	Kauai Status	KISC Status	HPWRA	Invasive Impacts Score	Feasibility Score	Combined Score
<p><i>Juncus polyanthemus</i> (Australian silver rush)</p>	Naturalized	EARLY DETECTION	HIGH RISK (12)	6.5	7.5	14

Initial PFC report completed: December 2017

PFC report updated as of: N/A

Current Recommendation for KISC: Pending Ranking and Committee approval

Knowledge Gaps and Contingencies:

- 1) Delimiting surveys near the known location are necessary to ensure it hasn't spread beyond its known distribution
- 2) Outreach efforts are necessary to detect plants sold to private residences

Background

Juncus polyanthemus (Juncaceae), or “Australian silver rush”, is a large graminoid herb that is occasionally cultivated (Wagner et al. 1999). *J. polyanthemus* has not been considered for control by KISC in the past. Therefore, the purpose of this prioritization assessment report is to evaluate whether KISC should attempt eradication (i.e. accept “Target” status) or joint control with partnering agencies (i.e. accept as “Partnership” species status). This will be informed by scoring and comparing *J. polyanthemus* to other “Early Detection” species known to Kauai (See Table 5 in KISC Plant Early Detection Report for status terminology)

Detection and Distribution

Statewide, *J. polyanthemus* is considered naturalized on Maui and has been collected from cultivated ponds on Oahu (Wagner et al. 1999, Imada 2012). Additionally, several herbarium specimens indicate that it may be naturalized on Hawaii Island (e.g. H. St. John 24988, and Engilis & Reid 92-16, BISH). Only one herbarium voucher collected from a cultivated plant during 2015-2017 surveys (K. Brock 826, PTBG) records its presence on Kauai (Figure C29- 1). Approximately 10 plants were found during a nursery survey where *J. polyanthemus* nursery stock was apparently received even though nursery staff had ordered the closely related *J. effusus*. Wagner et al. states that *J. polyanthemus* is commonly misidentified as *J. effusus* (1999); a microscope and dissection tools are ideal to distinguish between the two species.

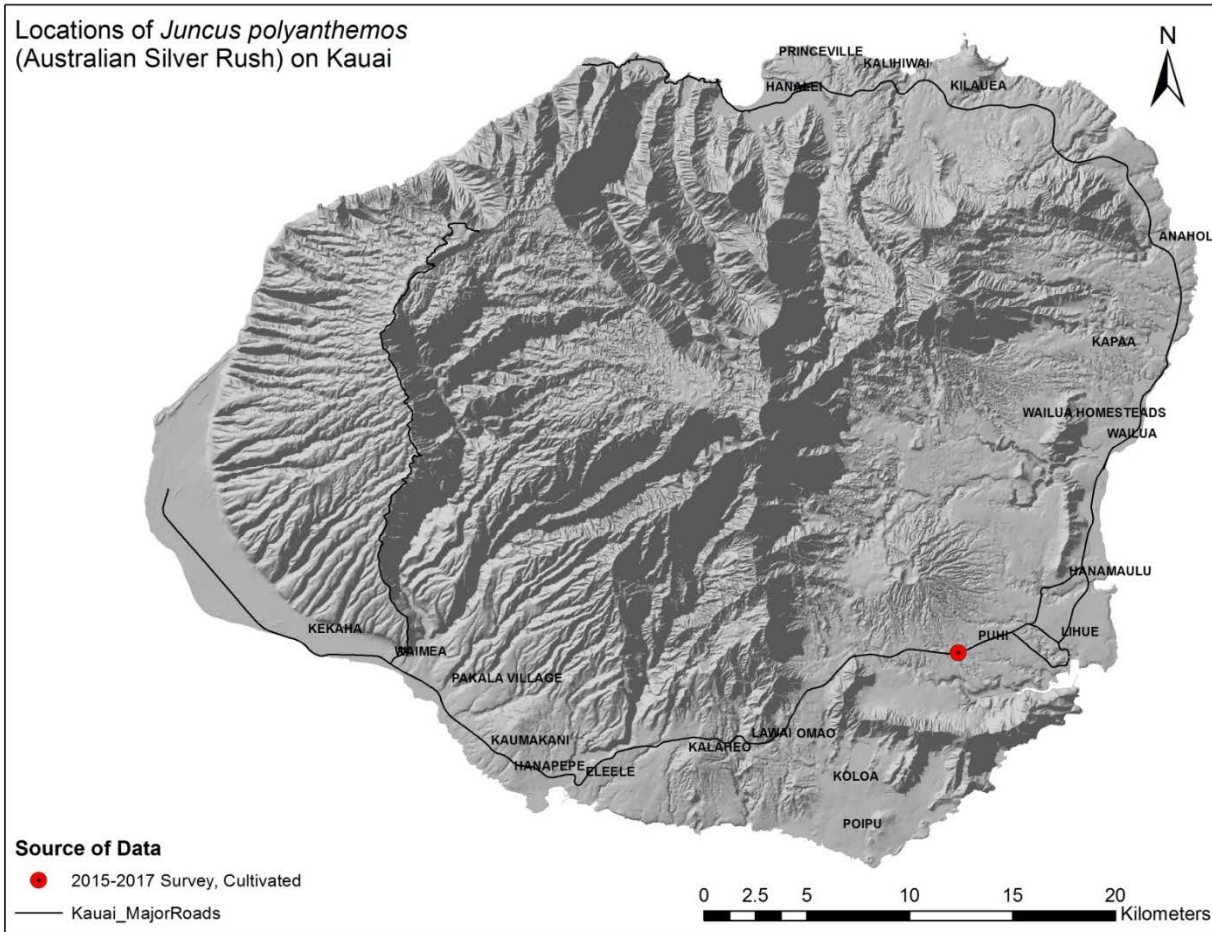


Figure C29- 1. Locations of *J. polyanthemos* detected on Kauai.

Hawaii Pacific Weed Risk Assessment (HPWRA) Score

J. polyanthemos is designated as “High Risk”, receiving a score of 12 (Daehler et al. 2004, HPWRA 2017). Traits contributing to this status are listed below according to whether they pertain to the likelihood a plant will invade vs. the consequences of the invasion, according to Daehler and Virtue (2010). Categorization of traits in this manner more accurately informs invasive impact potential scoring and prioritization of species that are already established on Kauai.

<i>Likelihood of Invasion</i>	<i>Consequences of Invasion</i>
<ul style="list-style-type: none"> • Well suited to climates in Hawaii • Naturalized in Hawaii and areas with comparable climates • Produces viable seed • Hybridizes naturally • Propagules dispersed intentionally and unintentionally by people • Propagules dispersed by water • Propagules dispersed by birds • Propagules dispersed by animals (fruit sticks to fur) • Benefits from disturbance 	<ul style="list-style-type: none"> • A congeneric weed, sharing a genus with other known weeds (i.e. implies inheritance of tendencies to inflict invasive impacts)

Refer to the full Weed Risk Assessment for *J. polyanthemos* at <https://sites.google.com/site/weedriskassessment/assessments/Download-Assessments>.



Figure C29- 2. *J. polyanthemus* in cultivation



Figure C29- 3. *J. polyanthemus* on Maui (Photo Credit: K. & F. Starr).

Invasive Impacts Score

1. Impact on natural community structure and/or composition

Score: 2.5 = Moderate impacts

J. polyanthemus was assigned a score of 2.5 because, although very little is known about potential invasive impacts to native ecosystems globally, its naturalization is increasingly being recorded in Hawaii. It has been observed in disturbed wet and mesic areas on Maui at elevations above 700m (Figure C29- 3) and has been observed along a hiking trail in native wet forest (*Cibotium-Metrosideros* dominated) on Hawaii Island (St. John 24988, BISH). This rhizomatous, mat-forming plant is likely to cause at least moderate impacts to native ecosystems when established at upper elevations, which includes high-value native forest on Kauai. Seeds may be easily dispersed into native forest by humans and animals via the sticky mucilaginous coating on their numerous seeds (Wagner et al. 1999, HPWRA 2017). Another closely related invasive plant in Hawaii, *J. effusus*, is capable of displacing vegetation in open areas, including rare bog habitats at upper elevations. This score may increase if further evidence suggests it can outcompete native vegetation.

2. Impacts to Agriculture, Culture and other Human Systems

Score: 2 = Moderate impacts

J. polyanthemus was assigned a score of 2 in this category because it has been observed naturalizing along roadsides and edges of agricultural ponds on Hawaii Island (Engilis & Reid 92-16, BISH). This plant can form dense rhizomatous mats and grow to 1.3m tall, making it a conspicuous weed (Wagner et al. 1999, HPWRA 2017), although more data is necessary to determine whether this plant can attain pest-like densities. Naturalized vouchers of this plant have not collected below 700m in Hawaii, but *J. polyanthemus* is often found in coastal areas at both temperate and tropical latitudes in its native Australian range (PlantNET. 2017), suggesting this plant may be capable of colonizing lowland habitats on Kauai.

3. Impacts to biotic and abiotic processes

Score: 2 = Minor Impacts

J. polyanthemus was given a score of 2 because of its ability to colonize shallow ponds and muddy, open areas (Wagner et al. 1999, HPWRA 2017). Even in low densities, this trait may allow *J. polyanthemus* to colonize open water wetlands and decrease the ability of shorebirds to forage. However, this score may increase if plants are able to form dense patches in coastal wetlands.

TOTAL INVASIVE IMPACTS SCORE: 6.5

Feasibility of Control Score

Feasibility of Control Scoring and rationale for *J. polyanthemus* is presented below. Refer to Appendix A for details regarding the Invasive Impact Score.

Delimiting Survey:

Score: 2 = Moderate Effort

Feasibility of a delimiting survey for *J. polyanthemus* was given a score of 2 because seeds were observed on sale plants. As the seeds are very small, they may have dispersed into adjacent ditches (Wagner et al. 1999), which should be searched to determine when an adventive or naturalized population has established. Additionally, significant outreach

efforts would be necessary to detect plants that have been sold and planted on private residences. However, this may be combined with outreach materials on *J. effusus*, as laypeople will likely not be able to distinguish between the two species.

Initial control:

Score: 3 = Minimal Effort

Feasibility of initial control for *J. polyanthemos* was given a score of 3 because this score accounts for the effort needed to control known plants at the nursery site. However, it's likely that some plants may have been sold before or since this plant was identified. This score may decrease if more plants are found in cultivation in future early detection surveys. This nursery has cooperated with KISC before and is part of the Pono Endorsement program, so their cooperation is expected.

Monitoring:

Score: 2.5 = Moderate Effort

Feasibility of monitoring for *J. polyanthemos* was given a score of 2.5 because seeds were observed on sale plants and closely related species (e.g. *J. effusus*) are able to form persistent seed banks (Rana and Sellers 2009, HPWRA 2013). However, these surveys may be included in future Pono Endorsement surveys.

FEASIBILITY OF CONTROL SCORE: 7.5

COMBINED SCORE: 6.5 + 7.5 = 14

Literature Cited

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