Alternanthera philoxeroides 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Caryophyllales	Amaranthaceae

Common name xi han lian zi cao (Chinese), alligator weed (English), pig weed (English)

Synonym
Achyranthes philoxeroides , (Mart.) Standl.
Alternanthera paludosa , Bunbury
Alternanthera philoxerina , Suess.
Alternanthera philoxeroides , (Mart.) Griseb. var. *luxurians* Suess.
Alternanthera philoxeroides , (Mart.) Griseb. var. *obtusifolia* (Mart. ex Moq.) Hicken
Alternanthera philoxeroides , (Mart.) Griseb. var. *acutifolia* (Mart. ex Moq.) Hicken
Alternanthera philoxeroides , (Mart.) Griseb. forma *angustifolia* Suess.
Alternanthera philoxeroides , (Mart.) Griseb. var. *lancifolia* Chodat
Bucholzia philoxeroides , Mart.
Telanthera philoxeroides , (Mart.) Moq.
Telanthera philoxeroides , (Mart.) Moq. var. *acutifolia* Mart. ex Moq.
Telanthera philoxeroides , (Mart.) Moq. var. *obtusifolia* Mart. ex Moq.

Similar species *Alternanthera caracasana, Alternanthera denticulata, Alternanthera sessilis, Ludwigia adscenciens, Persicaria decipiens, Polygonum amphibium, Tradescantia fluminensis*

Summary Alternanthera philoxeroides, commonly known as alligator weed, is a perennial stoloniferous herb that can be found in many parts of the world, infesting rivers, lakes, ponds and irrigation canals, as well as many terrestrial habitats. The aquatic form of the plant has the potential to become a serious threat to waterways, agriculture and the environment. The terrestrial form of Alternanthera philoxeroides grows into a dense mat with a massive underground rhizomatous root system. The canopy can smother most other herbaceous plant species. It has proven to be extremely expensive to attempt controlling Alternanthera philoxeroides.

view this species on IUCN Red List

Species Description
The Commonwealth of Australia (2000) states that, \"*Alternanthera philoxeroides* is a summer growing perennial herb. It has small white papery flower heads 8-10cm in diameter, that appear generally from November to March. *A. philoxeroides* does not produce viable seed. The leaves are shiny, spear-shaped, opposite, sessile, entire and about 2-7cm long and about 1-2cm wide. One of the main identifying features of alligator weed is that the stems are hollow when mature. This weed produces masses of creeping and layering stems, up to 10m long. Over water, roots are adventitious. On land adventitious roots and thickened taproots occur. Over water stems grow to 60cm high and have large, hollow internodes. On land stems are shorter and internodes smaller and much less hollow. Frost and ice kill exposed stems and leaves; however, protected stems survive to support the next season's growth. Mats may extend 15 metres over the water surface and become so robust they can support the weight of a man. Reproduction is asexual with maximum growth in mid-summer. The plant responds to high levels of nutrients and withstands 10 percent sea-strength salinity or up to 30 percent salinity in flowing brackish water.\"

Habitat Description
Alternanthera philoxeroides is a perennial stoloniferous herb found in both aquatic to terrestrial habitats. Rui-Yan and Ren (2004) have found *A. philoxeroides* infesting rivers, lakes, ponds, and irrigation canals, as well as many terrestrial habitats.Sainty *et al.* (1998) state that, \"*A. philoxeroides* grows on a wide range of substrata, from sand to heavy clay. When floating on water, it may be rooted in the bank or substrate, or free floating.\"

Reproduction
Sainty *et al.* (1998) states that, \"*Alternanthera philoxeroides* does not produce viable seed under field conditions (Center and Balciunas, 1975; Sainty, 1973; Julien, 1995). Consequently reproduction is entirely vegetative and relies on the production of nodes. Each node has two axillary buds. Stem nodes, portions of thicker roots, and underground stems are all capable of growth. Dispersal is by fragmentation.\"

General Impacts
Gunasekera (1999) states that, \"*Alternanthera philoxeroides* is considered to be one of the worst aquatic weeds in the world. The aquatic form of the plant has the potential to become a serious threat to waterways, agriculture and the environment. The terrestrial form grows into a dense mat with a massive underground rhizomatous root system. The canopy can smother most other herbaceous plant species.\" Buckingham (1996) states that, \"Floating stems grow across the surface of the waterway forming a dense interwoven mat. This mat clogs the waterway and out competes native plants along the shore.\" The Commonwealth of Australia (2000) states that, \"Alligator weed disrupts the aquatic environments by blanketing the surface of the water impeding penetration of light, gaseous exchange (sometimes leading to anaerobic conditions) with adverse affects on flora and fauna. Mats impede flow and lodge against structures thereby promoting sedimentation and contributing to flooding. They prevent access to and use of water, promote health problems by providing habitats for mosquitoes and degrade natural aesthetics.\" Control of this species has proven to be an expensive and complicated ordeal wherever it has established.

Management Info
Preventative measures:: The Australian Department of the Environment and Heritage (2003) state that, \"*Alternanthera philoxeroides* has rarely, if ever, been successfully eradicated once it has infested a water body, despite numerous costly attempts. For this reason, the highest priority for the management of alligator weed is an effective system of early detection and eradication before infestations become established.\"
A Risk assessment of *Alternanthera philoxeroides* 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 12 and a recommendation of: reject the plant for import (Australia) or species likely to be of high risk (Pacific).
The wetland and terrestrial *A. philoxeroides* is regarded as a 'Weed of National Significance in Australia' because of its invasiveness, its impacts- both economic and environmental and because it is difficult to control.
The Alligator weed Strategic plan for Australia is a detailed document that outlines the biology, impacts and management options to control its spread.
A weed management guide for alligator weed has been developed by CRC for Australian Weed Management and the Commonwealth Department of the Environment and Heritage that briefly describes different options for the control and management of its spread including integrated management.
A more recent publication Van Oosterhout (2007) brings together information and advice on the best and most effective advice for eradication, suppression and containment of alligator weed in Australia, from over 30 years of research. Species description: NSW Department of Primary Industries alligator weed profile describes in detail its physical characteristics, distinguishing features and descriptions of similar species to aid in accurate identification.

Pathway
It was probably introduced into Australia at Carrington (Newcastle docks area) in NSW when ship's ballast was dumped. It was first recorded there in 1946 (Commonwealth of Australia, 2000).The movement of contaminated plant mulch was identified as one reason for the recent spread (Coventry *et al.* 2002).

Principal source:

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG) with support from the Terrestrial and Freshwater Biodiversity Information System (TFBIS) Programme (Copyright statement)
Updates with support from the Overseas Territories Environmental Programme (OTEP) project XOT603, a joint project with the Cayman Islands Government - Department of Environment

Review: Dr. Lalith Gunasekera Research Scientist, CRC Australian Weed Management Department of Primary Industries Frankston Centre Victoria Australia

Pubblication date: 2010-10-04

ALIEN RANGE

[42] AUSTRALIA
[1] FRANCE
[2] INDONESIA
[2] MYANMAR
[1] PAPUA NEW GUINEA
[1] SINGAPORE
[2] THAILAND
[7] CHINA
[3] INDIA
[2] ITALY
[4] NEW ZEALAND
[1] PUERTO RICO
[1] SRI LANKA
[13] UNITED STATES

Red List assessed species 1: LC = 1;

Alternanthera sessilis **LC**

BIBLIOGRAPHY

49 references found for **Alternanthera philoxeroides**

Managment information

Australian Department of the Environment and Heritage, 2003. Alligator weed (*Alternanthera philoxeroides*). Weeds of National Significance: Weed Management Guide Department of the Environment and Heritage and the CRC for Australian Weed Management, 2003.
Summary: Available from: http://www.weeds.gov.au/publications/guidelines/wons/a-philoxeroides.html [Accessed 23 October 2008]
Barret, R. W., and A. N. L. Torres. 1999. *Nimbya alternantherae* and *Cercospora alternantherae*: Two new records of fungal pathogens on *Alternanthera philoxeroides* (alligatorweed) in Brazil. Australasian Plant Pathology. 28(2). 1999. 103-107.
Bassett, Imogen E., Jacqueline R. Beggs and Quentin Paynter, 2010. Decomposition dynamics of invasive alligator weed compared with native sedges in a Northland lake. New Zealand Journal of Ecology (2010) 34(3): 0-0
Summary: Available from: http://www.newzealandecology.org/nzje/new_issues/NZJEcol_BassettIP.pdf [Accessed May 17th 2010]
Bassett, I., pers. comm. July 2005. Alligator weed: Potential invader of forest catchments? Effects of shade on alligator weed growth. Centre for Biodiversity and Biosecurity Seminar Series, University of Auckland.
Buckingham, G. R. 1996. Biological control of alligatorweed, *Alternanthera philoxeroides*, the world s first aquatic weed success story. Castanea. 61(3). 1996. 232-243.
Champion, P. Clayton, J. and Rowe, D. 2002. Alien Invaders Lake Managers Handbook. Ministry for the Environment.
Summary: Available from: http://www.mfe.govt.nz/publications/water/lm-alien-invaders-jun02.pdf [Accessed 3 February 2005]
Champion, P.D.; Clayton, J.S. 2000. Border control for potential aquatic weeds. Stage 1. Weed risk model. Science for Conservation 141. .
Summary: This report is the first stage in a three-stage development of a Border Control Programme for aquatic plants that have the potential to become ecological weeds in New Zealand.
Available from: http://www.doc.govt.nz/upload/documents/science-and-technical/sfc141.pdf [Accessed 13 June 2007]
Champion, P.D.; Clayton, J.S. 2001. Border control for potential aquatic weeds. Stage 2. Weed risk assessment. Science for Conservation 185. 30 p.
Summary: This report is the second stage in the development of a Border Control Programme for aquatic plants that have the potential to become ecological weeds in New Zealand. Importers and traders in aquatic plants were surveyed to identify the plant species known or likely to be present in New Zealand. The Aquatic Plant Weed Risk Assessment Model was used to help assess the level of risk posed by these species. The report presents evidence of the various entry pathways and considers the impact that new invasive aquatic weed species may have on vulnerable native aquatic species and communities.
Available from: http://www.doc.govt.nz/upload/documents/science-and-technical/SFC185.pdf [Accessed 13 June 2007]
Commonwealth of Australia. 2000. ALLIGATOR WEED (*Alternanthera philoxeroides*) Strategic Plan. Commonwealth of Australia and the National Weeds Strategy Executive Committee.
Coventry, R., M. Julien, and J. Wilson. 2002. Report of the 1st CRC for Australian Weed Management Alligator Weed Research Workshop. Department of Land & Water Conservation, Windsor, NSW.
Environment Waikato. 2002. Alligator weed (*Alternanthera philoxeroides*).
Eurobodalla Shire Council (ESC), undated. Alligator weed (*Alternanthera philoxeroides*)
Summary: Available from: http://www.esc.nsw.gov.au/Weeds/Sheets/aquatic/A%20Alligator%20weed.htm [Accessed 2 June 2005]
European and Mediterranean Plant Protection Organization (EPPO), 2005. Reporting Service 2005, No. 9.
Summary: The EPPO Reporting Service is a monthly information report on events of phytosanitary concern. It focuses on new geographical records, new host plants, new pests (including invasive alien plants), pests to be added to the EPPO Alert List, detection and identification methods etc. The EPPO Reporting Service is published in English and French.
Available from: http://archives.eppo.org/EPPOReporting/2005/Rse-0509.pdf [Accessed 28 November 2005]
European and Mediterranean Plant Protection Organization (EPPO), 2006. Guidelines for the management of invasive alien plants or potentially invasive alien plants which are intended for import or have been intentionally imported. EPPO Bulletin 36 (3), 417-418.
Flanagan, G.J. 1999. Agnote Alligator weed
Gagne, R. J., A. Sosa, and H. Cordo. 2004. A new neotropical species of *Clinodiplosis* (Diptera: Cecidomyiidae) injurious to alligatorweed, *Alternanthera philoxeroides* (Amaranthaceae). Proceedings of the Entomological Society of Washington. 106 (2). April 2004. 305-311.
Gunasekera, L. 1999. Alligator weed - An aquatic weed present in Australian backyards. Plant Protection Quarterly. 14 (2). 1999. 77-78.
Gunasekera, L., and J. Bonila. 2001. Alligator weed: Tasty vegetable in Australian backyards? Journal of Aquatic Plant Management. 39 January, 2001. 17-20.
IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4.
Summary: The IUCN Red List of Threatened Species provides taxonomic, conservation status and distribution information on taxa that have been globally evaluated using the IUCN Red List Categories and Criteria. This system is designed to determine the relative risk of extinction, and the main purpose of the IUCN Red List is to catalogue and highlight those taxa that are facing a higher risk of global extinction (i.e. those listed as Critically Endangered, Endangered and Vulnerable). The IUCN Red List also includes information on taxa that are categorized as Extinct or Extinct in the Wild; on taxa that cannot be evaluated because of insufficient information (i.e. are Data Deficient); and on taxa that are either close to meeting the threatened thresholds or that would be threatened were it not for an ongoing taxon-specific conservation programme (i.e. are Near Threatened).
Available from: http://www.iucnredlist.org/ [Accessed 25 May 2011]
IUCN/SSC Invasive Species Specialist Group (ISSG)., 2010. A Compilation of Information Sources for Conservation Managers.
Summary: This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.
Julien, M. H., B. Skarratt, and G. E. Maywald. 1995. Potential Geographical Distribution of Alligator Weed and its Biological Control by *Agasicles hygrophila*. Journal of Aquatic Plant Management 33: 55-60.

Napompeth, B. UNDATED. Biological Control of Paddy and Aquatic Weeds in Thailand. National Biological Control Research Center (NBCRC), Kasetsart Univseristy.
National Pest Plant Accord, 2001. Biosecurity New Zealand.
Summary: The National Pest Plant Accord is a cooperative agreement between regional councils and government departments with biosecurity responsibilities. Under the accord, regional councils will undertake surveillance to prevent the commercial sale and/or distribution of an agreed list of pest plants.
Available from: http://www.biosecurity.govt.nz/pests-diseases/plants/accord.htm [Accessed 11 August 2005]
NSW Department of Primary Industries, 2007. Part 1: The alligator weed profile
Summary: Available from: http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0018/210447/alligator-weed-control-manual-part1.pdf [Accessed 26 July 2010]
Ramsar Sites Information Service, 2005. Ramsar Sites Database
Summary: The Ramsar Sites Information Service provides information on wetlands designated as internationally important under the Convention on Wetlands (Ramsar, 1971). These wetlands are commonly known as Ramsar Sites. Wetlands International manages and develops the Ramsar Sites Database (RSDB) under contract to the Ramsar Convention Secretariat. This core Ramsar Sites Database is a searchable database, fully accessible through the internet with a password protected data entry system, and an unprotected reporting system for public use.
Available from: http://www.wetlands.org/RSDB/default.htm [Accessed 25 April 2005]
Ramsar Sites Information Service, 2005. Ramsar Sites Database, A Directory of Wetlands of International Importance. Australia 5AU024 Hunter Estuary Wetlands
Summary: Available from: http://www.wetlands.org/RDB/Ramsar_Dir/Australia/AU024D02.htm [Accessed July 10 2005]
Royal New Zealand Institute of Horticulture (RNZIH), 2005. Alligator weed *Alternanthera philoxeroides*
Summary: Available from: http://www.rnzih.org.nz/pages/nppa_009.pdf [Accessed 1 October 2005]
Roy, B., Popay, I., Champion, P., Trevor, J., and Rahman, A., 2004. An Illustrated Guide to Common Weeds of New Zealand 2nd Edition New Zealand Plant Protection Society
Rui-Yan, M., and W. Ren. 2004. Effect of morphological and physiological variations in the ecotypes of alligatorweed, *Alternanthera philoxeroides* on the pupation rate of its biocontrol agent *Agasicles hygrophila* Zhiwu Shengtai Xuebao. 28 (1). Jan. 2004. 24-30.
Sainty, G., G. McCorkelle, and M. Julien. 1998. Control and spread of Alligator Weed *Alternanthera philoxeroides* (Mart.) Griseb., in Australia: lessons for other regions. Wetlands Ecology and Management 5: 195-201, 1998.
Sheng, Q., S. Jun-Ming, Z. Cheng-Qun, S. Geng-Yun, H. Jin-Liang, and W. Feng-Liang. 2003. The influence of cropping systems on weed communities in the cotton fields of Jiangsu Province. Zhiwu Shengtai Xuebao. 27 (2). Mar. 2003. 278-282.
Tan, W. Z., Q. J. Li, and L. Qing. 2002. Biological control of alligatorweed (*Alternanthera philoxeroides*) with a *Fusarium* sp. BioControl 47: 463-479, 2002.
Van Oosterhout, Elissa, 2007. Alligator weed control manual: Eradication and suppression of alligator weed (*Alternanthera philoxeroides*) in Australia NSW Department of Primary Industries
Summary: Available from: http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0017/210446/alligator-weed-control-manual-part0.pdf [Accessed 26 July 2010]

General information

CDFA (California Department of Food and Agriculture). UNDATED. Alligatorweed *Alternanthera philoxeroides* (C. Martius) Griseb. Encyclopweedia.
Summary: Available from: http://www.cdfa.ca.gov/phpps/ipc/weedinfo/alternanthera.htm#anchor49462 [Accessed 3 December 2004]
Duffaud, M., C. Magimel, and I. Bagdassarian. 1999. A new locality for *Alternanthera philoxeroides* (Amaranthaceae) on the Ile Nouvelle (Gironde, France). Bulletin de la Societe Linneenne de Bordeaux. 27(3). 1999. 143-144.
Freshwater Biodata Information System New Zealand (FBIS), 2005
Summary: The Freshwater Biodata Information System (FBIS) contains fish, algae, aquatic plant and invertebrate data and metadata gathered from New Zealand s freshwater streams, rivers and lakes. FBIS provides different ways to search for biodata: choose a predefined search from a list of common searches; use the map view to draw a box on a map and search for biodata; or create your own search for maximum search flexibility. FBIS is offered as a nationally available resource for the New Zealand public, institutions and companies who need access to a well-maintained long-term data repository.
Available from: https://secure.niwa.co.nz/fbis/validate.do?search=common [Accessed 5 August 2005]
Garbari, F., and M. L. Pedulla. 2001. *Alternanthera philoxeroides* (Mart.) Griseb. (Amaranthaceae), a new species for the exotic flora of Italy. Webbia. 56(1). 2001. 139-143.
Global Biodiversity Information Facility (GBIF), 2010. Species: *Alternanthera philoxeroides* (Mart.) Griseb.
Summary: Available from: http://www.gbif.net/species/13739378/ [Accessed 15 June 2010]
ISB-AFVP (Institute for Systematic Botany: Atlas of Florida Vascular Plants). 2004. *Alternanthera philoxeroides*. University of Southern Florida.
Summary: Available from: http://www.plantatlas.usf.edu/synonyms.asp?plantID=1343 [Accessed 3 December 2004]
ITIS (Integrated Taxonomic Information System), 2004. Online Database *Alternanthera philoxeroides*
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=20770 [Accessed March 2005]
Lal, C., J. C. Ghildiyal, and D. K. Maheshwari. 2002. Survey of aquatic vegetations in and around Delhi. Journal of Economic & Taxonomic Botany. 26 (3). December 1, 2002. 547-549.
Liu, C., G. Wu, D. Yu, and D. Wang. 2004. Seasonal changes in height, biomass and biomass allocation of two exotic aquatic plants in a shallow eutrophic lake. Journal of Freshwater Ecology. 19 (1). March 2004. 41-45.

Rother, S. P., and V. B. Paddakhe. 2004. Some noteworthy plant records from Akola district of Vidarbha region, Maharashtra. Journal of Economic & Taxonomic Botany. 28 (1). 2004. 31-33.

Roy, B; Popay, I; Champion, P; James, T & Rahman, A., 2004. An Illustrated Guide to Common Weeds of New Zealand 2nd Edition. *Alternanthera philoxeroides* alligator weed. New Zealand Plant Protection Society

Summary: Available from: http://www.rnzih.org.nz/pages/alternantheraphiloxeroides.htm [Accessed May 10 2005]

Singh, V., and R. P. Pandey. 1998. *Alternanthera philoxeroides* (Mart.) Griseb.: A new distributional record for Rajasthan. Journal of Economic & Taxonomic Botany. 22 (1). July 1, 1998. 225-226.

Stewart, C. A., R. B. Chapman, and M. A. Frampton. 2000. Growth of alligator weed (*Alternanthera philoxeroides* (Mart.) Griseb. (Amaranthaceae)) and population development of *Agasicles hygrophila* Selman and Vogt (Coleoptera: Chrysomelidae) in northern New Zealand. Plant Protection Quarterly. 15(3). 2000. 95-101.

University of Florida. UNDATED. Alligatorweed *Alternanthera philoxeroides*. Biological Control Insects For Aquatic and Wetland Weeds, University of Florida, Aquatic and Wetland Plant Information Retrieval System.

Summary: Available from: http://aquat1.ifas.ufl.edu/alligat.html [Accessed 3 December 2004]

USDA-GRIN (Germplasm Resources Information Network). 2004. *Alternanthera philoxeroides*. National Genetic Resources Program [Online Database] National Germplasm Resources Laboratory, Beltsville, Maryland.

Summary: Available from: http://www.ars-grin.gov/cgi-bin/npgs/html/tax_search.pl?Alternanthera+philoxeroides [Accessed 3 December 2004]

USDA-NRCS (Natural Resource Conservation Service). 2004. *Alternanthera philoxeroides*. The PLANTS Database Version 3.5 [Online Database] National Plant Data Center, Baton Rouge, LA.

Summary: Available from: http://plants.usda.gov/java/nameSearch?mode=Scientific+Name&keywordquery=Alternanthera+philoxeroides&go.x=6&go.y=11 [Accessed 3 December 2005]