



RECORD OF *Oreochromis aureus* (STEINDACHNER, 1864) (TELEOSTEI: PERCIFORMES: CICHLIDAE) IN THE NATURAL WATERS OF TAMIL NADU, INDIA

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Of the many fish introduced globally for aquaculture, Tilapia can be considered as the most widely introduced species. The Mozambique Tilapia, *Oreochromis mossambicus* Peters, 1852, was the first species to be widely introduced for aquaculture. FAO Database on Introductions of Aquatic Species (DIAS; FAO, 2000-2009) states that *O. mossambicus* was first introduced to India during the year 1952 (Devadas & Chako, 1953) from Sri Lanka and Thailand for aquaculture with the idea of reservoir fisheries. *O. niloticus* Linnaeus, 1758, was introduced to India as late as 1990 from Thailand. *O. mossambicus* has found its way into the list of 100 of the World's worst Invasive Alien Species published by Invasive Species Specialist Group (ISSG) (Lowe *et al.*, 2000). It has established itself in the wild which may be attributed to intentional release or escapes from fish farms.

O. mossambicus and *O. niloticus* have become

widely spread throughout Asia and occur in natural and quasi-natural waters. This has caused increased concern among conservationists and environmentalists (Pethiyagoda, 1994). A similar species, *Oreochromis aureus* (Steindachner, 1864), commonly called the Blue Tilapia which is a native of Africa and Middle East has also been introduced for commercial fisheries. Though there is no official record of blue tilapia being introduced into India, specimens of *O. aureus* (fig. 2A, B & C) were collected by the senior author from water bodies in and around Pallikaranai marsh in Chennai, Tamil Nadu, India. These fishes could have been brought in accidentally along with *O. mossambicus* fingerlings for aquaculture. The meristic details of ten specimens of *O. aureus* collected from Chennai are as follows: D.17/12-13; P.1/12-13; V.1/5; A.3/9-11; C.16; Lateral row of scales: 30-33; L.I. pored scales in upper and lower rows: 20-23/14-18 and gill rakers in the first arch: 21-23/5-7. The

above characters agree with those given for *O. aureus* in Trewavas (1983). The lower pharyngeal bones of *O. mossambicus* and *O. aureus* of length 18.7 cm SL and 18.1 cm SL respectively are shown in (Fig. 1A, B, C & D). The blade length of the pharyngeal bone is longer than the median length of the toothed area in the former vs. the blade shorter than the median length of toothed area in the latter. The shape of the pharyngeal bone is as given for the species of *O. aureus* and for *O. mossambicus* by Trewavas (1983).

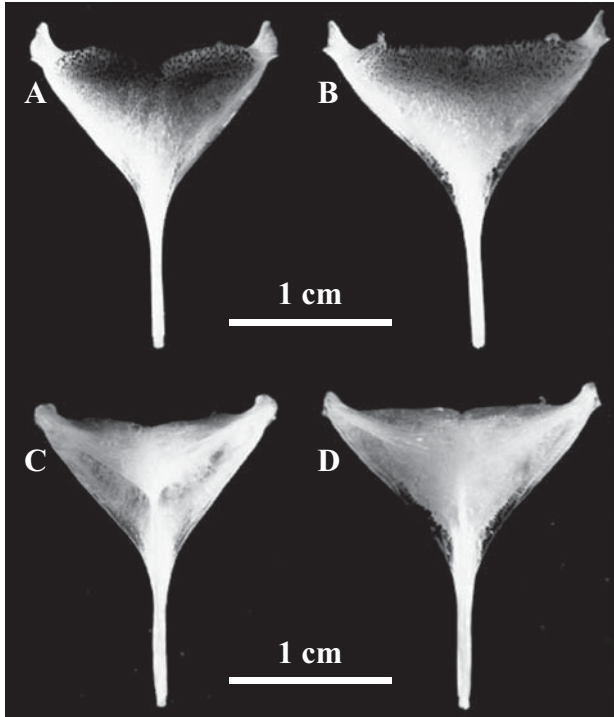


Fig. 01: The lower pharyngeal bones; A: dorsal view of *O. mossambicus*, B: dorsal view of *O. aureus*, C: ventral view of *O. mossambicus*, D: ventral view of *O. aureus*

The colouration of the fish can be described as grayish or bluish with a pale underside. Faint irregular bands can be seen on the sides and on the caudal fin. The distinguishing feature of *O. aureus* from *O. mossambicus* is the bands on the sides and the caudal fin. The faint bands on the tail and the broad pink distal portion also distinguishes it from *O. niloticus* which has numerous thin dark and clear bands on the caudal fin and the absence of the distal pink colouration, which character is used as the key feature for identification (Carpenter & Niem, 2001; Trewavas, 1983). Blue tilapias are fast growers and reach 35 cm in the first year (Winfree & Stickney, 1981). The females mature in a few weeks (Noble, 1989) or by the time they are 10 cm in length (Trewavas, 1983). Blue tilapias are freshwater fish but there are reports of them being recorded in

saline waters (Shafland & Pestrak, 1982; Trewavas, 1983). A breeding population of blue tilapia has been reported in the marine waters of Tampa Bay, Florida (Courtenay *et al.*, 1984). The blue tilapia has a wide range of feeding habits. They are considered to be herbivores (Noble, 1989) and others consider them as zooplanktivorous taking plant matter secondarily (Sparatu & Zorn, 1978).

The impact of blue tilapia on the aquatic ecosystem has been documented. Uprooting and deleafing of macrophytes has been recorded (Schwartz *et al.*, 1986). Blue tilapias have also been known to reduce light penetration by nest building which causes turbidity (Noble *et al.*, 1976) and compete for food and space with native species (Noble & Germany, 1986). A decline in native fishes has been recorded with the invasion of *O. aureus* (Scoppettone *et al.*, 2005). In the water bodies in and around the Pallikaranai marsh, blue tilapias co-exist with the Mozambique tilapia and specimens have been collected with striking characteristics of the Mozambique tilapia. Three kinds of specimens have been collected. The first was the typical *O. mossambicus*, which does not have any bands in its body and the truncate caudal fin without any vertical bands is black with pink colouration restricted to the tip (fig. 2D). The gill raker count for these specimens was 15-17 on the lower arm of the first gill arch. The second type was the typical *O. aureus* with faint bands on the caudal fin with a broad pink distal region, which is the main character of this species. The gill raker count for these specimens was 21-23 on the lower arm of the first gill arch. The third type of specimen were with unclear broken bands on the caudal fin and the distal portion of the caudal fin is black with pink colouration only at the tips and also the head profile resembles that of the Mozambique tilapia (fig. 2E). These specimens had 20-22 gill rakers on the lower arm of the first gill arch which is higher than that of the Mozambique tilapia which has less than 20 gill rakers (Trewavas, 1983). The occurrence of the forms intermediate between *O. aureus* and *O. mossambicus* could be due to the natural hybridization and the cases of such hybridization have been reported from Texas (Howells, 1991). Experiments have been conducted by crossing *Tilapia zilli* and *Tilapia guineensis* and the caudal fin of hybrids resembled both the parents (Nobah *et al.*, 2006). Therefore the specimens with caudal fin which resembled both *O. mossambicus* and *O. aureus* could be viewed as a hybrid giving scope to further study.

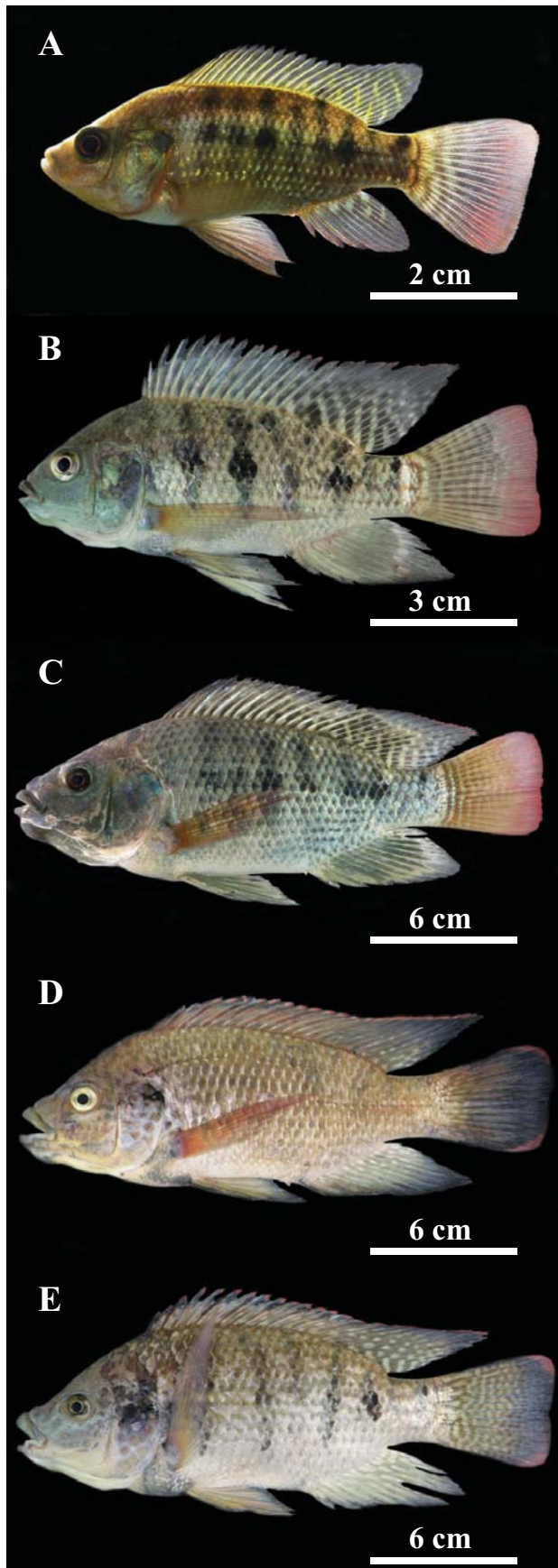


Fig. 02: (A) Juvenile *O. aureus* with pink distal end on the caudal fin, (B) Young *O. aureus* with metallic blue face, (C) Adult male *O. aureus* with bluish body and

bright pink distal end on the caudal fin, (D) Typical *O. mossambicus*, (E) Suspected *O. aureus* X *O. mossambicus*

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