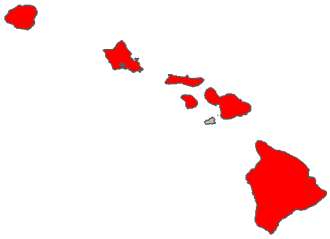
Fire risk report for *Erodium cicutarium*

Full Species Name *Erodium cicutarium* (L.) L'Her.
Family: Geraniaceae
Common names: alfilaria pin clover
Synonyms:
Known occurrences (as of 2020) 
Year first documented as naturalized in Hawai'i: 1913
This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 14.
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 **low** fire risk in Hawai'i with a fire risk score of **0.25**.

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*	No
Regenerates after fire	Yes
Promoted by fire	Yes
Reported flammable*	Low
Relative is flammable*	No

*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	No Data
Fire promoting plant in its introduced range (Same as Fire Promoting Native but within the species introduced range)	No	"Erodium cicutarium and native annuals did not contribute significantly to the spread of fire, because of low frequency and cover" https://www.jstor.org/stable/pdf/41425290.pdf Brooks, M. L. (1999). Alien annual grasses and fire in the Mojave Desert. Madroño, 13-19. --- "Figure 6, Habitat suitability highest when fires are less frequent" https://onlinelibrary.wiley.com/doi/pdf/10.1002/ece3.5650 Kimball, S., Gremer, J. R., Barron-Gafford, G. A., Angert, A. L., Huxman, T. E., & Venable, D. L. (2014). High water-use efficiency and growth contribute to success of non-native Erodium cicutarium in a Sonoran Desert winter annual community. Conservation Physiology, 2(1).
Regenerates after fire (Does the plant regrow after fire by any means? This includes resprouters, reseeders, and recruiters which dispersed into the area within approximately one year post fire)	Yes	"Redstem stork's bill seed in the litter layer remains viable following light fire, and seed just under the litter layer remains viable following moderate fire. Severe fire will kill seed unless it is buried 0.5 inch (1.25 cm) or more deep [41,53]." https://www.fs.fed.us/database/feis/plants/forb/erocic/all.html#FIRE%20ECOLOGY ---

		"Frequent prescribed burning favors redstem stork's bill and other forbs over annual grasses [5,20]. This is desirable when the climax grass provides poor forage, such as ripgut brome. Grassland fire typically destroys very few seeds or other organic matter in the soil [20]. It does destroy the overlying mulch layer that inhibits germination of redstem stork's bill seeds [5,19]." https://www.fs.fed.us/database/feis/plants/forb/erocic/all.html#FIRE%20ECOLOGY
Promoted by fire (Does the plant increase in abundance after a fire?)	Yes	"Frequent prescribed burning favors redstem stork's bill and other forbs over annual grasses [5,20]. This is desirable when the climax grass provides poor forage, such as ripgut brome. Grassland fire typically destroys very few seeds or other organic matter in the soil [20]. It does destroy the overlying mulch layer that inhibits germination of redstem stork's bill seeds [5,19]." https://www.fs.fed.us/database/feis/plants/forb/erocic/all.html#FIRE%20ECOLOGY
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	Low	"The prostrate stems of redstem stork's bill aid in spreading ground fire. Dead plants contribute to fuel loads" https://www.fs.fed.us/database/feis/plants/forb/erocic/all.html#FIRE%20ECOLOGY
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	No	

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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