

Identification and References

Images: <http://www.hear.org>

It is important to sample all parts of a grass for identification, including roots and stems. The reproductive structures of grasses are contained in spikelets, like a leafy flowering branch but smaller. Specialization in grasses occurs mainly in the spikelets, so they are used to characterize species.

Clark and Pohl. 1996 4th Edition Agnes Chase First Book of Grasses, Smithsonian.
Rotar, Peter. 1968. Grasses of Hawaii (Univ of Hawaii Press, 355 pages.
<http://www.botany.hawaii.edu/faculty/carr/po.htm>

Grasses are either annual or perennial species. Annual grasses complete their life cycle in a single year, and occur for at least part of the time only as seeds.

Impacts and control strategies differ for these two broad types.

Annual grasses are usually inconspicuous for many decades after their arrival in an ecosystem as they adapt to the local environment and then increase exponentially in distribution and abundance.

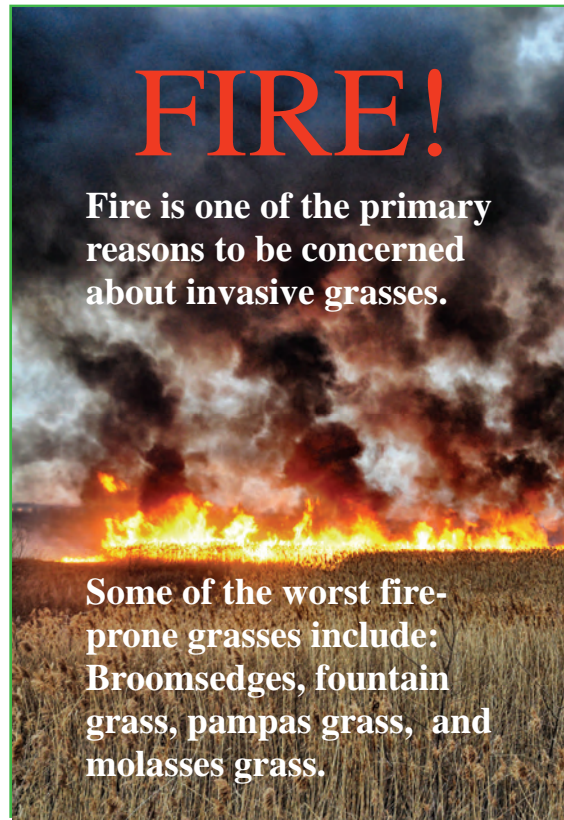
The wind-dispersed alien invasive perennial grasses are unpalatable and flammable in the dry season because of a build-up of fibrous, unpalatable leaves and stems.

African grasses are successful invaders in ecosystems that are naturally poor in large herbivores, but where domestic livestock have been introduced. African grasses are pre-adapted to survive in this situation because they are generally herbivore exploiters (being palatable to herbivores, recovering well after grazing, and having seeds adapted for dispersal in or on herbivores). Grasses tend to displace each other. Grass height, root and stem density help determine impacts.

“Civilization was based on grass, everywhere in the world”

Agnes Chase, agroagrostologist and womans rights supporter, 1922

Grasses are members of the taxonomic Family Poaceae (Gramineae), one of the largest families of flowering plants with 500 genera, 8000 species. The stems are round, often hollow, and leaves alternate. **Grasses are the most important plant family to man, for food and as forage for grazing animals that provide meat and milk. Grass holds the earth together and prevents erosion. Vegetative reproduction allows grasses to dominate new habitats, coexist with grazing animals and survive fire.**



FIRE!
Fire is one of the primary reasons to be concerned about invasive grasses.

Some of the worst fire-prone grasses include: Broomsedges, fountain grass, pampas grass, and molasses grass.



BIISC

BIG ISLAND INVASIVE SPECIES COMMITTEE



**GRASSES
IN
HAWAII**

How is our landscape changing and what are the impacts?

There are 47 native species of grasses in Hawaii, and over 100 alien grasses. The statewide Gap Analysis (2006, landsat) reported that the most common landcover class is Alien Grass (12% of state area).

Big Island Invasive Species Committee
23 E. Kāwili St. Hilo HI 96720
808/933-3345 Fax: 808/933-3326
pageelse@hawaii.edu
www.bigislandisc.org

Hotline: (808) 961-3299

BIISC is a public/private partnership whose mission includes: education, early detection, rapid response, control and eradication of invasive pests

Important Grass Species in Hawaii

Broomsedge, (*Andropogon virginicus*), tall grass to 6", grows in dense clumps, produces large, broom-like tufted seed heads. Thick growth displaces native plants. Dry growth promotes fire, quickly regrows. Drought tolerant but can flourish in wetter areas. Produces millions of seeds. It is common in Kahuku unit, HI Volcanoes Ntl Park



Pampas grass (*Cortaderia spp.*) ornamental bunchgrass, white-pink flower plumes, large tussocks. Has been sighted in Waimea, Volcano. Narrow, sharp, saw-toothed leaves. Plant can reach 15', creating access issues. Fire prone, drought tolerant, can flourish in wet areas. It produces millions of wind-dispersed seeds.

Bush Beardgrass or Broomsedge (*Schizachyrium condensatum* or *Andropogon condensatus*) The broomsedge species moved into dry mesic areas of HI Volcanoes Ntl Park in the 1960's, and carried fire. This species has been taxonomically difficult.



Fountain grass (*Pennisetum setaceum*), shiny, delicate looking grass, gossamer, celery green stems and silky seeded tops, highly flammable, has overtaken the dry tropical ecosystems of West Hawaii and caused numerous fires. It blocks out native plants and promotes invasives.

Molasses grass (*Melinis minutiflora*) spreading, perennial mat grass smothers everything, forms monotypic stands from rooted runners. fire adapted sea level to 1,500 m in dry and mesic environments. Good forage.



Three giant grasses (Elephant grass, *Penisetum purpureum*, Guinea Grass, *Panicum maximum*, and Silky Kangaroo grass, *Themeda villosa*) are all expanding in distribution since the end of sugar cane plantations. These grasses grow so tall they shade out native plants.

Buffalo or California grass (*Urochloa {Brachiaria} mutica*). Sprawling grass with rooting runners to 18' long, reaches up to 5' tall. Hairy. Good forage in high-rainfall and marshy lands. Extends into open water.



Hairgrass (*Deschampsia nubigena*) native bunchgrass. Occurs from mesic to wet forest, bogs, subalpine, cinder and alpine areas. Replaced by invasive grass (*Anthoxanthum odoratum*), alien velvet grass (*Holcus lanatus*) in some sites. Subalpine grasslands historically hairgrass.

Kikuyu (*Pennisetum clandestinum*), Serious pest in forests, shades out shrubs and herbs and prevents reproduction of tree by releasing allelopathic substances. Transported by seeds, birds and livestock droppings. Federal Noxious Weed. Coarse textured, light green color. One of most important pasture grasses in Hawaii.



Pili Grass (tanglehead, *Heteropogon contortus*) Native grass. Dry land grass on cliffs and ledges to 700 m elevation. Leaves bluish green to greenish brown in color. Flowers on narrow spikes. Tipped with twisted reedish brown bristle about 10 cm long. Grows in bunches. Being replaced at many sites by invasives, losing biodiversity.