on margins of aquatic habitats] "Grows in seasonally wet habitats; extending inland to eastern Western Plains"

Qsn #	Question	Answer
502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 13 Aug 2019]	Family: Cyperaceae Subfamily: Cyperoideae Tribe: Schoeneae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 13 Aug 2019]	Family: Cyperaceae Subfamily: Cyperoideae Tribe: Schoeneae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds.). (2010). Flora of China. Vol. 23 (Acoraceae through Cyperaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Annuals or short-lived perennials, slender. Roots fibrous. Culms tufted, 20–40 cm tall, 0.5–1 mm thick, mostly 2-nodose, smooth. Leaves basal and cauline. Cauline leaves 2, shorter than culm; sheath reddish purple, 1–2 cm; leaf blade capillary, ca. 0.5 mm wide. Involucral bracts surpassing inflorescence; sheath reddish purple, 0.5–1 cm."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	New Zealand Plant Conservation Network. (2019). Flora Details - <i>Schoenus apogon</i> . <a href="http://www.nzpcn.org.nz">http://www.nzpcn.org.nz</a> . [Accessed 14 Aug 2019]	"Current Conservation Status - 2012 - Not Threatened"

602	Produces viable seed	y
	Source(s)	Notes
	New Zealand Plant Conservation Network. (2019). Flora Details - <i>Schoenus apogon</i> . <a href="http://www.nzpcn.org.nz">http://www.nzpcn.org.nz</a> . [Accessed 14 Aug 2019]	"Propagation Technique - Easily grown from rooted pieces and fresh seed. An excellent pot plant. Quite tolerant of dry conditions as well as wet. "
	Understorey Network. (2019). Municipalities - <i>Schoenus apogon</i> . <a href="http://www.understorey-network.org.au">http://www.understorey-network.org.au</a> . [Accessed 14 Aug 2019]	"Seed germinates readily with the bog method. Easily grown by division when actively growing. May be successful in direct seeding. Suitable below powerlines."
	Grant, C. D., & Macgregor, C. M. (2001). Topsoil seed banks in grazed and ungrazed eucalypt woodlands at Newholme, Armidale, New South Wales, Australia. <i>New Zealand Journal of Botany</i> , 39(3), 471-481	"Table 1 Topsoil seed densities (m-2) and life forms of species showing topsoil seed stores of greater than 10 seeds m-2, and frequency (%) and life forms of species with an average frequency >10" [ <i>Schoenus apogon</i> - Seeds m-2 = 125.3]

603	Hybridizes naturally	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Kaur, N., Datson, P. M., & Murray, B. G. (2011). Hybridization amongst New Zealand Schoenus (Cyperaceae)?. <i>New Zealand Journal of Botany</i> , 49(4), 503-507	[Unlikely. <i>Schoenus apogon</i> tested with other species and no hybrids were produced] "Artificial pollinations were made between five New Zealand species of <i>Schoenus</i> (Cyperaceae) to determine whether they could form interspecific hybrids. No hybrids were produced and the site of the interspecific incompatibility was investigated using fluorescence microscopy. The site of pollen inhibition varied in the different cross combinations. No relationship was observed between pollen size and subsequent pollen germination and tube growth in the style. The results do not support the claim that <i>S. concinnus</i> and <i>S. nitens</i> form hybrids in nature."

604	Self-compatible or apomictic	y
	Source(s)	Notes
	Kaur, N., Datson, P. M., & Murray, B. G. (2011). Hybridization amongst New Zealand Schoenus (Cyperaceae)?. <i>New Zealand Journal of Botany</i> , 49(4), 503-507	[ <i>S. apogon</i> among the study species shown to be self-compatible] "The New Zealand <i>Schoenus</i> species that were tested were all found to be self-compatible. Studies of incompatibility using the Lundqvist (1961) petri dish technique as well as hand pollination on intact flowers revealed that all showed self pollen tube growth down to the base of the style and seed set on self-pollination. Thus, these <i>Schoenus</i> species can be added to the list of self-compatible New Zealand angiosperms adding support to the general consensus that self-incompatibility is relatively infrequent in the indigenous and endemic flora (Webb & Kelly 1993; Newstrom & Robertson 2005)."

Qsn #	Question	Answer
605	Requires specialist pollinators	n
	Source(s)	Notes
	Dahlgren, R.M.T., Clifford, H. T. & Yeo, P.F. (1985). The Families of the Monocotyledons: Structure, Evolution, and Taxonomy. Springer -Verlag, Berlin Heidelberg New York Tokyo	[Morphology of <i>Schoenus</i> suggests wind pollination] "Pollination. Pollination is mostly anemogamous but insect pollination may occur in some species with white or coloured bracts or where the upper leaves are conspicuously yellow as in the South African genus <i>Fieinia</i> or white as in the American genus <i>Diehromena</i> . The blue anther filaments of the South African <i>Chrysithrix</i> may also serve to attract pollinators. According to SCHULTZE-MoTEL (1966) <i>Rhynehospora</i> may also be insect-pollinated."
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds.). (2010). Flora of China. Vol. 23 (Acoraceae through Cyperaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Morphology suggests wind pollination] "Inflorescences consisting of 2– 5 distant corymbiform partial panicles, each bearing several sessile and shortly pedunculate spikelets; partial panicles 0.8– 1.5 cm and as broad. Spikelets reddish brown, narrowly ovoid, 4–6 mm, flattened, 1- or 2(or 3)-flowered. Glumes sanguineous with pale margin, lanceolate to ovate-lanceolate, 3–4 mm, papery, apex obtuse; basal 2 or 3 glumes empty, rather short. Perianth bristles 6, ca. 2 mm, antrorsely scabrous. Stamens 3. Style ca. 1.5 mm, base glabrous; stigmas 3, as long as style."
	Hedrèn, M. (1997). Genetic variation and hybridization in Swedish <i>Schoenus</i> (Cyperaceae). Plant Systematics and Evolution, 204(1-2), 21-37	[Related species wind-pollinated and possibly self-pollinated] "The species are wind-pollinated, tussock-forming herbaceous perennials (Pettersson 1958, Hegi 1966, Sparling 1968). Both species are protogynous and are normally outcrossed (Pettersson 1958, Sparling 1968), but it has been reported that self-pollination may occur in <i>S. nigricans</i> (Sparling 1968)."

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Benson, D., & McDougall, L. 2002. Ecology of Sydney plant species. Part 9 Monocotyledon families Agavaceae to Juncaginaceae. <i>Cunninghamia</i> 7(4): 695-930	"Vegetative spread: No (McIntyre et al. 1995)."

607	Minimum generative time (years)	1
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds.). (2010). Flora of China. Vol. 23 (Acoraceae through Cyperaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Annuals or short-lived perennials, slender."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	Source(s)	Notes

Qsn #	Question	Answer
	Strong, M. T. & Wagner, W. L. (1997). New and noteworthy Cyperaceae from the Hawaiian Islands. Bishop Museum Occasional Papers 48: 37-50	[Speculated accidental introduction. Possibly a roadside soil contaminant, but source unknown] "We have seen a single Hawaiian collection representing the first record of this genus from the Hawaiian Islands, and almost certainly an inadvertent introduction by humans, judging from the habitat of the single locality." ... "Material examined. HAWAII: "near 3500 ft" road sign, Volcano, among moss on roadside, 4 August 1976, Degener 35812 (BISH, US)."

702	Propagules dispersed intentionally by people	
	Source(s)	Notes
	Plant This. (2019). <i>Schoenus apogon</i> - Fluke Bog Rush. <a href="http://plantthis.com.au">http://plantthis.com.au</a> . [Accessed 14 Aug 2019]	"Garden Styles: suits bush, formal & oriental designs" [Cultivated within native range. Limited evidence of introduction outside native range]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Ornamental Dispersed by: Humans" [Appears to be primarily cultivated within native range]
	Strong, M. T. & Wagner, W. L. (1997). New and noteworthy Cyperaceae from the Hawaiian Islands. Bishop Museum Occasional Papers 48: 37-50	" <i>Schoenus apogon</i> Roem. & Schult. We have seen a single Hawaiian collection representing the first record of this genus from the Hawaiian Islands, and almost certainly an inadvertent introduction by humans, judging from the habitat of the single locality." ... "Material examined. HAWAII: "near 3500 ft" road sign, Volcano, among moss on roadside, 4 August 1976, Degener 35812 (BISH, US)."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unlikely. No evidence, and not cultivated with produce

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Benson, D., & McDougall, L. 2002. Ecology of Sydney plant species. Part 9 Monocotyledon families Agavaceae to Juncaginaceae. <i>Cunninghamia</i> 7(4): 695-930	"Dispersal, establishment & growth: No particular morphology for dispersal (McIntyre et al. 1995)."

705	Propagules water dispersed	y
	Source(s)	Notes
	Benson, D., & McDougall, L. 2002. Ecology of Sydney plant species. Part 9 Monocotyledon families Agavaceae to Juncaginaceae. <i>Cunninghamia</i> 7(4): 695-930	" <i>Schoenus apogon</i> Dispersal, establishment & growth: No particular morphology for dispersal (McIntyre et al. 1995). Recruitment mainly after fire (D. Keith pers. comm.). Germination outside in autumn, winter, spring in Northern Tablelands (Britton & Brock 1994)."... "Habitat: Seasonally wet habitats." [No morphological adaptations for water dispersal, but occurrence around aquatic habitats suggests water is the most likely dispersal vector]

706	Propagules bird dispersed	n
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Benson, D., & McDougall, L. 2002. Ecology of Sydney plant species. Part 9 Monocotyledon families Agavaceae to Juncaginaceae. <i>Cunninghamia</i> 7(4): 695-930	"Fruit/seed: Nut 1 mm long. Dispersal, establishment & growth: No particular morphology for dispersal (McIntyre et al. 1995)."

707	Propagules dispersed by other animals (externally)	
	<b>Source(s)</b>	<b>Notes</b>
	Benson, D., & McDougall, L. 2002. Ecology of Sydney plant species. Part 9 Monocotyledon families Agavaceae to Juncaginaceae. <i>Cunninghamia</i> 7(4): 695-930	"Fruit/seed: Nut 1 mm long. Dispersal, establishment & growth: No particular morphology for dispersal (McIntyre et al. 1995)." [No means of external attachment, but small size could allow for adherence in soil on birds or other animals]

708	Propagules survive passage through the gut	n
	<b>Source(s)</b>	<b>Notes</b>
	Benson, D., & McDougall, L. 2002. Ecology of Sydney plant species. Part 9 Monocotyledon families Agavaceae to Juncaginaceae. <i>Cunninghamia</i> 7(4): 695-930	"Fruit/seed: Nut 1 mm long. Dispersal, establishment & growth: No particular morphology for dispersal (McIntyre et al. 1995)." [Unlikely to be consumed]

801	Prolific seed production (>1000/m <sup>2</sup> )	
	<b>Source(s)</b>	<b>Notes</b>
	Grant, C. D., & Macgregor, C. M. (2001). Topsoil seed banks in grazed and ungrazed eucalypt woodlands at Newholme, Armidale, New South Wales, Australia. <i>New Zealand Journal of Botany</i> , 39(3), 471-481	"Table 1 Topsoil seed densities (m <sup>-2</sup> ) and life forms of species showing topsoil seed stores of greater than 10 seeds m <sup>-2</sup> , and frequency (%) and life forms of species with an average frequency >10" [Schoenus apogon - Seeds m <sup>-2</sup> = 125.3]

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	<b>Source(s)</b>	<b>Notes</b>
	Brock, M. A. (2011). Persistence of seed banks in Australian temporary wetlands. <i>Freshwater Biology</i> , 56(7), 1312-1327	"Table 2 Plant taxa germinating in longevity and residual seed bank experiments (1991–2003)" [Schoenus apogon - (ii) Long. SB yrs: viability after time dry in yearly longevity experiments = 5; Res. SB no.w/d: viability after number of yearly wetting and drying events of the residual seed bank = 6]

803	Well controlled by herbicides	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. (2019). Personal Communication	Unknown. No herbicide efficacy or chemical control of this species

Qsn #	Question	Answer
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	Benson, D., & McDougall, L. 2002. Ecology of Sydney plant species. Part 9 Monocotyledon families Agavaceae to Juncaginaceae. <i>Cunninghamia</i> 7(4): 695-930	"Fire response: Resprouts e.g. at Agnes Banks (Benson 1981), secondary juvenile period 1 year (D. Keith pers. comm.)."

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

- Collected and reported as naturalized on Hawaii island, but limited in distribution
- Reported as an invasive weed of rough or poorly drained pasture, but impacts are unspecified
- Tolerates many soil types
- Reproduces by seeds
- Self-compatible
- Reaches maturity in one growing season
- Seeds dispersed by water and intentionally by people, and possibly accidentally through soil contamination
- Seeds form a persistent seed bank
- Resprouts after fire

Low Risk Traits

- Despite naturalization and potential weediness, no negative impacts have been documented
- A possible accidental introduction to Hawaii, and unlikely to be intentionally cultivated or dispersed
- Unarmed (no spines, thorns, or burrs)
- Provides fodder for livestock
- Non-toxic
- Grows in high light environments
- Not reported to spread vegetatively

Second Screening Results for Low Stature Plants

(A) Reported as a weed of cultivated lands? Possibly. Reported as an invasive weed of rough or poorly drained pasture, but impacts are unspecified

Outcome = Evaluate further