

BIOLOGY OF TILAPIA

Tilapia is a member of the family *Cichlidae*. Three genera are well-known namely *Oreochromis*, *Tilapia* and *Sarotherodon*, of which Nile tilapia belongs to genus *Oreochromis*. This species is naturally distributed in Palestine, the Nile River as well as most part of African river and lakes. It was introduced in the Philippines in 1972. Its rising popularity is due to their hardness, resistance to diseases, ease in breeding, reasonable growth rate, good taste, and tolerance to a wide range of environmental conditions including temperature and salinities.

Taxonomic Positions of Tilapia

Most tilapia species of the tribe Tilapini now being used in aquaculture were grouped initially into one genus, *Tilapia*. The species within this genus were later classified according to differences in their mode of reproduction (Low McConnel; 1959 Trewawas, 1973, 1978, 1982). Species which evolved as substrate spawner but guard their eggs were retained in the genus *Tilapia* while those which orally rear their clutches were grouped into a new species *Sarotherodon*. Classification of the three genera *Tilapia*, *Sarotherodon* and *Oreochromis* was based largely on the differences on their reproduction and feeding habits.

Classification of Tilapia Species used in Aquaculture

Genus *Tilapia* (Substrate spawners)

Both parents guard, protect, aerate the breed, and help move clutch to different nest sites. Fry at first feeding are 4-5 mm and show feeble swimming ability. Fry survival relatively low.

Genus *Sarotherodon* (Paternal/biparental)

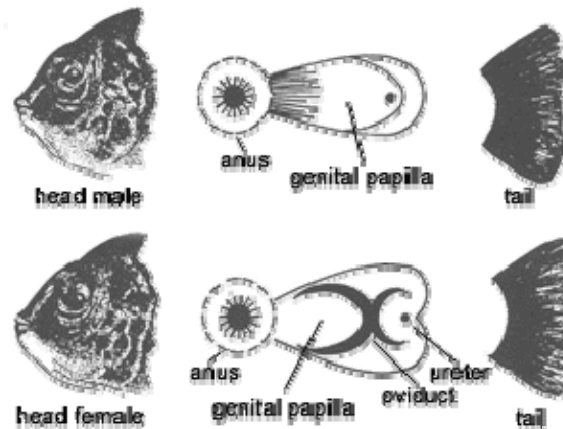
Both parents stay close to each other. Eggs and fry brooded in oral cavity up until they are ready for release. Brood may not be collected once released. Fry are between 7-9 mm at first breeding, well developed fins for swimming. Fry survival high.

Genus *Oreochromis* (Maternal)

Female solely involve in brood care. After spawning, female leaves nest to rear her clutch in safety. Fry brooded up until free swimming. There is an extended period of care during which fry seek shelter in buccal cavity for safety. First feeders have well-developed fins for swimming. Fry survival high.

Sex Identification

Sex identification of tilapia is relatively simple. The male has two openings just in front of the anal fin. The large opening is the anus and the smaller opening at the tip is the urogenital pore. The female has three openings: the anus, the genital pore, and the urinary pore. The genital papilla is usually smaller in the female. Tilapia can be sexed when it has attained the weight of 15 grams. Application of ink or dark dyes to the papillae may increase the accuracy of sexing and may allow sexing of smaller fish. By rubbing ink along the papillae of the tilapia, sexes can be readily distinguished.



Spawning

The Nile tilapia is a mouth-brooder. The male establishes a territory and builds a round nest in the pond bottom. (Usually the diameter of a nest is 30 to 60 centimeters. The size of the nest is correlated to the size of the male). The female enters the nest and lays the eggs. The eggs are fertilized by the male. The female then collects and incubates the eggs in her mouth. The eggs are yellow in color. Eggs hatch in about five to seven days. After hatching the fry remain in the mouth of the female for another four to seven days. The fry begin to swim freely in schools, but may return to the mouth of the mother when threatened. Females do not feed during incubation or the brooding period.

Females spawn every four to six weeks, but may spawn sooner if the eggs are removed. The number of eggs per spawning is related to the size of the female. A female of about 100 grams may produce approximately 100 eggs per spawning while a female of about 100 to 600 grams can produce approximately 1,000 to 1,500 or more eggs per spawning.