CONTRIBUTIONS TO THE BIOLOGY OF YOUNG GREY MULLET *Mugil cephalus* L. AND ITS POTENTIAL AS A CULTURABLE SPECIES IN SRI LANKA.

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ABSTRACT

A basic study on the commonly occuring brakish water fish M.cephalus, was started at the Fisheries Research Station, Pitipana. Young mullets were reared in laboratory aquaria at four experimental salinities (/ 1‰, 10‰, 20‰ and 30‰). Fish were fed 5% body wt, 8% body weight and excess food with a mixture of rice bran and fish-meal (3:1). After some initial failure due to mortalities in tanks, eight experimental tanks got established. Growth was monitored in these for the experimental period. Mullets were also reared in two nursery ponds and one small fingerling pond. Fish in one pond were reared on algae, while those in the other two ponds were fed with 5% and 10% body weight of the artificial food mixture twice daily. Growth in the ponds were monitored for a period of 65 weeks. The temperature, pH, salinity and D.O. of the ponds were also monitored for the entire period. The biochemical composition of wild, tank and pond reared fish were also studied.

Food intakes, specific growth rate, and conversion efficiency of tank reared fish were found to be salinity dependant. Food intake increased with decreasing salinity, when food was presented in excess. Specific rate of growth was highest at 20‰, yet C.E. was lowest at this salinity. There was no appreciable difference in growth when fed 8% of the body weight of food or in excess.

Digestion rates increased with salinity, but decreased with increasing size upto a size of 5-6gm.

Biochemical differences were found between laboratory reared and wild young mullets. Tank reared mullet had a higher percentage of protein, lipid and carbohydrate and a lower percentage of water than the wild fish. Mullets in general, had a low percentage of carbohydrates (1.15%-4.75%) and a high percentage of fat (7.50%-25.00%). High protein levels among tank reared fish are found at 20‰ salinity. A few abnormalities, mostly confined to the caudal region were also noticed among reared mullet.

Physiochemical factors such as temperature, D.O, salinity, and pH showed diurnal and seasonal variation. These variations were all within the tolerance range of M.cephalus. Highest mean day time temperature (31.0°C - 32.2°C) were recorded during June-July and the lowest (28.4°C - 28.8°C) during December-January. Average salinities fluctuated between 10‰-28‰. Mean pH was 9.1-9.3

and varied very gradually. Highest D.O levels (11-12 mg O_2/l) were attained around 1400-1600hrs in the afternoon and the lowest values (2.5 - 4.5mg O_2/l) reached around 0500 - 0700hrs. Deoxygenation of the water during early hours of the morning was frequent in hot months. Two instances of deoxygenation in Pond B caused heavy mortalities.

The algal flora in brackish water ponds is represented by four major groups of algae Chlorophyceae, Bacillariophyceae, Cyanophyceae and Phytoflagellates. Filamentous bluegreen algae and numerous benthic diatoms produce a luscious pasture of algae that forms a favourite food of mullets of all sizes. Large growths of Cheatomorpha in ponds A and C were found undesirable.

Variety of organisms including Molluscs, Crustaceans and fish were found in association with mullets in the culture ponds. Majority of these such as Tilapia, Eleortis fusca, Puntius vitatus and snails etc compete with mullets for food and space. Successful elimination of these depend on proper pond preperation, careful selection of fry and proper installation of screens and mesh.

A yield of 582.5, 290.9 and 517.0 Kg/ha/year were obtained from ponds A,B, and C respectively. This yield, along with rates of daily increase in wt/fish of 0.154, 0.201 and 0.247gm for the three ponds in respec-

tive order are considered to be comparatively low. Similar growth rates of ponds B and C suggest that supplementary feeding in this experiment has not brought about an increased production.