

STUDY ON THE FOOD AND FEEDING HABITS OF THE CHOCOLATE MAHSEER (*Neolissochilus hexagonolepis*) FROM MEGHALAYA, INDIA

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ABSTRACT

Chocolate Mahseer (*Neolissochilus hexagonolepis*) is a game fish and a commercially important species. Feeding intensity with respect to season, maturity stages and food items of this fish were investigated. The vegetable matter, algae and insects, form the basic food of the fish. There is a rise and fall in the feeding intensity of the fish during breeding season and the feeding intensity increased after the spawning season. The fish was found to be a voracious feeder as indicated by the high values of its gastro-somatic indices (G.S.I.). Morphology of the gut suggests that the gut is in a transitional stage between herbivorous and omnivorous condition.

KEYWORDS : *Neolissochilus hexagonolepis*, Feeding Intensity, GSI, Maturity Stages

Neolissochilus hexagonolepis (Commonly Known as Chocolate Mahseer) is a commercially important species and is widely recognized as a sport fish due to its tremendous size and strength facilities. It is highly esteemed by the anglers. In Meghalaya, the species locally known as Khasaw is one of the important food items as well as game fish of the region. However, the population of the species is in decreasing mode over the years (Sarma and Bhuyan, 2007) due to various anthropogenic factors. The rivers of Meghalaya are believed to be a suitable habitat for the species (Jyrwa et.al.; 2015). The study of the food and feeding habit of fishes provide keys for the selection of culturable species and the importance of much information is necessary for successful fish farming (Manon and Hossain; 2011). The present study deals with food and feeding habits of *Neolissochilus hexagonolepis* from Meghalaya.

MATERIALS AND METHODS

The specimens *Neolissochilus hexagonolepis* collected during the exploration of different rivers of Meghalaya during 2014-2015 were brought to the Hatchery Complex of St. Anthony's College, Shillong for the purpose of performing different experiments of the food and feeding habits of the fish. Analysis of gut for food was done in the fishes from natural water bodies. The stomach of the fishes was dissected and the gut content of the fishes was examined based on the method by Nikolsky (1963). The Gastro somatic Index (GSI) was determined by Bhatnagar

and Karamchandani (1970).

$$\text{G.S.I.} = \frac{\text{Weight of gut content}}{\text{Weight of Body}} \times 100$$

The Relative Length of the Gut (RLG) has been estimated by dividing the gut length by total length of the body (Al-Hussaini; 1949).

Feeding intensity of the species was observed in the fishes cultured in the specially constructed ponds in the hatchery complex of the department.

RESULTS AND DISCUSSION

In the present study, the overall result has been shown in the Table 1.

Gut Content

The gut contents of *Neolissochilus hexagonolepis* consist of Algae, Protozoa, Rotifera, Nematoda, Insecta, Crustacea, unidentified vegetable matter, unidentified animal matter, and sand particles. The vegetable matter, algae and insects form the basic food of the fish (which is normally eaten by fish and covering most of the stomach contents), in this study as per the definition of Nikolsky (1963). The animal matter, Protozoa, Rotifera, Nematoda, and Crustacea constituted the secondary food (which is frequently found in the stomach, but in smaller amounts. Sand particles were rare and therefore, considered as incidental food (which is found rarely in the stomach contents). Similar observations have also been made by Dasgupta (1988, 1990 & 1991).

In this study a change in the diet with increase in size was also observed. The smaller specimens consumed

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Table 1: Study of GSI, RLG & Food habit of *Neolissochilus hexagonolepis*

| Maturity stage | Seasons | No. of fish | GSI | RLG | Food habit |
|---------------------|------------------------------------|-------------|------|------|------------------|
| Stage I (Immature) | Spent (January –February) | 50 | 1.82 | 1.89 | Carni-omnivorous |
| Stage II (Maturing) | Pre-breeding (March –May) | 50 | 2.48 | 2.10 | Herbi-omnivorous |
| Stage III (Mature) | Breeding (June- August) | 50 | 0.63 | 2.81 | Herbi-omnivorous |
| Stage IV (Spent) | Post-breeding (September-December) | 50 | 1.32 | 2.04 | Carni-omnivorous |

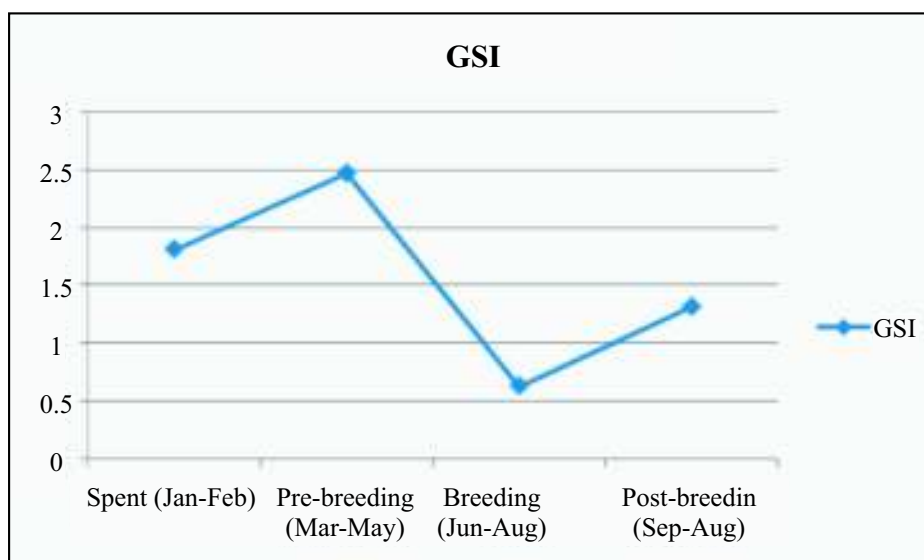


Figure 1: Seasonal GSI of *Neolissochilus hexagonolepis*

more of animal matter whereas large specimens consumed more of vegetable matter. The percentage of feeding was higher among the younger fishes as compared to the bigger fishes. Similar reports have also been made by Dasgupta (1988, 1990 & 1991).

Gastro-Somatic Index (GSI)

The seasonal GSI or feeding intensity of *Neolissochilus hexagonolepis* during the period of study has been presented in Figure 1. It is clear from the figure that there is a rise and in the feeding intensity of the fish. It was found out that GSI was lowest during the breeding period (June-August) and highest during the pre-breeding period (March-May).

Dasgupta (1982) reported that the species breeds during the April/May – October/November indicating that the period of low feeding intensity coincides with the

spawning period. The low feeding activity during the peak breeding season may be attributed to the completely developed gonads, permitting limited space in the abdominal cavity for intake of food. Further, the intensity in food intake increased following spawning and the fact that the fishes need more food for their growth. Dasgupta (1988) reported that the species is voracious feeder in natural condition.

The present study on *Neolissochilus hexagonolepis* revealed that to be a voracious feeder not only in riverine water but also in culture condition in ponds as indicated by the high values of its gastro-somatic indices (G.S.I.).

Relative Length of the Gut (RLG)

It has been observed in the present study that R.L.G. values of *Neolissochilus hexagonolepis* increase

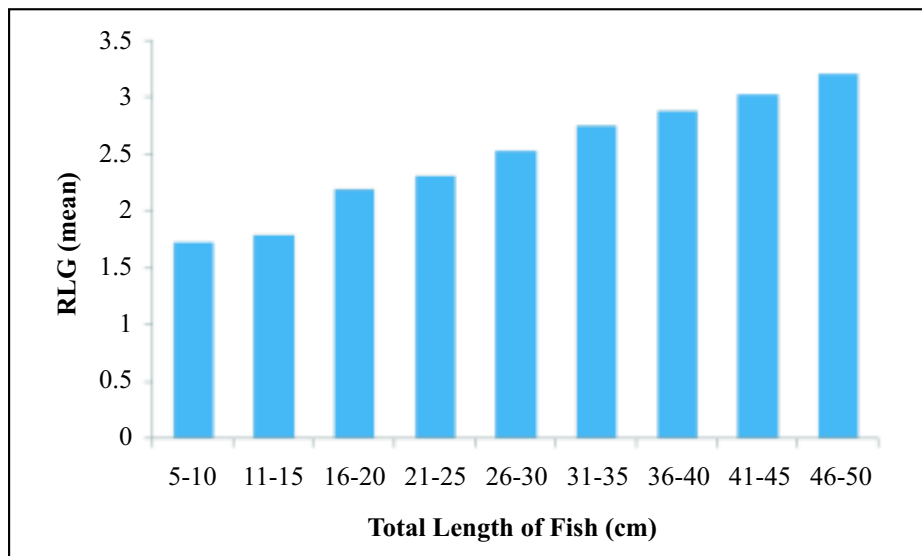


Figure 2: Relative Length of Gut (RLG) of *Neolissochilus hexagonolepis* of different sizes

with increasing total length of the fishes (Figure 2). The RLG values show a gradual increase from 1.73 in length (5-10 cm) to 3.21 in length (46-50 cm). It is also evident that R.L.G. value has a close relationship with the nature of food of the fish (Dasgupta, 1988). In omnivorous fishes, the RLG values were lower than herbivorous fishes since the vegetable matter requires more time for digestion.

In the present study, the average RLG value of *Neolissochilus hexagonolepis* was 2.21 (Table 1). Hence the species was found to be omnivorous which is further supported from the gut content analysis. This is further supported by the result obtained on the food and feeding habits as well as the morphology of the alimentary canal. Morphology of the gut suggests that the gut is in a transitional stage between herbivorous and omnivorous condition (Das and Pathani; 1978).

ACKNOWLEDGEMENT

Financial support of UGC, New Delhi is gratefully acknowledged.

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