

**POPULATION PARAMETERS OF THE MAJOR
FISH SPECIES CONTRIBUTING TO THE FISHERY
OF THE SOUTHERN BOLGODA LAKE**

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ABSTRACT

The present study was undertaken to determine the population parameters such as Von Bertalanffy growth coefficient (K), Asymptotic length (L_{∞}), the total mortality (Z), natural mortality (M), fishing mortality (F), optimum exploitation rate (E_{max}), mean size of capture (L_c) and yield per recruit values (Y/R) of major fish species that contribute to the fishery of the Southern Bolgoda lake in order to make recommendations on the optimum level of exploitation of the species for sustainable utilization of the fishery resource of this inland water body.

Sampling of the catch was done once a month from October 1999 to April 2000 and once in a fortnight from May 2000 to October 2000 at the four landing sites of the lake. On each sampling day the total length of maximum of individuals of each species in the fishermens catch was measured. Water temperature and salinity were also measured at each visit. The length data were analysed using the FiSAT software package.

The most abundant fishes in the catch were *Mugil cephalus*, *Etroplus suratensis*, *Ambassis gymnocephalus* and *Lutjanus argentimaculatus*.

Minimum water temperature of 26°C was recorded in October 1999 and maximum of 32°C in May 2000. The highest value for asymptotic length

(L_{∞}) which was 40.4 cm was estimated for *Mugil cephalus* while the lowest L_{∞} (14.4 cm) was estimated for *A. gymnocephalus*. The highest value for K , which was 2.1 year^{-1} was also obtained for *A. gymnocephalus* and the lowest value of 0.47 year^{-1} was obtained for *L. argentimaculatus*. The highest Z value which was 7.29 year^{-1} was recorded for *A. gymnocephalus* and the lowest value, which was 0.41 year^{-1} was obtained for *M. cephalus*. In all fish species studied the recruitment patterns showed two uneven pulses separated by about 5 months. The lowest values for L_{25} , L_{50} , L_{75} were recorded for *A. gymnocephalus* while the highest values for these parameters were recorded for *M. cephalus*.

The optimum fishing effort for *L. argentimaculatus*, *A. commersoni*, *E. suratesis* and *M. cephalus* is higher than the present fishing effort. The optimum mean length at capture for these four species is smaller than the present value. Therefore, the fishing effort has to be increased and the mesh size has to be slightly reduced in order to exploit the fish stocks of these four species at the sustainable level. More studies have to be carried out to determine the optimum mesh size of gill nets used in the lake.