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BIOLOGY OF LENGTH-WEIGHT AND FEEDING IN JUVENILES AND ADULTS OF AIR-BREATHING PERCH *ANABAS TESTUDINEUS* (BLOCH)

Ankana Dey and Sudhir K. Das*

Department of Fishery Biology and Resources Management,
West Bengal University of Animal and Fishery Science,
5 Buderhat, Panchasayer, Kolkata 700 094, India

**Corresponding Author*

The biology of feeding and growth pertaining to seasonal variations in diet composition, length-weight relationship and condition factor of *Anabas testudineus* was studied for a period of one year in two size group fishes (Group I: juveniles of <100 mm and Group II: adults of >100 mm). The length-weight relationship of the fish for Group I was $W=0.00849\ L^{3.2168}$ and for Group II was $W=0.00877\ L^{3.1502}$. The relative condition factor fluctuated from 1.032 to 1.372 indicating a significant variation ($p < 0.05$) in two size groups. The feeding intensity was maximum during October to December. Diet composition indicated the highest occurrence of insects followed by crustaceans and decayed organic matter. It also showed variations in different size group of fishes.

INTRODUCTION

Air-breathing perch, *Anabas testudineus* (Bloch) has wide distribution in tropical and subtropical belt. It is primarily found in freshwater tanks, beels, ditches, swamps, low-lying paddy fields etc. in eastern India. It can tolerate salinity up to 10‰ and as such found in brackishwater area too. Due to insectivorous and larvivorous feeding habit, the fish has ecological importance in paddy culture and public health. Adequate studies on food and feeding of this fish in agro-ecological conditions of Bengal are lacking. The present study therefore is an attempt on this regard.

MATERIAL AND METHODS

The samples for the present study were collected from the catches of local beels and ponds of Nadia and 24 Parganas (N) districts of West Bengal during the period August 2002 to July 2003. Fishes were preserved in 10% formalin after collection. The total length (mm) and weight (g) were recorded. Stomachs of fishes were carefully removed by dissecting the fish and preserved in 6% formalin for further study. Quantitative analysis was carried out following both occurrence and points volume method (Hynes, 1950; Pillay, 1952). Length-weight relationship and condition factor were determined following

standard methods (Le Cren, 1951). Monthly variations in feeding intensity were recorded by Gastro-somatic Index (stomach weight/fish weight × 100) and fullness of stomach (full, ¾ full, ½ full and ¼ full). A total of 181 fishes (72-168 mm) were examined for the present study. Fisher 't' test was applied to test allometry and other data were analysed following standard methods (Snedecor and Cochran, 1968).

For analysis of length-weight relationship, the fishes were categorized into two groups *viz*., Group I or juveniles (less than 100 mm total length or TL) and Group-II or adults (more than 100 mm TL).

RESULTS AND DISCUSSION

The length-weight relationship observed in the present study was found out as $W=0.00877\ L^{3.1502}$ for Group-I and $W=0.00849\ L^{3.2168}$ for fishes of Group-II. The exponent 'b' value varied significantly ($p < 0.05$) from 3 indicating allometric growth. It disagrees with observations of Chanchal *et al.* (1978) where corresponding 'b' values were 2.41 for male and 2.38 for females of *Anabas*. A relatively less value of 'b' in Group-II indicates slower growth in adult fishes. Das (2004) reported such variations in *Liza tade*.

A significant difference ($p < 0.05$) was observed in relative condition factor of fish during different months which might be due to variations in feeding intensity and gonadal maturity (Goswami and Sharma, 1996). It varied from 1.032 to 1.372 (Fig. 1) and it was relatively more in smaller fishes of Group-I (1.252) than those of Group-II (1.114). Such findings are in agreement with Gairola *et al.* (1990) in cyprinids, *Puntius ticto* and *Barilius bendelesis* in ponds of Lucknow as well as that of Kolekar and Choudhury (1989) in silurid, *Mystus seenghala*. Changes in condition factor of several fishes had been ascribed to depletion of body reserves during gonad maturation (Htunhan, 1978).

Gastro-somatic index (GaSI) and fullness of stomach are measures of feeding intensity of fish. In the present study, there was significant variation ($p < 0.05$) in GaSI in different months (Fig. 1). Das and Goswami (1997) concluded that these indices (GaSI and stomach fullness) were more during pre-spawning and post-spawning period in *Accrossocheilus hexagonolepsis*. Similar observations were recorded in the present study where GaSI and stomach fullness started increasing from October onwards during post-spawning phase (Fig. 3). There was a positive correlation between these two indices.

Food spectra of *Anabas* revealed occurrence of wide variety of items such as insects, crustaceans, worms, algae, decayed organic matter etc. in the stomach (Fig. 2) depicting euryphagic nature of the fish. However, the proportion of animal matter was about $^{2}/_{3}$ rd of total diets. Mookherjee *et al.* (1946) reported about 70% of dietary components of *Anabas* in Bengal was constituted by crustaceans, worms, insects and protozoa for which they described the fish as carnivore.

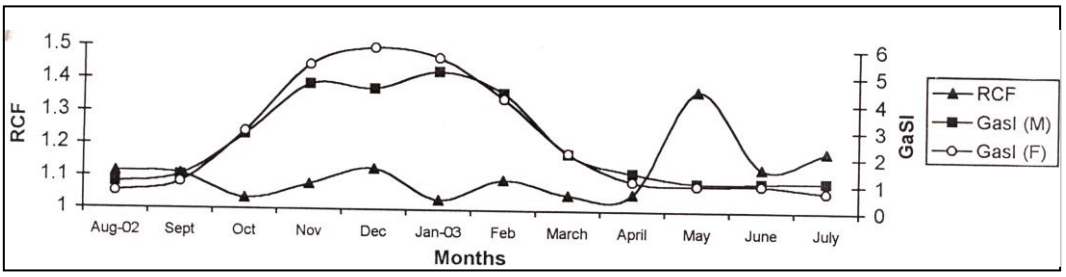

Fig. 1. Variations in conditions (RCF) and Gastgro-somatic index (GaSI) in male and female

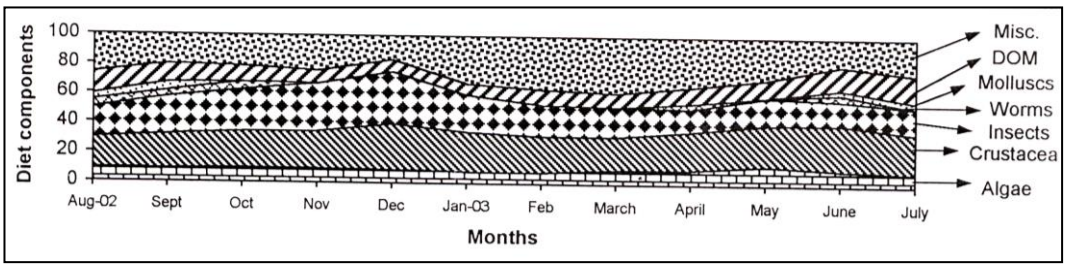

Fig. 2. Variations in monthly diet composition

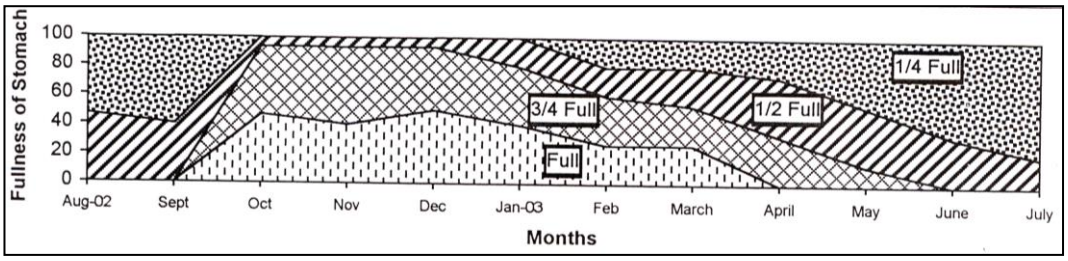

Fig. 3. Variations in fullness of stomach in different months

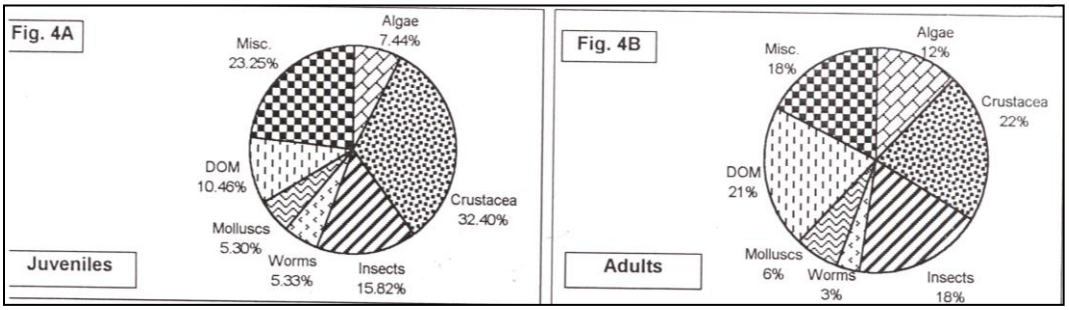

Fig. 4. Diet composition in juveniles and adults of *Anabas*

Jhingran (1991) termed it as entamophagous due to its feeding on insects and mosquito larvae. It was found that the items such as crustacea, worms and miscellaneous matter were more in the stomach of Group-I or juveniles fishes whereas the items like algae, insects, molluscs and decayed organic matter were relatively more in the stomach of Group-II or adults fishes (Fig. 4 a, b). Such size a specific variations in the diet was also reported in other fishes by several workers (Jobling, 1996; De Silva and Wijeyaratne, 1977).

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