Fire risk report for *Leptospermum laevigatum*

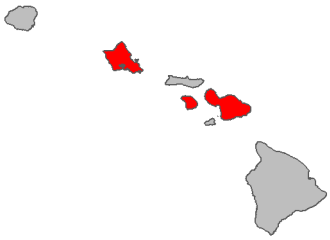
Full Species Name
Leptospermum laevigatum (Sol. ex Gaertn.) F.Muell.

Family: Myrtaceae

Common names:
Australian tea tree

Synonyms:

Known occurrences (as of 2020)



Year first documented as naturalized in Hawai'i: 1985

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	.5	1
Lowest risk	⇔	Highest risk

This species is likely a **high** fire risk in Hawai'i with a fire risk score of **0.52**.

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	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?)	Fire-prone	"This is particularly important when assessing the effects of fire exclusion in ecosystems where fire is thought to have once been common. Using two adjacent coastal Banksia integrifolia forest stands in southernVictoria,Australia initially surveyed in 1975 by Hazard and Parsons,we document the changes that occurred in the stand structure between 1975 and 2000. Western Park (WP) has now remained unburnt for over 100 years while Cerberus Naval Base (CNB) was most recently burnt in 1942" https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1442-9993.2007.01667.x Gent, M. L., & Morgan, J. W. (2007). Changes in the stand structure (1975–2000) of coastal Banksia forest in the long absence of fire. Austral Ecology, 32(3), 239-244.
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	Likely, but little data for native range
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)	Yes	"Yanchep National Park burned in intense fires which spread north eastwards from the coast from January 30, 1991, under extreme temperawres (45.8°C on 31/01/91) and strong south-westerly winds (Anon. 1991). Several L. laevigatum plants were present along the road edge prior to the fire, and L. laevigatum numbers increased substantially afterwards (A. Notley personal communication).... L.laevigatum is an obligate seeder: adult plants are readily killed by fire (Burrelll981; Clarke 1989b)."

		Lam, A. (2002). Invasion of indigenous vegetation in south-western Australia by Leptospermum Laevigatum (Gaertn.) F. Muell.(Myrtaceae). Edith Cowan University Theisis
Promoted by fire (Does the plant increase in abundance after a fire?)	Yes	"Fire is identified as r: major factor in enhancing invasion by L. laevigatwn. Where fire occurs and a seed source is adjacent, resultant recruitment appears to be immense, resulting in high density thickets of L. laevigatum." Lam, A. (2002). Invasion of indigenous vegetation in south-western Australia by Leptospermum Laevigatum (Gaertn.) F. Muell.(Myrtaceae). Edith Cowan University Theisis
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	High	" Coastal tea-tree is highly flammable and may increase fire risk" https://pir.sa.gov.au/__data/assets/pdf_file/0011/289748/Coastal_TeaTree_Factsheet_Final.pdf Costal Tea-tree NSW fact sheet --- "Other hedges can have significant cores of thin woody stems, hidden by a canopy of green leaves. These types of vegetation should be avoided. Species like the Australian myrtle – Leptospermum laevigatum – besides being highly invasible, have very fine leaves and are highly flammable." http://www.cibra.co.za/downloads/FireUrbanEdge.PDF 2000. Chapman, R.A./Forsyth, G.G. Recommendations for property owners and occupiers: reducing fire risk to properties on the urban edge – Cape Peninsula. CSIR Report. ENV-S-C 2000-104:
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	Yes	[listed as high flammablity] https://www.researchgate.net/publication/300066803_Flammability_of_native_plants McMahon, S. & Pearce, H.. (2005). Flammability of native plants. Open Space. 63. 20-21.

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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