


Fire risk report for *Casuarina equisetifolia*

Full Species Name <i>Casuarina equisetifolia</i> L.
Family: Casuarinaceae
Common names: common ironwood Australian pine beefwood she oak toa paina
Synonyms:
Known occurrences (as of 2020) 
Year first documented as naturalized in Hawai'i: 1924
This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 21.
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 **high** fire risk in Hawai'i with a fire risk score of **0.57**.

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 Data
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?)	Non Fire-prone	#This species is very fire sensitive (see section about regeneration) and therefore will not occur in fire prone habitats.
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)	No	"Trees less than 3 inches (8 cm) in diameter may sprout following fire. Trees larger than this usually die [3,14]." https://www.fs.fed.us/database/feis/plants/tree/casspp/all.html#FIRE%20ECOLOGY
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	"Casuarina is highly susceptible to fire damage. In some regions such as China and India, litter is routinely removed from plantations for use as fuel and to reduce the risk of fire"

		<p>https://www.researchgate.net/profile/John_Parrotta/publication/288324349_Casuarina_equisetifolia_L_ex_JR_and_G_Forst_Casuarina_Australian_pine/links/567fe94b08aebccc4e07389b/Casuarina-equisetifolia-L-ex-JR-and-G-Forst-Casuarina-Australian-pine.pdf</p> <p>Parrotta, J. A. (1993). <i>Casuarina equisetifolia</i> L. ex JR & G. Forst. <i>Casuarina</i>, Australian pine.</p> <p>-----</p> <p>"Fuel: The highly regarded wood ignites readily even when green, and ashes retain heat for long periods. It has been called 'the best firewood in the world' and also produces high-quality harcoal. Calorific value of the wood is 5000 kcal/kg and that of the charcoal exceeds 7 000 kcal/kg. It has been used for both domestic and industrial fuel such as for railroad locomotives."</p> <p>International Center for Research in Agroforestry. Website: AgroForestryTree Database. Accessed 2008. http://www.worldagroforestrycentre.org/sea/Products/AFDbases/AF/asp/BotanicSearch.asp</p>
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	No	Other species seem to have the same ecology

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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