# Fire risk report for *Ardisia solanacea*

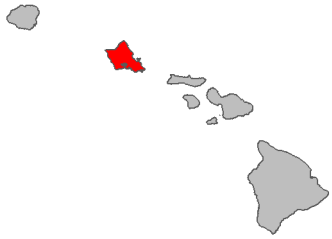
**Full Species Name**
*Ardisia solanacea* Roxb.

**Family**: Primulaceae

**Common names:**
shoebutton ardisia

**Synonyms:**

Known occurrences (as of 2020)



Year first documented as naturalized in Hawai'i: 2012

This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 6.

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 **0.16**.

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 | No |
| Promoted by fire | No |
| Reported flammable* | No Data |
| 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?) | Fire-prone | In China: "Mixed forests, shrubby areas, mountains or hillsides; 400-1600 m." http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200016807<br>---<br>"A. solanacea is native of Pakistan, India, Sri Lanka, Southeast Asia and China."<br>Jamal Basha, D, B. R. Srinivas Murthy, P Prakash, A Kirthi, and K. C. Anuradha. "Pharmacognostical Standardization, Preliminary Phytochemical Investigation of Root Stocks of Ardisia Solanacea Roxb." Journal of Chemical and Pharmaceutical Research 8, no. 8 (2016): 1107–13.<br>---<br>In areas it was found it India there were "recurring disturbances (e.g., fire, grazing, and wood harvesting)." https://doi.org/10.20546/ijcmas.2017.605.173<br>Srivastava, Prateek, and H Vasistha. "Impact of Urbanisation on Natural Regeneration of Shorea Robusta in Doon Valley (India)." International Journal of Current Microbiology and Applied Sciences 6, no. 5 (2017): 1590–1600. |
| 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, | No | "The burn was specifically prescribed (a) to reduce leaf litter buildup (hazardous fuel source) and (b) to aid in perpetuation of native firedependent species such as Pinus elliottii and Thrinax radiata, while ridding the system of |

| | | |
|---|---|---|
| and recruiters which dispersed into the area within approximately one year post fire) | | invasive plant species (e.g., Ardisia elliptica Thunb., Schinus terebinthifolius Raddi)."<br>https://acsess.onlinelibrary.wiley.com/doi/pdfdirect/10.1002/ael2.20026<br>Freidenreich, A., Harris, B., Dattamudi, S., Betancourt, E., Reis, M. S., & Jayachandran, K. (2020). Effects of prescribed fire on soil properties in a pine rockland ecosystem. Agricultural & Environmental Letters, 5(1), e20026. |
| Promoted by fire (Does the plant increase in abundance after a fire?) | No | "In comparing occurrences of most invasive non-native plant species between sampling periods, we found a general trend in which Ardisia elliptica Thunb., Neyraudia reynaudiana, and Schinus terebinthifolius were less abundant over time"<br>Possley, J., Woodmansee, S. W., & Maschinski, J. (2008). Patterns of plant composition in fragments of globally imperiled pine rockland forest: effects of soil type, recent fire frequency, and fragment size. Natural Areas Journal, 28(4), 379-394. |
| 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?) | No | "Following severe mechanical disturbance, a suite of widespread weedy plants may invade the disturbed areas (or may originate from a seed bank). This weedy vegetation is typically less flammable, and affects fire behavior, altering the ecological dynamics of the system... Non-native plants which can be problems in this system include Japanese Climbing Fern (Lygodium japonicum), Chinaberry (Melia azerderach), Japanese Honeysuckle (Lonicera japonica), Ardisia (Ardisia crenata)"<br>http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.169.8194&rep=rep1&type=pdf<br>Pyne, Milo. “West Gulf Coastal Plain Flatwoods Pond Ecological System - Ecological Integrity Assessment.” NatureServe, December 15, 2005. |

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 Ronja Steinbach and Kevin Faccenda in 2020.

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