

Fire risk report for *Acacia auriculiformis*

Full Species Name <i>Acacia auriculiformis</i> A.Cunn. ex Benth.
Family: Fabaceae
Common names: Earleaf acacia
Synonyms:
Known occurrences (as of 2020) 
Year first documented as naturalized in Hawai'i: 2006
This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 13.
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 **0.22**.

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	Non 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?)	Non Fire-prone	"A. auriculiformis is a component of the isolated patches of monsoon vine forests scattered widely throughout the Top End. These populations differ from those occurring in the wide-ranging riparian monsoon vine forests in that they are disjunct and possibly genetically isolated. They typically occur on landforms that are semi-permanently moist and protected from intense fire." Boland, D. J., Pinyopusarerk, K., McDonald, M. W., Jovanovic, T., & Booth, T. H. (1990). The habitat of <i>Acacia auriculiformis</i> and probable factors associated with its distribution. <i>Journal of Tropical Forest Science</i> , 159-180.
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	
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)	Yes	"Field observations in the <i>A. auriculiformis</i> provenance trial 4 weeks after the fire showed an occurrence of sprouts along the main stem of many trees." https://doi.org/10.1016/0378-1127(93)90044-n Ab Shukor, N. A. (1993). Recovery of <i>Acacia auriculiformis</i> from fire damage. <i>Forest Ecology and Management</i> , 62(1-4), 99–105. ----- "According to Yap (1986), <i>A. auriculiformis</i> survived a series of fires in tin tailing rehabilitation trials in Terengganu, Malaysia. Such ability is an important feature, as these denuded areas are highly flammable during dry seasons owing to the abundance of weeds. These results further emphasise the selection of suitable provenances capable of

		survival and recovery through the production of epicormic shoots, for use where fire hazards are high" https://doi.org/10.1016/0378-1127(93)90044-n Ab Shukor, N. A. (1993). Recovery of <i>Acacia auriculiformis</i> from fire damage. <i>Forest Ecology and Management</i>, 62(1-4), 99–105. ----- "Its ability to extend from the monsoon vine forest to the <i>Melaleuca</i> alliance can be attributed to several factors such as its hardseededness and subsequent ability to regenerate after fires, an ability to grow in exposed open sites, tolerance of adverse soil conditions (especially periodic waterlogging) , and its rapid early grow" Boland, D. J., Pinyopusarerk, K., McDonald, M. W., Jovanovic, T., & Booth, T. H. (1990). The habitat of <i>Acacia auriculiformis</i> and probable factors associated with its distribution. <i>Journal of Tropical Forest Science</i>, 159-180.
Promoted by fire (Does the plant increase in abundance after a fire?)	Yes	"<i>A. auriculiformis</i> is adapted to both wet and dry conditions and seed germination may be enhanced by fire (Langeland and Burks 1998)" http://hear.its.hawaii.edu/starr/hiplants/reports/pdf/acacia_auriculiformis.pdf Starr, F., Starr, K., & Loope, L. (2003). <i>Acacia auriculiformis</i>. <i>Plants of Hawaii Reports</i>.
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	No Data	#no data as to whether this species adds fuel, likely low flammability
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	Yes	"[<i>Acacia melanoxylon</i> reported as a fire hazard]" https://firesafemarin.org/plants/fire-hazardous ----- "However, since flammability and fire severity are also elevated due to invasion by <i>Acacia</i> spp." Rascher, Katherine G., André Große-Stoltenberg, Cristina Máguas, Joao Augusto Alves Meira-Neto, and Christiane Werner. <i>Acacia longifolia</i> invasion impacts vegetation structure and regeneration dynamics in open dunes and pine forests. <i>Biological Invasions</i> 13, no. 5 (2011): 1099-1113.)

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.

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