


# Fire risk report for *Sagittaria platyphylla*

<b>Full Species Name</b> <i>Sagittaria platyphylla</i> (Engelm.) J.G.Sm.
<b>Family:</b> Alismataceae
<b>Common names:</b> Delta arrowhead
<b>Synonyms:</b>
<b>Known occurrences (as of 2020)</b> 
Year first documented as naturalized in Hawai'i: 2013
This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 28.
<a href="#">View photos on Starr Environmental</a>
<a href="#">View on Wikipedia</a>
<a href="#">View occurrences on iNaturalist</a>
<a href="#">View at Plants of Hawaii</a>
<a href="#">View photos on Flickr</a>

0      .5      1  
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	No Data
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*	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?)	No Data	#emergant aquatic; fire unlikely
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	#emergant aquatic; very unlikely
Fire promoting plant in its introduced range (Same as Fire Promoting Native but within the species introduced range)	No	#emergant aquatic; very unlikely
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	"Vegetation species composition indicated that the reference and oiled-and-not-burned sites were very similar, each strongly dominated by Phragmites in September 2016 (Figure 9). Phragmites also strongly dominated the reference and oiled-and-not-burned sites across all other sampling periods (not shown). In contrast, by September 2016, the oiled-and-burned sites were characterized by a relatively even distribution of Sagittaria platyphylla (delta arrowhead), Sagittaria latifolia (broadleaf arrowhead), Zizania aquatic (southern wild rice), Pontederia cordata (pickerelweed), and Phragmites. Sagittaria lancifolia (bulltongue arrowhead) may also have been present, but was not differentiated from Sagittaria platyphylla. Though overall cover was low, the oiled-and-burned sites were initially dominated by Phragmites in June 2014, but with some Sagittaria platyphylla as well. This progressed to typical total cover values and near equal dominance by Phragmites, Sagittaria platyphylla, and Sagittaria latifolia in

		<p>September 2014, followed by these same three species with sizeable contributions by <i>Pontederia cordata</i>, <i>Polygonum</i> sp. (smartweed), and <i>Zizania aquatica</i> in September 2015."</p> <p><a href="https://www.ioscproceedings.org/doi/full/10.7901/2169-3358-2017.1.2348">https://www.ioscproceedings.org/doi/full/10.7901/2169-3358-2017.1.2348</a></p> <p>Zengel, S., Weaver, J., Nixon, Z., Wilder, S. L., Dauzat, J., Sanfilippo, C., ... &amp; Wall, S. (2017, May). In Situ Burning and Ecological Recovery in an Oil-Impacted <i>Phragmites australis</i> Tidal Freshwater Marsh at Delta National Wildlife Refuge, Louisiana. In International Oil Spill Conference Proceedings (Vol. 2017, No. 1, pp. 2348-2368). International Oil Spill Conference.</p>
Promoted by fire (Does the plant increase in abundance after a fire?)	Yes	<p>"Vegetation species composition indicated that the reference and oiled-and-not-burned sites were very similar, each strongly dominated by <i>Phragmites</i> in September 2016 (Figure 9). <i>Phragmites</i> also strongly dominated the reference and oiled-and-not-burned sites across all other sampling periods (not shown). In contrast, by September 2016, the oiled-and-burned sites were characterized by a relatively even distribution of <i>Sagittaria platyphylla</i> (delta arrowhead), <i>Sagittaria latifolia</i> (broadleaf arrowhead), <i>Zizania aquatic</i> (southern wild rice), <i>Pontederia cordata</i> (pickerelweed), and <i>Phragmites</i>. <i>Sagittaria lancifolia</i> (bulltongue arrowhead) may also have been present, but was not differentiated from <i>Sagittaria platyphylla</i>. Though overall cover was low, the oiled-and-burned sites were initially dominated by <i>Phragmites</i> in June 2014, but with some <i>Sagittaria platyphylla</i> as well. This progressed to typical total cover values and near equal dominance by <i>Phragmites</i>, <i>Sagittaria platyphylla</i>, and <i>Sagittaria latifolia</i> in September 2014, followed by these same three species with sizeable contributions by <i>Pontederia cordata</i>, <i>Polygonum</i> sp. (smartweed), and <i>Zizania aquatica</i> in September 2015."</p> <p><a href="https://www.ioscproceedings.org/doi/full/10.7901/2169-3358-2017.1.2348">https://www.ioscproceedings.org/doi/full/10.7901/2169-3358-2017.1.2348</a></p> <p>Zengel, S., Weaver, J., Nixon, Z., Wilder, S. L., Dauzat, J., Sanfilippo, C., ... &amp; Wall, S. (2017, May). In Situ Burning and Ecological Recovery in an Oil-Impacted <i>Phragmites australis</i> Tidal Freshwater Marsh at Delta National Wildlife Refuge, Louisiana. In International Oil Spill Conference Proceedings</p>

		(Vol. 2017, No. 1, pp. 2348-2368). International Oil Spill Conference.
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	No Data	#aquatic; very unlikely to burn
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	No	#aquatic; unlikely to be flammable

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

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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](mailto:faccenda@hawaii.edu)) in November 2021. Data were prepared by Kevin Faccenda in 2020.

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