

## Feeding habits of *Mugil Cephalus* Linnaeus, 1758 and *Rhinomugil Corsula* (Hamilton-Buchanan, 1822)

Thida Ei<sup>1</sup> and Maung Maung Gyi<sup>2</sup>

### Abstract

The study on the feeding habits of *Mugil cephalus* and *Rhinomugil corsula* from Bago River was carried out during 2007-2008. The stomach shapes and sizes of studied fishes were slightly different and the structures were relatively similar, the common food items of these species were recorded to be mud. *M. cephalus* and *R. corsula* were regarded to be herbivores and omnivores, respectively according to the analysis of food items in stomach contents.

**Key words:** *Mugil cephalus*, *Rhinomugil corsula*, feeding habits

### Introduction

*Mugil cephalus* and *Rhinomugil corsula* were common mullet species in Myanmar (Jayaram, 1981). Nature offers a great diversity of organisms that are used as food by different fish species and these differ in size and taxonomic group (Olojo *et al.*, 2002). Through observation in the field and examination of the contents of digestive tracts, and through physiological studies in the laboratory, researchers have learned much concerning feeding behavior and the kinds of organisms. Some fishes feed exclusively on plants and others feed only on animals (Lagler *et al.*, 1963). Fishes can also be classified as herbivores, carnivores, omnivores and detritivores according to food items in stomach (Munro, 1966).

### Materials and Methods

The studied fishes were collected from Bago River during October 2007 to December 2008. The collected specimens were identified based on morphological characters according to Talwar and Jhingran (1991). Abdomens of specimens were cut opened and the whole length of gastrointestinal tract from the oesophagus to anus was carefully removed, then the stomachs were cut separately from the junction with the oesophagus and its connection with small intestine. Stomachs were preserved in 10 percent alcohol prior to analysis of food items. Fragments in the stomach contents were removed and examined under dissecting

---

1. Assistant Lecturer, Department of Zoology, University of Yangon  
2. Professor (Head), Department of Zoology, University of Yangon

binocular microscope and then categorized as (mud, algae, oily fluid, sand, detritus, undigested fish tissue, flesh and larvae of fish, fat, fish scales and small crustaceans, plant materials and microorganisms) by occurrence method. In this method, the number of stomach containing each food item was expressed as a percentage of all non-empty stomachs (Dunn, 1954).

## Results and Discussion

### General account on the studied species

*Mugil cephalus* is a gregarious brackish water fish and found in Bago River with high salty to freshwater. Adults form huge schools near the surface over sandy or muddy bottom and dense vegetation.

*Rhinomugil corsula* swims in schools at the water surface with exposed eyes and snout. The eyes are positioned high towards the tip of the head which is concave between the eyes. It is freshwater habitat and usually found in muddy freshwater and coastal water habitats.

### General structure of stomach

The stomach was distinguished into two parts; the cardiac and pyloric stomach. The cardiac stomach communicated laterally with the pyloric stomach. The pyloric stomach was modified into a highly muscularized gizzard like organ and the wall of which was thickened and lined with longitudinal folds in both species. Cardiac stomach possessed thin muscular wall in both species, and a slender sac-like structure in *M. cephalus* but conical shaped in *R. corsula*. The size of cardiac stomach varied greatly depending upon the amount of food ingested. When food was present in the stomach, the shape of cardiac stomach was topedo-shaped and the cardio-pyloric junction of stomach was narrow in *M. cephalus* as shown in Fig. (1). In *R. corsula*, the shape of the cardiac stomach was elongated and cardio-pyloric junction was externally padded with a layer of adipose tissue as shown in Fig. (2).

### Stomach contents

Seven food items were recorded in the stomach of *Mugil cephalus* and six food items were recorded in *Rhinomugil corsula* (Table 1 and 2). Among the recorded food items, mud was the most common food items in both species. Algae and oily fluid were also observed in both species. Sand, detritus, plant materials and microorganisms were detected in *M. cephalus*,

but some parts of the fish and small crustaceans were second dominant food items in *R. corsula* as shown in Fig. (3) and (4).

As mullets also grazed at the bottom, thus sucked in mud and preferred soft decaying organic matter (Pillay, 1953; Sarojini, 1954; Mundahl and Wissing, 1988). Talwar and Jhingran (1991) reported that the common food item of the mullets was mud since they usually live in the muddy habitats.

Luther (1972) reported that *M. cephalus* was herbivorous species and Matrais (1980) described this species as herbivorous and detritivorous. In the present study, the feeding habits of *M. cephalus* were coincide with the previous workers according to the analysis of the stomach contents, it was observed that the food consists of mud, sand, detritus, plant materials, algae, undigested fish tissues, fat and oily fluid. *R. corsula* can be considered as an omnivorous fish since the food items in the stomach contained mud, algae and organic materials.

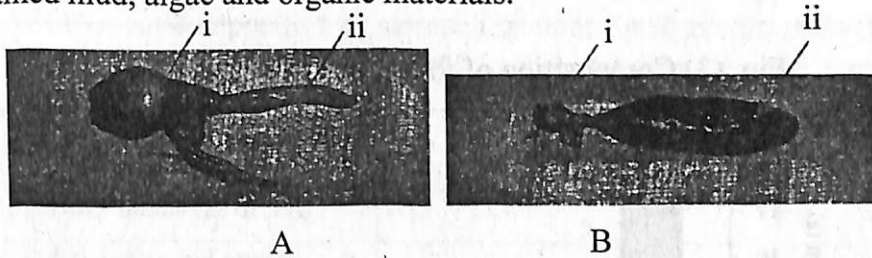


Fig.(1) Shape of stomach in *M. cephalus*: (A) Empty stomach (B) Stomach with food

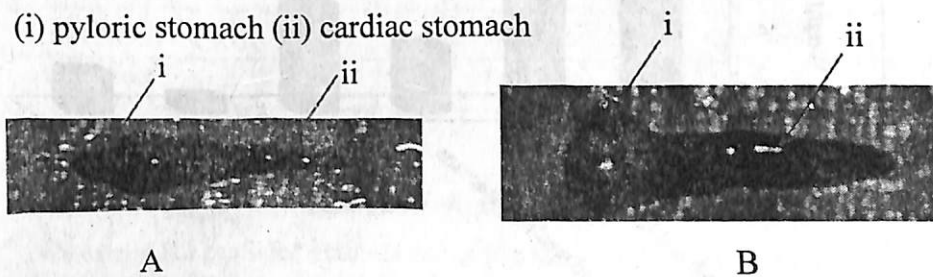


Fig. (2) Shape of stomach in *R. corsula*: (A) Empty stomach (B) Stomach with food

(i) pyloric stomach (ii) cardiac stomach

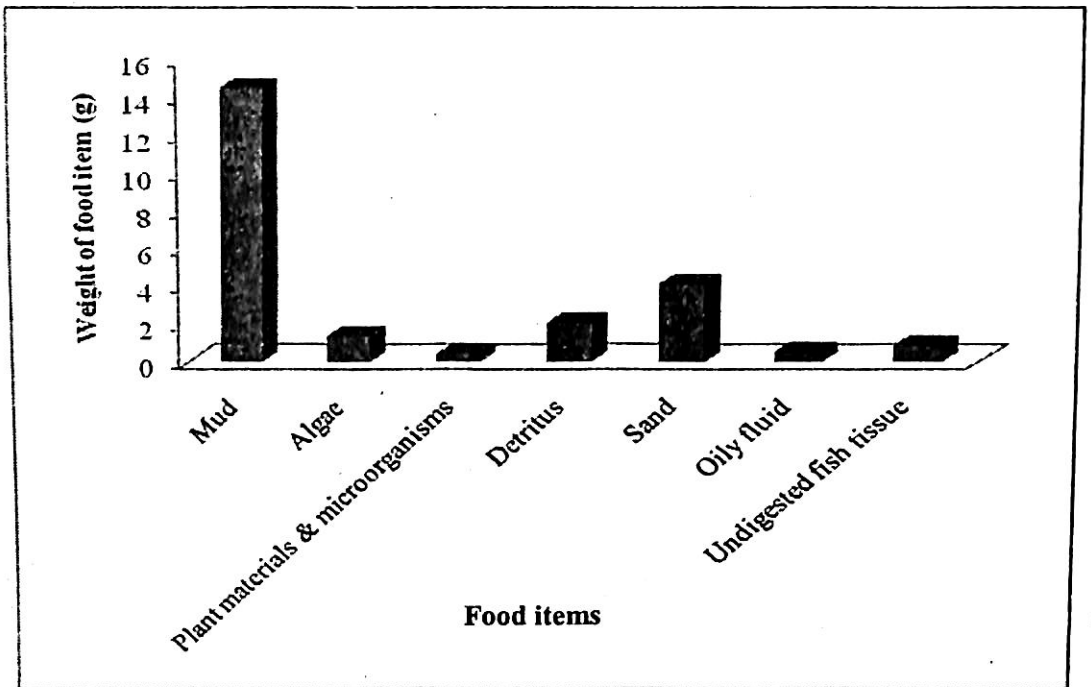


Fig. (3) Composition of food items in *M. cephalus*

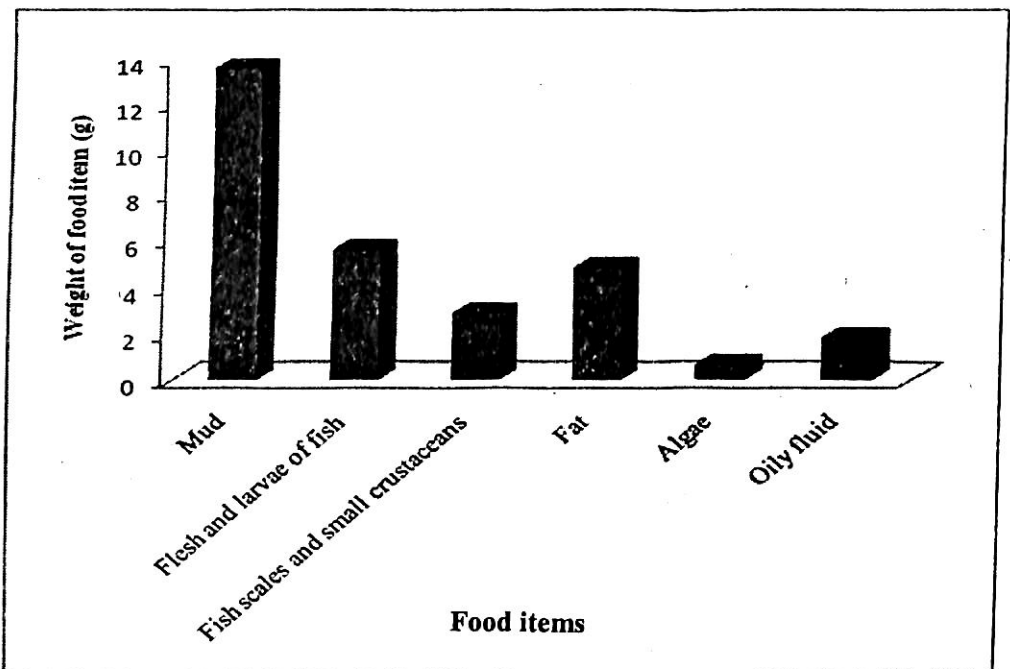


Fig. (4) Composition of food items in *R. corsula*

Table (1) Percent composition of stomach contents in *M. cephalus* (n = 10)

Sr. No	Food items	Weight of food item (g)	Occurrence of food item (percent)
1	Mud	14.48	60.89
2	Algae	1.34	5.63
3	Plant materials & microorganisms	0.42	1.77
4	Detritus	2.05	8.62
5	Sand	4.11	17.28
6	Oily fluid	0.52	2.19
7	Undigested fish tissue	0.86	3.62

Table (2) Percent composition of stomach contents in *R. corsula* (n = 10)

Sr. No	Food items	Weight of food item (g)	Occurrence of food item (percent)
1	Mud	13.59	46.08
2	Flesh and larvae of fish	5.60	18.99
3	Fish scales and small crustaceans	2.89	9.80
4	Fat	4.92	16.68
5	Algae	0.66	2.24
6	Oily fluid	1.83	6.21

### Acknowledgement

We extend our profound gratitude to the fishermen of the study sites for providing informations required for this research. We are also deeply indebted to the academic staff in Zoology Department, University of Yangon, for their assistance and encouragement.

## Reference

- Dunn, D. R., 1954. The feeding habits of some of the fishes and some members of the bottom fauna of Llyn Tegid (Bala Lake), Merionethshire. *J. Animal Ecology*, 23:224-233.
- Jayaram, K. C., 1981. The freshwater fishes of India, Pakistan, Bangladesh, Burma, and Sri Lanka. *Freshwater Biology* 45:201-218.
- Lagler, K. F., Bardach, J. E. and Miller, R. R., 1963. Ichthyology. The Study of Fishes. John Wiley and Sons. Inc., New York.
- Luther, G., 1972. The food habits of *Liza macrolepis* (Smith) and *Mugil cephalus* (Linnaeus). *Indian J. Fisheries* 9(2):604-626.
- Matrais, J. F. K., 1980. Aspect of food intake, food selection and alimentary canal morphology of *Mugil cephalus* (Linnaeus), *Liza tricuspidens* (Steindachner). *J. Experimental Marine Biology and Ecology*, 44:193-209.
- Mundahl, N. D., Wissing, T. E., 1988. Selection and digestive efficiencies of gizzard shad feeding on natural detritus and two laboratory diets. *Transactions of the American Fisheries Society*, 117:480-487.
- Munro, J. L., 1966. The food of a community of East African freshwater fishes. *J. Zoology, London*, 15:389-415.
- Olojo, E. A. A., Olurin, K. B., Osikoya, O. J., 2002. Food and feeding habits of *Synodontis nigrita* from the Osun River, SW Nigeria. *NAGA World Fish Center Quarterly*, 26:21-23.
- Pillay, T. V. R., 1953. Studies on the food and feeding habits and alimentary tract of the grey mullet, *Mugil lade* (Forsk). *Proceeding of the National Institute of Sciences of India* 19:777-827.
- Sarojini, K.K., 1954. The food and feeding habits of the grey mullets, *Mugil parsla* (Hamilton) and *M. speigleri* (Bleeker). *Indian J. Fisheries* 1:67-93.
- Talwar, P. K., Jhingran, A. G., 1991. Inland fishes of India and adjacent countries. Vol. I and II, A. A. Balkema/Rotterdam. Oxford and IBH Publishing Co.Pvt.Ltd., New Delhi, 888-994.