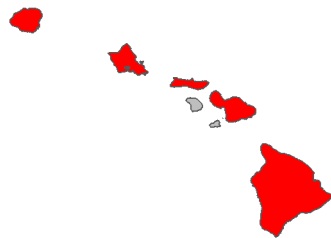


Fire risk report for *Andropogon virginicus*

Full Species Name <i>Andropogon virginicus</i> L.
Family: Poaceae
Common names: broomsedge yellow bluestem
Synonyms:
Known occurrences (as of 2020) 
Year first documented as naturalized in Hawai'i: 1924
This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 22.
View photos on Starr Environmental
View on Wikipedia
View occurrences on iNaturalist
View at Plants of Hawaii
View photos on Flickr

0 **I** .5 1
 Lowest risk ⇔ Highest risk

This species is likely a **high** fire risk in Hawai'i with a fire risk score of **0.79**.

This species was ranked by 49 managers on a scale of 'no risk', 'low risk', 'medium risk', or 'high risk'. The numerical score ranges from 0 to 1 with higher scores indicating more managers considered it a higher risk. A score of > .31 indicates high risk.

Summary of Fire ecology	
Native habitat fire proneness	Fire-prone
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?)	Fire-prone	"Broomsedge bluestem depends on frequent disturbance to maintain itself. Fires at 1- to 3-year intervals favor this species and tend to maintain its abundance [21]. In loblolly pine (<i>Pinus taeda</i>) stands in South Carolina, broomsedge bluestem was rare in unburned areas, infrequent in areas periodically burned in the summer or winter, but common in areas burned annually in the summer or winter, or biennially in the summer [21,39]." fs.fed.us/database/feis/plants/graminoid/andvir/all.html#FIRE%20ECOLOGY
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	"[table 1, cover increases as burn frequency increases]" #must be promoting fire if has a cover of between 60 to 90 percent in a frequently burned area Waldrop, T. A., White, D. L., & Jones, S. M. (1992). Fire regimes for pine-grassland communities in the southeastern United States. <i>Forest Ecology and Management</i> , 47(1-4), 195-210.
Fire promoting plant in its introduced range (Same as Fire Promoting Native but within the species introduced range)	Yes	"Currently the three most prevalent alien grass species in the seasonal submontane zone are <i>Melinis minutiflora</i> , <i>Andropogon virginicus</i> , and <i>Schizachyrium condensatum</i> (formerly known as <i>Andropogon glomeratus</i>). All maintain extremely high dead: live biomass ratios (80-90%) throughout most of the year, and thus are capable of supplying the continuous bed of fine fuels needed to carry fire. They will also burn at very high relative humidities (85-90%) and high fuel moistures (20-25%). Finally, all three recover rapidly and grow with increased vigor following fire; <i>Andropogon</i> and <i>Schizachyrium</i> can resprout within 96 h after fire (T. Tunison, personal observation)." Hughes, F., Vitousek, P. M., & Tunison, T. (1991). Alien grass invasion and fire in the seasonal submontane zone of Hawai'i. <i>Ecology</i> , 72(2), 743-747. ----- #Seemingly not widely invasive outside of HI
Regenerates after fire (Does the plant regrow after fire by any means? This includes	Yes	"Currently the three most prevalent alien grass species in the seasonal submontane zone are <i>Melinis minutiflora</i> , <i>Andropogon virginicus</i> , and <i>Schizachyrium condensatum</i> (formerly known as <i>Andropogon glomeratus</i>). All maintain

<p>resprouters, reseeder, and recruiters which dispersed into the area within approximately one year post fire)</p>	<p>extremely high dead: live biomass ratios (80-90%) throughout most of the year, and thus are capable of supplying the continuous bed of fine fuels needed to carry fire. They will also burn at very high relative humidities (85-90%) and high fuel moistures (20-25%). Finally, all three recover rapidly and grow with increased vigor following fire; Andropogon and Schizachyrium can resprout within 96 h after fire (T. Tunison, personal observation)."</p> <p>Hughes, F., Vitousek, P. M., & Tunison, T. (1991). Alien grass invasion and fire in the seasonal submontane zone of Hawai'i. Ecology, 72(2), 743-747.</p> <p>-----</p> <p>"Broomsedge bluestem is both a fire survivor and an off-site colonizer. Burned plants quickly initiate new top-growth from surviving meristems. In Hawaii, broomsedge bluestem began sprouting within 4 days after fire [14]. In southern Florida, it initiated new top-growth 3 weeks after prescribed burning in mid-February [13]. Additionally, new plants are commonly established the first year after fire from abundant wind-dispersed seed [19]."</p> <p>https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html#FIRE%20ECOLOGY</p>
<p>Promoted by fire (Does the plant increase in abundance after a fire?)</p>	<p>Yes</p> <p>" Currently the three most prevalent alien grass species in the seasonal submontane zone are Melinis minutiflora, Andropogon virginicus, and Schizachyrium condensatum (formerly known as Andropogon glomeratus). All maintain extremely high dead: live biomass ratios (80-90%) throughout most of the year, and thus are capable of supplying the continuous bed of fine fuels needed to carry fire. They will also burn at very high relative humidities (85-90%) and high fuel moistures (20-25%). Finally, all three recover rapidly and grow with increased vigor following fire; Andropogon and Schizachyrium can resprout within 96 h after fire (T. Tunison, personal observation)."</p> <p>Hughes, F., Vitousek, P. M., & Tunison, T. (1991). Alien grass invasion and fire in the seasonal submontane zone of Hawai'i. Ecology, 72(2), 743-747.</p> <p>-----</p> <p>"After a few years without fire, broomsedge bluestem [A. virginicus] stands contain much of this dead, highly flammable material which carries fire well. It burns at relatively high relative humidities (80-90%) and high fuel moisture (20-25%) [14]."</p>

		https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	High	"After a few years without fire, broomsedge bluestem [<i>A. virginicus</i>] stands contain much of this dead, highly flammable material which carries fire well. It burns at relatively high relative humidities (80-90%) and high fuel moisture (20-25%) [14]." https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	Yes	"big bluestem initiates new growth from surviving rhizomes after aboveground foliage has been damaged or consumed by fire. After summer burns, depending on the amount of damage inflicted, regrowth is either from undamaged apical meristems or from the initiation of new tillers from underground rhizomes [36]. Plants burned during the spring or fall when the aboveground foliage is dead resume growth in the spring as normal. In general, spring burning has a stimulating effect on the growth and competitive vigor of big bluestem [74]." https://www.fs.fed.us/database/feis/plants/graminoid/andger/all.html#FIRE%20EFFECTS

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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