Fire risk report for *Erica lusitanica*

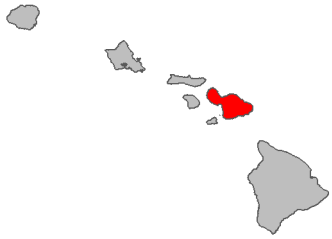
Full Species Name
Erica lusitanica Rudolph

Family: Ericaceae

Common names:
Portuguese heath
Spanish heath

Synonyms:

Known occurrences (as of 2020)



Year first documented as naturalized in Hawai'i: 2005

This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 20.5.

View photos on Starr Environmental

View on Wikipedia

View occurrences on iNaturalist

View at Plants of Hawaii

View photos on Flickr

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Lowest risk ⇔ Highest risk

This species is likely a **low** fire risk in Hawai'i with a fire risk score of **0.22**.

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	Fire-prone
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*	No Data
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?)	Fire-prone	"[In Europe (native range)] In addition, seeds may remain viable in the seedbank of mature heathlands for over 100 years" https://doi.org/10.1016/j.ympev.2015.04.005. Mugrabi de Kuppler, A, J Fagúndez, D Bellstedt, E Oliver, J Léon, and M Pirie. "Testing Reticulate versus Coalescent Origins of Erica Lusitanica Using a Species Phylogeny of the Northern Heathers (Ericeae, Ericaceae)." Molecular Phylogenetics and Evolution 88 (2015): 121–31. --- "frequent spring fires . . . of heathland" https://www.google.com/books/edition/Vegetation_dynamics_in_grasslans_heathla/Gp3uCAAAQBAJ?hl=en&gbpv=0 Clément, B, and J Touffet. "Vegetation Dynamics in Brittany Heathlands after Fire*." In Vegetation Dynamics in Grasslans, Heathlands and Mediterranean Ligneous Formations. Springer Netherlands, 2012. --- "E. lusitanica occurs in the Iberian Peninsula with two subspecies, subsp. lusitanica from Portugal and western Spain and subsp. cantabrica from northern Spain and southwest France . . . grow together in many localities." Fagúndez. "Two Wild Hybrids of Erica L. (Ericaceae) from Northwest Spain." Botanica Complutensis 30 (2006): 131–35.
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 about fuel characteristics in native areas and if this plant actually contributes significant biomass to the fires.
Fire promoting plant in its introduced range (Same as Fire Promoting Native but	No	"where invasive fire-tolerant taxa such as H. sericea, Hakea gibbosa, Erica lusitanica, and Pinus radiata have captured denuded sites on recurrently burned ridges"

within the species introduced range)		#if these ridges are recurrently burned, it is likely that the Erica may be helping to fuel those fires, but uncertain, they could be grass fires Wyse, S. V., Perry, G. L., & Curran, T. J. (2018). Shoot-level flammability of species mixtures is driven by the most flammable species: implications for vegetation-fire feedbacks favouring invasive species. Ecosystems, 21(5), 886-900.
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	"adaptations to recurrent fires . . . resprout after fire" https://doi.org/10.1016/j.ympev.2015.04.005 Mugrabi de Kuppler, A, J Fagúndez, D Bellstedt, E Oliver, J Léon, and M Pirie. "Testing Reticulate versus Coalescent Origins of Erica Lusitanica Using a Species Phylogeny of the Northern Heathers (Ericeae, Ericaceae)." Molecular Phylogenetics and Evolution 88 (2015): 121–31. --- "The ability of heath to resprout after fire or damage and to produce seeds with the capacity for dormancy" https://doi.org/10.1080/0028825X.1990.10412309 Mather, L. J., & Williams, P. A. (1990). Phenology, seed ecology, and age structure of Spanish heath (Erica lusitanica) in Canterbury, New Zealand. New Zealand journal of botany, 28(3), 207-215.
Promoted by fire (Does the plant increase in abundance after a fire?)	Yes	"The vast majority of Erica species are fire-recruiting" https://doi.org/10.1111/j.1469-8137.2005.01486.x Ojeda, Fernando, Fernando Brun, and Juan Vergara. "Fire, Rain and the Selection of Seeder and Resprouter Life-histories in Fire-recruiting, Woody Plants." New Phytologist 168 (2005): 155–65. --- "Site S4 was burnt subsequent to sampling, and during the autumn 2000 seedlings m-2 appeared, showing that fire creates conditions suitable for germination and seedling establishment, as occurs with most heath species" Mather, L. J., & Williams, P. A. (1990). Phenology, seed ecology, and age structure of Spanish heath (Erica lusitanica) in Canterbury, New Zealand. New Zealand journal of botany, 28(3), 207-215.
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	No Data	#No data regarding this species as a fuel

Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	Yes	"At this stage, the Erica-dominated fuel bed is highly flammable, due to the small leaf size and fine branching pattern" Johansson, M., Rooke, T., Fetene, M., & Granström, A. (2010). Browser selectivity alters post-fire competition between Erica arborea and E. trimera in the sub-alpine heathlands of Ethiopia. Plant Ecology, 207(1), 149-160.

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 Ronja Steinbach and Kevin Faccenda in 2020.

This research was funded by the Department of the Interior Pacific Islands Climate Adaptation Science Center. The project described in this publication was supported by Grant or Cooperative Agreement No.G20AC00073 to Curt Daehler from the United States Geological Survey. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the U.S. Geological Survey. Mention of trade names or commercial products does not constitute their endorsement by the Pacific Islands Climate Adaptation Science Center or the National Climate Adaptation Science Center or the US Geological Survey.