Oreochromis mossambicus

Common name
Mozambikskaya tilapiya (Russian, Russian Federation), nkobue (Sena, Mozambique), mojarra (Spanish, Mexico), tilapia mozambique (Spanish, Mexico), tilapia del Mozambique (Spanish), Mozambique mouth-breeder (English), Mozambique mouthbrooder (English), Mozambique tilapia (English), tilapia mossambica (English, Dominican Republic), kawasuzume (Japanese), blou kurper (Afrikaans, South Africa), tai chau chak ye (Cantonese, Hong Kong), tilapia (English, Bangladesh), common tilapia (English, Fiji), Java tilapia (English, Fiji), kurper bream (English, Hong Kong), Mozambique cichlid (English, India), malea (Fijian), tilapia du Mozambique (French), mujair (Javanese, Indonesia), trey tilapia khmous (Khmer, Cambodia), wu-kuo yu (Mandarin, Taiwan), mphende (Nyanja, Malawi), weißkehlbarsch (German), mosambikmaulbrüter (German)

Synonym
Tilapia mossambica , (Peters, 1852)
Sarotherodon mossambicus , (Peters, 1852)
Chromis dumerilii , Steindachner, 1864
Chromis vorax , Pfeffer, 1893
Chromis natalensis , Weber, 1897
Tilapia arnoldi , Gilchrist & Thompson, 1917

Similar species
Oreochromis

Summary
Oreochromis mossambicus (Mozambique tilapia) has spread worldwide through introductions for aquaculture. Established populations of Oreochromis mossambicus in the wild are as a result of intentional release or escapes from fish farms. Oreochromis mossambicus is omnivorous and feeds on almost anything, from algae to insects.

view this species on IUCN Red List
Species Description
28-31 vertebrae; dorsal spines XV-XVII; total dorsal rays 26-29; 30-32 lateral line scales; anal spines III, lower outer gill rakers 14-20; fine pharyngeal teeth; breeding males black (not in some cultured strains) with white lower parts on head; red dorsal and caudal fin margins; remnants of striped and barred pattern often visible in females, juveniles and non-breeding males, as a series of mid-lateral and dorsal blotches; jaws of adult males greatly enlarged, concave dorsal head profile; male genital papilla simple or slightly notched; caudal fin not densely scaled.

Notes
Mozambique tilapia (Oreochromis mossambicus) are easy to keep and breed in captivity. The so-called red tilapia in aquaculture is a hybrid between O. mossambicus and either O. niloticus or O. hornorum. O. mossambicus is the research subject of many physiological and biochemical studies in Asia. The mouthbrooding habit of this species allows it to nurture and carry its young long distances to invade habitats far from the original site of introduction (Costa-Pierce, 2003). Outside of Asia exotic tilapia fishes were not imported directly from Africa, but arrived as transits from third or fourth party sources. Founder populations may be morphologically and meristically distinct in Africa but are still reproductively compatible due to their recent divergence (Costa-Pierce, 2003).

Lifecycle Stages
Size and age of sexual maturity varies according to environmental conditions, with spawning in ponds at 2-3 months and 6-10cm for females and 7-13cm for males at intervals of 1- 5 months. In natural conditions sexual maturity at greater age and size.

Habitat Description
Many tilapias (Oreochromis spp.) can live quite happily in seawater. The fact that they have not typically invaded coral reefs is perhaps due to predation by marine fishes. (Courtenay, W., pers. comm., 2004). Mozambique tilapia (Oreochromis mossambicus) is very hardy and tolerates the high salinities of atoll lagoons, such as that at Fanning Atoll (Lobel, 1980). Thought to be ideal pond fish, they readily produce stunted stocks when overcrowded, as has been observed on Pagan in the Northern Mariana Islands (Eldredge, 2000).

Reproduction
Egg-layer. Male builds spawning bowers. Up to 1775 ripe eggs in one female. Hatching after 3-5 days; fry released 10-14 days after spawning, but mouthbrooded for about another week; more than one brood per season. Reproductive performance of tilapias is affected by salinity, which suppresses the aggression of dominant males. O. mossambicus can reproduce at 35 and 49 ppt (Bhujel, 2000).

Nutrition
Mozambique tilapia (Oreochromis mossambicus) are opportunistic feeders; juveniles are mainly omnivorous, while adults mainly feed on detritus.
General Impacts
When introduced, Mozambique tilapia (Oreochromis mossambicus) may be a possible threat to native species through competition for food and nest space. Juveniles have been documented to feed on other fish (de Moor et al. 1986). Tilapia are now generally considered to be pests. Eradication has been suggested on Tarawa and Nauru (Eldredge, 2000). In Hawai‘i, this species is suspected to be a threat to native species such as striped mullet (Mugil cephalus) (Randall 1987; Devick 1991). Tilapia also have been considered a major factor in the decline of the desert pupfish (Cyprinodon macularius) in the Salton Sea area (Courtenay and Robins, 1989; Swift et al. 1993). Because of its presence in Dade County, Florida, Courtenay (1989) indicated that the Mozambique tilapia may eventually enter Everglades National Park.

Management Info
Mozambique tilapia (Oreochromis mossambicus) are hardy and can easily establish in natural waters near aquaculture ponds or cages, from which they may escape during loading-harvesting or via containment failures. Mozambique tilapia are particularly hardy, resistant to wide varieties of water salinity oxygen and pollution levels, and can migrate long distances. They are difficult to catch by angling. They occupy a wide range of habitats, and reproduce rapidly and successfully. Removal from natural water resources where they have established may be impossible. The most effective management is complete isolation of individuals from natural waters to prevent introductions. Established populations may require intensive fishing to prevent overpopulations from affecting native populations (Jeffrey McCrary pers.comm May 2005).

Preventative measures: The use of potentially invasive alien species for aquaculture and their accidental release/or escape can have negative impacts on native biodiversity and ecosystems. Hewitt et al. (2006) Alien Species in Aquaculture: Considerations for responsible use aims to first provide decision makers and managers with information on the existing international and regional regulations that address the use of alien species in aquaculture, either directly or indirectly; and three examples of national responses to this issue (Australia, New Zealand and Chile). The publication also provides recommendations for a ‘simple’ set of guidelines and principles for developing countries that can be applied at a regional or domestic level for the responsible management of Alien Species use in aquaculture development. These guidelines focus primarily on marine systems, however may equally be applied to freshwater.

Copp et al. (2005) Risk identification and assessment of non-native freshwater fishes presents a conceptual risk assessment approach for freshwater fish species that addresses the first two elements (hazard identification, hazard assessment) of the UK environmental risk strategy. The paper presents a few worked examples of assessments on species to facilitate discussion. The electronic Decision-support tools- Invasive-species identification tool kits that includes a freshwater and marine fish invasives scoring kit are made available on the Cefas (Centre for Environment, Fisheries & Aquaculture Science) page for free download (subject to Crown Copyright (2007-2008)).

Pathway
Mozambique tilapia (Oreochromis mossambicus) have been introduced to many locations mainly for aquaculture. Mozambique tilapia has been directly introduced as a fishery resource by governmental agencies and individual anglers into natural waters th
GLOBAL INVASIVE SPECIES DATABASE
FULL ACCOUNT FOR: Oreochromis mossambicus

Principal source:

Compiler: Dr. Jos Snoeks, Africa Museum, Leuvensesteenweg, Tervuren, Belgium & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Dr. Jos Snoeks, Africa Museum, Belgium.

Publication date: 2006-06-22

ALIEN RANGE

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[1] REUNION
[1] SAINT LUCIA
[1] SAUDI ARABIA
Red List assessed species 21: CR = 2; EN = 9; VU = 7; LC = 3;

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<td>Barbus andrewi</td>
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<td>Travancoria elongata</td>
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BIBLIOGRAPHY

70 references found for Oreochromis mossambicus

Management information


Summary: Chapter on Oreochromis mossambicus from a list of non-indigenous species in the Gulf of Mexico ecosystem.


Summary: The electronic tool kits made available on the Cefas page for free download are Crown Copyright (2007-2008). As such, these are freeware and may be freely distributed provided this notice is retained. No warranty, expressed or implied, is made and users should satisfy themselves as to the applicability of the results in any given circumstance. Toolkits available include 1) FISK- Freshwater Fish Invasiveness Scoring Kit (English and Spanish language version); 2) MFISK- Marine Fish Invasiveness Scoring Kit; 3) MI-ISK- Marine invertebrate Invasiveness Scoring Kit and Amphisk- Amphibian Invasiveness Scoring Kit. These tool kits were developed by Cefas, with new VisualBasic and computational programming by Lorenzo Vilizzi, David Cooper, Andy South and Gordon H. Copp, based on VisualBasic code in the original Weed Risk Assessment (WRA) tool kit of P.C. Pheloung, P.A. Williams & S.R. Halloy (1999).

The decision support tools are available from:

The guidance documents are available from http://www.cefas.co.uk/media/118009/fisk_guide_v2.pdf [Accessed 13 January 2009].


**Summary:** The discussion paper presents a conceptual risk assessment approach for freshwater fish species that addresses the first two elements (hazard identification, hazard assessment) of the UK environmental risk strategy. The paper presents a few worked examples of assessments on species to facilitate discussion.

Available from: [http://www.cefas.co.uk/publications/techrep/tech129.pdf](http://www.cefas.co.uk/publications/techrep/tech129.pdf) [Accessed 1 September 2005]


**Summary:** Available from: [http://sisbib.unmsm.edu.pe/BVrevistas/biologia/v17n2/pdf/a07v17n2.pdf](http://sisbib.unmsm.edu.pe/BVrevistas/biologia/v17n2/pdf/a07v17n2.pdf) [Accessed 23 February 2011]


**Summary:** This document reviews and analyses published literature, grey literature, and personal communications on the social, economic and environmental impacts of tilapias in the Asia and the Pacific.


**Summary:** Discusses the most invasive freshwater fish in the Pacific region and also includes a checklist of introduced fish to the Pacific.


**Summary:** This publication aims to first provide decision makers and managers with information on the existing international and regional regulations that address the use of alien species in aquaculture, either directly or indirectly; and three examples of national responses to this issue (New Zealand, Australia and Chile).


**Hogan, A. and Vallance, T. (undated). An assessment of an NHT project to re-establish riparian zones as a Tilapia control measure. Queensland Department of Primary Industries, Walkamin QLD.**

**Summary:** A management plan that aims to reduce tilapia numbers by improving stream habitat quality.

Summary: Has one record of tilapia in Hawaii.


Summary: A record of tilapia in Pearl Harbor.


Summary: 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.


Spanish:
La lista de especies del Sistema de información sobre especies invasoras de M?xico cuenta actualmente con información acerca de nombre científico, familia, grupo y nombre común, así como h?bitat, estado de la invasión y en México, rutas de introducción y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una ligadirecta a la p?gina de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualizaci?n, por favor consulte la portada (http://www.conabio.gob.mx/invasoras/index.php/Portada), en la secci?n de novedades, para conocer los cambios.

Especies invasoras - Peces is available from:


Summary: Contains information about the native range and introduced distribution of tilapia.


Summary: New additions and persistence of the introduced fishes of the upper San Antonio River, Bexar County, Texas. The Texas Journal of Science 53(3).

Summary: Information on the effects of tilapia in the upper San Antonio River.


Summary: Lists locations where tilapia have been established and their impacts.

FishBase, 2005. Species profile Oreochromis mossambicus Mozambique tilapia

Summary: FishBase is a global information system with all you ever wanted to know about fishes. FishBase on the web contains practically all fish species known to science. FishBase was developed at the WorldFish Center in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and many other partners, and with support from the European Commission (EC). Since 2001 FishBase is supported by a consortium of seven research institutions. You can search on Search FishBase.

This species profile is available from: http://www.fishbase.org/Summary/SpeciesSummary.cfm?id=3 [Accessed 21 March, 2005]
Food and Agriculture Organisation of the United Nations (FAO), 1998. Aquatic Species Introductions Database (DIAS).

Summary: The database includes records of aquatic species introduced or transferred from one country to another and does not consider movements of species inside the same country. Coverage of accidental introductions of organisms (e.g., through ship ballast waters) is not complete and records on this topic have been generally entered only when important impacts on fisheries or on the environment have been caused.

Food and Agriculture Organisation of the United Nations (FAO), 2004. Database on Introductions of Aquatic Species.


Summary: Consequences to the biodiversity of New Caledonia of the introduction of plant and animal species.


Summary: Information on tilapia in South Africa’s Western Cape Province.

ITIS (Integrated Taxonomic Information System), 2005. Online Database Oreochromis mossambicus

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.


Summary: Information on tilapia in South Korea.


Summary: Information on the commercial production of tilapia in Venezuela.


Summary: Information on the effects of tilapia on an endangered New Caledonian fish.


Lobel, P. S. 1980. Invasion by the Mozambique tilapia (Sarotherodon mossambicus; Pisces; Cichlidae) of a Pacific atoll marine ecosystem. Micronesica 16(2): 349-355.


Summary: Information on tilapia aquaculture in Fiji.


Summary: Useful information on the distribution of tilapia in Western Australia.

GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: Oreochromis mossambicus


Summary: A small amount of information on tilapia in Nicaragua.


Summary: A substantial database record of O. mossambicus within the US.


Summary: Information on tilapia in Papua New Guinea.

Available from: [Accessed 2 February 2005]


Summary: Information on the presence of tilapia in the Salton Sea and information on the location itself.


Summary: Information on the presence of tilapia in the Salton Sea, California.


Summary: Information on worldwide commercial production of tilapia.


Summary: Information on tilapia in Indian reservoirs.


Summary: Overview of the natural distributions and introductions of the tilapias important for aquaculture.


Summary: Has records of tilapia in the region of the Black Sea.


Summary: Outlines the distribution of tilapia in Australia.


Summary: Mentions that tilapia make up part of the diet of the Cape clawless otter in Groenvlei Lake.


Summary: Information on the habitat preferences of tilapia in South Africa.