

FULL ACCOUNT FOR: Ipomoea aquatica



**System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Solanales	Convolvulaceae

#### Common name

lorenzo (English, Nauru), kongkong (English, Yap), kangkong (English, Ulithi), water bindweed (English), luve ne tombithi (English, Fiji), ota karisa (English, Fiji), wa kumala (English, Fiji), Chinese waterspinach (English), seri (English, Chuuk), kangum (English, Palau), swamp morning glory (English), swamp cabbage (English), aquatic morning glory (English), water spinach (English), aseri (English, Chuuk), kang kong (English), ung-choi (English), seeri (English, Chuuk), lili vai (English, Samoa), kangking (English, Yap), ndrinikava (English, Fiji), akankong (English, Guam), kankum (English, Palau), te kang kong (English, Kiribati), cancon (English, Guam), kankan (English, Guam), kangkun (English, Guam), liseron d'eau (French)

**Synonym** 

*Ipomoea repens* , Roth *Ipomoea reptans*, Poiret Convolvulus repens, Vahl Ipomoea subdentata, Miq.

**Similar species** 

**Summary** 

Ipomea aquatica is rich in iron and is used traditionally to treat gastric and intestinal disorders. However, Ipomea aquatica is highly invasive, forming dense mats over the surface of water bodies, such as lakes, ponds, marshes, canals and ditches. It is also found in very moist soils, such as the muddy banks along streams. Ipomea aquatica spreads rapidly from plant fragments and its floating seeds allow effective colonisation of new areas. Aquatic herbicides, whilst generally effective, are not specific enough to be used in many sensitive areas, making eradication very difficult.



view this species on IUCN Red List

### **Species Description**

Ipomoea aquatica is a trailing vine with milky sap. Stems are hollow, up to 3m long or more, rooting at the nodes, floating in aquatic situations." Stone (1970, in PIER, 2003) describes the leaves as being variable but commonly 5-15cm long and 2-10cm wide and oblong-lanceolate (arrowhead shaped) in shape. The flowers are described as being, showy, funnelform like morning-glory blooms, solitary or in few-flowered clusters at leaf axils; petals white to pink-lilac; the fruit as being, an oval or spherical capsule, woody at maturity, about 1cm wide, holding 1-4 grayish seeds, these often short-hairy. Two basic forms (with many cultivars of each) are recognized worldwide for this species "red," with red-purple tinged stems and pale pink to lilac flowers; and "green," with fully green stems and white flowers. A single plant of Chinese water spinach may grow taller than 21m and can branch profusely (Langeland K.A. & Burks K.C, 1999).



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#### Uses

Commonly used as a food plant in Asia (PIER, 2003). Popular among some recent immigrants as a common potherb from the homeland and has been studied in Florida as a vegetable crop. This is because the plant of its rich iron content (Langeland K.A. & Burks K.C, 1999). *I. aquatica* is relatively rich in S-methyl methionine (Vitamin U) and is used traditionally to treat gastric and intestinal disorders. Furthermore it has been found to have insulin-like properties acting as an anti-hyperglycaemic (Malalavidhane, Wickramasinghe & Jansz, 2000).

### **Habitat Description**

*Ipomoea aquatica* is found in fresh water aquatic habitats (PIER, 2003). *I. aquatica* has been found primarily in canals and ditches but also invades lakes. It grows well in moist soil or in still to flowing waters (Langeland K.A. & Burks K.C., 1999).

*I.* aquatica dwells in muddy stream banks, freshwater pond and lakes, and marshes. It is confined to the tropics and subtropics zones because it is susceptible to frosts and because it does not grow well when temperatures are below 23.9 degrees Celsius. Because of its prolific growth, this species can invade moist cultivated areas, such as rice and sugar cane fields, and other areas with varying water levels (Fears, UNDATED).

#### Reproduction

Under good conditions, *Ipomoea aquatica* can produce 190,000kg fresh weight biomass per ha in 9 months. It flowers in the warm months and produces 175-245 seeds per plant during the peak season (Langeland K.A. & Burks K.C, 1999).

#### **General Impacts**

*Ipomoea aquatica* forms dense floating mats of intertwined stems over water surfaces, shading out native submersed plants and competing with native emergents. It is considered the second greatest problem plant in the Philippines, where it tends to overgrow freshwater marginal areas. A common to serious weed in many areas in the tropics (Langeland K.A. & Burks K.C, 1999).

Masses of tangled vegetation obstruct water flow in drainage and flood control canals. They have infested lakes, ponds, and river shorelines, displacing native plants that are important for fish and wildlife. The veins of the plant create dense impenetrable canopies over small ponds and retention basins creating stagnant water conditions that are ideal breeding environments for mosquitoes (Fears, UNDATED).

#### **Management Info**

<u>Preventative measures</u>: Sale and distribution of *I. aquatica* is prohibited in Florida, however, the plant is still repeatedly introduced there.

\r\nChemical: According to Schardt & Schmitz (1990, in Fears, UNDATED), aquatic herbicides have been used to control the plant but the results were only temporary. 3-(3,4-dichlorophenyl)-1,1-dimethylurea (DCMU / Diuron) provided acceptable control in dry ditches but also controlled most other adjacent plants, which is unacceptable in areas of high conservation value. 1-1'-dimethyl-4,4'-bipyridylium dichloride (paraquat) and 2,4-dichlorophenoxyacetic acid (2,4-D) have both been shown to have an impact on plant growth (Ninomiya, Oogami, Kino-Oka, Taya, 2003). However as with DCMU, paraquat is a broad spectrum herbicide and would, in many cases, likely impact surrounding vegetation to an unacceptable level. N-(phosphonomethyl)glycine (glysophate) would probably be effective but again is a broad spectrum herbicide. More research needs to be undertaken on the effectiveness of 2,4 D which is a far more selective herbicide.

\r\n<u>Biological</u>: It would appear that biological control has not been attempted in its non-native habitats (Williams, A.E., pers.comm., 2004).

**Principal source:** *Ipomoea aquatica* (Fears, UNDATED)

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



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#### **ALIEN RANGE**

[1] AFRICA

[1] AUSTRALIA

[1] COOK ISLANDS

[1] FRENCH POLYNESIA

[2] KIRIBATI

[1] MAYOTTE

[1] NEW CALEDONIA

[1] PALAU

[1] PUERTO RICO

[1] SAMOA

[1] SOUTH AMERICA

[7] UNITED STATES

[1] AMERICAN SAMOA

[1] BRITISH INDIAN OCEAN TERRITORY

[1] FIJI

[1] GUAM

[1] MARSHALL ISLANDS

[1] MICRONESIA, FEDERATED STATES OF

[1] NORTHERN MARIANA ISLANDS

[1] PHILIPPINES

[1] REUNION

[1] SOLOMON ISLANDS

[1] TONGA

[1] UNITED STATES MINOR OUTLYING ISLANDS

#### **BIBLIOGRAPHY**

#### 14 references found for Ipomoea aquatica

#### **Managment information**

Fears, Nicole UNDATED. Water Spinach Exotic Aquatics on the Move [Online Database] Sea Grant.

Summary: This page contains information about description, habitat, impacts, origin, distribution, uses, and control measures. Available from: http://www.iisgcp.org/EXOTICSP/waterspinach.htm [Accessed 24 October 2003].

Ninomiya K., Oogami Y., Kino-Oka M., Taya M. (2003). Assessment of herbicidal toxicity based on non-destructive measurement of local chlorophyll content in photoautotrophic hairy roots. Journal of Bioscience and Bioengineering, 95, 3, 264-270.

**Summary:** Investigates the response of chlorophyll in the hairy roots of *I. aquatica* to various herbicide applications.

PIER (Pacific Island Ecosystems at Risk), 2003. Ipomoea aquatica

Summary: Ecology, synonyms, common names, distributions (Pacific as well as global), management and impact information.

Available from: http://www.hear.org/pier/species/ipomoea\_aquatica.htm [Accessed 24 October 2003]

Varnham, K. 2006. Non-native species in UK Overseas Territories: a review. INCC Report 372. Peterborough: United Kingdom.

Summary: This database compiles information on alien species from British Overseas Territories.

Available from: http://www.incc.gov.uk/page-3660 [Accessed 10 November 2009]

#### **General information**

Barthelat, F. 2005. Note sur les espêces exotiques envahissantes è Mayotte. Direction de le Agriculture et de la Forêt. 30p

Summary: Tableau synth tique des plantes exotiques de Mayotte class es en fonction de leur niveau d envahissement.

Conservatoire Botanique National De Mascarin (BOULLET V. coord.) 2007. Ipomoea aquatica.- Index de la flore vasculaire de la Rêunion (Trach�ophytes): statuts, menaces et protections. - Version 2007.1 (mise � jour 12 juin 2007). Disponible � http://flore.cbnm.org .

**Summary:** Base de donn@es sur la flore de la R@union. De nombreuses informations tr@s utiles.

Available from: http://flore.cbnm.org/index2.php?page=taxon&num=c24fe9f765a44048868b5a620f05678e [Accessed March 2008] Florence J. Chevillotte H. Ollier C. & Meyer J.-Y. 2007. Ipomoea aquatica. Base de donn@es botaniques Nadeaud de l Herbier de la Polyn@sie

**Summary:** Base de donn es sur le flore de Polyn sie Fran aise.

Available from: http://www.herbier-tahiti.pf/Selection Taxonomie.php?id tax=1215 [Accessed March 2008]

ISB (Institute for Systematic Botany) 2003. Ipomoea aquatica Atlas of Florida Vascular Plants [Online Database]

Summary: Brief listing of scientific name, common name, synonyms, and a Florida distribution.

Available from: http://www.plantatlas.usf.edu/main.asp?plantID=388 [Accessed 24 October 2003].

ITIS (Integrated Taxonomic Information System), 2005. Online Database Ipomoea aquatica

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=lpomoea+aquatica&p format=&p ifx=plglt&p lang= [Accessed March 2005]

Langeland, K.A. and Burks, K. C (Eds) 1998. Identification and Biology of Non-Native Plants in Florida s Natural Areas, University of Florida. Ipomea aquatica

**Summary:** Information on plants that pose threats to natural resource areas in Florida.

Available from: http://www.fleppc.org/ID book/ipomea%20aquatica.pdf [Accessed 30 December 2004]



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MacKee, H.S. 1994. Catalogue des plantes introduites et cultiv@es en Nouvelle-Cal@donie, 2nd edn. MNHN, Paris.

**Summary:** Cet ouvrage liste 1412 taxons (esp�ces, sous esp�ces et vari�t�s) introduits en Nouvelle-Cal�donie. L auteur pr�cise dans la majorit� des cas si l esp�ce est cultiv�e ou naturalis�e.

Malalavidhane T.S., Wickramasinghe S.M.D.N. & Jansz E.R. (2000). Oral hypoglycaemic activity of *Ipomoea aquatica*. *Journal of Ethnopharmacology*, 72, 293-298.

Summary: Looks at the hypoglycaemic properties of the plant in rats from Sri Lanka

Meyer, Jean-Yves & Loope, Lloyd & Sheppard, A. & Munzinger, Jérôme & Jaffré, Tanguy. (2006). Les plantes envahissantes et potentiellement envahissantes dans l'archipel néo-calédonien : première évaluation et recommandantions de gestion.

USDA-NRCS (Natural Resource Conservation Service). 2005. *Ipomoea aquatica*. 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=Ipomoea+aquatica [Accessed 24 March 2006].