

Cenchrus ciliaris [简体中文](#) [正體中文](#)

System: Terrestrial

| Kingdom | Phylum | Class | Order | Family |
|---------|---------------|------------|-----------|---------|
| Plantae | Magnoliophyta | Liliopsida | Cyperales | Poaceae |

Common name African foxtail grass (English), zacate buffel (Spanish), buffelgrass (English), pasto buffel (Spanish), B♠ffelgras (German), cenchrus cili♠ (French), dhaman (Hindi)

Synonym *Cenchrus ciliaris*, L.
Cenchrus glaucus, C. R. Mudaliar & Sundararaj
Pennisetum cenchroides, Rich.
Pennisetum incomptum, Nees ex Steud.

Similar species

Summary *Cenchrus ciliaris* (*Pennisetum ciliare*), commonly known as buffel grass, is a perennial bunchgrass that forms thick mats. It is also known by its basionym *Cenchrus ciliaris*. Buffel grass has been widely introduced in the dry tropics and subtropics as a pasture grass, for erosion control and revegetation of arid areas. The characteristics of buffel grass which make it suitable for erosion control are rapid germination, high propagation and establishment rates on poor and infertile soils. Buffel grass's dominance and resistance to fire, drought and heavy grazing on arid soils make it a suitable arid zone pasture grass. In Australia, the south-western United States and Mexico (where it has been introduced as a pasture grass and for erosion control) Buffel grass often forms extensive dense monocultures excluding native species and promoting intense and frequent fires. It is widely distributed and is resilient to a number of harsh environmental conditions. It changes plant communities by encouraging and carrying wildfires through communities that are not adapted to fire. It burns readily and recovers quickly after fire. Buffel grass has a robust root system; its swollen stem base accumulates carbohydrate reserves, so the loss of leaf surface area after a fire or drought is not fatal to the plant and allows regrowth in favourable conditions.



[view this species on IUCN Red List](#)

Species Description

Buffel grass is a perennial bunchgrass with erect culms 10-150cm tall. It can form thick mats or tussocks with dense, usually stoloniferous root systems. The leaf blades are bluish-green in colour, 3-30cm long, with soft hairs on the upper surface. The inflorescence is generally cylindrical in outline, 2-14cm long, and can be purple, gray or yellowish. The spikelets are solitary or clustered, and are surrounded by numerous bristles (Martin, 2002).

Notes

Cenchrus ciliaris is also referred to as *Pennisetum ciliare*.

Uses

Buffel grass has been widely introduced and subsequently established in hot, semiarid regions of the world for forage and fodder (Van Devender *et al.* 1997).

Habitat Description

Buffel grass favours alkaline soils and within arid areas establishes best in pockets of high nutrients and moisture. Hacker and Ratcliff (1989) state that buffel grass does not spread rapidly in higher rainfall areas in Queensland, Australia, but is more invasive in the arid zones of central and western Australia where its resistance to fire drought and grazing makes it very persistent and dominate over native species by forming dense monocultures and displacing native species.

Reproduction

Tu (2002) states that, "*P. ciliare* (*Cenchrus ciliaris*) is bisexual (having both male and female flowers), with bisexual spikelets and hermaphrodite florets. *C. ciliaris* can produce seed either sexually or by apomixis (asexual reproduction without fertilization or meiosis) (Van Devender *et al.* 1997 in Tu, 2002). It can also reproduce vegetatively, *via* rhizome or stolon sprouts." Ocumpaugh and Rodriguez (UNDATED) elaborate on the apomixis method of reproduction stating that, "All *P. ciliare* (*Cenchrus ciliaris*) varieties reproduce by apomixis, where the embryo of the seed develops from an unreduced vegetative (somatic) cell in the ovule of the female and receives no genetic material from the male (Bashaw and Hanna 1990), resulting in plants that are identical to their maternal origin, or in other words, varietal clones. The apomixis trait is both an asset and a liability. It is an asset in that once we find a plant with good agronomic characteristics we can save the seed from it and it always breeds true, producing a very uniform variety. The liability is that the crossing of plants with good traits is not a one-step process since the use of the sexual clone is indispensable."

General Impacts

Buffel grass alters fire regimes. Buffel grass changes plant communities by encouraging and carrying wildfires through communities that are not adapted to fire. It burns readily (even when green) and recovers quickly after fire. Recurrent fires maintain *C. ciliaris* populations, and the ecological result is a conversion of native desert scrub communities to an African-type savannah with reduced native biological diversity (McCormick *et al.* 1999). Brooks *et al.* (2004) identify methods by which new plant forms introduced to an existing vegetation stand through invasion can alter the extrinsic fuel properties of the stand. The authors observe that buffel grass in Australia alters the fire regime by increasing horizontal fuel continuity and thus increase in frequency and extent of the fire.

Martin (2002) states that, "*P. ciliare* (*Cenchrus ciliaris*), in Hawaii, was planted for erosion control but is now replacing the native pili grass (*Heteropogon contortus*). The species biodiversity in alien-dominated communities is lower than the biodiversity in native pili grass communities (Daehler and Carino, 1998). *C. ciliaris* was also noted as one of the threats for the federally endangered species South Texas ambrosia (see [Ambrosia cheiranthifolia in Endangered Species found in Texas](#)) and Zapata bladderpod (see [Lesquerella thamnophila in Federal Register Environmental Documents](#)).

In upland arid regions, *C. ciliaris* can transform native desert shrub and thornscrub into grasslands. In lowland riparian areas, *C. ciliaris* can replace native riparian vegetation along riverbanks. By dominating these riparian areas and their moist refuges within arid regions, *C. ciliaris* threatens keystone habitats that are vital to the survival of many plant and animal species (McCormick *et al.* 1999).

Grice (2004) states that, "*P. ciliare* (*Cenchrus ciliaris*) is structurally and functionally similar to the native, perennial, tussock grasses of central Australia, but it might be less useful to native granivores than the native grasses because of the characteristics of its seeds. Invasion by *C. ciliaris* could therefore lead to a decline in the diversity of granivores."



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Cenchrus ciliaris*

Management Info

A [Risk assessment of *Cenchrus ciliaris* \(*Pennisetum ciliare*\)](#) for Australia was prepared by Pacific Island Ecosystems at Risk (PIER) using the Australian risk assessment system (Pheloung, 1995). The result is a score of 7 and a recommendation of: reject the plant for import (Australia) or species likely to be a pest (Pacific). For details on cultural, biological, chemical and physical control of this species please read our pdf file on [management information](#).

Pathway

Buffel grass has been widely introduced in the dry tropics and subtropics as a pasture grass, for erosion control and revegetation of arid areas.

Principal source: Van Devender, T. R; Felger, R. S and Burquez, A. M., 1997. Exotic plants in the Sonoran desert Region, Arizona and Sonora. California Exotic Pest Plants Council 1997 Symposium Proceedings.

[Martin, T. 2002.](#) *Cenchrus ciliaris* L. The Nature Conservancy: Wildland Invasive Species Team.

[Tu, 2002](#) Element Stewardship Abstract for *Cenchrus ciliaris* L.

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Expert review underway

Publication date: 2006-03-23

ALIEN RANGE

[6] AUSTRALIA

[1] PUERTO RICO

[1] VIRGIN ISLANDS, U.S.

[3] MEXICO

[10] UNITED STATES

Red List assessed species 3: CR = 1; EN = 1; VU = 1;

[Amytornis dorotheae](#) **VU**

[Lasiorhinus krefftii](#) **CR**

[Chamaesyce kuwaleana](#) **EN**

BIBLIOGRAPHY

25 references found for *Cenchrus ciliaris*

Management information

Butler, D. W., and R. J. Fairfax. 2003. Buffel Grass and fire in a Gidgee and Brigalow woodland: A case study from central Queensland. *Ecological Management & Restoration* 4(2): pg 120.

Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.

Daehler, Curtis C. and Erin M. Goergen., 2005. Experimental Restoration of an Indigenous Hawaiian Grassland after Invasion by Buffel Grass (*Cenchrus ciliaris*). Society for Ecological Restoration International

Department of Conservation and Land Management (CALM), 2004. Cape Range National Park Management Plan- Issues Paper March 2004

[Dixon, I. R; K. W. Dixon, and M. Barrett., 2002. Eradication of buffel grass \(*Cenchrus ciliaris* on Airlie Island, Pilbara Coast, Western Australia. In *Turning the tide: the eradication of invasive species: 374-380. Veitch, C.R. and Clout, M.N.\(eds\). IUCN SSC Invasive Species Specialist Group. IUCN. Gland. Switzerland and Cambridge. UK.*](#)

Summary: Eradication case study in Turning the tide: the eradication of invasive species.

Fairfax, R. J., and R. J. Fensham. 1999. The effect of exotic pasture development on floristic diversity in central Queensland, Australia. *Biological Conservation* 94: 11-21.

Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.

Grice, A. C. 2004. Weeds and the monitoring of biodiversity in Australian rangelands. *Austral Ecology* 29: 51-58.

Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.

Griffin, G.F., 1993. The spread of buffel grass in inland Australia: land use conflicts. In Proceedings of the 10th Australian Weeds Conference and 14th Asian Pacific Weed Science Society Conference . Brisbane, Queensland. 6 - 10 September 1993. Brisbane, QLD., The Weed Society of Queensland. pp.501-504.

Global Invasive Species Database (GISD) 2024. Species profile *Cenchrus ciliaris*. Available from:

<https://iucngisd.org/gisd/species.php?sc=846> [Accessed 29 November 2024]

Humphries, Stella E., 1996. Australian National Weeds Strategy: What Are the Lessons? California Exotic Pest Plant Council 1996 Symposium Proceedings

Latz, P.K., 1991. Buffel and couch grass in Central Australian creeks and rivers. Newsletter of the Central Australian Conservation Council, Inc: 5.

[Martin, T. 2002. *Cenchrus ciliaris* L. The Nature Conservancy: Wildland Invasive Species Team.](#)

Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.

Available from: <http://tncweeds.ucdavis.edu/alert/alrtcenc.html> [Accessed 08 November 2003]

[McIvor, J. G., 2003. Competition affects survival and growth of buffel grass seedlings- is buffel grass a coloniser or an invader? Tropical Grasslands Volume 37. 176-181.](#)

Summary: Available from:

http://www.tropicalgrasslands.asn.au/Tropical%20Grasslands%20Journal%20archive/Abstracts/Vol_37_2003/Abs_03_03_pp176_181.html [Accessed 10 June 2005]

[Ocumpaugh, W. R., and O. Rodriguez. UNDATED. Pasture forage production: Integration of improved pasture species into south Texas livestock production systems. Texas A&M Univ. Agric. Res. Sta., Beeville, TX and G. E. Pogue Seed Co. Inc., Kenedy, TX.](#)

Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.

Available from: <http://cnrit.tamu.edu/cgrm/whatshot/laredo/ocumpaugh.html> [Accessed 03 August 2004]

[Ramirez, R. G., J. B. Quintanilla, and J. Aranda. 1997. White-tailed deer food habits in northeastern Mexico. Small Ruminant Research 25: 141-146.](#)

Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.

[Tu, M. 2002. Element Stewardship Abstract for *Cenchrus ciliaris* L. The Nature Conservancy's Wildland Invasive Species Team, Dept. of Vegetable Crops & Weed Sciences, University of California, Davis, CA.](#)

Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.

Available from: <http://tncweeds.ucdavis.edu/esadocs/documnts/cenccil.html> [Accessed 08 November 2003]

General information

[Brooks, M. L; D Antonio, C. M; Richardson, D. M; Grace, J.B; Keely, J. E; DiTomaso, J. M; Hobbs, R. J; Pellant, M and Pyke, D., 2004. Effects of Invasive Alien plants on Fire Regimes. BioScience July 2004 / Vol. 54 No. 7. 677](#)

[Borquez, A., y M. A. Quintana. 1994. Islands of diversity: Ironwood ecology and the richness of perennials in a Sonoran Desert biological reserve. Pages 9-28 in G.P. Nabhan y J.L. Carr \(editors\), Ironwood: An Ecological and Cultural Keystone of the Sonoran Desert. Occasional Papers in Conservation Biology No. 1. Washington, D.C. USA: Conservation International.](#)

[CONABIO. 2008. Sistema de información sobre especies invasoras en México. Especies invasoras - Plantas. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. Fecha de acceso.](#)

Summary: English:

The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (<http://www.conabio.gob.mx/invasoras/index.php/Portada>), under the section Novedades for information on updates.

Invasive species - Plants is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Plantas [Accessed 30 July 2008]

Spanish:

La lista de especies del Sistema de información sobre especies invasoras de México cuenta actualmente con información acerca de nombre científico, familia, grupo y nombre común, así como de hábitat, estado de la invasión en México, rutas de introducción y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la página de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualización, por favor consulte la portada (<http://www.conabio.gob.mx/invasoras/index.php/Portada>), en la sección novedades, para conocer los cambios.

Especies invasoras - Plantas is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Plantas [Accessed 30 July 2008]

[Hacker, J. B. and Ratcliff, D. 1989. Seed dormancy and factors controlling dormancy breakdown in buffel grass accessions from contrasting provinces. Journal of Applied Ecology, 26: 201-212.](#)

[ITIS \(Integrated Taxonomic Information System\). 2002. Online Database *Pennisetum ciliare*.](#)

Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.

Available from: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=504198 [Accessed 08 November 2003]

[McCormick, L., Bourke, C. and B. McGufficke. 1999. Buffel grass. NSW Agriculture, Agnote DPI/289, November.](#)

Summary: Available from: <http://www.agric.nsw.gov.au/reader/1541> [Accessed 10 June 2005]

[Smith, Clifford W., Undated. Impact of Alien Plants on Hawai'i's Native Biota.](#)

Summary: This report emphasizes 86 of the more than 4,600 alien plant species that have been introduced to Hawai'i. Issues related to the biology and control of these species are discussed.

Available from: http://www.botany.hawaii.edu/faculty/cw_smith/impact.htm [Accessed June 10 2005]



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Cenchrus ciliaris*

[USDA-GRIN \(Germplasm Resources Information Network\). 2003. *Cenchrus ciliaris*. National Genetic Resources Program \[Online Database\] National Germplasm Resources Laboratory, Beltsville, Maryland.](#)

Summary: Information on common names, synonyms, and the distributional range of species.

Available from: <http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?9794> [Accessed 08 November 2003]

[USDA-NRCS \(Natural Resource Conservation Service\). 2002. *Pennisetum ciliare*. The PLANTS Database Version 3.5 \[Online Database\] National Plant Data Center, Baton Rouge, LA](#)

Summary: Available from: <http://plants.usda.gov/java/profile?symbol=PECI> [Accessed 08 November 2005]

Van Devender, T. R; Felger, R. S and Burquez, A. M., 1997. Exotic plants in the Sonoran desert Region, Arizona and Sonora. California Exotic Pest Plants Council 1997 Symposium Proceedings.

Villasenor, J. L., and F. J. Espinosa-Garcia. 2004. The alien flowering plants of Mexico. Diversity and Distributions, (Diversity Distrib.) 10:113-123.