Reproductive System of Nile Tilapia

*Oreochromis niloticus*
by Bennett Hughes-Lock, Spring 2014

**Lek-Spawning**

Nile tilapia reach sexual maturity between 5 and 10 months when they reach a total length of 9 – 15 cm. Age of sexual maturity depends on the size of the habitat. Spawning is first observed at 19 °C. Males dig and aggressively defend a crater-like nest within a defined spawning territory, or lek. Nests are roughly 2X males' length or up to 1 m in diameter.

Females swim in schools over the nests to select mates. Males will perform a mating display to attract females. Females then select a mate and release eggs into nests where the males then fertilize them.

**Mouth Brooding**

Nile tilapia are mouthbrooders; females collect and incubate their eggs orally. Eggs hatch into fry in the their mouths after 4-5 days but females will continue to brood the fry orally until they absorb their yolk sacs; sacs attached to the fry provide early nourishment. The entire incubation and brooding period is ~15 days but varies with temperature. Female Nile tilapia eat little or nothing while brooding, so it can take up to 4 weeks before they are able to spawn again. Even after brooding, fry can swim back into their mother’s mouth cavity via her mouth or operculum.

**Reproductive Success**

Maternal mouth brooding provides enhanced parental care but also limits the number of eggs per spawn. Fecundity, or egg number, is proportional to the body weight of the female. Nile tilapia fecundity ranges from 149 – 2797 ova for individuals between 36 – 975 grams.

Males remain in their territory guarding their nest and continue to fertilize eggs from a succession of females. This tactic ensures the survival of the males’ genetic code. Spawning is suppressed by a period of cold temperatures. If temperatures do not drop, females will continue to spawn.

If there is no cold period, during which spawning is suppressed, the female may spawn continuously, making *O. niloticus* a good choice for large-scale aquaponics where legally permitted.