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Life-history of Nile tilapia in tropical lakes and reservoirs

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Tilapias are one of the major groups of introduced species, representing an important food source and improving the local development. However, changes in the size-structure of tilapia (from dense populations with large adults to overpopulations of stunted individuals) have threatened not only fishing but also appear to be responsible for the negative impacts on native species. In this work, we carried out a review on the attributes of Oreochromis niloticus in tropical lakes and reservoirs and we model the dynamics of individuals and populations. We found that the maximum size, fecundity and size-at-maturity are positively related to the lake area however is probably a function of tilapia competition for food/space. The model indicated a low energy required for reproduction making tilapias only ceases reproducing under very unfavorable food conditions. Under low food availability, tilapias reproduce early, producing more eggs per gram of fish. Still, high algae biomass in lakes may induce the stunting of individuals as a consequence of high reproduction of adults tilapias. Such characteristics make tilapia successful in environments with harsh conditions, increasing their abundance and impacts on other species, as well as may not bring the desired economic benefits due to the stunting. The management of tilapia populations is recommended mainly in small and eutrophic lakes, to avoid competition for space and food that reduce tilapia growth rates without altering reproduction. We suggest harvesting on juveniles in parallel with fishing on adults when it is desired to break the stunting state and ensure the sustainability of fishing.

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