# Fire risk report for *Heterotheca grandiflora*

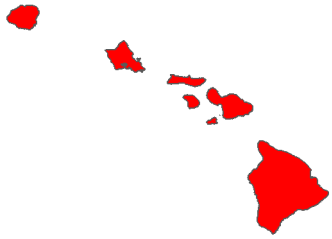
**Full Species Name**
*Heterotheca grandiflora* Nutt.

**Family**: Asteraceae

**Common names:**
telegraph weed

**Synonyms:**

Known occurrences (as of 2020)



Year first documented as naturalized in Hawai'i: 1909

This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 14.

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 **0.50**.

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 data |
| Reported flammable* | High |
| 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 | " Non-dormant seeds also are characteristic of some annual species found commonly on burned sites. Some of these, such as Agoseris heterophylla, Galium parisiense , Heterotheca grandiflora , Lactuca serriola , and Microseris lineari/olia (Table 1), are relatively weedy and produce diaspores capable of distant dispersal. Their presence on first-year burns can be accounted for by colonization from nearby disturbed areas such as road-cuts or natural disturbances. Many of these annuals have heat sensitive seeds and, thus, it is of interest that several disperse seeds in the fall and winter, after the time of most chaparral wildfires. Some of these species produce polymorphic achenes with different germination responses (e.g., Agoseris heterophylla , see Table 1 , and Heterotheca grandiflora , see Flint and Palmblad 1978) that may promote colonization of burned sites"<br>https://www.jstor.org/stable/pdf/41424639.pdf<br>Keeley, J. E., & Keeley, S. C. (1987). Role of fire in the germination of chaparral herbs and suffrutescents. Madroño, 240-249.<br>----------<br>"[listed as occuring in chaprral, a famously fire prone ecosystem]"<br>https://www.jstor.org/stable/pdf/41424697.pdf<br>Davis, F. W., Hickson, D. E., & Odion, D. C. (1988). Composition of maritime chaparral related to fire history and soil, Burton Mesa, Santa Barbara County, California. Madrono, 169-195. |
| 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 | No | |

| | | |
|---|---|---|
| Promoting Native but within the species introduced range) | | |
| 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 | "Non-dormant seeds also are characteristic of some annual species found commonly on burned sites. Some of these, such as Agoseris heterophylla, Galium parisiense , Heterotheca grandiflora , Lactuca serriola , and Microseris lineari/olia (Table 1), are relatively weedy and produce diaspores capable of distant dispersal. Their presence on first-year burns can be accounted for by colonization from nearby disturbed areas such as road-cuts or natural disturbances. Many of these annuals have heat sensitive seeds and, thus, it is of interest that several disperse seeds in the fall and winter, after the time of most chaparral wildfires. Some of these species produce polymorphic achenes with different germination responses (e.g., Agoseris heterophylla , see Table 1 , and Heterotheca grandiflora , see Flint and Palmblad 1978) that may promote colonization of burned sites" https://www.jstor.org/stable/pdf/41424639.pdf Keeley, J. E., & Keeley, S. C. (1987). Role of fire in the germination of chaparral herbs and suffrutescents. Madroño, 240-249. |
| Promoted by fire (Does the plant increase in abundance after a fire?) | no data | #perhaps, Keeley suggests it may be adapted to growing in burned areas, but no data demonstrate and increase in germination on burned areas required for me to answer this as yes. |
| Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?) | High | "[described as highly flammable; page 17]" https://www.sandiegocounty.gov/pds/docs/DPLU199.pdf County of San Diego, Department of Planning and Land Use FIRE, PLANTS, DEFENSIBLE SPACE AND YOU BUILDING DIVISION |
| Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?) | No | |

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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