


Fire risk report for *Leucaena leucocephala* subsp. *leucocephala*

Full Species Name <i>Leucaena leucocephala</i> subsp. <i>leucocephala</i> (Lam.) de Wit
Family: Fabaceae
Common names: koa haole false koa
Synonyms:
Known occurrences (as of 2020) 
Year first documented as naturalized in Hawai'i: 1903
This species has not yet been ranked by the Hawai'i Weed Risk Assessment program as of 2020.
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 **0.71**.

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	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*	High
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	
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	<p>"It regenerates rapidly from basal shoots after fire. New seedlings often rapidly re-establish stands after fire or other disturbance (C.W. Smith, 1985; p. 193)."</p> <p>http://www.hear.org/pier/species/leucaena_leucocephala.htm</p> <p>-----</p> <p>"In the Yucatán peninsula, Mexico, Leucaena is a nitrogen-fixing pioneer that occupies areas after high-intensity wildfires sparked by lightning"</p> <p>Wolfe, B. T., & Van Bloem, S. J. (2012). Subtropical dry forest regeneration in grass-invaded areas of Puerto Rico: understanding why Leucaena leucocephala dominates and native species fail. Forest Ecology and Management, 267, 253-261.</p>
Promoted by fire (Does the plant increase in	Yes	"Unlike most native dryland plant species, leucaena benefits from periodic wildfires. Its ability to resprout vigorously from the stump allows it to recover quickly after fire. Its

abundance after a fire?)		<p>recalcitrant seeds can withstand fast-moving fires common in dry scrub or grassland habitats"</p> <p>Idol, T. (2019). A short review of leucaena as an invasive species in Hawaii. Tropical Grasslands-Forrajes Tropicales, 7(4), 290-294.</p> <p>-----</p> <p>"exotic species such as Leucaena leucocephala are fire-adapted, spread easily after fire episodes and can establish into previously forested areas."</p> <p>Monmany, A. C., Gould, W. A., Andrade-Núñez, M. J., González, G., & Quiñones, M. (2017). Characterizing predictability of fire occurrence in tropical forests and grasslands: the case of Puerto Rico. Forest Ecology and Conservation, 77-95.</p>
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	High	<p>"[Appendix 1; Leucaena community listed as medium flammalbe]"</p> <p>https://www.soe-townsville.org/fire/BushFireHazardReport.pdf</p> <p>BUSH FIRE HAZARD MAPPING Analysis of bushfire susceptibility based on vegetation type and slope. Trinity Software</p>
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>

Fact sheet prepared by Kevin Faccenda (faccenda@hawaii.edu) in November 2021. Data were prepared by Kevin Faccenda in 2020.

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