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Study of the Gonadosomatic Index of an ornamental fish, *Brachydanio rerio* (Ham)

Sushil Kr. Sarmah and Sharmistha Paul

Abstract

The present study was undertaken to trace precisely the spawning period of an important ornamental fish species, *Brachydanio rerio*. Gonadosomatic index (GSI) expresses the relative change in gonad weight to the percentage of body weight. In the present study two peaks are observed in the GSI of *Brachydanio rerio*, first peak is observed in the month of June and the second in the month of October.

Keywords: Gonadosomatic index, ornamental fish, *Brachydanio rerio*

1. Introduction

In India, especially Northeastern region, a number of fish species exists in natural water bodies, which have a good ornamental value due to their beautiful colour, shape, manageable size, hardness, compatibility and longevity. Survey in the wholesale market at Hatibagan in Kolkata and information from exporters revealed that a large group of indigenous fish has increased demand in overseas market like Japan and the Middle East. Although its price at the collecting site is nominal, the ultimate price is quite high so, there is a scope of developing the trade with varieties of indigenous fish species^[1]. Culture and breeding of indigenous fresh water ornamental fish species (OFS) of North Eastern Region (NER) are very little known due to lack of awareness and interest among the fish farmers. Among the 196 OFS of NER, the exporter of Kolkata and Chennai through some local suppliers exports nearly 27 OFS from NER^[1]. These OFS are all traded on wild caught and none venture for their culture and breeding. Therefore, the population of these valuable ichthyo-species are gradually declining due to over exploitations from their natural stock. The commercial organized export of freshwater OFS of NER depends primarily on assured and adequate supply as and when demand arises which is possible only through the mass breeding technique. The scientific management for obtaining high yields of fish production eventually calls the adequate and in-depth study of breeding mechanism. In order to complete the task, the present study was undertaken to trace accurately the spawning period of *B. rerio*. This is reported in terms of gonadosomatic index which express the relative change in gonad weight to the percentage of body weight.

2. Methodology

Material for the study was obtained from Deepor Beel and wetlands of Guwahati University Campus. Matured fishes were weighed along with the weight of gonads monthly. Later percentage of gonad weight in relation to the total body weight was calculated by using the following formula

$$GSI = \frac{\text{Total ovary weight}}{\text{Total weight of the body}} \times 100$$

Gonado-somatic index (GSI) is considered as an indicator of spawning frequency. And the index is also used to study the maturity of ovaries. The Gonado-somatic index (GSI) is studied for individual matured female fish after LeCren (1951),^[2] Marichamy (1984)^[3] and Wootton (1973, 1982)^[4, 5]. Gonadosomatic index of fish increases with maturation being maximum during peak periods of maturity and abruptly declines after spawning.

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Oceanographic History Keith Rodney Benson, Philip F. Rehbock, 2002 From a study of knowledge of the sea among indigenous cultures in the South Seas to inquiries into the subject of sea monsters from studies of Pacific currents to descriptions of ocean going research vessels the sixty three essays presented here reflect the scientific complexity and richness of social relationships that characterize ocean ographic history Based on papers presented at the Fifth International Congress on the History of Oceanography held at the Scripps Institution of Oceanography the first ICHO meeting following the cessation of the Cold War the volume features an unusual breadth of contributions Oceanography itself involves the full spectrum of physical biological and earth sciences in their formal empirical and applied manifestations The contributors to Oceanographic History The Pacific and Beyond undertake the interdisciplinary task of telling the story of oceanography's past drawing on diverse methodologies Their essays explore the concepts techniques and technologies of oceanography as well as the social economic and institutional determinants of oceanographic history Although focused on the Pacific the geographic range of subjects is global and includes Micronesia East Africa and Antarctica the bathymetric range comprises inshore fisheries coral reefs and the azoic zone The seventy one contributors represent every continent of the globe except Antarctica bringing together material on the history of oceanography never before published Monthly Catalogue, United States Public Documents , 1984

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