Taxon: Andropogon virginicus L. **Family:** Poaceae

Common Name(s): broom sedge
broom-sedge bluestem
whiskey grass

Synonym(s): Andropogon virginicus var. glaucus
Andropogon virginicus var. virginicus

Assessor: No Assessor **Status:** Assessor Approved **End Date:** 7 May 2018

WRA Score: 22.0 **Designation:** H(Hawai'i) **Rating:** High Risk

Keywords: Perennial Grass, Pasture Weed, Environmental Weed, Fire Hazard, Dense Stands

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y=1, n=0	y
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed		
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	y
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	y
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic	y=1, n=0	y
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems	y=1, n=0	y
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	y
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	y
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally		
604	Self-compatible or apomictic	y=1, n=-1	y
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	2
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	y
702	Propagules dispersed intentionally by people	y=1, n=-1	n
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	y
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	y
708	Propagules survive passage through the gut		
801	Prolific seed production (>1000/m2)	y=1, n=-1	n
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	n

Supporting Data:

Qsn #	Question	Answer
101	**Is the species highly domesticated?**	**n**
	Source(s)	**Notes**
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence of domestication

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	NA

201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**High**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 7 May 2018]	"Native Northern America EASTERN CANADA: Canada [Ontario (s.)] NORTHEASTERN U.S.A.: United States [Connecticut, Indiana, Massachusetts, Michigan (s.), New Jersey, New York (s.e.), Ohio, Pennsylvania, Rhode Island, West Virginia] NORTH-CENTRAL U.S.A.: United States [Illinois (s.), Iowa (s.e.), Kansas (e.), Missouri, Oklahoma (e.)] SOUTHEASTERN U.S.A.: United States [Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee (http://tenn.bio.utk.edu/vascular/database/vascular-database.asp?CategoryID=Monocots&FamilyID=Poaceae&GenusID=Andropogon&SpeciesID=virginicus), Virginia] SOUTH-CENTRAL U.S.A.: United States [Texas] NORTHERN MEXICO: Mexico [Coahuila, Nuevo Leon] SOUTHERN MEXICO: Mexico [Chiapas, Puebla, Tabasco, Veracruz, Yucatan] Southern America CARIBBEAN: Bahamas, Bermuda, Cuba, Dominican Republic, Jamaica, Puerto Rico, Trinidad and Tobago CENTRAL AMERICA: Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama WESTERN SOUTH AMERICA: Colombia"

202	**Quality of climate match data**	**High**

Qsn #	Question	Answer
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 7 May 2018]	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"in Hawai'i common and often dominant along roadsides and in disturbed dry to mesic forest and shrubland, especially on ridges, 50-1,200 m, on O'ahu and Hawai'i."
	Plants for a Future. 2018. Andropogon virginicus. https://www.pfaf.org/User/Plant.aspx?LatinName=Andropogon+virginicus. [Accessed 7 May 2018]	"USDA hardiness: 5-9"

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 7 May 2018]	"Native Northern America EASTERN CANADA: Canada [Ontario (s.)] NORTHEASTERN U.S.A.: United States [Connecticut, Indiana, Massachusetts, Michigan (s.), New Jersey, New York (s.e.), Ohio, Pennsylvania, Rhode Island, West Virginia] NORTH-CENTRAL U.S.A.: United States [Illinois (s.), Iowa (s.e.), Kansas (e.), Missouri, Oklahoma (e.)] SOUTHEASTERN U.S.A.: United States [Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee SOUTH-CENTRAL U.S.A.: United States [Texas] NORTHERN MEXICO: Mexico [Coahuila, Nuevo Leon] SOUTHERN MEXICO: Mexico [Chiapas, Puebla, Tabasco, Veracruz, Yucatan] Southern America CARIBBEAN: Bahamas, Bermuda, Cuba, Dominican Republic, Jamaica, Puerto Rico, Trinidad and Tobago CENTRAL AMERICA: Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama WESTERN SOUTH AMERICA: Colombia Cultivated Northern America United States Naturalized Asia-Temperate CAUCASUS: Georgia, Russian Federation-Ciscaucasia [Ciscaucasia] Australasia AUSTRALIA: Australia NEW ZEALAND: New Zealand Northern America United States (w.) Pacific NORTH-CENTRAL PACIFIC: United States [Hawaii]"

Qsn #	Question	Answer
205	**Does the species have a history of repeated introductions outside its natural range?**	**y**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 7 May 2018]	"Naturalized Asia-Temperate CAUCASUS: Georgia, Russian Federation-Ciscaucasia [Ciscaucasia] Australasia AUSTRALIA: Australia NEW ZEALAND: New Zealand Northern America United States (w.) Pacific NORTH-CENTRAL PACIFIC: United States [Hawaii]"
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	Introduced into tropical Africa, Australia, Western USA, and Hawaii

301	Naturalized beyond native range	y
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 7 May 2018]	"Naturalized Asia-Temperate CAUCASUS: Georgia, Russian Federation-Ciscaucasia [Ciscaucasia] Australasia AUSTRALIA: Australia NEW ZEALAND: New Zealand Northern America United States (w.) Pacific NORTH-CENTRAL PACIFIC: United States [Hawaii]"
	Imada, C. T., Staples, G. W. & Herbst, D. R. 2000. New Hawaiian plant records for 1999. Bishop Museum Occasional Papers 63: 9-16	[Kauai] "Previously documented from Oʻahu, Molokaʻi, Länaʻi, Maui, and Hawaiʻi (Wagner et al., 1990: 1497; Hughes, 1995: 8; Herbarium Pacificum Staff, 1999: 7; Oppenheimer et al. 1999: 9), broomsedge was collected at Iliau Nature Loop on Kauaʻi in a dry shrubland of Wilkesia, Dodonaea, Styphelia, and Pteridium. Material examined: KAUAʻI: Waimea Canyon State Park, Iliau Nature Loop, ca 2980 ft, 7 Mar 1999, C. Imada, W. Char & C. Morden 99-10."

Qsn #	Question	Answer
	Hughes, G.D. 1995. New Hawaiian plant records II. Bishop Museum Occasional Papers. 42:1-10	[Molokai & East Maui] Previous knowledge: First collected in 1924 (Lee 65, BISH). Hawaiian Archipelago distribution Oahu and Hawaii. Native to eastern North America, now extending into Central America (Wagner et al. 1990: 1497). Significance: New island record for Molokai. It was collected on the Molokai Forest Rd near upper reservoir in 1991 (Hughes s.n., BISH). This invasive grass, carried long distances by the strong trade winds, quickly colonizes disturbed mesic shrubland and dominates many disturbed areas from Kalae to Kamalo, from 600–1000 m on the southern aspect of eastern Molokai. First collected on Maui in 1980 (Higashino 9360, BISH) on USFWS transect 3 at 1100 m elevation. It seems sparingly naturalized in dieback forest on windward E Maui. However, at least on W Maui in 1993, it was observed to be dominating disturbed areas of lowland mesic shrubland in Kapunakea Preserve."
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai‘i Press and Bishop Museum Press, Honolulu, HI.	[Oahu & Hawaii] "in Hawai'i common and often dominant along roadsides and in disturbed dry to mesic forest and shrubland, especially on ridges, 50-1,200 m, on O'ahu and Hawai'i. First collected on Hawai'i in 1924 (Lee 65, BISH)."
	Oppenheimer, H. L., Meidell, J. S., Bartlett, R. T. 1999. New plant records for Maui and Moloka‘i. Bishop Museum Occasional Papers. 59: 7-11	[West Maui] "Wagner et al. (1990: 1497) reported this taxon as being naturalized on O‘ahu and Hawai‘i. Hughes (in Evenhuis & Miller, 1995b: 8) later documented its occurrence on Moloka‘i, and also cited a collection from Maui (Higashino 9360, BISH), which was made on East Maui. Although Hughes reported observing A. virginicus in Kapunakea Preserve as early as 1993, the following is the first collection from West Maui. The authors have also observed this species in a wide range of habitats on West Maui, including bogs, wet and mesic forests, pastures and roadsides. Material examined. MAUI: West Maui, Lahaina District, abundant weed in a pasture W of Honolua Valley, North of Pu‘u Ka‘eo, 336 m, 23 Sep 1998, Oppenheimer H99804."

302	Garden/amenity/disturbance weed	
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai‘i Press and Bishop Museum Press, Honolulu, HI.	"Native to eastern North America, now extending into Central America and sparingly introduced elsewhere; in Hawaii common and often dominant along roadsides and in disturbed dry to mesic forest and shrubland, especially on ridges, 50-1200 m on Oahu and Hawaii." [invades disturbed areas, but only answer yes to 3.04]

303	Agricultural/forestry/horticultural weed	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"A. virginicus is a perennial member of the grass family (Poaceae). It is an abundant species within its large native range extending from most of eastern North America to northern South America (Colombia). It has expanded its range through accidental introductions to the west coast of the USA, Asia, Oceania and Europe. It is weedy within its native range and behaves similarly where introduced. It is an aggressive colonizer of disturbed, low nutrient dry soils. The species is fire tolerant, and minimizes competition via allelopathy. It is a serious weed in Hawaii where it threatens endangered and threatened plant species, and it is listed on the state's noxious weed list. It alters successional processes, changes fire regimes, causes erosion, and alters hydrology. It is also a threat to agricultural systems where it invades pastures."
	Uchytil, R. J. 1992. Andropogon virginicus. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html. [Accessed 7 May 2018]	"Broomsedge bluestem is considered a pasture weed. It frequently invades improperly managed pasture lands, and because of its low palatability, increases on deteriorating ranges. To reduce its abundance, pastures should be heavily grazed in the early spring when broomsedge bluestem is most palatable, and then deferred from grazing for 60 to 90 days [18]. In pastures heavily infested with broomsedge bluestem in Missouri, a combination of drilling with tall fescue (Festuca arundinacea), fertilization, winter mowing, and grazing eliminated broomsedge bluestem in 4 years [28]."
	Butler, T. J., Stritzke, J. F., Redmon, L. A., & Goad, C. L. (2002). Broomsedge (Andropogon virginicus) response to herbicides and burning. Weed Technology, 16(1), 18-22	"Broomsedge is a native, warm-season, short-lived perennial bunchgrass that has invaded millions of hectares of pastureland in the southeastern United States (Peters and Lowance 1974)."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Nursery Production, Pastures, Vegetables"

304	Environmental weed	y
	Source(s)	**Notes**
	Anderson, S. J., Stone, C. P., & Higashino, P. K. 1992. Distribution and spread of alien plants in Kipahulu Valley, Haleakala National Park, above 2,300 ft. elevation. Pp. 300 338.in Stone et al. (eds.). Alien Plant Invasions in Native Ecosystems of Hawaii: Management and Research, Cooperative National Park Resources Studies Unit, University of Hawaii, Honolulu, HI	"Andropogon virginicus (broomsedge), a perennial bunchgrass capable of forming a dense, monotypic ground cover excluding natives, spreads readily by wind-borne seeds. Distribution in the study area consisted of one plant in a Carex bog at 4,400 ft (1,340 m) on the Lower Plateau, several individuals at 4,100 ft (1,250 m) elevation on the transect in closed-canopy koa-`ohia forest on the Upper Plateau, and a few plants at 3,280 ft (1,000 m) on Palikea Stream and 3,500 ft (1,070 m) in Ko`uko`uai gulches and also in closed-canopy `ohi`a-koa forest. All of these plants were uprooted. Continuing work in the Valley has led to the discovery of a major population of broomsedge extending along the sheer eastern wall of the Valley from 3,600 ft (1,100 m) to east of Kaumakani Peak."

Qsn #	Question	Answer
	Loope, L.L., Nagata, R.J. & Medeiros, A.C. 1992, Alien plants in Haleakala National Park Pp. 551-576 in Stone et al (eds) Alien plant invasions in native ecosystems of Hawaii. Coop. Nat. Park Resources Studies Unit, University of Hawaii, Honolulu, HI	"Broomsedge, Andropogon virginicus Although well established in many low-elevation areas of East Maui, including wet slopes and clearings in Kipahulu Valley, broomsedge is still very rare in Kaupo Gap. Because of its well-known negative effects in Hawai`i Volcanoes National Park, linked to fire, at elevations comparable to Kaupo Gap, it warrants early control in Haleakala. Interestingly, this bunchgrass, generally associated with leeward, drier sites, has recently been recorded in the wet montane bogs of Haleakala's Northeast Rift. Opportunistic control has prevented its further spread there and should be continued."
	Smith, C.W. 1985. Impact of Alien Plants on Hawaii's Native Biota. Pp. 180-250 in Stone & Scott (eds.). Hawaii's terrestrial ecosystems: preservation & management. CPSU, Honolulu, HI	"This perennial bunchgrass sometimes forms continuous cover in boggy, open mesic and dry habitats. It releases highly persistent allelopathic substances (Rice 1972). The dead material provides an excellent fuel for fires. It is fire-stimulated; its cover increases dramatically with each fire (Smith, Parman, and Wampler 1980). In areas where it occurs, both fire intensities and acreage burnt have increased. Because it retains the phenology of its native habitat, the southeastern United States, its growth is out of synchrony with Hawai'i's climatic pattern (Sorensen 1980). It is dormant during the rainy season, which Mueller-Dombois (1973) has shown leads to increased erosion in some areas, The seeds are dispersed by wind, The potential for biological control has been discussed by Gardner and Davis (1982), but attempts to evaluate possible agents in Hawai'i probably will be resisted by the sugar industry. It is widely distributed from sea level to at least 1,600 m on all major islands. Major infestations occur on the windward plain and Pupukea areas of O'ahu, overgrazed ridges in East Moloka'i, and the Puna and Ka'u regions of Hawai'i,"
	USDA Natural Resources Conservation Service. 2018. Hawaii State-listed Noxious Weeds. http://plants.usda.gov/java/noxious?rptType=State&statefips=15. [Accessed 7 May 2018]	Hawaii State noxious weed

305	Congeneric weed	y
	Source(s)	**Notes**
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Andropogon gayanus…It is invasive because it forms dense and large tussocks, displacing native vegetation…Smaller patches can be sprayed with grass-specific herbicides. Individual tufts may be hand pulled or dug out."

Qsn #	Question	Answer
401	**Produces spines, thorns or burrs**	**n**
	Source(s)	**Notes**
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[No evidence] "A perennial bunchgrass of 50-100 cm height, with branching, light-green to reddish brown stems. Leaf-sheaths have long hairs on the margins and a tuberculate surface. Ligules are yellow to brownish and membranous. Leaf blades reach 40 cm in length and are 2-5 mm wide, rough and have spathes of 3-5 cm length. Inflorescences are racemes of 2-4 cm length containing spikelets of 3-4 mm length. Flowers are either sessile and bisexual or stalked and male. "

402	Allelopathic	y
	Source(s)	**Notes**
	Rice, E. (1972). Allelopathic Effects of Andropogon virginicus and its Persistence in Old Fields. American Journal of Botany, 59(7), 752-755	"Abstract: Aqueous extracts of fresh roots and shoots of Andropogon virginicus (broomsedge) were found to be inhibitory to the growth of seedlings of Amaranthus palmeri, Bromus japonicus, Aristida oligantha, and Andropogon scoparius. The first two species are often important in the pioneer stage of old-field succession in eastern Oklahoma, Aristida is prominent in the second stage, and Andropogon scoparius is important later in succession including the climax Quercus stellata-Quercus marilandica savanna. Sterile dilute extracts of roots and shoots of broomsedge were inhibitory to two test species of Azotobacter, a free living nitrogen fixer, and to two species of Rhizobium, a symbiotic nitrogen fixer. Small amounts of decaying shoots of broomsedge (1 g per 454 g of soil) were very inhibitory to the growth of the four test species listed above and to Amaranthus retroflexus, another species often important in the first stage of succession. Similar amounts of decaying material in soil also significantly inhibited growth and nodulation of the two most important species of legumes in old-field succession in eastern Oklahoma, Lespedeza stipulacea and Trifolium repens. Broomsedge is known to compete vigorously and grow well on soils of low fertility, so the inhibition of nodulation of legumes could help keep the nitrogen supply low and give broomsedge a selective advantage in competition over species that have higher nitrogen requirements. The combined interference of broomsedge against other species resulting from competition and allelopathy could help explain why it invades old fields in 3-5 yr after abandonment from cultivation and remains so long in almost pure stands."
	Uchytil, R. J. 1992. Andropogon virginicus. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html. [Accessed 7 May 2018]	"In infertile soils, broomsedge bluestem acts as a long-lived competitor. Nearly pure stands can persist on soils low in nitrogen or phosphorus as a result of competition and allelopathy. Decaying broomsedge bluestem inhibits the growth of carelessweed (Amaranthus palmeri), Japanese brome (Bromus japonicus), prairie threeawn (Aristida oligantha), and little bluestem (Schizachyrium scoparium) [31]."

403	Parasitic	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[No evidence. Poaceae] "A perennial bunchgrass of 50-100 cm height, with branching, light-green to reddish brown stems. Leaf-sheaths have long hairs on the margins and a tuberculate surface. Ligules are yellow to brownish and membranous. Leaf blades reach 40 cm in length and are 2-5 mm wide, rough and have spathes of 3-5 cm length. Inflorescences are racemes of 2-4 cm length containing spikelets of 3-4 mm length. Flowers are either sessile and bisexual or stalked and male. "

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**
	Peters, E. J., & Lowance, S. A. (1974). Fertility and management treatments to control broomsedge in pastures. Weed Science, 22(3), 201-205	"Broomsedge is less palatable than many forage species, especially as it matures. On ungrazed or lightly grazed areas, seed stalks of mature broomsedge may remain standing for a year or more. The light-yellow broomsedge stems are distinctive, and fields infested with broomsedge are obvious during the dormant season."
	Uchytil, R. J. 1992. Andropogon virginicus. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html. [Accessed 7 May 2018]	"Grazing considerations: The nutritional quality and digestibility of new broomsedge bluestem growth are significantly increased following fire. When burned in January or February in Georgia, protein content on March 15 was 13 percent for plants on burned sites but only 5.5 percent for plants on unburned sites. However, nutrient increases are short-lived. By June 15, protein content of burned and unburned plants was similar at 6.2 and 6.0 percent, respectively [20]. Tender and nutritious, this new growth is palatable to cattle and horses. Following a July wildfire on Cumberland Islands National Seashore, Georgia, horses heavily grazed broomsedge bluestem regrowth but avoided nearby plants that had not burned"
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"used for food by songbirds (seeds) and deer (plants) and for cover by quail, sometimes grazed, low palatability and nutritive value,"
	USDA NRCS. 2006. Andropogon virginicus. Plant Guide. Plant Guide. http://plants.usda.gov/plantguide/pdf/pg_anvi2.pdf. [Accessed 7 May 2018]	"Uses Livestock: Broomsedge bluestem is grazed readily by cattle in the spring and early summer shortly after growth starts. The nutrition value is low except in early stages of growth. It is unpalatable when mature."

Qsn #	Question	Answer
405	**Toxic to animals**	**n**
	Source(s)	**Notes**
	Peters, E. J., & Lowance, S. A. (1974). Fertility and management treatments to control broomsedge in pastures. Weed Science, 22(3), 201-205	"Broomsedge is less palatable than many forage species, especially as it matures. On ungrazed or lightly grazed areas, seed stalks of mature broomsedge may remain standing for a year or more. The light-yellow broomsedge stems are distinctive, and fields infested with broomsedge are obvious during the dormant season." [No evidence]
	USDA NRCS. 2006. Andropogon virginicus. Plant Guide. Plant Guide. http://plants.usda.gov/plantguide/pdf/pg_anvi2.pdf. [Accessed 7 May 2018]	"Uses Livestock: Broomsedge bluestem is grazed readily by cattle in the spring and early summer shortly after growth starts. The nutrition value is low except in early stages of growth. It is unpalatable when mature."
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[No evidence] "food by songbirds (seeds) and deer (plants) and for cover by quail, sometimes grazed, low palatability and nutritive value"

406	**Host for recognized pests and pathogens**	
	Source(s)	**Notes**
	Sudbrink, D. L., Mack, T. P., & Zehnder, G. W. (1998). Alternate host plants of cowpea curculio,(Coleoptera: Curculionidae) in Alabama. Florida Entomologist 81(3) 373 -383	"Cowpea curculio, Chalcodermus aeneus (Boheman), is an important pest of cowpea, Vigna unguiculata (L.) Walpers, in the southeastern United States. This insect also feeds on other fabaceous crops and a number of wild host plants. In a field survey done in Alabama during 1992 to 1994, adults of cowpea curculio were collected on 31 alternate host plant species representing 11 plant families, and eggs and larvae were collected on three fabaceous plant species of the subtribe Phaseolinae. Before the cow- pea cropping season in the spring, some of the alternate host plants of adults included narrow-leaved vetch, Vicia sativa ssp. nigra (L.) Erhardt, purple cudweed, Gnapha- lium purpureum L., heartwing sorrel, Rumex hastatulus L., cutleaf eveningprimrose, Oenothera laciniata L., and moss verbena, Verbena tenuisecta Briquet. In May and June, cowpea curculios reproduced on snapbean pods, Phaseolus vulgaris L., before cowpea plants bloomed, indicating that adults from this new generation could infest cowpeas during pod formation. Adults fed on sicklepod, Senna obtusifolia (L.) Irwin & Barneby, during the cowpea cropping season. After the end of the cowpea cropping season, cowpea curculio produced an overwintering generation on Strophostyles um- bellata (L.) Elliott and S. helvula (Muhlenburg ex Willdenow) Britton. Adults over- wintered in clumps of broomsedge, Andropogon virginicus L. Purple cudweed, heartwing sorrel, moss verbena, and sicklepod may represent new host records for cowpea curculio. Destruction of spring alternate hosts and overwintering hosts of cowpea curculio and crop rotation of cowpeas away from snapbeans may help to re- duce cowpea curculio infestation in cowpea." [apparently not only important alternate host]

Qsn #	Question	Answer
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[Impacts on other grasses unknown] "A. virginicus has been found to host several species of rust and smut fungi. These include the rusts Puccinia andropogonis, P. ellisiana, Uromyces andropogonis, Sorosporium ellisii (a head smut), S. everhartii (a seed smut), Sphacelotheca seymouriana and S. occidentalis (head or seed smuts), and Ustilago striiformis (stripe smut) (Gardner and Davis, 1982). Beckham et al. (1971) report nine species of thrips on A. virginicus in northern Georgia. Agindotan et al. (2013) report a new marfavirus, tentatively named Switchgrass mosaic virus (SwMV), on A. virginicus."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	**Notes**
	Pollen Library. 2018. Broom-Sedge (Andropogon virginicus). http://www.pollenlibrary.com/Specie/Andropogon%20virginicus/. [Accessed 7 May 2018]	"Allergenicity: Broom-Sedge (Andropogon Virginicus) is a moderate allergen." [allergenic to susceptible individuals, but not inherently allergenic]
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Astringent, a tea made from the leaves used in the treatment of diarrhea, boil plant with sugar for a tea for fever." [No evidence]
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	No evidence of toxicity

408	Creates a fire hazard in natural ecosystems	y
	Source(s)	**Notes**
	Smith, C.W. 1985. Impact of Alien Plants on Hawaii's Native Biota. Pp. 180-250 in Stone & Scott (eds.). Hawaii's terrestrial ecosystems: preservation & management. CPSU, Honolulu, HI	"The dead material provides an excellent fuel for fires. It is fire-stimulated; its cover increases dramatically with each fire (Smith, Parman, and Wampler 1980). In areas where it occurs, both fire intensities and acreage burnt have increased."
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"The species is highly flammable due to accumulation of dead plant material and thus affects fire regimes by increasing fire intensity as well as the acreage burnt. The species is fire-stimulated, and its cover increases with each fire."

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	**Notes**
	Uchytil, R. J. 1992. Andropogon virginicus. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html. [Accessed 7 May 2018]	"Broomsedge bluestem is a shade-intolerant, seral species. It invades abandoned cropland, roadsides, overgrazed range, and logged-over pinelands."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y

Qsn #	Question	Answer
	Source(s)	**Notes**
	USDA NRCS. 2006. Andropogon virginicus. Plant Guide. Plant Guide. http://plants.usda.gov/plantguide/pdf/pg_anvi2.pdf. [Accessed 7 May 2018]	"It grows on a wide variety of soils, especially in old fields and other disturbed sites."
	Uchytil, R. J. 1992. Andropogon virginicus. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html. [Accessed 7 May 2018]	"It is most common on sandy soils but also grows on a variety of other soil textures [11,18]. It grows well on low-fertility soils, especially those on eroded, "worn-out" fields [18]."

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Cespitose perennials growing in dense tufts, yellowish at base; culms erect, 50-100 cm tall, branching freely from the middle and upper nodes, internodes compressed, up to 4 mm in diameter, hollow but partially pithy, glabrous."

412	Forms dense thickets	y
	Source(s)	**Notes**
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"On Hawaii, it forms dense stands in bogs, open mesic and dry habitats."
	Uchytil, R. J. 1992. Andropogon virginicus. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html. [Accessed 7 May 2018]	"On infertile soils, broomsedge bluestem acts as a long-lived competitor. Nearly pure stands can persist on soils low in nitrogen or phosphorus as a result of competition and allelopathy. Decaying broomsedge bluestem inhibits the growth of carelessweed (Amaranthus palmeri), Japanese brome (Bromus japonicus), prairie threeawn (Aristida oligantha), and little bluestem (Schizachyrium scoparium)"

501	Aquatic	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Terrestrial] "in Hawai'i common and often dominant along roadsides and in disturbed dry to mesic forest and shrubland, especially on ridges, 50-1,200 m"

502	Grass	y
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 7 May 2018]	Family: Poaceae (alt.Gramineae) Subfamily: Panicoideae Tribe: Andropogoneae Subtribe: Andropogoninae

503	Nitrogen fixing woody plant	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 7 May 2018]	Family: Poaceae (alt.Gramineae) Subfamily: Panicoideae Tribe: Andropogoneae Subtribe: Andropogoninae

504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**n**
	Source(s)	**Notes**
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"A perennial bunchgrass of 50-100 cm height, with branching, light-green to reddish brown stems. Leaf-sheaths have long hairs on the margins and a tuberculate surface. Ligules are yellow to brownish and membranous. Leaf blades reach 40 cm in length and are 2-5 mm wide, rough and have spathes of 3-5 cm length. Inflorescences are racems of 2-4 cm length containing spikelets of 3-4 mm length. Flowers are either sessile and bisexual or stalked and male."

601	**Evidence of substantial reproductive failure in native habitat**	**n**
	Source(s)	**Notes**
	Uchytil, R. J. 1992. Andropogon virginicus. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html. [Accessed 7 May 2018]	[No evidence] "Broomsedge bluestem grows throughout the Southeast from the 25-inch mean annual precipitation belt (southeastern Nebraska south through eastern Texas) eastward. It is found as far north as Iowa, Ohio, and New York. Outlying introduced populations occur in southern California and Hawaii [18,33]."

602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	USDA NRCS. 2006. Andropogon virginicus. Plant Guide. Plant Guide. http://plants.usda.gov/plantguide/pdf/pg_anvi2.pdf. [Accessed 7 May 2018]	"Broomsedge bluestem is propagated from seeds or by plant division. However, of the two propagation methods, it is best to plant broomsedge bluestem by seeds. The seeds are produced 6 to 8 weeks from when the culms were produced."
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Seeds are dispersed by wind."

Qsn #	Question	Answer
603	**Hybridizes naturally**	
	Source(s)	**Notes**
	Campbell, C. S. (1982). Hybridization between Andropogon glomeratus var. pumilus and A. longiberbis (Gramineae) in Central Florida. Brittonia, 34(2), 146-150	"Abstract In a mixed population of Andropogon glomeratus var. pumilus and A. longiberbis in Lake County, Florida, there were six individuals morphologically intermediate between and less fertile than these two taxa. In a discriminant analysis using two characters, spikelet length and raceme sheath width, the putative hybrid plants are significantly different from both parents (P<0.01). Reproductive isolation of these taxa in other mixed populations comes, at least in part, from a combination of nonsynchronous flowering and cleistogamy." [unknown for A. virginicus]

604	**Self-compatible or apomictic**	**y**
	Source(s)	**Notes**
	Campbell, C. (1982). Cleistogamy in Andropogon L. (Gramineae). American Journal of Botany, 69(10), 1625-1635	"Most of the species of the large, cosmopolitan genus Andropogon (sensu Stapf, 1919) bear flowers which have three stamens and are chasmogamous. Flowers of 11 species, however, have only one functional stamen. Chasmogamy occurs in all 11 species, but cleistogamy, resulting in the production of viable fruits, also takes place in all but one of these species. All 11 species grow in North or Central America or in both. Nine of the species comprise the Andropogon virginicus complex, a group of diploid, cespitose perennials with a center of distribution in the southeastern United States (Campbell, in press)...It is not known whether or not increases in homozygosity have accompanied increases in cleistogamy in the virginicus complex. Second, self-compatibility facilitates establishment of new populations following long distance dispersal. The dispersal units of the virginicus complex are adapted for wind dispersal, and colonizing by seed dispersal (rather than by seed persisting in the soil from previous colonizations) appears to be important for andropogon weeds (Campbell, 1980). Moreover, because all the taxa but one (Andropogon arctatus) are known to be self- compatible, they all potentially benefit from Baker's rule (Jain, 1976)."

605	**Requires specialist pollinators**	**n**
	Source(s)	**Notes**
	Zomlefer, W.B. 1994. Guide to Flowering Plant Families. The University of North Carolina Press, Chapel Hill & London	"The reduced flowers are anemophilous" [Poaceae]

Qsn #	Question	Answer
606	**Reproduction by vegetative fragmentation**	**n**
	Source(s)	**Notes**
	Uchytil, R. J. 1992. Andropogon virginicus. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html. [Accessed]	"REGENERATION PROCESSES : Broomsedge bluestem's primary mode of reproduction is sexual. It is a prolific producer of small seeds that are dispersed by wind and readily establish on exposed soil." [No evidence]

607	**Minimum generative time (years)**	**2**
	Source(s)	**Notes**
	Uchytil, R. J. 1992. Andropogon virginicus. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html. [Accessed]	"Flowering begins when plants are 2 or 3 years old, and continues thereafter [8,16]."

701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y**
	Source(s)	**Notes**
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	"The seed is well adapted to catch in wool and fur as well as in clothing. May also be spread on mud on machinery."

702	**Propagules dispersed intentionally by people**	**n**
	Source(s)	**Notes**
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	"The seed is well adapted to catch in wool and fur as well as in clothing. May also be spread on mud on machinery." [Plant may have been intentionally spread in past, but now considered a weed]

703	**Propagules likely to disperse as a produce contaminant**	**y**
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Contaminant, Herbal, Ornamental"
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	"The seed is well adapted to catch in wool and fur as well as in clothing. May also be spread on mud on machinery."

704	**Propagules adapted to wind dispersal**	**y**
	Source(s)	**Notes**
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Seeds are dispersed by wind."

705	**Propagules water dispersed**	**y**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"It reproduces mainly via its seeds, which are dispersed by wind and water, and by adhering to animals, clothing or vehicles."

706	Propagules bird dispersed	n
	Source(s)	**Notes**
	Davison, V., & Van Dersal, W. (1941). Broomsedge as a Food for Wildlife. The Journal of Wildlife Management, 5 (2), 180-181	"Wherever clumps of broomsedge were to be found near the road, groups of as many as 10 or 15 birds were busily engaged in stripping the stalks of their seeds. They would fly into the air, perch on or near the tip of the grass culm, bend it to the snow surface by their weight, then extract the seeds and eat them." [Birds act as seed predators, not dispersers]
	USDA NRCS. 2006. Andropogon virginicus. Plant Guide. Plant Guide. http://plants.usda.gov/plantguide/pdf/pg_anvi2.pdf. [Accessed 7 May 2018]	"Wildlife: Broomsedge bluestem benefits wildlife. Several species of birds and mammals eat the seeds in the winter when the seeds of other plants are not available. Several animals use the plants for cover and nesting sites (especially quail)." [Birds are seed predators]

707	Propagules dispersed by other animals (externally)	y
	Source(s)	**Notes**
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	"The seed is well adapted to catch in wool and fur as well as in clothing. May also be spread on mud on machinery"

708	Propagules survive passage through the gut	
	Source(s)	**Notes**
	USDA NRCS. 2006. Andropogon virginicus. Plant Guide. Plant Guide. http://plants.usda.gov/plantguide/pdf/pg_anvi2.pdf. [Accessed 7 May 2018]	"Uses Livestock: Broomsedge bluestem is grazed readily by cattle in the spring and early summer shortly after growth starts. The nutrition value is low except in early stages of growth. It is unpalatable when mature." [Unknown, but unpalatable when mature, so probability of seeds being consumed incidentally by grazers is low]

801	Prolific seed production (>1000/m2)	n
	Source(s)	**Notes**
	Kirkman, L., & Sharitz, R. (1994). Vegetation Disturbance and Maintenance of Diversity in Intermittently Flooded Carolina Bays in South Carolina. Ecological Applications, 4 (1), 177-188	"Andropogon virginicus is an early old-field successional species and was not abundant in the seed bank, even within the A. virginicus-dominated vegetation. Because A. virginicus is a common upland wind-dispersed species, invasion of Carolina bay wetlands is probably by dispersal into them during dry periods, rather than recruitment from a persistent seed bank. "

802	Evidence that a persistent propagule bank is formed (>1 yr)	

Qsn #	Question	Answer
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"Seeds of A. virginicus have been found to form persistent seed banks (Baskin and Baskin, 1998)."
	"Leck, M., & Leck, C. (1998). A Ten-Year Seed Bank Study of Old Field Succession in Central New Jersey. The Journal of the Torrey Botanical Society, 125(1), 11-32"	"The seed bank patterns and reproductive/life history strategies also are not necessarily related. Agrostis hyemalis and Andropogon virginicus, both perennial grasses, rely to different degrees on a persistent seed bank; the latter has none." [Contradicts other references reporting a persistent seed bank]

803	**Well controlled by herbicides**	**y**
	Source(s)	**Notes**
	Butler, T. J., Stritzke, J. F., Redmon, L. A., & Goad, C. L. (2002). Broomsedge (Andropogon virginicus) response to herbicides and burning. Weed Technology, 16(1), 18-22	"Abstract: Broomsedge control studies were conducted on six broomsedge-infested pastures in south- eastern Oklahoma from 1995 to 1997. Glyphosate applied in spring at 2.24 kg ai/ha decreased broomsedge plant density by 58% 3 mo after treatment (MAT), on areas where the previous year's forage was grazed, and by 95% 3 MAT, where spring fire had removed the old top-growth before glyphosate application. Broomsedge plant density was not affected where glyphosate was applied in spring to sites with old-standing top-growth. Paraquat applied in spring at 0.56 kg ai/ha and spring burning without a herbicide treatment had no effect on broomsedge plant density. Glyphosate at 0.56 and 1.12 kg ai/ha applied in late summer reduced the number of broomsedge stems 1 yr after treatment (YAT) by an average of 65 and 80%, respectively. Paraquat at 0.56 kg/ha applied in late summer of 1995, followed by burning 1 wk after treatment (WAT), decreased broomsedge stem density by more than 60% 1 YAT at four of six locations when compared with mowing in late summer. Burning in November after an October frost decreased broomsedge stem density by more than 47% 1 YAT at four locations. Two consecutive years of burning after frost and paraquat applied in late summer followed by burning 1 WAT reduced broomsedge dry matter production by 68 and 96%, respectively, when compared with mowing in late summer. These data suggest that good to excellent control of established broomsedge is possible with herbicides alone, with a combination of herbicides and late-summer burning, and with fall burning after an early frost in a dry fall. However, broomsedge control was short-lived with all the treatments because of the establishment of new broomsedge seedlings. Thus, it will be important to integrate the destruction of broomsedge plants with proper fertility and grazing management in order to provide satisfactory broomsedge control."
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Chemical control methods include spraying bromacil, hexazinone, tebuthiuron, or a mixture of bromacil and diuron. Individual plants can be hand pulled or dug out."
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching,L. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Glyphosate is effective for controlling broomsedge but thorough application to live foliage is critical. HAVO staff controlled broomsedge with foliar applications of glyphosate at 1% in water (Chris Zimmer, HAVO)."

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**y**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Uchytil, R. J. 1992. Andropogon virginicus. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/graminoid/andvir/all.html. [Accessed 7 May 2018]	"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]."
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"The species is highly flammable due to accumulation of dead plant material and thus affects fire regimes by increasing fire intensity as well as the acreage burnt. The species is fire-stimulated, and its cover increases with each fire."

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	**n**
	Source(s)	**Notes**
	Smith, C.W. 1985. Impact of Alien Plants on Hawaii's Native Biota. Pp. 180-250 in Stone & Scott (eds.). Hawaii's terrestrial ecosystems: preservation & management. CPSU, Honolulu, HI	"The potential for biological control has been discussed by Gardner and Davis (1982), but attempts to evaluate possible agents in Hawai'i probably will be resisted by the sugar industry."
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. 2018. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/. [Accessed 7 May 2018]	[No evidence. Widely naturalized] "Andropogon virginicus L. Status: Naturalized Distribution: K (Iliau Nature Loop)/ O/ Mo (Kala`e to kamalo)/ L (Munro Tr)/ M/ H"
	Anderson, S. J., Stone, C. P., & Higashino, P. K. 1992. Distribution and spread of alien plants in Kipahulu Valley, Haleakala National Park, above 2,300 ft. elevation. Pp. 300 338.in Stone et al. (eds.). Alien Plant Invasions in Native Ecosystems of Hawaii: Management and Research, Cooperative National Park Resources Studies Unit, University of Hawaii, Honolulu, HI	[No evidence] "Andropogon virginicus (broomsedge), a perennial bunchgrass capable of forming a dense, monotypic ground cover excluding natives, spreads readily by wind-borne seeds. Distribution in the study area consisted of one plant in a Carex bog at 4,400 ft (1,340 m) on the Lower Plateau, several individuals at 4,100 ft (1,250 m) elevation on the transect in closed-canopy koa-`ohia forest on the Upper Plateau, and a few plants at 3,280 ft (1,000 m) on Palikea Stream and 3,500 ft (1,070 m) in Ko`uko`uai gulches and also in closed-canopy `ohi`a-koa forest. All of these plants were uprooted. Continuing work in the Valley has led to the discovery of a major population of broomsedge extending along the sheer eastern wall of the Valley from 3,600 ft (1,100 m) to east of Kaumakani Peak. "
	Loope, L.L., Nagata, R.J. & Medeiros, A.C. 1992, Alien plants in Haleakala National Park Pp. 551-576 in Stone et al (eds) Alien plant invasions in native ecosystems of Hawaii. Coop. Nat. Park Resources Studies Unit, University of Hawaii, Honolulu, HI	[No evidence] "Broomsedge, Andropogon virginicus Although well established in many low-elevation areas of East Maui, including wet slopes and clearings in Kipahulu Valley, broomsedge is still very rare in Kaupo Gap. Because of its well-known negative effects in Hawai`i Volcanoes National Park, linked to fire, at elevations comparable to Kaupo Gap, it warrants early control in Haleakala. Interestingly, this bunchgrass, generally associated with leeward, drier sites, has recently been recorded in the wet montane bogs of Haleakala's Northeast Rift. Opportunistic control has prevented its further spread there and should be continued."

Summary of Risk Traits:

High Risk / Undesirable Traits
• Elevation range exceeds 1000 m, demonstrating environmental versatility
• Thrives in tropical climates
• Naturalized on Kauai, Oahu, Molokai, Lanai, Maui & Hawaii (Hawaiian Islands), & elsewhere
• A pasture & environmental weed
• Other Andropogon species are invasive
• Allelopathic
• Creates a fire hazard
• Tolerates many soil types
• Forms dense stands
• Reproduces by seeds
• Self-compatible
• Reaches maturity in 2-3 years
• Seeds dispersed by wind, water, externally in wool & fur as well as in clothing. May also be spread on mud on machinery
• Able to resprout after fire

Low Risk Traits
• Unarmed (no spines, thorns, or burrs)
• Palatable to grazing animals at early stages of growth (less palatable when mature)
• Shade-intolerant
• Not reported to spread vegetatively
• Herbicides may provide effective control