Fire risk report for *Lygodium japonicum*

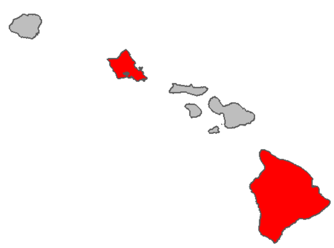
Full Species Name
Lygodium japonicum (Thunb.) Sw.

Family: Lygodiaceae

Common names:
Japanese climbing fern

Synonyms:

Known occurrences (as of 2020)



Year first documented as naturalized in Hawai'i: 1966

This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 23.

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 **0.53**.

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	No Data
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	
Fire promoting plant in its introduced range (Same as Fire Promoting Native but within the species introduced range)	Yes	"The dry dead fronds are flammable and in fire-prone regions the fern carries fires from the ground to the forest canopies, intensifying wild fires." Weber, E., 2003. Invasive Plant Species of the World A Reference Guide to Environmental Weeds. CABI Publishing, Zurich. ---------------------------- "OWCF has infested more than 49,000 ha of central and southern Florida, forming dense rachis mats that smother and shade native vegetation, damage natural habitats, and alter fire-line intensity and behavior (Ferriter and Pernas 2006, Lott et al. 2003, " https://apirs.plants.ifas.ufl.edu/site/assets/files/375131/375131.pdf Sebesta, N., Richards, J., & Taylor, J. (2016). The effects of heat on spore viability of Lygodium microphyllum and implications for fire management. Southeastern Naturalist, 15(sp8), 40-50.f
Regenerates after fire (Does the plant regrow after fire by any means? This includes resprouters, reseeders, and recruiters which	Yes	"Eradication of Japanese climbing fern is difficult because of the large rhizome root system and the rapid germination from spores. Prescribed burns will eliminate aerial portions, but will not stop resprouting." http://www.texasinvasives.org/invasives_database/detail.php?symbol=LYJA [Cited 2009 September 8].

dispersed into the area within approximately one year post fire)		
Promoted by fire (Does the plant increase in abundance after a fire?)	No Data	
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	High	"It can weaken or even kill smothered trees. The dry dead fronds are flammable and in fire-prone regions the fern carries fires from the ground to the forest canopies, thus intensifying wild fires" Weber, E., 2003. Invasive Plant Species of the World A Reference Guide to Environmental Weeds. CABI Publishing, Zurich.
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	Yes	"There are suggestions that small-leaf climbing fern is "tolerant of fire" (reviewed by [5]) and that Japanese climbing fern is "promoted" by fire (reviewed by [40]), but no details are provided." https://www.fs.fed.us/database/feis/plants/fern/lygspp/all.html#FireEcology

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 Hawaiʻi 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 Hawaiʻi is available from the Hawaiʻi 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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