

NOTES ON FOOD AND FEEDING HABITS
OF MILKFISH (CHANOS CHANOS) FROM THE SEA

by

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Abstract

Study on the natural food of adult milkfish was made from specimens caught from the open sea. The contents of guts from 15 specimens were qualitatively analysed, and both planktonic as well as benthic forms were encountered. The relationship between the gut length and body length has been worked out. Ten out of 15 milkfish examined were also found to be infected with Acanthocephalan parasites confined mainly to the anterior part of the intestine.

Introduction

Under the UNDP/FAO project on Brackishwater Shrimp and Milkfish Culture Applied Research and Training, operating from the Shrimp Culture Research Centre, Jepara, an intensive program of maturation and spawning of milkfish has been initiated. One important aspect of this program is attempting hypophysation and spawning of milkfish, utilising spawners caught from the open sea. Spawners collected under the above program are also being utilised for a continuing study of the natural food of large milkfish, as our information on this aspect at present is far from complete. The salient features of this study are briefly reported in this note.

Material and Method

During the course of the study 24 specimens ranging from 52 cm/1.15kg to 101cm/9.0 kg have been examined, and the contents of 15 guts were qualitatively analysed. The coils of the guts were carefully unravelled and the length of each gut recorded. Analysis of the gut contents was made section-wise separately from oesophagus, gizzard, duodenum and intestine, to gain some idea of the extent of digestion of different items of the ingested matter.

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Observations

Length of gut in relation to the total body length of the specimen ranged from 3.32 to 7.1, but no definite correlation could be established.

Out of the 15 guts analysed, two were empty. In most of the specimens examined the anterior region of the alimentary canal from the oesophagus to the gizzard was empty. Only in three specimens this region contained some food. State of fullness of the gut was low in all specimens, though generally, guts of smaller specimens contained more food than the larger specimens. However, the limited number of guts analysed does not permit any inference about feeding habits in relation to sex and maturity of the species.

In almost all specimens the gut contents included appreciable quantities of a slimy, semi-solid substance, as observed by earlier workers also. Indistinguishable, organic detritus accounted for the bulk of the gut contents in almost all specimens. Among the distinguishable items the three dominant forms are listed in order of abundance in Table 1.

Though diatoms were represented by several species, and usually in bulk, they constituted only a small proportion of the contents. In specimen No. 13, however, Coscinodiscus formed an appreciable part of the contents. In specimens No. 10 and 12 the dominant item of food was Lucifer which were packed in the posterior end of oesophagus adjacent to gizzard and were discernible in different stages of digestion throughout the gut (Plate 1). However, in specimens No. 2 and 11 bottom invertebrates such as gastropods, lamellibranchs and their broken shells, and foraminifera constituted the bulk of the feed (Plates 2 and 3). Both planktonic as well as benthic organisms were encountered in the gut contents.

Parasitism

Ten out of the 15 specimens examined were infected with Acanthocephalan parasites (Plates 4, 5, and 6). These parasites were mainly confined to the anterior part of the intestine, though two of these extended also into the duodenum and the gizzard. All stages of the parasites were present, the eggs (40-110 microns), the young ones (10-50 mm) and the adults measuring 50-80 mm in length. The infection was heavy and the number of parasites encountered varied from 45 to 658. In almost all cases the intestinal wall at the infected area was thicker compared to the uninfected portion of the gut. This appears to be the first report of Acanthocephalan parasites infecting milkfish. Hematodes were also present, though in a limited number.

Table 1: Dominant items of food in the guts of Chanos spawners

Specimen No.	Total Length (cm)	Weight (kg)	Sex/Maturity	Length of gut (cm)	Dominant items of food	Location from where caught
1	99	6.20	indistinguishable	535	Plant tissue, Copepods	Legon Gede
2	59	1.46	-	291	Broken shell of Foraminifera, Gastropods	Legon Gede
3	100	7.80	female-spent	706.5	Empty	Katang
4	96	6.30	male-mature, oozing	349	Plant tissue, Pleurosigma, Copepods	Menco
5	52	1.15	-	201.7	None	Legon Pinggir
6	93.5	6.50	male-mature, oozing	338	Plant tissue	Menco
7	92	7.30	indistinguishable	556.5	Nitzschia, Phormidium, Copepods	Gresik
8	101	9.00	female-developing	505.5	Pleurosigma, Rhizosolenia, Nitzschia,	Menco
9	91.3	7.20	male-developing	502	None	Menco
10	90.5	5.50	male-mature	341.5	Lucifer, Copepods Ostracods	Legon Bajak
11	91	5.75	female-developing	303.5	Broken shell of Foraminifera, Gastropods	Legon Bajak
12	87.5	4.75	female-developing	434	Lucifer, Copepods, Coscinodiscus	Legon Bajak
13	72.5	2.75	--	361.5	Coscinodiscus, Hyperiid, Amphipods Filamentous algae	Legon Bajak
14	90.5	5.30	male-developing	367.5	Plant tissue, Ostracods, Copepods	Legon Bajak
15	88	5.20	male-mature	328	Empty	Legon Bajak

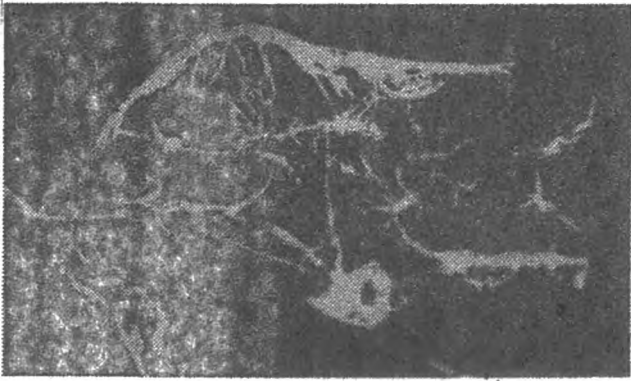


Plate 1. Lucifer.

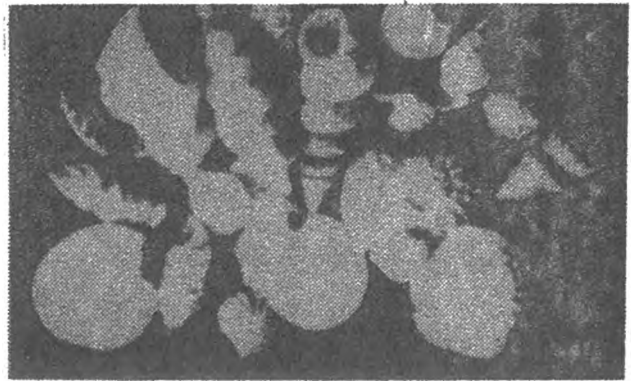


Plate 2. Foraminifera, Gastropods
and other Molluscs

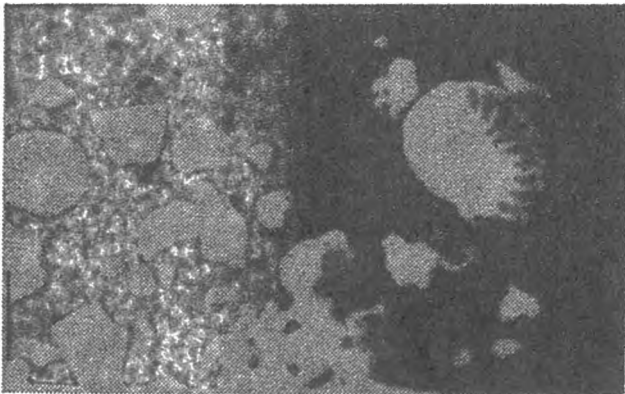


Plate 3. Foraminifera and
broken shell of Molluscs

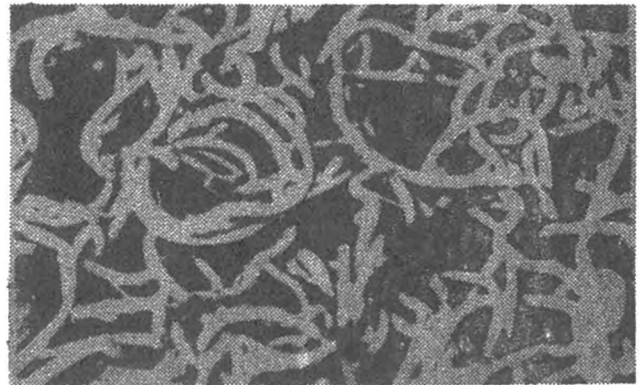


Plate 4. Acanthocephalid worms

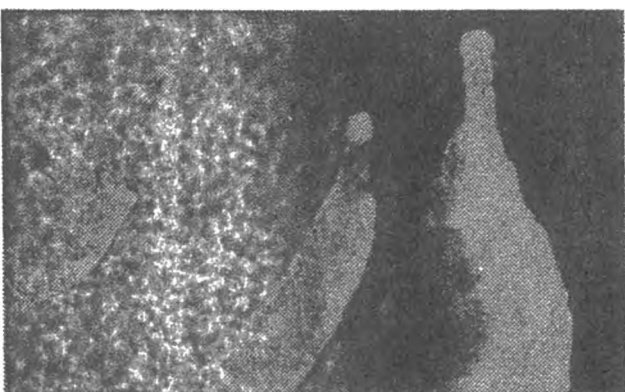


Plate 5. Proboscis of
Acanthocephalid worms

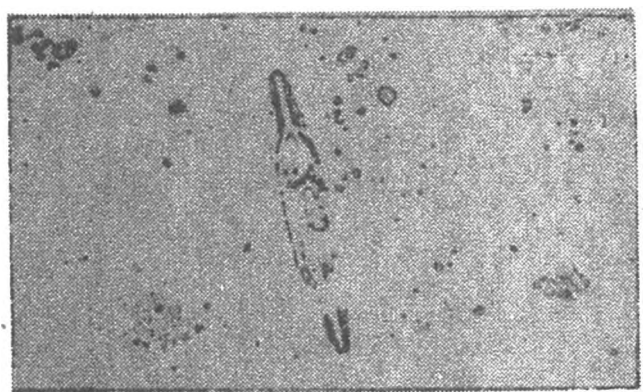


Plate 6. Egg of Acanthocephalid
worms.

Discussion

Divergent opinions have been expressed about the food and feeding habits of Chanos. LeMare 1950; cited by Tampi, 1958 assumed Chanos to be a selective feeder and Sunier classified it as a benthic feeder (1922), while Chacko (1949) after studying over 300 specimens concluded that it is a plankton feeder. That Chanos is a plankton feeder has been reported from Taiwan and Philippines and this view has been supported by the high production obtained from the deep tambaks and fish pens in Laguna de Bay in the Philippines, where the predominant food is planktonic. The gill rakers of Chanos, though small, are numerous and joined together into an effective fine sieve that could retain even fine food particles.

Data presented in this note are of interest since both planktonic as well as benthic organisms were encountered in the gut contents. However, no inference about the feeding habits of milkfish could be drawn from the few specimens examined in the present study.

References

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