Keywords: High Risk, Naturalized, Shade-tolerant, Ornamental Fern Ally, Ground cover

Family: ***Selaginellaceae***

Taxon: ***Selaginella braunii***

Synonym: *Lycopodioides braunii (Baker) Kuntze*
Selaginella braunii fo. hieronymi Alderw.
Selaginella hieronymi Alderw.
Selaginella vogelii Mett.

Common Name: arborvitae fern
Braun's spike-moss
Chinese lace-fern spike-moss
treelet spike-moss

Questionaire : current 20090513 **Assessor:** Assessor **Designation:** H(HPWRA)
Status: Assessor Approved **Data Entry Person:** Assessor **WRA Score** 7

101	**Is the species highly domesticated?**	**y=-3, n=0**	**n**
102	**Has the species become naturalized where grown?**	**y=1, n=-1**	
103	**Does the species have weedy races?**	**y=1, n=-1**	
201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**(0-low; 1-intermediate; 2-high) (See Appendix 2)**	**Low**
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**	**n**
205	**Does the species have a history of repeated introductions outside its natural range?**	**y=-2, ?=-1, n=0**	**y**
301	**Naturalized beyond native range**	**y = 1*multiplier (see Appendix 2), n= question 205**	**y**
302	**Garden/amenity/disturbance weed**	**n=0, y = 1*multiplier (see Appendix 2)**	**n**
303	**Agricultural/forestry/horticultural weed**	**n=0, y = 2*multiplier (see Appendix 2)**	**n**
304	**Environmental weed**	**n=0, y = 2*multiplier (see Appendix 2)**	**n**
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**	**y=1, n=0**	
403	**Parasitic**	**y=1, n=0**	**n**
404	**Unpalatable to grazing animals**	**y=1, n=-1**	
405	**Toxic to animals**	**y=1, n=0**	**n**
406	**Host for recognized pests and pathogens**	**y=1, n=0**	**n**
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**
409	**Is a shade tolerant plant at some stage of its life cycle**	**y=1, n=0**	**y**

410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y=1, n=0**	
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**	
604	**Self-compatible or apomictic**	**y=1, n=-1**	
605	**Requires specialist pollinators**	**y=-1, n=0**	**n**
606	**Reproduction by vegetative fragmentation**	**y=1, n=-1**	**y**
607	**Minimum generative time (years)**	**1 year = 1, 2 or 3 years = 0, 4+ years = -1**	
701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y=1, n=-1**	
702	**Propagules dispersed intentionally by people**	**y=1, n=-1**	**y**
703	**Propagules likely to disperse as a produce contaminant**	**y=1, n=-1**	
704	**Propagules adapted to wind dispersal**	**y=1, n=-1**	**y**
705	**Propagules water dispersed**	**y=1, n=-1**	
706	**Propagules bird dispersed**	**y=1, n=-1**	**n**
707	**Propagules dispersed by other animals (externally)**	**y=1, n=-1**	
708	**Propagules survive passage through the gut**	**y=1, n=-1**	
801	**Prolific seed production (>1000/m2)**	**y=1, n=-1**	**y**
802	**Evidence that a persistent propagule bank is formed (>1 yr)**	**y=1, n=-1**	
803	**Well controlled by herbicides**	**y=-1, n=1**	
804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**y=1, n=-1**	
805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	**y=-1, n=1**	

Designation: H(HPWRA) **WRA Score** 7

Supporting Data:

101	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Is the species highly domesticated? No]
102	2013. WRA Specialist. Personal Communication.	NA
103	2013. WRA Specialist. Personal Communication.	NA
201	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Species suited to tropical or subtropical climate(s) 0-Low] "Native: ASIA-TEMPERATE: China: China"
202	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Quality of climate match data 2-High]
203	2006. Harrison, M.. Groundcovers for the South. Pineapple Press Inc., Sarasota, FL	[Broad climate suitability (environmental versatility)? Yes] "Zones 6-10" [5 hardiness zones]
203	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Broad climate suitability (environmental versatility)? Yes] "In rock crevices, usually on limestone rocks; (below 100–)400– 1400(–1800) m. Anhui, Chongqing, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang [Malaysia (Peninsular)]." [Elevation range exceeds 1000 m, demonstrates environmental versatility]
204	2003. Palmer, D.D.. Hawaii's Ferns and Fern Allies. University of Hawaii Press, Honolulu, HI	[Native or naturalized in regions with tropical or subtropical climates? No] No evidence
204	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Native or naturalized in regions with tropical or subtropical climates? No] No evidence
205	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Does the species have a history of repeated introductions outside its natural range? Yes] "Selaginella braunii is cultivated outside of China, sometimes escaping in widely scattered localities in various parts of the world."
301	1986. Snyder, Jr., L.H./Bruce, J.G.. Field Guide to the Ferns and Other Pteridophytes of Georgia. University of Georgia Press, Athens, GA	[Naturalized beyond native range? Yes] "A native of eastern Asia cultivated in a few gardens and rarely escaped in the southeastern United States. In Georgia, only in Camden County."
301	1993. Flora of North America Editorial Committee. Flora of North America: Volume 2: Pteridophytes and Gymnosperms. Oxford University Press, Oxford, UK	[Naturalized beyond native range? Yes] "introduced; 0-50 m; Ala., Ga., La., N.C.; native of China."
301	1997. Weakley, A.S.. Flora of the Carolinas and Virginia -- Key to Pteridophyte Genera. The Nature Conservancy, Southeast Regional Office, Southern Conservation Science Department, http://www.ibiblio.org/unc-biology/herbarium/weakley/Selag.html	[Naturalized beyond native range? Yes] "Treelet Spikemoss, Braun's Spikemoss. Cp (NC): naturalized around graveyards or gardens; rare, introduced, native of China."
301	2011. Peck, J.H.. History of Arkansas pteridophyte studies with a new annotated checklist and floristic analysis. Phytoneuron. 38: 1–39.	[Naturalized beyond native range? Yes] "Table 15. The checklist of Arkansas ferns and fern allies annotated with comments on whether they are native or naturalized in Arkansas and the number of counties from which they are known and vouchered." [Selaginella braunii = Naturalized]
301	2011. Peck, J.H.. New and noteworthy additions to the Arkansas fern flora. Phytoneuron. 30: 1–33.	[Naturalized beyond native range? Yes] "Selaginella braunii Baker (Selaginellaceae) — This species was brought into cultivation in China and is commonly grown across the southeastern USA (Hoshizaki & Moran 2001; Mickel 2003) where it has naturalized." … "It has escaped from cultivation within Garvan Woodland Gardens in Garland Co. and has escaped from an unknown source and become naturalized in Alsopp Park, Little Rock, in Pulaski Co."
301	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Naturalized beyond native range? Yes] "Selaginella braunii is cultivated outside of China, sometimes escaping in widely scattered localities in various parts of the world (Proctor, Ferns Jamaica, 35. 1985)."
302	2005. Harrison, M.. Southern Gardening: An Environmentally Sensitive Approach. Pineapple Press, Sarasota, FL	[Garden/amenity/disturbance weed? No evidence] "It multiplied happily and in a pleasant manner - slowly, and not at all in an unwelcome or invasive way."

302	2011. Peck, J.H.. New and noteworthy additions to the Arkansas fern flora. Phytoneuron. 30: 1–33.	[Garden/amenity/disturbance weed? No] "The species is somewhat drought sensitive and winter sensitive in Arkansas, and it certainly is not aggressive enough to have much invasive potential. This is the first report of this species naturalizing in Arkansas."
303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No] No evidence to date
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No] No evidence to date
305	2002. Timmins, S.M./Braithwaite, H.. Early detection of invasive weeds on islands. Pp 311-318 in Veitch and Clout (eds). Turning the tide: the eradication of invasive species. IUCN, Gland, CH - Cambridge, UK	[Congeneric weed? Yes] "In 1998, a sharp-eyed weeder on Raoul Island found selaginella (Selaginella kraussiana) (West 2002). It was sprayed soon after it was positively identified, but it keeps emerging at the same site. The site now has a sign alerting the presence of selaginella and any visitors are required to clean their boots in hot soapy water after visiting the site to prevent further spread of selaginella on Raoul (A. Warren pers. comm.)." … "When a reserve manager found selaginella, not previously known on Stewart Island, the first step was an advertising campaign, including talking to the next local Garden Group meeting. This identified several more infestations, also all on private property. One site was treated the following summer but more control, and a full survey, is needed to meet the aim of eradicating selaginella from Stewart Island (C. Wickes pers. comm.)."
305	2003. Palmer, D.D.. Hawaii's Ferns and Fern Allies. University of Hawaii Press, Honolulu, HI	[Congeneric weed? Yes] "The most popular Selaginella in cultivation, S. kraussiana is native to tropical and southern Africa and has escaped to become an established weed in many places throughout the world."
401	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Produces spines, thorns or burrs? No] "Plants terrestrial or epilithic, xerophytic, evergreen or seasonally green, erect, 10–45 cm, with creeping subterranean rhizome and stolons. Rhizophores restricted to creeping rhizomes and stolons, very short. Main stems branched from middle or upper part, pinnately branched, usually stramineous, unbranched main stem (3–)8–13(–25) cm tall, 0.5–2(–3) mm in diam., usually subquadrangular, often pubescent; primary leafy branches 4–8 pairs, 2 or 3 times pinnately branched, branchlets sparse, adjacent primary branches on main stem (3–)5–8(–11) cm apart, leafy branches pubescent on both sides, dorsiventrally flattened, ultimate branches 2.5–4.5 mm wide including leaves. Axillary leaves on branches contiguous or imbricate, narrowly elliptic or falcate, 1.6–2.8 × 0.4–1.2 mm, not carinate, base obliquely decurrent, margin subentire, slightly involute when dry, apex acuminate. Ventral leaves on branches slightly ascending, ovate-triangular or oblong-falcate, 1.6–2.2 × 1–1.8 mm, apex acute or mucronate; basiscopic base decurrent, margin subentire, involute; acroscopic base rounded, not overlapping stem and branches, margin subentire."
402	2013. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Parasitic? No] "Plants terrestrial or epilithic, xerophytic, evergreen or seasonally green, erect, 10–45 cm, with creeping subterranean rhizome and stolons."
404	2013. Backyard Gardener. Selaginella braunii. http://www.backyardgardener.com/plantname/pda_8b73.html [Accessed 18 Oct 2013]	[Unpalatable to grazing animals? Possibly] "Tolerances: deer"
405	1987. Jones, D. L.. Encyclopedia of Ferns. Timber Press, Portland, OR.	[Toxic to animals? No evidence]
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Toxic to animals? No evidence]
406	1987. Jones, D. L.. Encyclopedia of Ferns. Timber Press, Portland, OR.	[Host for recognized pests and pathogens? No evidence]
406	2013. OnlinePlantGuide.com. Selaginella braunii /Arborvitae Fern. http://www.onlineplantguide.com/Plant-Details/2488/ [Accessed 18 Oct 2013]	[Host for recognized pests and pathogens? No] "Susceptible to insects and diseases: No"
407	1987. Jones, D. L.. Encyclopedia of Ferns. Timber Press, Portland, OR.	[Causes allergies or is otherwise toxic to humans? No evidence]
407	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Causes allergies or is otherwise toxic to humans? No evidence]

407	2013. Dave's Garden. PlantFiles: Arborvitae Fern, Braun's Spikemoss, Chinese Lace Fern, Treelet Spikemoss - Selaginella braunii. http://davesgarden.com/guides/pf/go/54833/ [Accessed 18 Oct 2013]	[Causes allergies or is otherwise toxic to humans? No evidence] "Danger: N/A"
408	1986. Snyder, Jr., L.H./Bruce, J.G.. Field Guide to the Ferns and Other Pteridophytes of Georgia. University of Georgia Press, Athens, GA	[Creates a fire hazard in natural ecosystems? No] "Habitat: Wet woods, swamps, and meadows."
408	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Creates a fire hazard in natural ecosystems? No] "Plants herbaceous, terrestrial, epilithic, or occasionally epiphytic, evergreen or sometimes seasonally green, perennial (rarely annual)." [Family Description] "In rock crevices, usually on limestone rocks; (below 100–)400– 1400(–1800) m." [Species habitat: No evidence, and unlikely given growth form and habitat]
409	2006. Harrison, M.. Groundcovers for the South. Pineapple Press Inc., Sarasota, FL	[Is a shade tolerant plant at some stage of its life cycle? Yes] "Plant quart- or gallon-sized containers a foot or so apart in shade or filtered sunlight." … "Although it likes moist, shady spots, it does not like standing water."
409	2010. Plant Delights Nursery. Selaginella braunii (Braun's Arborvitae Fern). http://www.plantdelights.com/Selaginella-braunii-Brauns-Arborvitae-Fern/productinfo/1506/#.UmGc6RCmaHM [Accessed 18 Oct 2013]	[Is a shade tolerant plant at some stage of its life cycle? Yes] "Culture Part Sun to Shade"
409	2013. Dave's Garden. PlantFiles: Arborvitae Fern, Braun's Spikemoss, Chinese Lace Fern, Treelet Spikemoss - Selaginella braunii. http://davesgarden.com/guides/pf/go/54833/ [Accessed 18 Oct 2013]	[Is a shade tolerant plant at some stage of its life cycle? No] "Sun Exposure: Partial to Full Shade"
410	2013. Backyard Gardener. Selaginella braunii. http://www.backyardgardener.com/plantname/pda_8b73.html [Accessed 18 Oct 2013]	[Tolerates a wide range of soil conditions ?] "pH Range: 6 to 7 ; Soil Range: Sandy Loam to Clay Loam"
410	2013. Gardening Guides. All about growing Arborvitae fern. http://worldgardener.blogspot.com/2013_07_16_archive.html [Accessed 18 Oct 2013]	[Tolerates a wide range of soil conditions?] "It needs moist, humus rich and well-drained soil."
411	1987. Jones, D. L.. Encyclopedia of Ferns. Timber Press, Portland, OR.	[Climbing or smothering growth habit? No] "This is a clumping species with erect, branched, somewhat frond-like stems. The leaves are dark green and leathery in texture."
412	2006. Harrison, M.. Groundcovers for the South. Pineapple Press Inc., Sarasota, FL	[Forms dense thickets? Possibly] "Selaginella gradually grows to cover the ground with a solid mass that inhibits weed growth."
412	2011. Peck, J.H.. New and noteworthy additions to the Arkansas fern flora. Phytoneuron. 30: 1–33.	[Forms dense thickets? Potentially] "Known in the Arkansas trade as Arborvitae Fern, it grows into a reasonably thick ground cover." … "The species is somewhat drought sensitive and winter sensitive in Arkansas, and it certainly is not aggressive enough to have much invasive potential. This is the first report of this species naturalizing in Arkansas." [Unknown if it excludes other vegetation]
501	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Aquatic? No] "Plants terrestrial or epilithic, xerophytic, evergreen or seasonally green, erect, 10–45 cm, with creeping subterranean rhizome and stolons."
502	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Grass? No] Selaginellaceae
503	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Nitrogen fixing woody plant? No] Selaginellaceae
504	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Plants terrestrial or epilithic, xerophytic, evergreen or seasonally green, erect, 10–45 cm, with creeping subterranean rhizome and stolons. Rhizophores restricted to creeping rhizomes and stolons, very short."
601	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Evidence of substantial reproductive failure in native habitat? No] "In rock crevices, usually on limestone rocks; (below 100–)400– 1400(–1800) m. Anhui, Chongqing, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang [Malaysia (Peninsular)]."

602	1987. Jones, D. L.. Encyclopedia of Ferns. Timber Press, Portland, OR.	[Produces viable seed? Yes] "Selaginellas can be readily raised from spore, however, most plants are propagated vegetatively."
602	2006. Harrison, M.. Groundcovers for the South. Pineapple Press Inc., Sarasota, FL	[Produces viable seed? Spores] "Club moss can be grown from spores, but it is a complicated process that is usually done only in research laboratories."
602	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Produces viable seed? Yes. Viable spores] "sporophylls unlike sterile leaves, uniform, not white margined, broadly ovate or suborbicular, margin denticulate, apex acute; megasporophylls throughout lower side of strobili; microsporangia orbicular; microspores yellowish orange or pale yellow, megaspores whitish."
603	1930. Graustein, J.E.. Evidences of Hybridism in Selaginella. Botanical Gazette. 90(1): 46-74.	[Hybridizes naturally? Unknown for S. braunii] "Natural hybridization among plants as a source of species formation is proving to be of general occurrence. To the long list of groups in which it has been found to be widespread, the Selaginellaceae must apparently now be added."
604	1987. Jones, D. L.. Encyclopedia of Ferns. Timber Press, Portland, OR.	[Self-compatible or apomictic? Unknown] "Some ferns … and fern allies (species of Selaginella and Isoetes), produce two types of spore and are said to be heterosporous. The smaller spores (termed microspores) bear only archegonia and thus the two types of spore must fall in proximity for fertilization to occur. If they are close together the sperm can swim to the archegonia in a film of water. Fertilization is achieved in the same way as that described for the general life cycle."
605	1987. Jones, D. L.. Encyclopedia of Ferns. Timber Press, Portland, OR.	[Requires specialist pollinators? No] "Some ferns … and fern allies (species of Selaginella and Isoetes), produce two types of spore and are said to be heterosporous. The smaller spores (termed microspores) bear only archegonia and thus the two types of spore must fall in proximity for fertilization to occur. If they are close together the sperm can swim to the archegonia in a film of water. Fertilization is achieved in the same way as that described for the general life cycle."
606	2010. Plant Delights Nursery. Selaginella braunii (Braun's Arborvitae Fern). http://www.plantdelights.com/Selaginella-braunii-Brauns-Arborvitae-Fern/productinfo/1506/#.UmGc6RCmaHM [Accessed 18 Oct 2013]	[Reproduction by vegetative fragmentation? Yes, but slowly] "The dark green, lacy, semi-evergreen fronds of arborvitae fern rise to 18" tall from a slowly creeping rhizome. In 3 years you could expect a 2' wide mass. "
606	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Reproduction by vegetative fragmentation? Yes, but probably only for short distances] "Plants terrestrial or epilithic, xerophytic, evergreen or seasonally green, erect, 10–45 cm, with creeping subterranean rhizome and stolons. Rhizophores restricted to creeping rhizomes and stolons, very short."
607	2013. Monrovia. Arborvitae Fern - Selaginella braunii. http://www.monrovia.com/plant-catalog/plants/2799/arborvitae-fern.php [Accessed 18 Oct 2013]	[[Minimum generative time (years)? Unknown]? "Slow grower to 6 to 12 in. tall, 24 in. wide."
607	2013. OnlinePlantGuide.com. Selaginella braunii /Arborvitae Fern. http://www.onlineplantguide.com/Plant-Details/2488/ [Accessed 18 Oct 2013]	[Minimum generative time (years)? Unknown] "Rate of Growth: Slow"
701	2013. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Unknown] Small size of spores may allow for inadvertent dispersal, but direct evidence has not been found
702	1993. Flora of North America Editorial Committee. Flora of North America: Volume 2: Pteridophytes and Gymnosperms. Oxford University Press, Oxford, UK	[Propagules dispersed intentionally by people? Yes. Propagated as an ornamental] "Selaginella braunii is cultivated outside of China, sometimes escaping in widely scattered localities in various parts of the world."
703	1993. Flora of North America Editorial Committee. Flora of North America: Volume 2: Pteridophytes and Gymnosperms. Oxford University Press, Oxford, UK	[Propagules likely to disperse as a produce contaminant? Possibly] "Selaginella braunii is cultivated in greenhouses, nurseries, and gardens mainly in Florida, Georgia, Louisiana, and Texas." [Cultivation in greenhouses may allow for spread of spores into other potted plants]
704	2010. Gordon, D.R./Mitterdorfer, B./Pheloung, P.C. et al.. Guidance for addressing the Australian Weed Risk Assessment questions. Plant Protection Quarterly. 25(2): 56-74.	[Propagules adapted to wind dispersal? Yes] "This group includes tumbling plants and fern spores."
704	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Propagules adapted to wind dispersal? Yes] "Strobili solitary, terminal, compact, tetragonal, 5–6 × 1.4–2.3 mm; sporophylls unlike sterile leaves, uniform, not white margined, broadly ovate or suborbicular, margin denticulate, apex acute; megasporophylls throughout lower side of strobili; microsporangia orbicular; microspores yellowish orange or pale yellow, megaspores whitish."

705	1986. Snyder, Jr., L.H./Bruce, J.G.. Field Guide to the Ferns and Other Pteridophytes of Georgia. University of Georgia Press, Athens, GA	[Propagules water dispersed? Possibly. Small size of spores may allow for movement by water] "Habitat: Wet woods, swamps, and meadows."
706	2013. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 2-3 (Lycopodiaceae through Polypodiaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Propagules bird dispersed? No] "Strobili solitary, terminal, compact, tetragonal, 5–6 × 1.4–2.3 mm; sporophylls unlike sterile leaves, uniform, not white margined, broadly ovate or suborbicular, margin denticulate, apex acute; megasporophylls throughout lower side of strobili; microsporangia orbicular; microspores yellowish orange or pale yellow, megaspores whitish."
707	2013. WRA Specialist. Personal Communication.	[Propagules dispersed by other animals (externally)? Unknown] Small size of spores may allow for external dispersal, but direct evidence has not been found
708	2013. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown, but unlikely to be consumed or internally dispersed]
801	2003. Lemke, C.. Cal's plant of the week - Selaginella braunii. University of Oklahoma Department of Botany & Microbiology, http://www.plantoftheweek.org/week200.shtml [Accessed 18 Oct 2013]	[Prolific seed production (>1000/m2)? Presumably Yes] "Selaginella braunii are propagated by division or by spores. Spores are placed on moist peat and sand mix and covered with glass until the spores germinate."
802	2013. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown]
803	2013. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	2013. Dave's Garden. PlantFiles: Arborvitae Fern, Braun's Spikemoss, Chinese Lace Fern, Treelet Spikemoss - Selaginella braunii. http://davesgarden.com/guides/pf/go/54833/ [Accessed 18 Oct 2013]	[Tolerates, or benefits from, mutilation, cultivation, or fire? Possibly Yes] "Easy to transplant. Easy to divide. When I have moved it, it grows in the new spots and bits of root left behind resprout in the old spot. It even started to grow in my compost pile. Not invasive, however. as each new plant increases in size only gradually."
805	2013. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m
- Widely naturalized
- Related *Selaginella* species have become invasive
- Shade tolerant
- May slowly form a dense ground cover that could exclude other vegetation
- Can spread vegetatively and by spores

Low Risk Traits

- Despite ability to spread, no negative impacts have been documented thus far
- Unarmed (no spines, thorns or burrs)
- Ornamental ground cover
- Non-toxic