THE BIOLOGY AND FISHERY OF GREY MULLETS (MUGILIDAE, PISCES) IN NEGOMBO LAGOON, SRI LANKA

THESIS PRESENTED FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

TO THE

FACULTY OF SCIENCE

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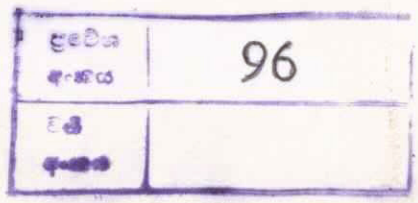
SRI LANKA



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ABSTRACT

The age, growth, reproductive biology, food, feeding and fishery of the grey mullet species Liza dussumieri, L. macrolepis, L. strongylocephalus, L. tade, Mugil cephalus and Valamugil buchanani in Negombo lagoon were studied from January, 1980 to December, 1982.

The highest growth during the first year of life was observed for L. macrolepis and M. cephalus while the lowest growth was observed for L. dussumieri. The calculated values for asymptotic lengths were highest for M. cephalus and lowest for L. strongylocephalus. The growth coefficients of the grey mullets which ranged from 0.0856 to 0.3365 showed a significant negative correlation with the asymptotic lengths. Isometric growth was evident only in M. cephalus and in the females of L. tade.

The values for absolute fecundity ranged from 80710 in L. strongylocephalus to 1683545 in M. cephalus. The relationships of fecundity with body size were significant in all species. The sex ratio was unbalanced in favour of males in all species other than in L. strongylocephalus where the females matured at a smaller size than the males. The grey mullets were found to be

non serial spawners breeding during different periods of the year. These periods usually extend over several months. The abundance of the grey mullets in the lagoon was found to be related to their breeding periods.

The grey mullets are all omnivorous grazers. A high overlap in the diets among different species as well as among different size groups of the same species was observed.

The grey mullet catch in the Negombo lagoon amounted to approximately 23000 kg/yr. This formed about 38% of the total landings of the entire lagoon. The most abundant species was found to be L. dussumieri which contributed about 37% of the total grey mullet catch.

It is suggested from the results that the use of brush parks and gill nets may be increased to maximise the sustainable yield of grey mullets. In addition, the increase of time period between implantation and fishing of brush parks from four weeks to two months or more and the operation of set nets without blocking the access channels to the lagoon will further enhance the catch.