Oreochromis mossambicus (Peters, 1852)

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Synonyms
Chromis mossambicus Peters, 1852

FAO names
Mozambique tilapia

Local names
Afrikaans: Blou kurper (South Africa), Blou-kurper (South Africa), Bloukurper (South Africa), Grootbekkurper (South Africa), Mosambiek-tilapia (South Africa), Mosambiekkurper (South Africa), Mossambiekkurper (South Africa), Rooivinkurper (South Africa)
Creole, French: Lapia (Réunion, Seychelles), Tilapya (Réunion, Seychelles)
Digo: Para para (Kenya)
English: Mozambique tilapia (official FAO and AFS name, Kenya, Namibia, South Africa, Zimbabwe), Blue bream (South Africa), Blue tilapia (South Africa), Largemouth tilapia (South Africa), Mocambique tilapia (South Africa), Mozambique cichlid (old FAO name), Mozambique mouthbrooder (old AFS name), Redfin tilapia (South Africa),
Malagasy, Betsimisaraka: Sembaka (Madagascar)
Nyanja (Chichewa): Mphende (Malawi)
Sena: Nkobue (Mozambique)
Venda: Bende (South Africa), Khala (South Africa), Thipende (South Africa), Tshena (South Africa), Tshikwea (South Africa)

Geographical distribution
Lower Shiré and Lower Zambezi, and coastal plains from Quelimane (Mozambique) southwards to the Bushmans River (South Africa) (Trewavas 1983; Skelton 2001). Widely introduced for aquaculture, but escaped and established in the wild in many countries, often outcompeting local species (Kottelat & Whitten 1996). Several countries report adverse ecological impact after introduction.

Habitat and Biology
Adults thrive in standing waters (Crass 1964; Skelton 2001). Inhabits reservoirs, rivers, creeks, drains, swamps and tidal creeks; commonly over mud bottoms, often in well-vegetated areas (Allen et al 2002). Also found in warm weedy pools of sluggish streams, canals, and ponds (Page & Burr 1991).

Common in blind estuaries and coastal lakes (Blaber 1997), but usually absent from permanently open estuaries and open sea (de Moor & Bruton 1988) and from fast-flowing waters (Crass 1964; Skelton 1993). Normally not found at high altitudes (de Moor & Bruton 1988). Able to survive extreme reduction of temporary water bodies (Trewavas 1983; Lévêque 1997; Marshall 2011). Highly euryhaline (Pienaar 1978; Balarin 1979; Trewavas 1983; Thys van den Audenaerde 1988; de Moor & Bruton 1988; Bell-Cross & Minshull 1988; Lévêque 1997; Gupta & Acosta 2004). Grows and reproduces in fresh-, brackish and seawater (Bardach et al 1972; Balarin 1979; Bruton et al 1982; Trewavas 1983; Wohlfarth & Hulata 1983; Suresh & Lin 1992; Lévêque 1997). Can be reared under hyper-saline conditions (Robins et al 1991; Allen et al 2002; Lamboj 2004). Tolerates low dissolved oxygen levels (Chervinski 1982; Phillipart & Ruwet 1982; de Moor & Bruton 1988). Mainly diurnal. May form schools (Phillipart & Ruwet 1982; Robins et al 1991; Allen et al 2002). Omnivorous (Bell-Cross 1976; Wohlfarth & Hulata 1983), feeds mainly on algae and phytoplankton (Crass 1964; Bell-Cross 1976; Bell-Cross & Minshull 1988; Robins et al 1991; Skelton 1993; Allen et al 2002; Lamboj 2004) but also takes some zooplankton, small insects and their larvae (Bell-Cross 1976; Bell-Cross & Minshull 1988; Robins et al 1991; Skelton 1993; Allen et al 2002; Lamboj 2004), shrimps (Bell-Cross 1976; Bell-Cross & Minshull 1988), and aquatic macrophytes (de Moor & Bruton 1988). Juveniles are carnivorous/omnivorous, adults tend to be herbivorous or detritus feeders (Trewavas 1983; Otto-Infante 1985; de Moor & Bruton 1988). However, large individuals have also been reported to prey on small fishes (Crass 1964; Pienaar 1978; Trewavas 1983; de Moor & Bruton 1988), and occasionally cannibalise their own young (Trewavas 1983; de Moor & Bruton 1988). Exhibits considerable plasticity in feeding habits (Maitipe & De Silva 1985; de Moor & Bruton 1988) as well as in reproductive biology (Maitipe & De Silva 1985). Polygamous (Bell-Cross 1976; Bell-Cross & Minshull 1988), maternal mouthbrooder (Bell-Cross 1976; Bruton et al 1982; Trewavas 1982; Bell-Cross & Minshull 1988). Reaches sexual maturity at 15 cm length (Allen et al 2002), but stunted fish may breed at 6-7 cm and at an age of just over 2 months (Lamboj 2004). Fecundity high (Gupta & Acosta 2004). Extended temperature range 8-42 °C, natural temperature range 17-35°C (Phillipart & Ruwet 1982), with salinity-dependent differences in temperature tolerance (Chervinski 1982; Trewavas 1983). Somewhat aggressive towards other species (Bardach et al 1972). Used extensively in biological, physiological and behavioural research (Skelton 1993). Translocated and introduced for aquaculture, sport fishing, stocking man-made lakes and biological control of nuisance plants and animals; a most successful and vagile invader (de Moor & Bruton 1988). Hybridisation with *O. niloticus* and decreasing population trends caused the species to be assessed as vulnerable by IUCN (Bills 2019).

Key features

Snout long; forehead with relatively large scales, starting with 2 scales between the eyes followed by 9 scales up to the dorsal fin (Pfeffer 1893, 1894). Adult males develop a pointed, duckbill-like snout (Lamboj 2004) due to enlarged jaws, often causing the dorsal head profile to become concave in large specimens (Bell-Cross 1976; Bell-Cross & Minshull 1988; Trewavas 1983; Skelton 2001; Lamboj 2004). Dorsal head profile convex in smaller specimens (Weber 1897; Boulenger 1899). Pharyngeal teeth very fine, the dentigerous area with narrow lobes, the blade in adults longer than dentigerous area; 28-31 vertebrae; dorsal fin with 15-17 spines and 10-13 soft rays, anal fin with 3 spines and 9-12 soft rays; 14-20 lower gill-rakers; genital papilla of males simple or with a shallow distal notch; caudal fin not densely scaled; female and non-breeding male silvery with 2-5 mid-lateral blotches and some of a more dorsal series; breeding male black with white lower parts of head and red margins to dorsal and caudal fins (Trewavas 1983).

Interest to fisheries

FAO (2024) does not hold statistics from any African country, which is remarkable in view of its economic importance. Capture production statistics are available in FAO (2024) only for Indonesia, Papua New Guinea and Thailand, where the species was introduced.

This highly commercial species is an important fisheries component in lacustrine environments throughout its distribution area. In the Kosi Bay system (South Africa) its contribution varied between 7% (gillnets) to almost 30% (spearfishing) of the catches (Kyle 1986). In Lake Chicamba (Mozambique), *Coptodon rendalli* and *O. mossambicus* made up over 50% of the total subsistence catch (Weyl & Hecht 1998). It dominated the Maputo Special Reserve (Mozambique) fish fauna averaging 25% of the catch composition at sites (range 1-100%) and was abundant in the Mozambican lakes Piti, Xingute, Maxai and Nhame (Bills 2001). Harding & Koekemoer (2011) studied a suite of eutrophic and hypertrophic South African dams and concluded that, by targeting the fish species as recommended, the fish communities will naturally shift towards *O. mossambicus* as the most important species. This species was attributed a tremendous commercial potential as a high-quality table fish that is also a highly desirable species from an ecological perspective as it has an omnivorous feeding behaviour and is also an algal feeder (Harding & Koekemoer 2011). In the artisanal fisheries in the Ndumo area of the Lower Phongolo River floodplain (South Africa), the species is the second most important, both in terms of percentage of consumption (77.4%) and percentage of fishermen targeting the species (85.5%), preceded only by *Coptodon rendalli* (Coetzee et al 2015).

In the Shire River floodplain, *O. mossambicus* is one of the principal species, targeted with gill nets, cast nets, long line, and fish traps, and is fairly heavily exploited. In the 1999/2000 fishing season, 1543 tons were caught, and together with *Clarias gariepinus* (1927 tons caught) made up over 70% of the catches. Maximum selectivity for long lines occurred at a length before maturity. In addition, a considerable proportion of juveniles were also selected. Furthermore, the reduction in length at first maturity (from 106mm SL in Willoughby & Tweddle 1978 to 58 mm SL in Chimatiro 2004) and 50% sexual maturity in the Lower Shire Floodplain might have been caused by the increase in fishing pressure exerted on the stocks, which might have led to changes in life-history traits of the current populations. Management for the floodplain should be centered on controlling overfishing and preserving the spawner stock, by banning seine and mosquito nets, and closing the river floodplain and permanently connected lagoons to fishing during the low flood regime (Chimatiro 2004).

Introduced into the Orange River, *O. mossambicus* seems to have drastically increased in abundance since the early 1980s. The study from Naesje et al (2007), conducted between 1995-2001 in the lower Orange River, found that *O. mossambicus* was the fourth most important species in all gear types, contributing to 11.4% of the abundance in number (but only 4.9% of the biomass). This is considerably higher than the numbers documented by Cambray (1984) (2% of the total number sampled). Recruitment had also been extremely successful, with large numbers of juvenile fish recorded. It is expected that this abundance will increase in the future, which may be detrimental to the native fish populations, especially to *Tilapia sparrmanii* (Naesje et al 2007).

The introduction of *O. niloticus* may cause a serious hazard for the local *O. mossambicus* stocks, which are at risk of extirpation or will be localized in isolated habitats (Tweddle 2010; Marshall 2011; Madzivanzira et al 2022). In the Limpopo River extensive hybridisation and introgression between both species was observed (D'Amato et al 2007; Tweddle & Wise 2007; Firmat et al 2013).

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