Fire risk report for *Opuntia ficus-indica*

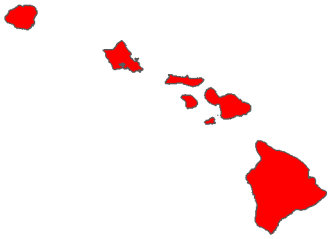
Full Species Name
Opuntia ficus-indica (L.) Mill.

Family: Cactaceae

Common names:
prickly pear
panini

Synonyms:

Known occurrences (as of 2020)



Year first documented as naturalized in Hawai'i: 1985

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

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Lowest risk ⇔ Highest risk

This species is likely a **low** fire risk in Hawai'i with a fire risk score of **0.01**.

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*	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	"Fire has been a major factor in the evolution of prickly pears in southern California. Cacti do not grow in the chaparral or brushland because this is a fire type of vegetation burned over, on the average, once in five to thirty years. A hot chaparral fire cannot be survived by cactus plants. Even a summer grass fire sweeping through a patch of prickly pears is devastating, for small plants are killed outright and the larger ones often are killed, too, except sometimes for parts below ground or those sheltered, as by a piling up of cactus stem joints during the fire" Benson, L., & Walkington, D. L. (1965). The southern Californian prickly pears-invasion, adulteration, and trial-by-fire. Annals of the Missouri Botanical Garden, 52(3), 262-273.
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, reseeders, and recruiters which dispersed into the area within approximately one year post fire)	No	"Fire has been a major factor in the evolution of prickly pears in southern California. Cacti do not grow in the chaparral or brushland because this is a fire type of vegetation burned over, on the average, once in five to thirty years. A hot chaparral fire cannot be survived by cactus plants. Even a summer grass fire sweeping through a patch of prickly pears is devastating, for small plants are killed outright and the larger ones often are killed, too, except sometimes for parts below ground or those

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Promoted by fire (Does the plant increase in abundance after a fire?)	No	
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	No Data	
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	Yes	"Trials of burning Cylindropuntia spinosior (snake cactus) and field observations of Opuntia stricta (common prickly pear) following wild fire have shown that these species are not killed by fire, and in fact they recover with great vigour" https://www.agric.wa.gov.au/sites/gateway/files/Opuntioid%20cacti%20best%20practice%20control%20manual.pdf Managing Opuntioid Cacti in Australia Best practice control manual for Austrocylindropuntia, Cylindropuntia and Opuntia species M.R. Sheehan and S. Potter Weeds of National Significance 2017

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

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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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