

Tilapia :

Species and geographical distribution in Africa



FAO/ASTF GCP/RAF/510/MUL: Enhancing capacity/risk reduction of emerging Tilapia Lake Virus (TiLV) to African tilapia aquaculture

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Facts and figures – Tilapia in Africa

- Tilapia - originated exclusively from Africa and Middle East
- Widely distributed all over Africa
- Several species have been introduced into many countries within Africa & worldwide for various objectives
- Almost all tilapia produced in Africa is locally consumed, with very limited exports (out of Africa)
- By far, Nile tilapia has become a major candidate for commercial aquaculture in Africa and worldwide
- Tilapia is a traditional and favourite dish in almost all countries of Africa
- **Wild/Capture tilapia production in Africa (2017): >400,000 MT**
- **Tilapia aquaculture production in Africa (2017): 1.2 million MT**

Factors behind the wide distribution of tilapia

- Habitat diversity is one of the major factors behind the wide distribution of tilapia. In Africa, for example, tilapia inhabit a wide range of ecologically and geographically different habitats eg rivers, lakes, swamps etc
- Tilapia has thrived naturally in a wide range of environmental conditions, including desirable temperature, depths, oxygen, competition, food availability, productivity etc

Tilapia Introductions

Tilapias were introduced into many tropical, subtropical and temperate regions of the world during second half of the 20th century, mainly for the following reasons:

- i. For farming as food fish
- ii. Development of new fisheries (capture)
- iii. For recreational fishing
- iii For aquatic weed control
- iv For research purposes

Aquaculture production of Tilapias

Tilapia have become a favourable candidate species for aquaculture due to its:

- ✓ Fast growth
- ✓ Tolerance to a wide range of environmental conditions (such as temperature, salinity, low dissolved oxygen, etc.)
- ✓ Resistance to stress and disease
- ✓ Ability to reproduce in captivity and short generation time.
- ✓ Feeding on low trophic levels & acceptance of artificial feeds
- ✓ Ready market

Tilapia culture is now practised almost all African countries.

In Egypt - mainly in brackish-water environments in lake areas along the Mediterranean coast

Tilapia genus

Currently, tilapia cichlid family is divided into three genera:

- 🐟 *Tilapia* (substrate spawners)
- 🐟 *Sarotherodon* (maternal/paternal mouthbrooders)
- 🐟 *Oreochromis* (maternal mouthbrooders).

The taxonomic classification of tilapia is still confusing and subject of continuous modification.

Distribution of tilapia

- *Tilapia genus* is widely distributed in West and Central Africa,
 - *T. rendalli*, *T. zillii*
- *Sarotherodon genus*, is restricted to West Africa, also eastwards towards the Nile and the first Rift lakes
 - *S.galilaeus*,
- *Oreochromis genus* are distributed more in the Central and Eastern African regions (rift valley lakes in East Africa)
 - *O. mossambicus*, *O. aureus*, *O. niloticus*, *O.machrochir*, *O. shiranus* etc

Outside Africa, tilapia are now widely distributed worldwide (Asia, South and Central America, Southern India, Israel)

The species in Africa

Several.....but of commercial importance are:

Nile Tilapia	<i>Oreochromis niloticus</i>
Mozambique Tilapia	<i>Oreochromis mossambicus</i>
Blue Tilapia	<i>Oreochromis aereus</i>
Three Spotted Tilapia	<i>Oreochromis andersonii</i>
Redbreast Tilapia	<i>Tilapia rendalli</i>
Greenheaded/Longfin Tilapia	<i>Oreochromis macrochir</i>
Karonga Tilapia/Tilapia shiranus	<i>Oreochromis karongae and Oreochromis shiranus</i>
Redbelly Tilapia	<i>Tilapia Zilli</i>

Nile Tilapia

(*Oreochromis niloticus*)



Nile Tilapia

(*Oreochromis niloticus*)



- Has been important in both capture & aquaculture production in Africa
- Native within the tropical and subtropical regions of Africa and Middle East.
- Widely distributed in the Nile and Niger River basins; in lakes Tanganyika, Albert, Edward, and George, and other lakes in western and eastern Africa
- Accounts for over 90% of total tilapia aquaculture in Africa
- Introduced Nile Tilapia has been widely reported a threat to local/indigenous tilapias

Nile Tilapia

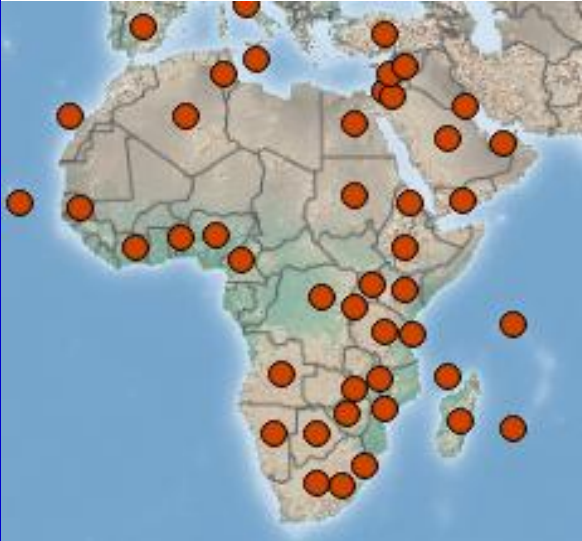
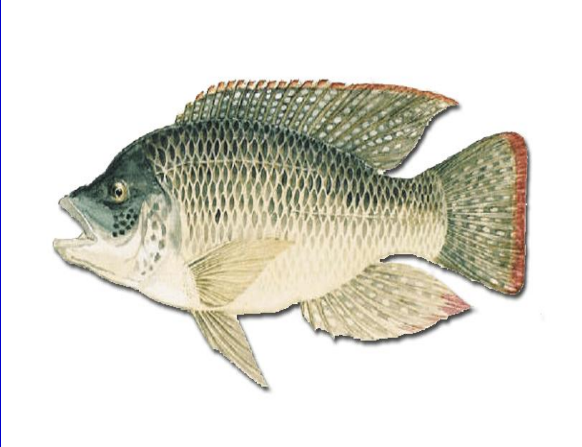
(*Oreochromis niloticus*)



- Meaningful to food security in many parts of Africa (because of volumes produced)
- Almost all major tilapia commercial farms in Africa use niloticus
- Widespread for small scale fish farms
- Improved strains - selective breeding and genetic improvements work ongoing

Mozambique Tilapia

(*Oreochromis mossambicus*)



- Southern Africa: Lower Zambezi, Lower Shiré and coastal plains from Zambezi delta to Algoa Bay.
- Some parts of South Africa (Limpopo system)
- Widely introduced for aquaculture, but escaped and established itself in the wild in many countries, often outcompeting local species
- **Several countries report adverse ecological impact after introduction.**
- Was the first tilapia species to be introduced to Asia (1940s)
- No so favoured for commercial aquaculture due to problem of overcrowding and poor growth.
- Aquaculture of Mozambique tilapia is happening mainly in Southern Africa, but success rates are low

Blue Tilapia

(Oreochromis aureus)



- North-West Africa and Middle East: Lower Nile, Chad Basin, Benue, middle and upper Niger, Senegal River, Jordan Valley
- Limited reports of adverse ecological impact after introduction.

Redbelly Tilapia (*Tilapia Zillii*)



- *Tilapia zillii* is used for aquaculture, commercial aquarium trade, a weed control agent, and as a recreational fishery for many countries throughout the world
- Its native range includes tropical and subtropical Africa, mostly in West Africa and Central to East Africa

Three-spotted tilapia

(Oreochromis andersonii)



- Southern Africa: Okavango River; Cunene River and some parts of Angola; upper Zambezi, Kafue River; middle Zambezi, Lake Kariba and Cabora Bassa
- Several countries report adverse ecological impact after their introduction
- Aquaculture trials of andersonii happening in some parts of Northern Namibia, Zambia with low success rates

Redbreast tilapia

(Tilapia rendalli)



- Central to Southern Africa: Congo River basin Bangweulu area; Lake Malawi, Zambezi, Okavango and Cunene basins, Limpopo, Lake Tanganyika, Cuanza and Catumbela rivers in Angola
- Introduced elsewhere usually for weed control and aquaculture
- Several countries report adverse ecological impact after its introduction.

Longfin/ greenhead tilapia (*Oreochromis macrochir*)



- Southern Africa: Kafue, upper Zambezi, and Congo River systems; Also in the Okavango, Ngami region, Cunene basin, Bangweulu region
- Have often been bred in captivity before being released into the wild (restocking of water bodies)

Oreochromis karongae and *Oreochromis shiranus*



- *Jewels of Malawi!*
- *O. karongae* : Southern Africa: Lake Malawi.
- *O. Shiranus*: Southern Africa: Malawi's Shiré Lake Malawi and its tributary rivers, Lake Chilwa and its basin in Malawi and Mozambique
- Commercial aquaculture of *O. Shiranus* is developing well in Malawi

Reported negative ecological impacts on tilapia introductions in Africa

- Habitat destructions
- Hybridization with endemic species
- Disappearance of native species
- Infestation by parasites
- Accidental introductions (unknown future)

Acknowledgement

✓ *TILAPIA CULTURE BOOK: Abdel-Fattah M. El-Sayed*

✓ *CABI Invasive species compendium*

**Also
announcing:**



ISTA 12

19-21 June 2019

TWELFTH INTERNATIONAL SYMPOSIUM ON TILAPIA IN AQUACULTURE

Chennai Trade Center, Chennai, INDIA

Thank you!

