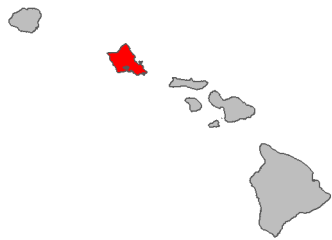


Fire risk report for *Asparagus falcatus*

Full Species Name <i>Asparagus falcatus</i> L.
Family: Asparagaceae
Common names:
Synonyms:
Known occurrences (as of 2020) 
Year first documented as naturalized in Hawai'i: 2008
This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 11.
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 **0.22**.

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	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	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?)	Fire-prone	"Native to Africa, distributed in evergreen forest on forest margins and in dense scrub." Nawaz, Tahira, Mansoor Hameed, Sajid Ahmad, Waqar-U-Nisa, Adnan Younis, and Hina Kanwal. "COMPARATIVE ANATOMY OF ROOT AND STEM OF SOME NATIVE AND EXOTIC ASPARAGUS L. SPECIES." Pakistan Journal of Botany 44 (March 2012): 153–58. ----- "[occurs on fire managed rangeland with at year burn frequency, albeit a lower frequency than the other rangelands. Table 2]" Gilo, B. N., & Kelkay, T. Z. (2017). Changes in vegetation structure and aboveground biomass in response to traditional rangeland management practices in Borana, southern Ethiopia. African Journal of Range & Forage Science, 34(1), 21-31.
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	"The species recorded only in the unburnt forest included two canopy trees (Apodytes dimidiata and Olea woodiana), several lianes (e.g. Asparagus falcatus..." #retrospective study, so it is not certain that the species was present before the fire, but it is likely given they are similar sites. Pammenter, N. W., Berjak, M., & Macdonald, I. A. W. (1985). Regeneration of a Natal coastal dune forest after fire. South African Journal of Botany, 51(6), 453-459.

		----- "[regenerated on valley slopes 5 years after fire. appendix 1]" Mligo, C. (2019). Post fire regeneration of indigenous plant species in the Pugu Forest Reserve, Tanzania. <i>Global Ecology and Conservation</i>, 18, e00611. ----- "[occurs on fire managed rangeland with at year burn frequency, albeit a lower frequency than the other rangelands. Table 2]" Gilo, B. N., & Kelkay, T. Z. (2017). Changes in vegetation structure and aboveground biomass in response to traditional rangeland management practices in Borana, southern Ethiopia. <i>African Journal of Range & Forage Science</i>, 34(1), 21-31.
Promoted by fire (Does the plant increase in abundance after a fire?)	No	"[occurs on fire managed rangeland with at year burn frequency, albeit a lower frequency than the other rangelands. Table 2]" #lower frequency in burned areas implies it is not promoted. Gilo, B. N., & Kelkay, T. Z. (2017). Changes in vegetation structure and aboveground biomass in response to traditional rangeland management practices in Borana, southern Ethiopia. <i>African Journal of Range & Forage Science</i>, 34(1), 21-31.
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	"A. asparagoides competes with indigenous under- storey vegetation by climbing and covering native species (Fox, 1984). It may also reduce the amount of incident light on the soil surface and suppress native seed germination, and once infestations have reached this stage, the creepers' tuberous roots totally blanket surface layers of the soil. It possibly competes with native seedlings for limited moisture and nutrients (Raymond, 1995). In summer months, when it dies back leaving a blanket of entwined stems, it becomes a potential fire hazard." https://doi.org/10.1046/j.1472-4642.1999.00030.x Stansbury, C, and J Scott. "The History, Distribution and Rate of Spread of the Invasive Alien Plant, Bridal Creeper, <i>Asparagus Asparagoides</i> (L.) Wight, as Determined from a

		Questionnaire Survey of Landholders in South-western Australia.” Diversity and Distributions 5, no. 3 (May 1999): 105–16.
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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 Ronja Steinbach and 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.

