SOME ASPECTS OF THE ECOPHYSIOLOGY OF THE CHINESE GRASS CARP (*CTENOPHARYNGODON IDELLA*)

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ABSTRACT:

Two species of Chinese carps, the grass carp (Ctenopharyngodon idella), and the big head carp (Aristichthys nobilis) were successfully cultured for the first time at the freshwater fish breeding and Experimental Station, Udawalawe, Sri Lanka between 1976 and 1978. Artificial propagation was successfully executed in 1977 and 1978. Methodology adopted in pond preparation and the culture process is briefly described.

The effect of temperature on the incubation time, fertilization and hatching rate of eggs of 4 females was studied at three different temperatures (28°C, 32°C and 33°C) and this was compared with the results from the hatcheries in the field. The effect of temperature on the mortality of larvae and fry of 3 females chosen at random, was also studied at two temperatures (28°C and 33°C).

It was observed that the fertilization rate generally decreased with increase in temperature. Although the

general tendency was an increase in hatching rate with increase in temperature, there was no overall marked difference in the hatching rate of eggs of the 4 females tested. At the higher temperature (32°C and 33°C) all the hatched larvae were deformed.

The deformities observed are described. Mortality also increased with increase in temperature, and the difference in mortality among the fry of different females, is assumed to be hereditery related.

The rate of growth of the fry of grass carp in mud ponds were compared with those in experimental tanks, maintained at two temperatures (28°C and 33°C) and fed on 2 different food types. (Plankton - poonac mixture and poonac).

It has been shown that the food intake was variable from day to day and that there was a general tendency for food conversion efficiency to decrease with increase in temperature. Food conversion efficiency also decreased with increase in size. It has been also shown that there

was a marked increase in growth among the fish feed with a diet of plankton and poonac mixture, than among the fish fed poonac alone. The rate of increase in weight was about the same in fish fed plankton-poonac mixture and in the fish cultured in the ponds. The rate of increase in weight decreased markedly in the fish fed poonac alone, when compared to those fed with plankton - poonac mixture and in the fish in mud ponds.

The monthly variation in the plankton content, oxygen content and temperature was investigated in 5 alternate ponds over a period of one year in order to fully understand the condition of the ponds in which the grass carp and bighead carp were cultured. The p^H was determined over a one month period. Also the variation in the plnakton biomass before and after stocking of grass carp fry was also investigated and shown in the results. This would help to get an idea of the quantity and quality of the plankton, and dissolved oxygen in ponds in which grass carp and big head carp are cultured under the conditions described in this paper: It would also help in future culture purposes in the field.

The changes in the feeding habit of grass carp fry with increase in growth, under natural conditions in the pond, were studied and was correlated to the availability of different components of plankton found in the pound. The time taken for complete gut evacuation was fould to decrease with increase in temperature and size. The decrease in the time for complete gut evacuation with increase in size in grass carp fry is correlated to an abrupt change in the feeding habit and the diet presented (Zooplankton) from a predominent carnivorous type until about the size of 25 mm, to an almost completely herbivorous habit beyond this size.