GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Piper aduncum***

Piper aduncum 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Piperales	Piperaceae

Common name

matico (English), bamboo piper (English), cow's foot (English), false matico (English), higuillo (English), jointwood (English), spiked pepper (English), false kava (English), anisillo (English), yaqona ni Onolulu (English, Fiji), man anesi wiwiri (English), pimenta-de-macaco (Portuguese, Brazil), jaborandi-do-mato (Portuguese, Brazil), aerta ruão (English), higuillo de hoja menuda (Spanish), guayayo (English), yanggona ni Onolulu (English, Fiji), cordoncillo (English), Santa María negra (English)

Synonym

Artanthe adunca , (L.) Miq. 1840
Artanthe celtidifolia , (Kunth) Miq. 1844
Piper aduncifolium , Trel. 1929
Piper aduncum , L. var. *laevifolium* C.DC. 1920
Piper anguillaespicum , Trel. 1929
Piper celtidifolium , Kunth 1816
Piper disparispicum , Trel. 1929
Piper elongatum , Vahl var. *laevifolium* (C.DC.) Trel. 1927
Piper fatoanum , C.DC. 1920
Piper flavescens , (C.DC.) Trel. 1929
Piper hebecarpum , C.DC. 1902
Piper intersitum , Trel. var. *porcecitense* Trel. 1940
Piper intersitum , Trel. 1940
Piper martinicense , C.DC. var. *montis-pilati* C.DC. 1902
Piper martinicense , C.DC. var. *genuinum* Stehle 1940
Piper martinicense , C.DC. 1898
Piper multinervium , M.Martens & Galeotti 1843
Piper multinervium , M.Martens & Galeotti var. *kantelolense* Trel. 1938
Piper multinervium , M.Martens & Galeotti var. *amplum* Trel. 1938
Piper multinervium , M.Martens & Galeotti var. *skutchii* Trel. 1938
Piper oblanceolatum , Trel. var. *fragilicaule* Trel. 1929
Piper pseudovelutinum , C.DC. var. *flavescens* C.DC. 1891
Piper stehleorum , Trel. 1940
Piper submolle , Trel. 1929
Piper subrectinerve , C.DC. 1902
Steffensia adunca , (L.) Kunth 1840
Steffensia celtidifolia , (Kunth) Kunth 1840

Similar species

Piper hispidinervum, Piper auritum, Piper methysticum

Summary

Piper aduncum is a shrub or small tree that is a native of the West Indies and mainland tropical America from Mexico to northern Argentina. It is an invader of disturbed areas, where it is able to form thickets and spreads by sprouts and suckers. Piper aduncum is a problem in some Pacific Islands, where it can interfere with the harvesting of the related kava plant. Piper aduncum has a number of uses, including traditional medicines and agroforestry.

view this species on IUCN Red List

Species Description
Piper aduncum is a shrub or small tree up to 7m tall and 10cm or more in stem diameter, with short silt roots and medium-hard, brittle wood; foliage and twigs aromatic. Can grow as individual plants or in thickets. Branches are erect, but with drooping twigs and swollen, purplish nodes. Leaves alternate, distichous, elliptic, 12-22cm long, shortly petiolate; lamina scabrid above, with sunken nerves, softly hairy beneath. Inflorescence a leaf-opposed, curved spike on a 12-17cm peduncle, white to pale yellow, turning green with maturity. Flowers crowded in regular transverse ranks. Perianth absent; usually 4 stamens. Fruit a 1-seeded berry, compressed into greyish, wormlike spikes. Seeds brown to black, 0.7 -1.25mm long, compressed, with a reticulate surface (Waterhouse and Mitchell, 1998 in PIER, 2003).

Notes
In Fiji the red-vented bulbul (*Pycnotus cafer*), an introduced bird, is the chief disperser of *P. aduncum* seeds (Metcalfe, 1995).

Lifecycle Stages
Sprouts and suckers are able to grow more than a metre in their first year. Individual stems can live from 2 to several years, but through sprouting they can live for much longer (Francis, 2003).

Uses
Provides food and cover for wildlife, can be used for revegetating disturbed areas, and contributes to the biomass of forests (Francis, 2003). *P. aduncum* stakes are used in Papua New Guinea to create terraces for agriculture and to prevent erosion (Bourke, 1997).
Wood can be used for basic construction, fuel, stakes and fences. Has ornamental value and the fruit is used to season food. Essential oils from this species have antibacterial properties and may also be used as an insecticide and a molluscicide. Tea made from the leaves and roots is used to treat diarrhea, dysentery, vomiting, ulcers, and can also be used for the control of bleeding (Francis, 2003).

Habitat Description
Disturbed rainforest areas and rainforest margins. Can grow up to 1700m in altitude (Bourke, 1997). In the Highlands of PNG this species goes up to 2000\r\nm (Pers. comm., Dr. Jan Leps) . In Fiji, it is an aggressive weed from sea level to 400m, most often along roadsides and in thickets, but also sometimes in secondary forest or on forested ridges, rarely found in intact rainforests (Smith, 1981 in PIER, 2003).
Lives in areas that receive from 1500 to greater than 4000mm of mean annual rainfall. Colonizes most soil types, apart from excessively well-drained soils, where it only grows at the upper end of the rainfall range; dry soils; and salty soils (Francis, 2003).
Requires high light levels and a bare soil surface, which means that disturbance is necessary for this species to establish. Moderately intolerant of shade, as it requires at least partial exposure to sunlight for it to reach a large size and flower (Francis, 2003).

Reproduction
Seeds can be dispersed by birds and a number of species of bat (PIER, 2003; Lobova and Mori, 2002). May be introduced into new areas on machinery, particularly logging equipment. Locally, it spreads by suckers, forming large clumps (PIER, 2003).

Propagation of this species can be carried out by planting cuttings directly into soil (Bourke, 1997). *Piper aduncum* flowers and fruits year-round. Seeds have a low germination rate, while cuttings are more successful (Francis, 2003). The seed weight reported is 0.17 mg (Leps *et al*. 2002). Also Garcia et al. reported that *P. aduncum* was the most common in viable seeds in faeces of bats.

General Impacts
A pest in the Pacific, where it can become mixed with the kava (*Piper methysticum*) crop during harvesting, lowering its quality. Also competes with kava and other crops. May act as a host for kava pests and pathogens (Plant Protection Service, 2001).

Management Info
Preventative measures: A Risk Assessment of *Piper aduncum* for Hawai'i and other Pacific islands was \r\r\nprepared by Dr. Curtis Daehler (UH Botany) with funding from the Kaulunani \r\r\nUrban Forestry Program and US Forest Service. The alien plant screening system \r\r\nis derived from Pheloung *et al*. (1999) with minor modifications for use \r\r\nin Pacific islands (Daehler *et al.* 2004). The result is a score of 18 \r\r\nand a recommendation of: \"Likely to cause significant ecological or economic \r\r\nharm in Hawai'i and on other Pacific Islands as determined by a high WRA score, \r\r\nwhich is based on published sources describing species biology and behaviour in \r\r\nHawai'i and/or other parts of the world.\"
\r\nPhysical: Young plants can be uprooted by hand, although care must be \r\r\ntaken to ensure that no pieces of rhizome are left behind in the soil (UF/IFAS, \r\r\n2000).
Chemical: Basal bark application of 20% Garlon 4, or cut stems \r\r\nat ground level and apply 50% Garlon 3A to the stump (UF/IFAS, 2000).

Pathway
Thought to have been introduced to Fiji in packing materials at Suva port (Plant Protection Service, 2001).Used for making agricultural terraces (Bourke, 1997).Used for agroforestry (Bourke, 1997).Widely planted as an ornamental tree (Francis, 2003).Movement of equipment has allowed this species to spread between land masses (Francis, 2003).

Principal source: Francis, J. K. 2003. *Piper aduncum* fact sheet. USDA Forest Service.
PIER, 2003. Pacific Islands Ecosystems At Risk.

Compiler: IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: John K. Francis. US Department Of Agricuture. USA.
Dr. Jan Leps. Department of Botany Faculty of Biological Sciences University of South Bohemia. The Czech Republic.

Pubblication date: 2005-07-27

ALIEN RANGE

[2] FIJI
[2] INDONESIA
[1] MALAYSIA
[1] PAPUA NEW GUINEA
[1] PUERTO RICO
[3] UNITED STATES
[1] GUATEMALA
[1] KIRIBATI
[1] PANAMA
[1] PHILIPPINES
[1] SOLOMON ISLANDS
[1] VIRGIN ISLANDS, U.S.

BIBLIOGRAPHY
27 references found for **Piper aduncum**

Managment information
Daehler, C.C; Denslow, J.S; Ansari, S and Huang-Chi, K., 2004. A Risk-Assessment System for Screening Out Invasive Pest Plants from Hawaii and Other Pacific Islands. Conservation Biology Volume 18 Issue 2 Page 360.
Summary: A study on the use of a screening system to assess proposed plant introductions to Hawaii or other Pacific Islands and to identify high-risk species used in horticulture and forestry which would greatly reduce future pest-plant problems and allow entry of most nonpests.

Francis, J. K. 2003. *Piper aduncum* fact sheet. USDA Forest Service.
Summary: A good summary of ecological information on *P. aduncum*. Mentions a range of benefits that this species has, but doesn t include any information on invasiveness.
Available from: http://www.fs.fed.us/global/iitf/pdf/Piper%20aduncum.pdf [Accessed 15 January 2003]
Hartemink, Alfred., 2005. *Piper aduncum* (L) The great plant invader.
Hartemink, Alfred E., 2001. Biomass and nutrient accumulation of *Piper aduncum* and *Imperata cylindrica* fallows in the humid lowlands of Papua New Guinea. Forest Ecology and Management 144 (2001) 19–32
Summary: Impact study
Hartemink, Alfred E. & J.N. O'Sullivan , 2001. Leaf litter decomposition of *Piper aduncum*, *Gliricidia sepium* and *Imperata cylindrica* in the humid lowlands of Papua New Guinea. Plant and Soil 230: 115-124, 2001.
Summary: Impact study
Leps, J *et al*, 2002. Successful invasion of the neotropical species *Piper aduncum* in rain forests in Papua New Guinea. Applied Vegetation Science 5:255-262,2002
Summary: Impact.
PIER (Pacific Island Ecosystems at Risk), 2003. *Piper aduncum*
Summary: Ecology, synonyms, common names, distributions (Pacific as well as global), management and impact information.
Available from: http://www.hear.org/pier/species/piper_aduncum.htm [Accessed 5 February 2003].
Plant Protection Service, 2001. Pest Alert: False kava. Secretariat of the Pacific Community.
Summary: Highlights the problems posed by *P. aduncum* to the kava industry in the Pacific Islands.
Available from: http://www.spc.org.nc/pps/PestAlerts/PestAlertNo19-False_Kava.pdf [Accessed 15 January 2003].
UF/IFAS. 2000. Document SP 242 - Control of Non-native Plants in Natural Areas of Florida. University of Florida, Institute of Food and Agricultural Sciences.
Summary: Has some basic information on the type of herbicides that should be used to control *P. aduncum*.
Available from: http://edis.ifas.ufl.edu/BODY_WG209 [Accessed 15 January 2003].

General information

Atlas of Florida Vascular Plants, 2003. Institute for Systematic Botany.
Summary: Provides an extensive list of synonyms for *P. aduncum*.
Available from: http://www.plantatlas.usf.edu/ [Accessed on 15 January 2003].
Bourke, R. M. 1997. Management of fallow species composition with tree planting in Papua New Guinea. Resource Management in Asia-Pacific - Working Paper No. 5.
Summary: Has a small amount of information on the use of *P. aduncum* for agricultural purposes in Papua New Guinea.
Available from: http://rspas.anu.edu.au/rmap/Wpapers/rmap_wp05.rtf [Accessed 15 January 2003].
de Lima Moreira, D. 2000. Piperaceae home page. Geocities.
Summary: Various information on some plants in the Piperaceae family.
Available from: http://www.geocities.com/davyson2000/ [Accessed 15 January 2003].
Du Puy D.J. (1993) Piperaceae, Flora of Australia, Vol. 50, Oceanic Islands 2, pp. 73-76. Australian Government Publishing Service, Canberra.
Summary: Distribution.
Gann, G.D. & Bradley, K.A. (1999) The Exotic Plants of the South Florida Ecosystem v3.0. November 1999 Edition The Institute for Regional Conservation.
Summary: Distribution.
Available from http://www.regionalconservation.org
Garcia, Q.S., Rezende, J. L. P. & Aguiar, L.M.S. (2000) Seed dispersal by bats in disturbed area of southern Brazil. – from Rev. Biol. Trop. 48: 125-128.
Summary: Seed Dispersal.
Hartemink, A. E. 1997. *Piper aduncum* fallows in the Lowlands of Papua New Guinea. Indigenous Strategies for Intensification of Shifting Cultivation in Southeast Asia. Copyright 1997 – International Development Research Centre, Ottawa, Canada. Available from: http://www.idrc.ca/cbnrm/documents/abstract_plenary2.cfm [Accessed 15 January 2003]
Summary: Abstract of a report on the effects of *Piper aduncum* on nutrients in the soil.
Hashimotio, T., Kojima, K., Tange, T. & Sasaki, S. (2000) Changes in carbon storage in fallow forests in the tropical lowlands of Borneo. Forest Ecology and Management 126, 331-337.
Summary: Listed P.a. as the most abundant species in fallow forests in the tropical lowlands of Borneo
ITIS (Integrated Taxonomic Information System), 2005. Online Database *Piper aduncum*
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.cbif.gc.ca/pls/itisca/taxastep?king=every&p_action=containing&taxa=Piper+aduncum&p_format=&p_ifx=plglt&p_lang=
[Accessed March 2005]
Kidd, S.B. (1997) A note on *Piper aduncum* in Morobe province, Papua New Guinea. Science in New Guinea 22, 121-123.
Summary: Distribution
Lobova, T. A. and Mori, S. A. 2002. Atlas of Seeds Dispersed by Bats in the Neotropics. The New York Botanical Garden.
Summary: Good information on the species of bat that disperse *P. aduncum* seeds.
Available from: http://www.botanypages.org/mori/batsplants/batseedatlas/seedatlas_frameset.htm [Accessed 17 June, 2003]
Metcalfe, P. 1995. The Place of Indigenous Plants in Pacific Landscapes.
Summary: Mentions that *P. aduncum* is distributed in Fiji mainly by the red-vented bulbul.
Available from: http://fehps.une.edu.au/f/s/curric/pMetcalfe/DOCS/OverseasReflections/PacificLandscape.html [Accessed 15 January 2003]

Meyer, J.-Y. 2000. Invasive plants in the Pacific Islands. In: The Invasive Species in the Pacific: A Technical Review and Draft Regional Strategy. Sherley, G. (tech. ed). Published in June 2000 by the South Pacific Regional Environment Programme (SPREP).
Summary: Resource that includes the distribution of invasive species throughout the Pacific Islands.
Parham, J.W. (1958) The Weeds of Fiji. Department of Agriculture, The Government Press, Suva, Fiji.
Summary: Location Notes Fiji.
Peruvian Nature. 2003. Matico (*Piper aduncum* L).
Summary: Some medicinal information about *P. aduncum*.
Available from: http://www.peruviannature.com/matpring/matico/matingle.html [Accessed 15 January 2003].
Petir, A., Materem, D., Yapong, P., Sakel, M., Okira, M. & Platts-Mills, T. (1998) Useful plants of Salemben villagge, Madang province, Papua New Guinea. Publication No. 13 of the Christensen Research Institute, Madang.
Summary: Uses.
Rogers, H.M. & Hartemink, A.E. 2000. Soil seed bank and growth rates of an invasive species, *Piper aduncum*, in the lowlands of Papua New Guinea. Journal of Tropical Ecology 16, 243-251.
Summary: Ecology.
Tropilab® Inc. 2003. *Piper aduncum* L. - spiked pepper.
Summary: Brief description of the plant, some medicinal uses and propagation.
Available from: http://www.tropilab.com/spikedpepper.html [Accessed 15 January 2003].