


Fire risk report for *Saccharum spontaneum*

Full Species Name <i>Saccharum spontaneum</i> L.
Family: Poaceae
Common names: wild cane
Synonyms:
Known occurrences (as of 2020) 
Year first documented as naturalized in Hawai'i: 1937
This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 17.
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 **0.72**.

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	No Data
Fire promoting plant in its native range	Yes
Fire promoting plant in its introduced range*	Yes
Regenerates after fire	Yes
Promoted by fire	Yes
Reported flammable*	High
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?)	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?)	Yes	<p>"fire, cutting and grazing retard succession from early successional grasslands dominated by <i>S. spontaneum</i> to forest, allowing other grassland assemblages to become established (Lehmkuhl, 1994). In the absence of these disturbances, succession from grassland to forest would occur once soil conditions favoured the establishment of trees"</p> <p>#areas dominated by the species can burn, likely promotes fire if it is the main species</p> <p>Peet, N. B., Watkinson, A. R., Bell, D. J., & Kattel, B. J. (1999). Plant diversity in the threatened sub-tropical grasslands of Nepal. <i>Biological Conservation</i>, 88(2), 193-206.</p> <p>-----</p> <p>"Fire is also likely to have had a long history in Bardia s grasslands as it is intimately associated with grass harvesting and the grazing of domestic stock [<i>S. sponteum</i> listed as codominant in these grasslands] "</p> <p>Peet, N. B., Watkinson, A. R., Bell, D. J., & Sharma, U. R. (1999). The conservation management of <i>Imperata cylindrica</i> grassland in Nepal with fire and cutting: an experimental approach. <i>Journal of Applied Ecology</i>, 36(3), 374-387.</p>
Fire promoting plant in its introduced range (Same as Fire Promoting Native but within the species introduced range)	Yes	<p>"In April 2009 a dense stand of <i>Saccharum spontaneum</i> in the Panama Canal Watershed burned as a result of an anthropogenic fire. Regrowth was monitored throughout the 2009 growing season and compared to a nearby unburned stand with a similar management history. Six months after the fire, live aboveground biomass and stem density were similar but flowering shoot densities were significantly higher in the burned stand"</p>

		Saltonstall, K., & Bonnett, G. D. (2012). Fire promotes growth and reproduction of <i>Saccharum spontaneum</i> (L.) in Panama. <i>Biological Invasions</i> , 14(12), 2479-2488.
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>"Perennial. Rhizomes elongated. Culms erect; robust; 200-400 cm long. " [presence of a rhizome suggests it will regenerate] http://www.plantsoftheworldonline.org/taxon/urn:lsid:ipni.org:names:420031-1</p> <p>-----</p> <p>"In April 2009 a dense stand of <i>Saccharum spontaneum</i> in the Panama Canal Watershed burned as a result of an anthropogenic fire. Regrowth was monitored throughout the 2009 growing season and compared to a nearby unburned stand with a similar management history. Six months after the fire, live aboveground biomass and stem density were similar but flowering shoot densities were significantly higher in the burned stand"</p> <p>Saltonstall, K., & Bonnett, G. D. (2012). Fire promotes growth and reproduction of <i>Saccharum spontaneum</i> (L.) in Panama. <i>Biological Invasions</i>, 14(12), 2479-2488.</p> <p>-----</p> <p>"These results suggest that fire promotes the growth of <i>Saccharum</i> [<i>spontaneum</i>] and may enhance its spread by stimulating new shoot growth, increasing flowering shoot density and thereby seed production, and creating available habitat for recruitment of new populations by removing litter."</p> <p>Saltonstall, K., & Bonnett, G. D. (2012). Fire promotes growth and reproduction of <i>Saccharum spontaneum</i> (L.) in Panama. <i>Biological Invasions</i>, 14(12), 2479-2488.</p>
Promoted by fire (Does the plant increase in abundance after a fire?)	Yes	<p>"In April 2009 a dense stand of <i>Saccharum spontaneum</i> in the Panama Canal Watershed burned as a result of an anthropogenic fire. Regrowth was monitored throughout the 2009 growing season and compared to a nearby unburned stand with a similar management history. Six months after the fire, live aboveground biomass and stem density were similar but flowering shoot densities were significantly higher in the burned stand"</p> <p>Saltonstall, K., & Bonnett, G. D. (2012). Fire promotes growth and reproduction of <i>Saccharum spontaneum</i> (L.) in Panama. <i>Biological Invasions</i>, 14(12), 2479-2488.</p>

Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	High	"In April 2009 a dense stand of <i>Saccharum spontaneum</i> in the Panama Canal Watershed burned as a result of an anthropogenic fire. Regrowth was monitored throughout the 2009 growing season and compared to a nearby unburned stand with a similar management history. Six months after the fire, live aboveground biomass and stem density were similar but flowering shoot densities were significantly higher in the burned stand" Saltonstall, K., & Bonnett, G. D. (2012). Fire promotes growth and reproduction of <i>Saccharum spontaneum</i> (L.) in Panama. <i>Biological Invasions</i> , 14(12), 2479-2488.
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	Yes	" <i>Saccharum ravennae</i> D, R Emerging concern in North Coast riparian scrub; considered fire hazard in Arizona" http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.468.2022&rep=rep1&type=pdf#page=31 Lambert, A. M., D'antonio, C. M., & Dudley, T. L. (2010). Invasive species and fire in California ecosystems. <i>Fremontia</i> , 38(2), 29-36.

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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