



## Size-group related variation in the feeding behaviour of an ornamental fish, *Puntius conchonius* from Mandal river system in Central Himalaya region of Garhwal, India.

Bahuguna P.<sup>1</sup> ✉ and Baluni P.<sup>2</sup>

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### Abstract

The present work deals with the study of food and feeding habit of *P. conchonius* an ornamental fish of hill streams of Garhwal Himalaya. The gut content of fishes of various size and age groups were analyzed. It was observed that with the increase in size the preference for food changed. From the initial nature of being a carnivore it later on shifted towards herbivory with preference for algal matter. The study of this shifting food preference of fish will help in the management of the aquarium.

**Key words:** *Size group, Ornamental fish, Puntius conchonius, Mandal River.*

### Introduction

Food is the main source of energy and plays a vital role in determining population levels, rate of growth and condition of fishes. Studies on food and feeding habits of fish help to determine the niche of fishes in the ecosystem, preferred food items of the fishes and also to reveal the food spectrum overlapping with that of co-existing fishes (Basudha and Vishwanath, 1999). The knowledge of food and feeding habits helps in selecting the species of fishes for culture that would produce optimum yield by utilizing all the available potential resource in the water bodies. Plenty of research work has been done on the food and feeding habits of freshwater fishes. Some of the significant contributors in these types of researches are Pillay (1953), Sharma (1984), Dobriyal and Negi (1998), Thapliyal *et al.*, (2004), Mondal *et al.*, (2005) and Sharma *et al.*, (2018). The aim of the study was to investigate the type of food eaten by *Puntius conchonius*. Such studies could be important in the rational management and culture of the commercially important freshwater fish.

### Author's Address

<sup>1</sup>Fish Biology and Aquatic biodiversity Laboratory, Department of Zoology, Agastyamuni - 246421, Uttarakhand, India

<sup>2</sup>Ecology lab, Department of Botany, A.P.B. Govt. P.G.College College Agastyamuni - 246421, Uttarakhand, India  
(E-mail: pratibaluni@gmail.com)

**E-mail:** [pankajpaurii@gmail.com](mailto:pankajpaurii@gmail.com)

### Materials and Methods

The gut contents were removed and preserved in 4 % formalin solution. The food was analyzed qualitatively on point method basis that is the qualitative analysis was made and points were given purely on the basis of observation. Various food items were identified with the help of Ward and Whipple (1959), Needham and Needham (1962) and Prescott (1939a,b). The preserved food items were mounted on slides and each food items was observed under the microscope.

### Results and Discussion

The food and feeding habits of fish is undoubtedly an important aspect in the biology and ecological study of fishes. Fish biologists all over the world agree that fishes are herbivorous, carnivorous and omnivorous. However, besides the three primary groups, fishes are further divided into several sub groups on the basis of nature of food consumed by them. In case of herbivorous the plant matter contains not less than 75% of the average annual food (Das and Moitra, 1963). This group is further divided in to planktophagus and the detritophagus depending upon whether they feed on plankton (*Silver carp* and *Catla*) or detritus (*Torchelynooides*). Nikolsky (1963) suggested another classification of fish based on amount of variation



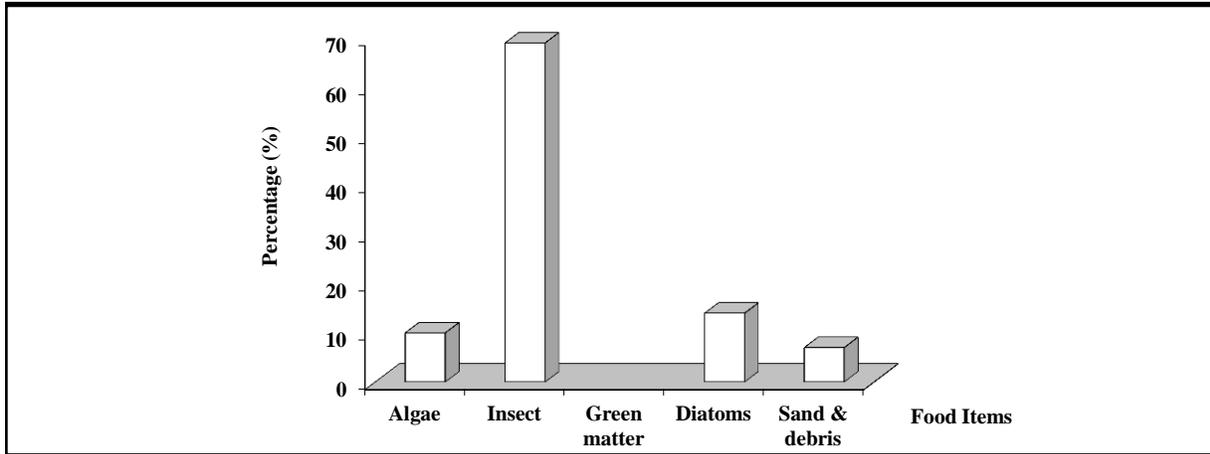


Fig 1. Percentage of different Food Items in size group 2.5 - 3.5 of *P. conchonius* (Ham.-Buch.)

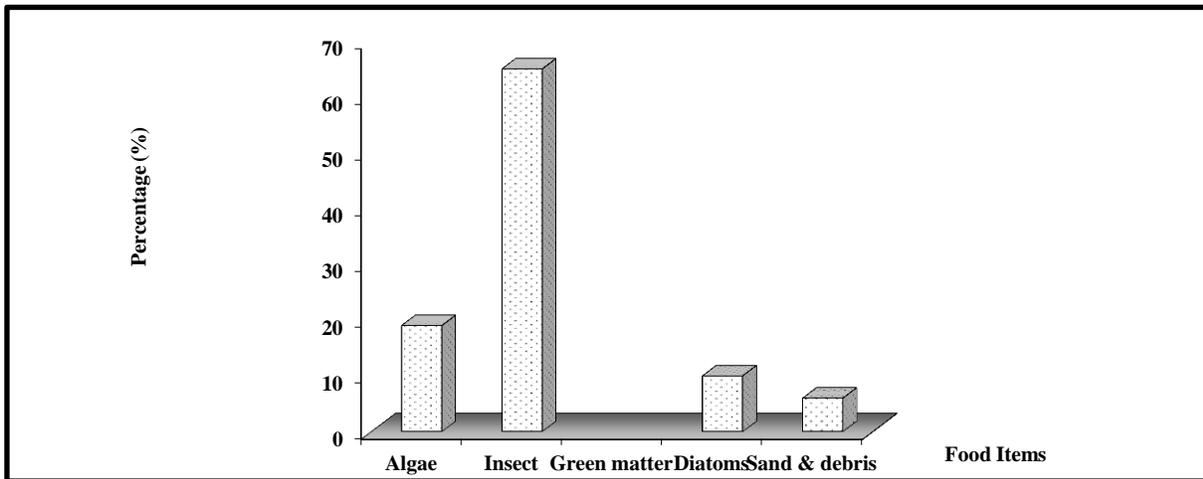


Fig 2. Percentage of different Food Items in size group 3.6 - 4.5 of *P. conchonius* (Ham.-Buch.)

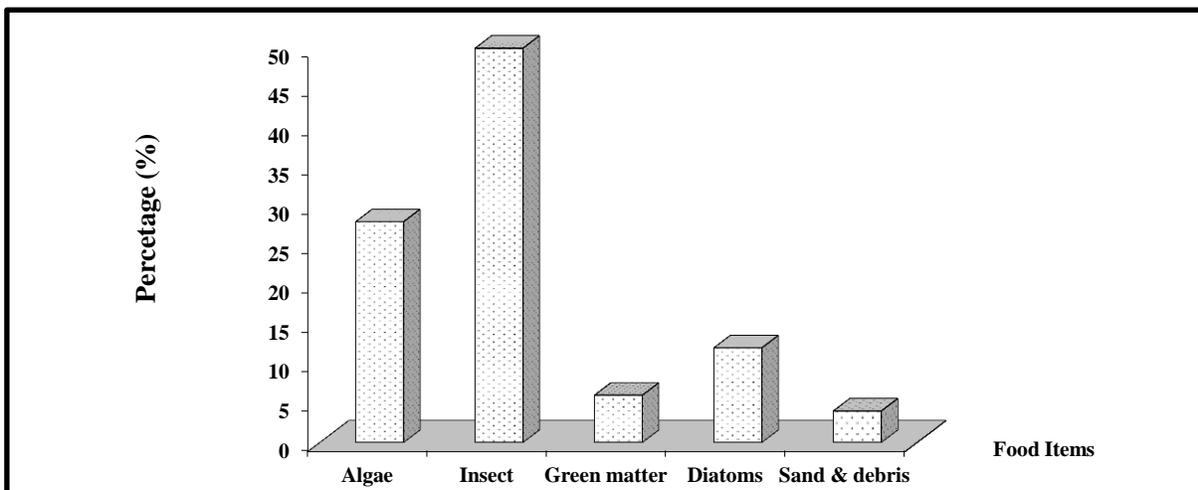


Fig 3. Percentage of different Food Items in size group 4.6 - 5.5 of *P. conchonius* (Ham.-Buch.)

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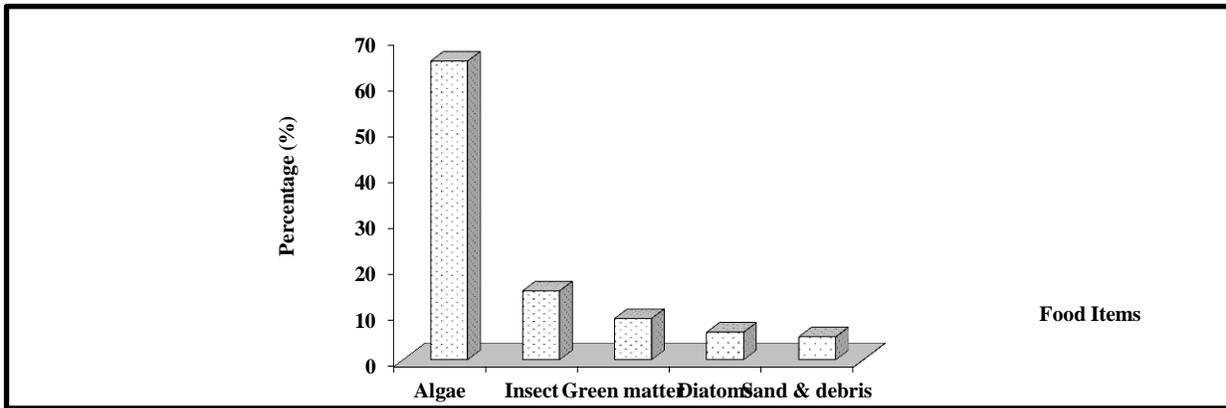


Fig: 4. Percentage of different Food Items in size group 5.6 - 6.5 of *P. conchoniuss* (Ham.-Buch.)

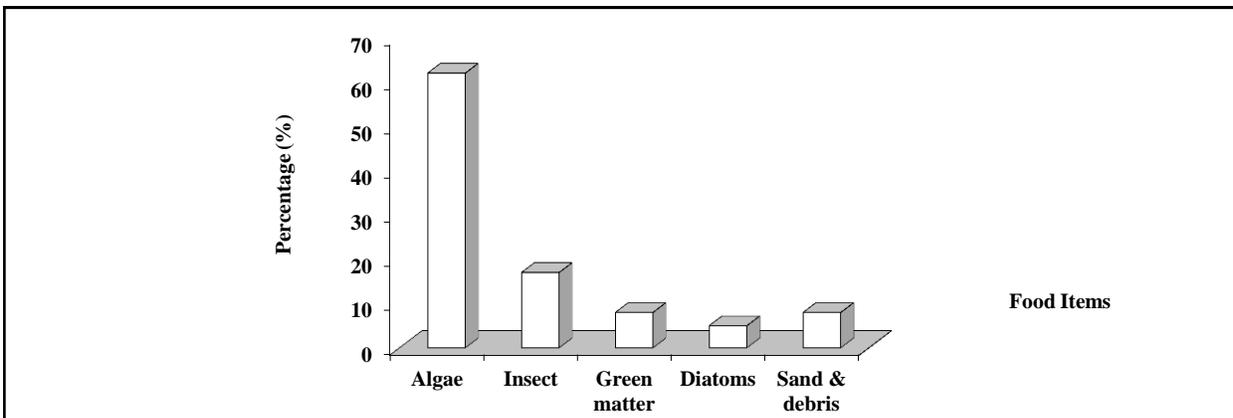


Fig 5. Percentage of different Food Items in size group 6.6 -7.5 of *P. conchoniuss* (Ham.-Buch.)

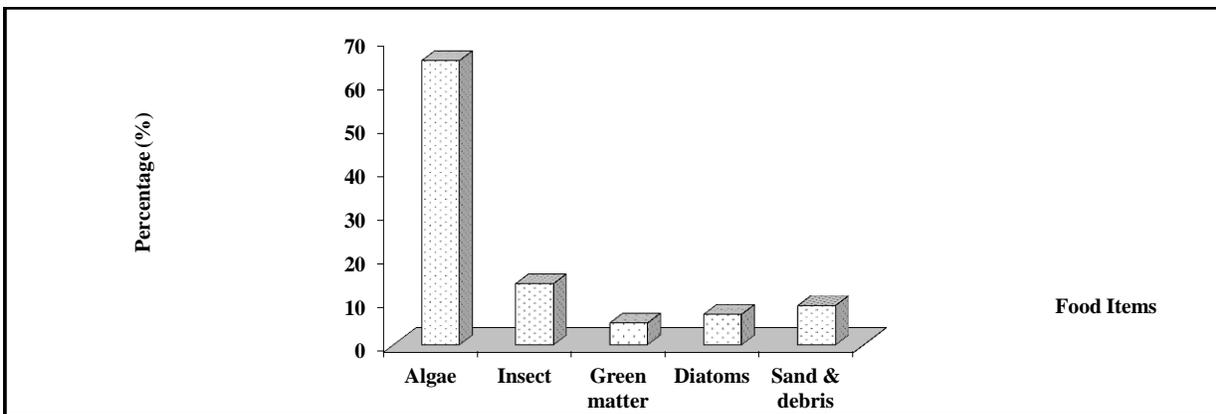


Fig 6. Percentage of different Food Items in size group 7.6 - 8.5 of *P. conchoniuss* (Ham.-Buch.)

in the types of food eaten by them. Thus, the fishes are either (a) euryphagic (feeding on a variety of foods), (b) Stenophagic (feeding on a few different types of food) or (c) monophagic (feeding on only a single type of food). Nikolsky (op.cit.) also classified the food of fish into (a) basic food (comprise the main part of the total food intake), (b) secondary food (frequently found in the gut



contents, but in small amounts), (c) incidental food (rarely found in the gut contents) and (d) emergency food (the fish consumes when the basic food is not available).

The present work on the feeding biology of *P. conchoni* has revealed that it is a herbi-omnivorous fish as it consumes more green matter than the insects. The primary food mainly constituted of green and blue-green algae. The secondary food preferences of this fish were the insects as they were frequently found in the gastrointestinal tract or alimentary canal. The diatoms were also present in the gut contents, which may be called incidental food because diatoms are attached with the periphytic algae. The percentages of different food items in different size groups are shown in Figure 1.1 to 1.7. Size-group related variation in the feeding behaviour of an ornamental fish *Puntius conchoni* from Mandal River showed that fishes with size ranging from 2.5 to 5.5mm were mostly carnivores in feeding behaviour whereas those in 5.6 to 8.5mm range were having preference for herbivory.

It was observed that the smaller size group fishes preferred insect's food. When the fish size increased, their preference shifted towards the algal food matter. Change of food habits with increase in size has been reported for many cyprinids species. Thus, with increase in size, *B. dorsalis* and *B. amphibi*, change their diet from one of predominantly crustaceans to one of predominantly higher plants (De Silva *et al.*, 1980).

### Conclusion

*Puntius conchoni* is an important fresh water fish species of Garhwal Himalaya. Size group related variation in the feeding showed that fishes with size ranging from 2.5 to 5.5mm were mostly carnivores and preferred insects as food whereas those from 5.6 to 8.5mm ranged showed preference for algal matter. The study of this shifting food preference of fish help in the management of the aquarium.

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