

Fire risk report for *Falcataria moluccana*

Full Species Name <i>Falcataria moluccana</i> (Miq.) Barneby & J.W.Grimes
Family: Fabaceae
Common names: Moluccan albizia batai
Synonyms: <i>Paraserianthes falcataria</i> <i>Albizia falcataria</i>
Known occurrences (as of 2020) 
Year first documented as naturalized in Hawai'i: 1944
This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 8.
View photos on Starr Environmental
View on Wikipedia
View occurrences on iNaturalist
View at Plants of Hawaii
View photos on Flickr

0 **I** .5 1
 Lowest risk ⇔ Highest risk

This species is likely a **low** fire risk in Hawai'i with a fire risk score of **0.23**.

This species was ranked by 49 managers on a scale of 'no risk', 'low risk', 'medium risk', or 'high risk'. The numerical score ranges from 0 to 1 with higher scores indicating more managers considered it a higher risk. A score of > .31 indicates high risk.

Summary of Fire ecology	
Native habitat fire proneness	Non Fire-prone
Fire promoting plant in its native range	No
Fire promoting plant in its introduced range*	No
Regenerates after fire	No
Promoted by fire	No
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?)	Non Fire-prone	"As a plantation tree it does not tolerate poorly drained or flooded areas, and it is also sensitive to fire and strong wind" https://core.ac.uk/reader/269190352 Hidayat, J., Iriantono, D., & Ochsner, P. (2003). <i>Paraserianthes falcataria</i> . Seed Leaflet, (81) Danida Forest Seed Centre
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)	No	"Considering the susceptible nature of <i>A. falcataria</i> to fire, which results in injury at the basal part of the stem and high incidence of die-back in plantations with a history of fire, manifestation of the disease through fire injury was also investigated" Sharma, J. K., & Sankaran, K. V. (1988). Incidence and severity of <i>Botryodiplodia</i> die-back in plantations of <i>Albizia falcataria</i> in Kerala, India. <i>Forest Ecology and Management</i> , 24(1), 43–58. doi:10.1016/0378-1127(88)90023-0
Regenerates after fire (Does the plant regrow after fire by any means? This includes resprouters, reseeder, and recruiters which dispersed into the area within approximately one year post fire)	No	"C (T3), 70 °C (T4) and 80 °C (T5) resulted in significantly higher germination in <i>A. falcataria</i> only. In both these species, boiling water (T6) , dry heat (T7), straw fire (T8) and H2O2 (T13, T14) treatments resulted in complete failure of germination " [seeds do not regenerate] https://www.jstor.org/stable/43581829?seq=1#metadata_info_tab_contents Sajeelvukumar, B., Sudhakara, K., Ashokan, P. K., & Gopikumar, K. (1995). Seed dormancy and germination in <i>Albizia falcataria</i> and <i>Albizia procera</i> . <i>Journal of Tropical Forest Science</i> , 371-382.
Promoted by fire (Does the plant increase in	No	

abundance after a fire?)		
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	Low	"Trees easily attacked by fire are: <i>P. falcata</i> , <i>E. urophylla</i> , <i>C. Bambang</i> and Watanabe 59 <i>callothyrsus</i> , and <i>P. canescens</i> [list <i>P. falcata</i> as flammable based on its low quantity of ash, completely ignores moisture content however]" Saharjo, B. H., & Watanabe, H. (1999). The flammability of shrubs and trees in an <i>Acacia mangium</i> plantation based on silica-free ash content. <i>Journal of Forest Research</i> , 4(1), 57-59.
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	No	none in <i>falcata</i> , but there are some in <i>acacia</i>

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>

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

