

Assessment date 14 June 2017

<i>Zizania latifolia</i> ALL ZONES		Answer	Score
1.01	Is the species highly domesticated?	n	0
1.02	Has the species become naturalised where grown?		
1.03	Does the species have weedy races?		
2.01	Species suited to Florida's USDA climate zones (0-low; 1-intermediate; 2-high) North Zone: suited to Zones 8, 9 Central Zone: suited to Zones 9, 10 South Zone: suited to Zone 10	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	y	1
2.04	Native or naturalized in habitats with periodic inundation North Zone: mean annual precipitation 50-70 inches Central Zone: mean annual precipitation 40-60 inches South Zone: mean annual precipitation 40-60 inches	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	y	2
3.02	Garden/amenity/disturbance weed	y	2
3.03	Weed of agriculture	unk	
3.04	Environmental weed	y	4
3.05	Congeneric weed	y	2
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	unk	0
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	n	-1
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens	y	1
4.07	Causes allergies or is otherwise toxic to humans	n	0
4.08	Creates a fire hazard in natural ecosystems	unk	0
4.09	Is a shade tolerant plant at some stage of its life cycle	n	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	unk	0
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	y	1
5.01	Aquatic	y	5
5.02	Grass	y	1
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	n	0

6.01	Evidence of substantial reproductive failure in native habitat	n	0
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally	unk	-1
6.04	Self-compatible or apomictic	unk	-1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	y	1
6.07	Minimum generative time (years)	1	1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y	1
7.02	Propagules dispersed intentionally by people	y	1
7.03	Propagules likely to disperse as a produce contaminant	unk	-1
7.04	Propagules adapted to wind dispersal	unk	-1
7.05	Propagules water dispersed	y	1
7.06	Propagules bird dispersed	y	1
7.07	Propagules dispersed by other animals (externally)	y	1
7.08	Propagules dispersed by other animals (internally)	unk	-1
8.01	Prolific seed production	unk	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-1
8.03	Well controlled by herbicides	n	1
8.04	Tolerates, or benefits from, mutilation or cultivation	y	1
8.05		?	
Total Score		22	
Implemented Pacific Second Screening		no	
Risk Assessment Results		High	

section	# questions answered	satisfy minimum?
A		10 yes
B		9 yes
C		17 yes
total		36 yes

	Reference	Source data
1.01		Cultivated, but no evidence of selection for reduced weediness
1.02		Skip to 2.01
1.03		Skip to 2.01
2.01	<p>1. Global Plant Hardiness Zones for Phytosanitary Risk Analysis. http://naldc.nal.usda.gov/download/36586/PDF (Accessed: 7 June 2017) 2. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?42268 (Accessed: 7 June 2017) 3. Flora of China. http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=242355686 (Accessed: 7 June 2017) 4. Kew Royal Botanic Garden. http://www.kew.org/data/grasses-db/www/imp10896.htm (Accessed: 7 June 2017)</p>	<p>1. Figure 3. Florida North Zone: Hardiness zones 8 and 9. Central Zone: Hardiness zones 9 and 10. South Zone: Hardiness zone 10. 2. Native to China, Japan, Korea, Taiwan, Russia, India, Myanmar, and Vietnam. Naturalized in New Zealand, Estonia, Moldova, and Ukraine. 3. "Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [NE India, Japan, Korea, Myanmar, Russia; cultivated in SE Asia]." 4. "DISTRIBUTION Europe: eastern. Asia-temperate: Siberia, Soviet far east, China, and eastern Asia. Asia-tropical: India, Indo-China, and Malesia. Australasia: New Zealand. Pacific: north-central."</p>
2.02		Native range is well known.
2.03	<p>1. The University of Melbourne. Köppen-Geiger Climate Map of the World. http://people.eng.unimelb.edu.au/mpeel/koppen.html (Accessed: 7 June 2017) 2. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?42268 (Accessed: 7 June 2017) 3. Flora of China. http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=242355686 (Accessed: 7 June 2017) 4. Kew Royal Botanic Garden. http://www.kew.org/data/grasses-db/www/imp10896.htm (Accessed: 7 June 2017)</p>	<p>1. Native or naturalized to Köppen-Geiger Climate Zones: Am, Aw, Cwa, Cwb, Cfa, Cfb, Dfa, and Dfb. 2. Native to China, Japan, Korea, Taiwan, Russia, India, Myanmar, and Vietnam. Naturalized in New Zealand, Estonia, Moldova, and Ukraine. 3. "Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [NE India, Japan, Korea, Myanmar, Russia; cultivated in SE Asia]." 4. "DISTRIBUTION Europe: eastern. Asia-temperate: Siberia, Soviet far east, China, and eastern Asia. Asia-tropical: India, Indo-China, and Malesia. Australasia: New Zealand. Pacific: north-central."</p>
2.04	<p>1. Climate Charts. World Climate Maps. http://www.climate-charts.com/World-Climate-Maps.html#rain (Accessed: 7 June 2017) 2. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?42268 (Accessed: 7 June 2017) 3. Flora of China. http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=242355686 (Accessed: 7 June 2017) 4. Kew Royal Botanic Garden. http://www.kew.org/data/grasses-db/www/imp10896.htm (Accessed: 7 June 2017)</p>	<p>1. Native and naturalized in areas with rainfall within these ranges. 2. Native to China, Japan, Korea, Taiwan, Russia, India, Myanmar, and Vietnam. Naturalized in New Zealand, Estonia, Moldova, and Ukraine. 3. "Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [NE India, Japan, Korea, Myanmar, Russia; cultivated in SE Asia]." 4. "DISTRIBUTION Europe: eastern. Asia-temperate: Siberia, Soviet far east, China, and eastern Asia. Asia-tropical: India, Indo-China, and Malesia. Australasia: New Zealand. Pacific: north-central."</p>
2.05	<p>1. Landcare Research - Manaaki Whenua. http://www.landcareresearch.co.nz/publications/newsletters/biological-control-of-weeds/issue-65/manchurian-wild-rice (Accessed: 7 June 2017) 2. Encyclopedia of Life. http://eol.org/pages/1114724/overview (Accessed: 7 June 2017) 3. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?42268 (Accessed: 7 June 2017)</p>	<p>1. "The plant was accidentally introduced into New Zealand via soil ballast from ships, and it is now considered a weed around waterways in Northland where it grows up to 4 m tall." 2. "Introduced range includes: Hawaii, USA" 3. Naturalized in New Zealand, Estonia, Moldova, and Ukraine.</p>
3.01	<p>1. US National Plant Germplasm System. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?42268 (Accessed: 7 June 2017) 2. Plants of Hawaii. http://hear.its.hawaii.edu/starr/hiplants/maps/zizania_latifolia.htm (Accessed: 7 June 2017)</p>	<p>1. Naturalized in New Zealand, Estonia, Moldova, and Ukraine. 2. Naturalized in Hawaii.</p>

3.02	<p>1. Waikato Regional Pest Management Plan 2016/17 Operational Plan. https://www.waikatoregion.govt.nz/assets/PageFiles/7035/Operational%20Plan_20162017.pdf (Accessed: 7 June 2017) 2. Global Compendium of Weeds. http://www.hear.org/gcw/species/zizania_latifolia/ (Accessed: 7 June 2017)</p>	<p>1. Classified as an eradication pest plant by the Waikato Regional Council in New Zealand 2. Classified as a weed.</p>
3.03	<p>1. Global Invasice Species Database. http://issg.org/database/species/ecology.asp?si=866&fr=1&sts=&lang=EN (Accessed: 7 June 2017)</p>	<p>1. "In places where it has been introduced, its dense growth can exclude almost any native species of plant, fish, or animal. It blocks drainage systems and if not controlled can easily overgrow pasture and farmland converting productive farmland into swamp."</p>
3.04	<p>1. Weedbusters. http://www.weedbusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Auckland Council. http://pestplants.aucklandcouncil.govt.nz/plant-search/Zizlat (Accessed: 7 June 2017) 3. Global Invasice Species Database. http://issg.org/database/species/ecology.asp?si=866&fr=1&sts=&lang=EN (Accessed: 7 June 2017) 4. Global Compendium of Weeds. http://www.hear.org/gcw/species/zizania_latifolia/ (Accessed: 7 June 2017)</p>	<p>1. "Seeds and rhizomes fragments spread rapidly and widely in wet or dry areas, and it forms dense, long-lived stands on land and water margins, overtopping other riparian species."; "Forms permanent stands in water margins and dry land of nothing but <i>Zizania latifolia</i>, replacing all other species. Causes silt to accumulate, altering water systems, causing flooding and destroying habitat for aquatic fauna and flora." 2. "Dense growth blocks waterways, impeding drainage, disrupting recreational activities. Out-competes native water species. Invades pasture, causing land to become waterlogged. Causes flooding. Rhizomes penetrate stopbanks." 3. "In places where it has been introduced, its dense growth can exclude almost any native species of plant, fish, or animal. It blocks drainage systems and if not controlled can easily overgrow pasture and farmland converting productive farmland into swamp." 4. Classified as an environmental weed.</p>
3.05	<p>1. Global Compendium of Weeds. http://www.hear.org/gcw/scientificnames/scinamez.htm (Accessed: 7 June 2017) 2. Regulated Noxious Aquatic Weeds. http://www.watgardenersinternational.org/conservation/Regulated_Noxious_Aquatic_Weeds_02-2010.htm (Accessed: 7 June 2017)</p>	<p>1. <i>Zizania aquatica</i> is classified as an environmental weed and noxious weed and <i>Zizania palustris</i> is classified as an environmental weed. 2. <i>Zizania aquatica</i> is a noxious weed of Puerto Rico.</p>
4.01	<p>1. Flora of China. http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=242355686 (Accessed: 7 June 2017) 2. Global Invasice Species Database. http://issg.org/database/species/ecology.asp?si=866&fr=1&sts=&lang=EN (Accessed: 7 June 2017)</p>	<p>No evidence of these features</p>
4.02		<p>No evidence</p>
4.03		<p>No evidence</p>

4.04	<p>1. Weedbusters. http://www.weedbusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Jain et al. Indian Journal of Traditional Knowledge. The ethnobotany and nutritional values of wild rice [<i>Zizania latifolia</i> (Griseb.) Turcz. Ex Stapf] (Poaceae) in Manipur. http://nopr.niscair.res.in/bitstream/123456789/13426/1/IJTK%201%281%29%2066-69.pdf (Accessed: 8 June 2017) 3. NIWA Taihoro Nukurangi. https://www.niwa.co.nz/aquatic-biodiversity-and-biosecurity/update/issue-05-2003/stopping-the-freshwater-wild-rice-invader (Accessed: 8 June 2017)</p>	<p>1. "Extremely tolerant of damage, grazing, cold or heat, wind, fire, different soil types, moderate shade and moderate salinity." 2. "The shoot is a major fodder for brow-antlered deer locally called 'Sangai' (<i>Cervus eldi eldi</i> McClelland), the 'state animal' of Manipur which is a critically endangered species of the world. The local people believe that the tender shoot is very nutritious and fondly eaten by the pregnant animals. It is belief that depletion of <i>Z. latifolia</i> may affect the population of the 'Sangai'. The fresh leaves are given as a good fodder for other grazing livestock. The dried leaves after cutting into small pieces (5-8 CM length) are mixed with rice husk powder and given as feed to grazing animals." 3. "Unless intensive grazing is maintained in pastures adjacent to drains filled with Manchurian wild rice, it will invade these areas too."; "Mowing, grazing, burning, and a combination of these methods have been used to control the plant where it has spread to pastures. However, because stock will graze only on new shoots, the pastures must be constantly maintained to prevent plants from becoming large and unpalatable."</p>
4.05	<p>1. Weedbusters. http://www.weedbusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Jain et al. Indian Journal of Traditional Knowledge. The ethnobotany and nutritional values of wild rice [<i>Zizania latifolia</i> (Griseb.) Turcz. Ex Stapf] (Poaceae) in Manipur. http://nopr.niscair.res.in/bitstream/123456789/13426/1/IJTK%201%281%29%2066-69.pdf (Accessed: 8 June 2017) 3. NIWA Taihoro Nukurangi. https://www.niwa.co.nz/aquatic-biodiversity-and-biosecurity/update/issue-05-2003/stopping-the-freshwater-wild-rice-invader (Accessed: 8 June 2017)</p>	<p>1. "Extremely tolerant of damage, grazing, cold or heat, wind, fire, different soil types, moderate shade and moderate salinity." 2. "The shoot is a major fodder for brow-antlered deer locally called 'Sangai' (<i>Cervus eldi eldi</i> McClelland), the 'state animal' of Manipur which is a critically endangered species of the world. The local people believe that the tender shoot is very nutritious and fondly eaten by the pregnant animals. It is belief that depletion of <i>Z. latifolia</i> may affect the population of the 'Sangai'. The fresh leaves are given as a good fodder for other grazing livestock. The dried leaves after cutting into small pieces (5-8 CM length) are mixed with rice husk powder and given as feed to grazing animals." 3. "Unless intensive grazing is maintained in pastures adjacent to drains filled with Manchurian wild rice, it will invade these areas too."; "Mowing, grazing, burning, and a combination of these methods have been used to control the plant where it has spread to pastures. However, because stock will graze only on new shoots, the pastures must be constantly maintained to prevent plants from becoming large and unpalatable."</p>
4.06	<p>1. Terrell, E.E. & Batra, L.R. Econ Bot (1982) 36: 274. https://link.springer.com/article/10.1007/BF02858549 (Accessed: 9 June 2017) 2. Liu Z1, Gao Y, Luo J, Lai F, Li Y, Fu Q, Peng Y. Environ Entomol. 2011 Jun;40(3):749-54. https://www.ncbi.nlm.nih.gov/pubmed/22251655 (Accessed: 12 June 2017)</p>	<p>1. "<i>Zizania latifolia</i> (Manchurian wild rice), native to eastern Asia, is often infected by the smut fungus, <i>Ustilago esculenta</i>, causing culm enlargement and failure to produce flowers. The enlarged infected culms have been used as a vegetable (gau sun) in China since the 10th century. The occasionally-used name <i>Z. Caduciflora</i> is shown to be only a synonym. To facilitate identification of the host, a taxonomic key shows that <i>Z. Latifolia</i> differs from and is fully distinct from the American species of <i>Zizania</i>. The nature and structure of the fungus and the history and cultivation of the vegetable are described. As a precaution we propose quarantine of the host and fungus to prevent possible disastrous widespread infection of American wild rices by the fungus." 2. "Based on injury level under field conditions, rice (<i>Oryza sativa</i> L.); water oat (<i>Zizania latifolia</i> Griseb.); corn (<i>Zea mays</i> L.); tidalmarsh flatsedge (<i>Cyperus serotinus</i> Rottb.); and narrow-leaved cat-tail (<i>Typha angustifolia</i> Linn.) were identified as the primary host plant species of <i>S. inferens</i>."</p>

4.07	<p>1. Yamaguchi, M. 1990. Asian vegetables. p. 387-390. In: J. Janick and J.E. Simon (eds.), Advances in new crops. Timber Press, Portland, OR. (Accessed: 7 June 2017) 2. Guo et al. <i>Zizania latifolia</i> Turcz. Cultivated in China. Genetic Resources and Crop Evolution. https://link.springer.com/article/10.1007%2Fs10722-006-9102-8 (Accessed: 8 June 2017) 3. Eat the Weeds. http://www.eattheweeds.com/wild-rice/ (Accessed: 9 June 2017)</p>	<p>1. "Grown since ancient times, this aquatic plant is cultivated in all parts of Asia from Manchuria in the north through eastern China to Indo-China on the south and east to Japan and Taiwan. A perennial water bamboo can be grown in stagnant ponds and in poorly drained soils. Plants grow from 1.2 to 2.4 m in height and the fully elongated leaves measure from 30 to 60 cm in length. Enlarged stems are harvested, the upper leaves cut off and only the stem with husk-like wrapper leaves sent to market. The edible portion is the succulent stem after the husks are removed." 2. "<i>Zizania latifolia</i>, which belongs to the tribe Oryzaceae, has been cultivated for more than 2000 years and has historically been used in China mainly as an aquatic vegetable." 3. "There's also a perennial Wild Rice in Japan, Taiwan, China and much of eastern Eurasia called <i>Zizania latifolia</i>. Incidentally the latter becomes infected with <i>Ustilago esculenta</i> which causes the lower stem to swell. The Chinese parboil the stem then saute it with meat or other vegetables."</p>
4.08		No evidence
4.09	<p>1. Weebusters. http://www.weebusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Plants for a Future. http://www.pfaf.org/user/plant.aspx?latinname=Zizania+latifolia (Accessed: 12 June 2017)</p>	<p>1. "Extremely tolerant of damage, grazing, cold or heat, wind, fire, different soil types, moderate shade and moderate salinity." 2. Semi-shade or no shade</p>
4.10	<p>1. Weebusters. http://www.weebusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Yamaguchi, M. 1990. Asian vegetables. p. 387-390. In: J. Janick and J.E. Simon (eds.), Advances in new crops. Timber Press, Portland, OR. https://hort.purdue.edu/newcrop/proceedings1990/V1-387.html (Accessed: 7 June 2017)</p>	<p>1. "Extremely tolerant of damage, grazing, cold or heat, wind, fire, different soil types, moderate shade and moderate salinity." 2. "<i>Zizania latifolia</i> can be grown in stagnant ponds and in poorly drained soils."</p>
4.11	<p>1. USDA Plants Database. https://plants.usda.gov/core/profile?symbol=zila3 (Accessed: 7 June 2017)</p>	<p>1. "Growth Habit: Graminoid"</p>
4.12	<p>1. Weebusters. http://www.weebusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Auckland Council. http://pestplants.aucklandcouncil.govt.nz/plant-search/Zizlat (Accessed: 7 June 2017) 3. Global Invasive Species Database. http://issg.org/database/species/ecology.asp?si=866&fr=1&sts=&lang=EN (Accessed: 7 June 2017) 4. NIWA Taihoro Nukurangi. https://www.niwa.co.nz/aquatic-biodiversity-and-biosecurity/update/issue-05-2003/stopping-the-freshwater-wild-rice-invader (Accessed: 8 June 2017)</p>	<p>1. "Seeds and rhizomes fragments spread rapidly and widely in wet or dry areas, and it forms dense, long-lived stands on land and water margins, overtopping other riparian species."; "Forms permanent stands in water margins and dry land of nothing but <i>Zizania latifolia</i>, replacing all other species. Causes silt to accumulate, altering water systems, causing flooding and destroying habitat for aquatic fauna and flora." 2. "Very tall, perennial grass <3m high, forms dense rhizome mats."; "Dense growth blocks waterways, impeding drainage, disrupting recreational activities. Out-competes native water species. Invades pasture, causing land to become waterlogged. Causes flooding. Rhizomes penetrate stopbanks." 3. "In places where it has been introduced, its dense growth can exclude almost any native species of plant, fish, or animal. It blocks drainage systems and if not controlled can easily overgrow pasture and farmland converting productive farmland into swamp." 4. "This plant dramatically reduces the diversity of native vegetation by displacing small species and enveloping taller vegetation. The result: long-term monocultures of Manchurian wild rice."; "It forms dense stands about 3 to 4 m high, and has a strong, deep root system and bulky rhizomes that spread several metres down into soft sediment."</p>

5.01	<p>2. Auckland Council. http://pestplants.aucklandcouncil.govt.nz/plant-search/Zizlat (Accessed: 7 June 2017) 2. Landcare Research - Manaaki Whenua. http://www.landcareresearch.co.nz/publications/newsletters/biological-control-of-weeds/issue-65/manchurian-wild-rice (Accessed: 7 June 2017) 3. Global Invasive Species Database. http://issg.org/database/species/ecology.asp?si=866&fr=1&sts=&lang=EN (Accessed: 7 June 2017)</p>	<p>1. "Habitats: Fresh or saline water, on margins, in swamps, adjacent pasture. Tolerates wide range of conditions." 2. "aquatic plant" 3. "Zizania latifolia is a perennial aquatic grass."</p>
5.02	<p>1. USDA Plants Database. https://plants.usda.gov/core/profile?symbol=zila3 (Accessed: 7 June 2017) 2. Auckland Council. http://pestplants.aucklandcouncil.govt.nz/plant-search/Zizlat (Accessed: 7 June 2017) 3. Landcare Research - Manaaki Whenua. http://www.landcareresearch.co.nz/publications/newsletters/biological-control-of-weeds/issue-65/manchurian-wild-rice (Accessed: 7 June 2017)</p>	<p>1. "Growth Habit: Graminoid"; "Family: Poaceae" 2. "Very tall, perennial grass <3m high, forms dense rhizome mats." 3. "MWR is a member of the grass family, Poaceae."</p>
5.03	<p>1. USDA Plants Database. https://plants.usda.gov/core/profile?symbol=zila3 (Accessed: 7 June 2017) 2. Wang, Qiulin, Chen, Jingrui, Liu, Fan, Li, Wei. Flora 2014 v.209 pp. 279-284. https://pubag.nal.usda.gov/catalog/5424973 (Accessed: 7 June 2017)</p>	<p>1. "Family: Poaceae" 2. Herbaceous.</p>
5.04	<p>1. Flora of China. http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=242355686 (Accessed: 7 June 2017) 2. Global Invasive Species Database. http://issg.org/database/species/ecology.asp?si=866&fr=1&sts=&lang=EN (Accessed: 7 June 2017)</p>	<p>No evidence of these specialized structures</p>
6.01		<p>No evidence</p>
6.02	<p>1. Weedbusters. http://www.weedbusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Royal New Zealand Institute of Horticulture. http://www.rnzih.org.nz/pages/nppa_057.pdf (Accessed: 7 June 2017) 3. Useful Tropical Plants. http://tropical.theferns.info/viewtropical.php?id=Zizania+latifolia (Accessed: 8 June 2017)</p>	<p>1. "Rhizomes spread outwards slowly, but more rapid spread comes from seeds and rhizome fragments being moved by water, livestock, machinery, clothing, and possibly by birds." 2. "Occasionally large quantities of seeds are produced. Established plants spread by their long stout rhizomes forming dense impenetrable swards. Spread is by seed or rhizome fragments spread by water movement or drainage machinery." 3. "Propogation: Seed - it must not be allowed to dry out or it will quickly lose its viability, usually within 4 weeks"</p>
6.03		<p>No evidence of natural hybrids</p>
6.04	<p>1. Kew Royal Botanic Gardens. http://www.kew.org/data/grasses-db/www/imp10896.htm (Accessed: 7 June 2017) 2. Flora of China. http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=135329 (Accessed: 7 June 2017)</p>	<p>1. "Monoecious; with male and female spikelets in the same inflorescence. Inflorescence a panicle." 2. Monoecious</p>
6.05	<p>1. USDA Plants Database. https://plants.usda.gov/core/profile?symbol=zila3 (Accessed: 7 June 2017) 2. Eat the Weeds. http://www.eattheweeds.com/wild-rice/ (Accessed: 7 June 2017)</p>	<p>1. "Family: Poaceae"; "Growth Habit: Graminoid" 2. Also "wind-pollinated"</p>
6.06	<p>1. Weedbusters. http://www.weedbusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Royal New Zealand Institute of Horticulture. http://www.rnzih.org.nz/pages/nppa_057.pdf (Accessed: 7 June 2017) 3. Useful Tropical Plants. http://tropical.theferns.info/viewtropical.php?id=Zizania+latifolia (Accessed: 8 June 2017)</p>	<p>1. "Rhizomes spread outwards slowly, but more rapid spread comes from seeds and rhizome fragments being moved by water, livestock, machinery, clothing, and possibly by birds." 2. "Occasionally large quantities of seeds are produced. Established plants spread by their long stout rhizomes forming dense impenetrable swards. Spread is by seed or rhizome fragments spread by water movement or drainage machinery." 3. "Propogation: Division in spring."</p>

6.07	<p>1. USDA Plants Database. https://plants.usda.gov/core/profile?symbol=zila3 (Accessed: 7 June 2017) 2. PI@ntUse. http://uses.plantnet-project.org/en/Zizania_latifolia_(PROSEA) (Accessed: 7 June 2017) 3. Yamaguchi, M. 1990. Asian vegetables. p. 387-390. In: J. Janick and J.E. Simon (eds.), <i>Advances in new crops</i>. Timber Press, Portland, OR. https://hort.purdue.edu/newcrop/proceedings1990/V1-387.html (Accessed: 7 June 2017)</p>	<p>1. "Perennial" 2. "Galls start to appear about 4-5 months after planting and are ready for harvest 1-2 weeks later." 3. "Stem enlargement occurs after about 4 months growth. Harvest is made in about 150 days from planting with the green type and about 170 days with the white and pink types."</p>
7.01	<p>1. Weedbusters. http://www.weedbusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Auckland Council. http://pestplants.aucklandcouncil.govt.nz/plant-search/Zizlat (Accessed: 7 June 2017) 3. NIWA Taihoro Nukurangi. https://www.niwa.co.nz/aquatic-biodiversity-and-biosecurity/update/issue-05-2003/stopping-the-freshwater-wild-rice-invader (Accessed: 8 June 2017)</p>	<p>1. "Rhizomes spread outwards slowly, but more rapid spread comes from seeds and rhizome fragments being moved by water, livestock, machinery, clothing, and possibly by birds. Road graders, soil movement, dumped vegetation, contaminated diggers, farm machinery, eel nets, boats and trailers all spread seed and rhizome fragments into new catchments, lowland pasture, roadsides, water tables, drains and farm dams." 2. "Seed dispersed via birds, water. Rhizome fragments in water, machinery, nets, boats." 3. "It is dispersed when water transports seeds and pieces of rhizome to new locations. Contaminated drainage machinery is also a major factor in its spread between catchments."; "Mechanical diggers have commonly been used to remove the plant, but there is the risk of transferring rhizome fragments to new sites. The Northland Regional Council (NRC) has identified this as the main method of dispersal, and actively promotes cleaning drainage machinery before it is used in areas not infested."</p>
7.02	<p>1. Yamaguchi, M. 1990. Asian vegetables. p. 387-390. In: J. Janick and J.E. Simon (eds.), <i>Advances in new crops</i>. Timber Press, Portland, OR. (Accessed: 7 June 2017) 2. Guo et al. <i>Zizania latifolia</i> Turcz. Cultivated in China. <i>Genetic Resources and Crop Evolution</i>. https://link.springer.com/article/10.1007%2Fs10722-006-9102-8 (Accessed: 8 June 2017) 3. Eat the Weeds. http://www.eattheweeds.com/wild-rice/ (Accessed: 8 June 2017)</p>	<p>1. "Grown since ancient times, this aquatic plant is cultivated in all parts of Asia from Manchuria in the north through eastern China to Indo-China on the south and east to Japan and Taiwan. A perennial water bamboo can be grown in stagnant ponds and in poorly drained soils. Plants grow from 1.2 to 2.4 m in height and the fully elongated leaves measure from 30 to 60 cm in length. Enlarged stems are harvested, the upper leaves cut off and only the stem with husk-like wrapper leaves sent to market. The edible portion is the succulent stem after the husks are removed." 2. "Zizania latifolia, which belongs to the tribe Oryzeae, has been cultivated for more than 2000 years and has historically been used in China mainly as an aquatic vegetable." 3. "There's also a perennial Wild Rice in Japan, Taiwan, China and much of eastern Eurasia called Zizania latifolia. Incidentally the latter becomes infected with <i>Ustilago esculenta</i> which causes the lower stem to swell. The Chinese parboil the stem then saute it with meat or other vegetables."</p>
7.03		No evidence
7.04		No evidence
7.05	<p>1. Weedbusters. http://www.weedbusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Auckland Council. http://pestplants.aucklandcouncil.govt.nz/plant-search/Zizlat (Accessed: 7 June 2017) 3. NIWA Taihoro Nukurangi. https://www.niwa.co.nz/aquatic-biodiversity-and-biosecurity/update/issue-05-2003/stopping-the-freshwater-wild-rice-invader (Accessed: 8 June 2017)</p>	<p>1. "Rhizomes spread outwards slowly, but more rapid spread comes from seeds and rhizome fragments being moved by water, livestock, machinery, clothing, and possibly by birds." 2. "Seed dispersed via birds, water. Rhizome fragments in water, machinery, nets, boats." 3. "It is dispersed when water transports seeds and pieces of rhizome to new locations. Contaminated drainage machinery is also a major factor in its spread between catchments."</p>
7.06	<p>1. Weedbusters. http://www.weedbusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Auckland Council. http://pestplants.aucklandcouncil.govt.nz/plant-search/Zizlat (Accessed: 7 June 2017)</p>	<p>1. "Rhizomes spread outwards slowly, but more rapid spread comes from seeds and rhizome fragments being moved by water, livestock, machinery, clothing, and possibly by birds." 2. "Seed dispersed via birds, water. Rhizome fragments in water, machinery, nets, boats."</p>

7.07	1. Weedbusters. http://www.weedbusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017)	1. "Rhizomes spread outwards slowly, but more rapid spread comes from seeds and rhizome fragments being moved by water, livestock, machinery, clothing, and possibly by birds."
7.08		No evidence
8.01		No evidence
8.02	1. Useful Tropical Plants. http://tropical.theferns.info/viewtropical.php?id=Zizania+latifolia (Accessed: 8 June 2017)	1. "Propogation: Seed - it must not be allowed to dry out or it will quickly lose its viability, usually within 4 weeks"
8.03	1. Auckland Council. http://pestplants.aucklandcouncil.govt.nz/plant-search/Zizlat (Accessed: 7 June 2017) 2. Landcare Research - Manaaki Whenua. http://www.landcareresearch.co.nz/publications/newsletters/biological-control-of-weeds/issue-65/manchurian-wild-rice (Accessed: 7 June 2017) 3. NIWA Taihoro Nukurangi. https://www.niwa.co.nz/aquatic-biodiversity-and-biosecurity/update/issue-05-2003/stopping-the-freshwater-wild-rice-invader (Accessed: 8 June 2017)	1. "Always begin control at top of catchment. For herbicide treatment, budget for 50-70% regrowth after first 1-2 treatments, 10% thereafter. Usually need 5-10 treatments over 6-8 years for eradication. Burn-off of initial spray trash OK if dense, not needed thereafter." 2. "Until now, herbicides have provided an effective control measure, but once the plant has become widespread it becomes logistically difficult to use them as a control tool. Also, herbicide use on a large scale is costly and can negatively affect waterways." 3. "Herbicide trials in New Zealand have evaluated sodium chlorate, sodium TCA, paraquat, glyphosate, and dalapon (2,2-dichloropropionic acid) in combination with amitrole. Although none of these products will eradicate this grass, some do reduce its height or cover (or both), preventing it from flowering and dispersing seed. The recent use of grass-specific herbicides also shows promise."; "We conducted the trials in containers at NIWA's experimental facility at Ruakura, and in field plots near Dargaville in collaboration with NRC. The trials were monitored for more than a year and each product was evaluated at several different rates. Haloxypop and imazapyr significantly reduced the leaf biomass of the grass in containers. The best results for the grass in field plots were also achieved with haloxypop – rates as low as 0.5 kg/ha were gained by using very high water rates (1600 L/ha), reducing cover to less than 10% for more than a year. This rate is equivalent to a 40% reduction in the amount of haloxypop previously recommended by NRC to control Manchurian wild rice."
8.04	1. Weedbusters. http://www.weedbusters.org.nz/weed-information/zizania-latifolia/59/ (Accessed: 7 June 2017) 2. Auckland Council. http://pestplants.aucklandcouncil.govt.nz/plant-search/Zizlat (Accessed: 7 June 2017) 3. NIWA Taihoro Nukurangi. https://www.niwa.co.nz/aquatic-biodiversity-and-biosecurity/update/issue-05-2003/stopping-the-freshwater-wild-rice-invader (Accessed: 8 June 2017)	1. "Extremely tolerant of damage, grazing, cold or heat, wind, fire, different soil types, moderate shade and moderate salinity." 2. "Dispersal: Rhizome fragments in water, machinery, nets, boats." 3. "Mechanical diggers have commonly been used to remove the plant, but there is the risk of transferring rhizome fragments to new sites. The Northland Regional Council (NRC) has identified this as the main method of dispersal, and actively promotes cleaning drainage machinery before it is used in areas not infested."
8.05	1. Liu Z1, Gao Y, Luo J, Lai F, Li Y, Fu Q, Peng Y. Environ Entomol. 2011 Jun;40(3):749-54. https://www.ncbi.nlm.nih.gov/pubmed/22251655 (Accessed: 12 June 2017)	1. "Based on injury level under field conditions, rice (<i>Oryza sativa</i> L.); water oat (<i>Zizania latifolia</i> Griseb.); corn (<i>Zea mays</i> L.); tidalmarsh flatsedge (<i>Cyperus serotinus</i> Rottb.); and narrow-leaved cat-tail (<i>Typha angustifolia</i> Linn.) were identified as the primary host plant species of <i>S. inferens</i> ."