Abstract

Tilapia production has increased in Aguamilpa Reservoir, in Nayarit, Mexico, in the last few years and represents a good economic activity for rural communities and the country. We determined growth parameters, mortality and reproductive aspects for 2,413 specimens of blue tilapia Oreochromis aureus in this reservoir. Samples were taken monthly from July 2000 through June 2001, of which 1,371 were males and 1,042 were females. Standard length (SL) and total weight (TW) were measured in each organism. The SL/TW relationships through power models for sexes were determined. The growth parameters $L_0$, $k$, and $t_0$ of the von Bertalanffy equation were estimated using frequency distribution of length through ELEFAN-I computer program. Finally the reproductive cycle and size of first maturity were established using morph chromatic maturity scale. The results suggested that the males and females had negative allometric growth ($b<3$). Significant differences were found between SL/TW model for the sexes, suggesting separate models for males and females. Results indicate that there are no differences in growth rates between sexes; the proposed parameters were $L=43.33$ cm standard length, $k=0.36$/year and $t_0=-0.43$ years. Natural and fishing mortality coefficients were 0.83/year and 1.10/year, respectively. The estimated exploitation rate (0.57/year) suggested that during the study period the fishery showed signs of overfishing. Blue tilapia reproduces year-round; the highest activity occurs from January through May and size of first maturity was 23 cm SL. We conclude that it is necessary to establish a minimum catch size in this reservoir based on the reproductive behavior of this species. Rev. Biol. Trop. 58 (4): 1577-1586. Epub 2010 December 01.

Keywords

Growth, reproduction, exploitation rate, Oreochromis aureus, Aguamilpa Reservoir, ELEFAN.