Fire risk report for *Ehrharta stipoides*

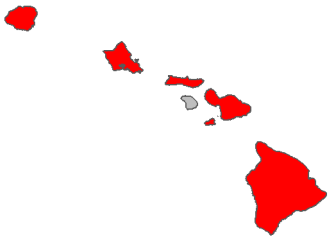
Full Species Name
Ehrharta stipoides Labill.

Family: Poaceae

Common names:
meadow ricegrass

Synonyms:
Microlaena stipoides

Known occurrences (as of 2020)



Year first documented as naturalized in Hawai'i: 1916

This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 19.

View photos on Starr Environmental

View on Wikipedia

View occurrences on iNaturalist

View at Plants of Hawaii

View photos on Flickr

0	.5	1
Lowest risk	⇔	Highest risk

This species is likely a **high** fire risk in Hawai'i with a fire risk score of **0.72**.

This species was ranked by our machine learning algorithm using the data presented on the next page. A predicted score of > .34 suggests the plant is a high fire risk.

Summary of Fire ecology	
Native habitat fire proneness	No Data
Fire promoting plant in its native range	No
Fire promoting plant in its introduced range*	Yes
Regenerates after fire	Yes
Promoted by fire	Yes
Reported flammable*	High
Relative is flammable*	Yes

*These values were used by the model to predict fire risk

Detailed summary of Fire Ecology

Native habitat fire proneness (In any part of the plant's native range is its habitat described as fire prone due to natural or human caused fires?)	No Data	
Fire promoting plant in its native range (Does the species act as a major fuel source, increase fire severity, frequency, or modify fuel bed characteristics within its native range?)	No	"Microlaena stipoides showed the reverse pattern; although the mean Microlaena cover index was over four times higher on low fire frequency sites than where fire frequency was high or moderate" [occurs most frequently in unburned areas] Morris, E. C., & Watson, P. J. (2020). Fire frequency effects in a grassy woodland: Trees and grasses. Austral Ecology, 45(3), 384-398.
Fire promoting plant in its introduced range (Same as Fire Promoting Native but within the species introduced range)	Yes	"It is a fire-stimulated grass and in Hawai'i carries fires over larger areas than normal" Smith, C.W. 1985. Impact of Alien Plants on Hawaii's Native Biota. Pp. 180-250 in Stone & Scott (eds.). Hawaii's terrestrial ecosystems: preservation & management. CPSU, Honolulu, HI --- "The result was an oversimplified koa community composed of koa and alien grasses (Ehrharta stipoides, Pennisetum clandestinum) that was more vulnerable to wild fire. During the Broomsedge Burn, fire carried by meadow ricegrass (Ehrharta stipoides) burned 85 ac of koa forest" Loh, R., McDaniel, S., Schultz, M., Ainsworth, A., Benitez, D., Palumbo, D., Smith, K., Tunison, T. & Vaidya, M. (2007). Rehabilitation of seasonally dry ohia woodlands and mesic koa forest following the Broomsedge Fire, Hawaii Volcanoes National Park. Technical Report 147. Pacific Cooperative Studies Unit, University of Hawai?i, Honolulu, HI --- #not widely invasive outside of HI
Regenerates after fire (Does the plant regrow after fire by any means? This includes	Yes	[listed as Faculatative root resprouters, and a fire resistant increaser. table 3] Purdie, R. W., & Slatyer, R. O. (1976). Vegetation succession after fire in sclerophyll woodland communities in south-

resprouters, reseeders, and recruiters which dispersed into the area within approximately one year post fire)		eastern Australia. Australian Journal of Ecology, 1(4), 223-236. ---------- [Resprouts with 48 to 176 percent more tillers than it had before being burned] https://nph.onlinelibrary.wiley.com/doi/pdf/10.1111/nph.15480 Moore, N. A., Camac, J. S., & Morgan, J. W. (2019). Effects of drought and fire on resprouting capacity of 52 temperate Australian perennial native grasses. New Phytologist, 221(3), 1424-1433.
Promoted by fire (Does the plant increase in abundance after a fire?)	Yes	"Similarly, the present research shows that frequent burning favored one species in particular i.e. Microlaena stipoides" Clarke, S. (2004). The effect of fire and grazing on the Cumberland Plain Woodlands.
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	High	"It is a fire-stimulated grass and in Hawai'i carries fires over larger areas than normal" Smith, C.W. 1985. Impact of Alien Plants on Hawaii's Native Biota. Pp. 180-250 in Stone & Scott (eds.). Hawaii's terrestrial ecosystems: preservation & management. CPSU, Honolulu, HI" ---------- "The grass layer, which declines in tropical savanna with fire exclusion (Woinarski et al.2004), does not disappear in CPW; however, composition shifts from dominance by T. triandra; replacement grasses including M. stipoides are unlikely to provide such a flammable matrix. With longer intervals between fires, CPW shifts not to the closed forest that can co-occur with mesic savanna (Bond 2019), but to a less readily flammable state. Long-unburnt CPW can sustain a fire; however, it is less easily ignited than open Themeda-dominated woodland (J. Sanders pers. comm, 2004)." #The ecoystem is less flammable when T. triandra is replaced with M. stipoides, but is however still flammable. So i'll count it as flammable. https://doi.org/10.1111/aec.12869 Morris, E. C., & Watson, P. J. (2020). Fire frequency effects in a grassy woodland: Trees and grasses. Austral Ecology, 45(3), 384–398.
Relative is flammable (Does a plant in the	Yes	"The grass accumulates large quantities of dried plants thus increasing fire intensity and frequency. Fires themselves

same genus meet the Reported Flammable criteria?)		stimulate germination and regrowth, favouring the spread of the grass." Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK"

Text in quotes are direct quotes from the source
Text in square brackets was added by the assessor to clarify something or to summarize from a figure.
Text preceded by a "#" is comment from the assessor

The data presented were assembled from literature and database searches for each species using as much data as could be collected regarding the plant's fire ecology under natural conditions. Searches aimed to be exhaustive and consist of as much data as could be located in 2020. Our machine learning algorithm was trained on 49 species of plants which had their fire risk ranked by 49 managers in Hawai'i in November 2020. The model used a conditional random forest regression algorithm to predict scores for each species using the manager score as the response variable and the fire ecology traits of each plant as the predictor variables to generate a fire risk score. This trained model was then used to predict the fire risk for all species which were not ranked by managers. The model was calibrated such that it is 90% accurate at predicting high fire risk plants and 79% accurate at predicting low fire risk plants. This research and the resulting fire risk model has been published in the journal Biological Invasions by Kevin Faccenda and Curt Daehler (both at the University of Hawai'i at Mānoa).

Note that the analysis doesn't account for a plant species' spatial distribution, population density, or distinct climate and ecosystem conditions (which can also influence fire risk). The fire risk of these species are mostly under "worst case" environmental conditions where the climate is dry enough to maintain fire, but wet enough to allow for plant growth and fuel accumulation. The fire risk ranking should not be taken as a stand-alone risk metric in prioritizing weed control efforts. Rather, this information may also be useful for determining if a newly discovered species poses a potential fire threat in wildland areas.

More general information on the weed risks and ecology of non-native plants in Hawai'i is available from the Hawai'i Invasive Species Committee's Weed Risk Assessment database.

View more fact sheets at https://www.pacificfireexchange.org/weed-fire-risk-assessments

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Fact sheet prepared by Kevin Faccenda (faccenda@hawaii.edu) in November 2021. Data were prepared by Kevin Faccenda in 2020.

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