



समुद्री मात्स्यकी सूचना सेवा MARINE FISHERIES INFORMATION SERVICE

No. 129

JUNE 1994



तकनीकी एवं TECHNICAL AND
विस्तार अंकावली EXTENSION SERIES

केन्द्रीय समुद्री मात्स्यकी CENTRAL MARINE FISHERIES
अनुसंधान संस्थान RESEARCH INSTITUTE
कोचिन, भारत COCHIN, INDIA

भारतीय कृषि अनुसंधान परिषद
INDIAN COUNCIL OF AGRICULTURAL RESEARCH

SOME OBSERVATIONS ON A COPEPOD PARASITE FROM A FLYING FISH AND A BUNCH OF FLYING FISH EGGS ATTACHED TO A FLOTSAM

K. J. Mathew and Geetha Antony

Central Marine Fisheries Research Institute, Cochin - 682 014

Introduction

The cruise 87 of FORV *Sagar Sampada* from 16th to 26th March, 1991 was specially programmed for the investigation of the oil slick in the Gulf area on account of the war between the multinational forces and Iraq. In the course of the survey a floating thermocol piece adhered with thousands of fish eggs and a flying fish infested with a copepod parasite were obtained in the plankton net. Following is an account of the observations made in this regard.

1. Copepod parasite from a flying fish

In the early morning hours on 23-3-1991 the ship was passing through a very rich ground of flying fishes. As the ship passed by, hundreds of flying fishes were seen flying out of the water producing shrieking sounds. The fish population in the area was so dense that six adult fishes were caught in the zooplankton net operated at station 2231 (21°00'N 67°04'E). The fishes were identified as *Hirundichthys speculiger* (Valenciennes, 1840). One of the fish was found infested with a copepod parasite on the dorsal side, almost midway between the base of the skull and the beginning of the dorsal fin (Figs. 1&2). The parasite was identified as *Pennella biloba* Kirtisinghe (1933).

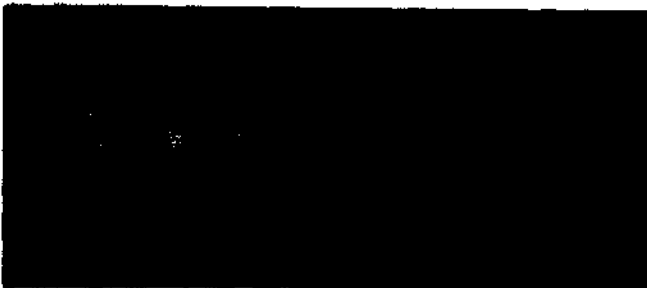


Fig. 1. The external part of the copepod parasite found on the dorsal side of a flying fish.

Externally the parasite had a long, cylindrical, backwardly curved, thick, greyish, fleshy abdomen (Fig. 3) which measured 11.2 mm in length and 2.4 mm across. It terminated in a 7.5



Fig. 2. An enlarged view of the copepod parasite found infecting a flying fish.

mm long feathery process which had on its lateral sides 17 pairs of fleshy finger like appendages of which one pair was unbranched, 13 pairs bifid and 3 pairs trifid, each branch measuring 4-5 mm. From the base of the feathery process arose 2 long, straight, white, fine, whip-like filamentous egg strings each having a length of 36.0 mm. From the point of insertion of the egg strings there arose three pairs of finger-like abdominal processes whose outer pair was unbranched while the inner two pairs were branched into two. Each of the outer unbranched pair measured 4.8 mm. The branched pairs measured 4mm for the outer branches and 2.99 mm for the inner branches.

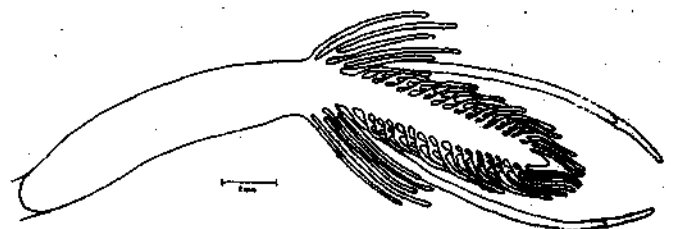


Fig. 3. A diagrammatic view of the external part of the copepod parasite *Pennella biloba* found on the flying fish *Hirundichthys speculiger*.

The fish was dissected to trace the parasite into the body. It was found that it penetrated deep into the muscular tissue as a tubular structure and moved down anteriorly in an angle of 45° and reached the cardiac sac. Since the fish was preserved in formalin, the tissues became hard and it was not possible to trace the parasite beyond the cardiac sac where it broke.

2. Flying fish eggs attached to a flotsam

On 18-3-1991 at station 2213 (19°18'N 66°58'E) a flotsam (a floating piece of thermocol of about 750 cc) entered the plankton net (Fig. 4). On closer examination it was found that the floating object was fully covered with some kind of elastic, gelatinous, thread-like material in which thousands of fish eggs were embedded. When examined under the microscope, it was seen that the eggs were in advanced stages of development with well developed embryos in majority of the eggs. The threads were, in fact, outgrowths from the eggs. The eggs were identified to belong to the flying fish (Vijayaraghavan, 1973, *Indian J. Fish.*, 20 (1) : 108-137). The locality from where the flotsam was obtained was a rich ground for the flying fishes.

The eggs of the flying fishes have been reported to possess transparent filaments of varying lengths for adhesion (Vijayaraghavan, *op. cit.*). In the present case the float was wrapped with the filaments all around in such a way that it was laborious to break away a portion of the float. One interesting thing noticed was that three young fishes belonging to the species *Abalistes stellatus* (Lacepede, 1788) (*Fish Identification sheets, Fishing Area 71, Vol. 2, FAO*), were trapped within the filamentous cover (Figs. 4 & 5) and there was no way for their coming out. All the fishes were in dead condition but no decay had effected. It is obscure as to when and how the fishes happened to get wound to the floating thermocol piece by the sticky filaments or when they died in that condition. It is quite likely that these small fishes were swimming close to the flotsam for food, shelter or to hide from their predators, when they were suddenly trapped by the flying fishes in running condition which swam around the flosam from all directions winding the floating piece with the filamentous threads of the extruding eggs, giving no chance for the trapped fishes to escape. The fact that the eggs were in advanced stage of development indicates that the trapped fishes lived for some days in that

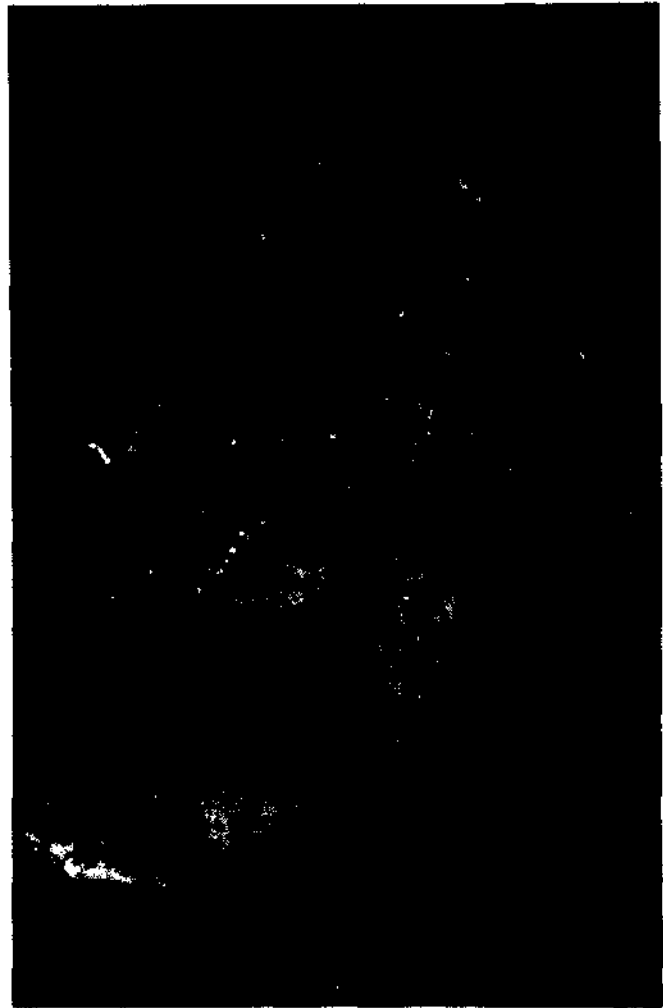


Fig. 4. Part of the thermocol piece found covered with eggs of flying fish. Seen below is one of the 3 balistid fishes got trapped in the gelatinous threads of the eggs.



Fig. 5. An enlarged view of one of the trapped fishes.

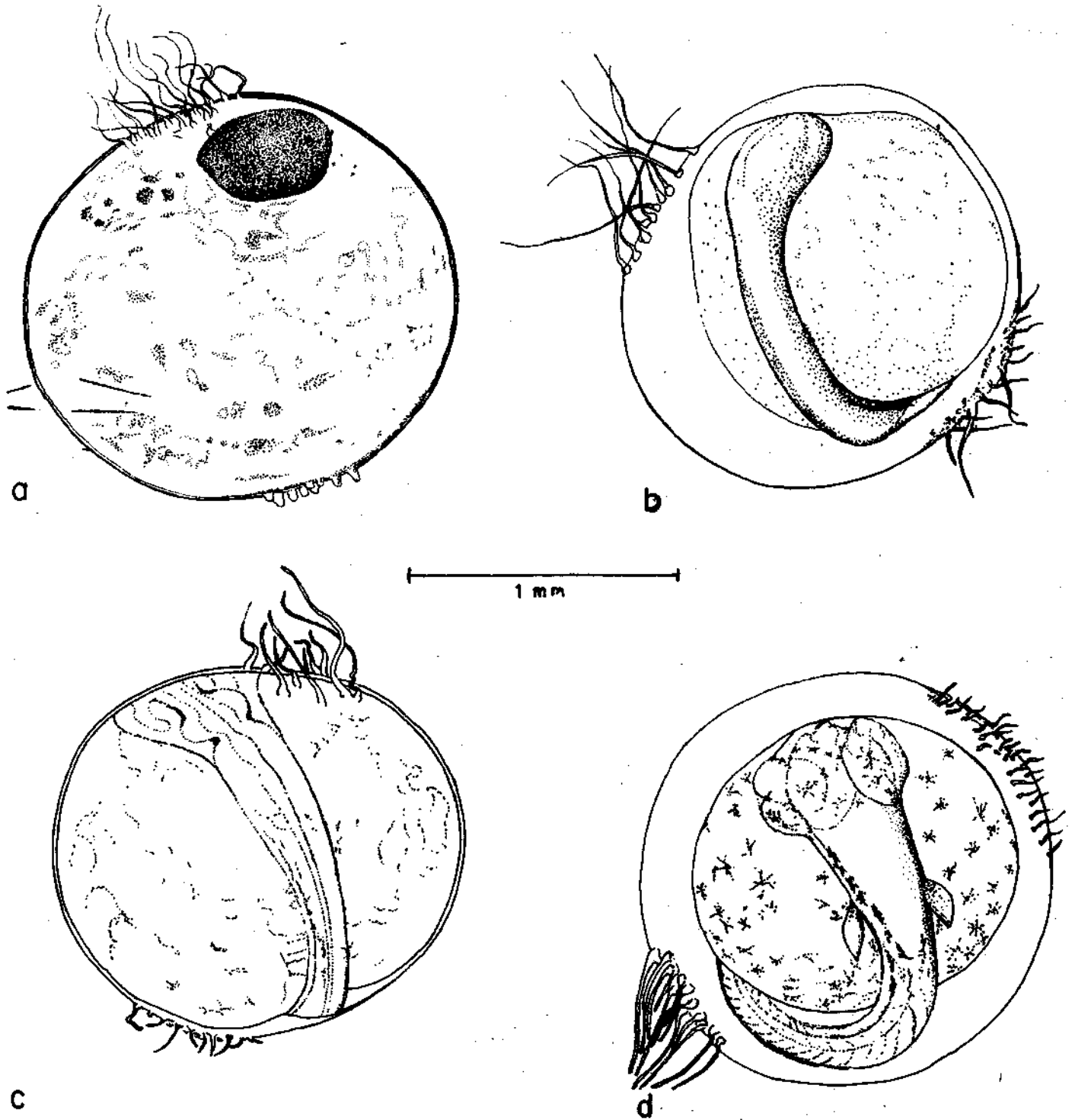


Fig. 6. a-d, Four stages of developing eggs recovered from the flotsam.

condition and finally succumbed to death due to pressure from the gelatinous threads, lack of food and movement.

A few eggs in different stages of development were separated from the sponge piece and the same are briefly described.

Stage - 1 (Fig. 6a)

Egg diameter : 1.6 mm; yolk diameter : 1.58 mm; No. of larger filaments : 16; No. of smaller filaments : 48.

A very narrow space between yolk and the egg membrane. The smaller filaments are long

but thin. The shorter basal filaments which are fewer in number are thicker.

Stage - 2 (Fig. 6b)

Egg diameter : 1.6 mm; yolk diameter : 1.25 mm; No. of smaller filaments : 48; No. of larger filaments : 22.

Pigmentation present over the occipital region and along the sides of the embryo till 3/4 of the length, dense at the middle. The posterior 1/4 of the body devoid of pigmentation. Chromatophores scattered over the yolk on the surface where the embryo lies. The other half of the yolk without any pigmentation.

Stage - 3 (Fig. 6c)

Egg diameter : 1.45 mm; yolk diameter : 1.4 mm; No. of smaller filaments : 36; No. of larger filaments : 16.

Dense pigmentation along the lateral edges of the embryo along the middle one-third of the body. Apart from a few dark chromatophores

along the posterior margin of the eye, the embryo is not pigmented either along the anterior 1/3 or posterior 1/3 part of the body. There are faint chromatophores on the surface of the yolk on either side of the embryo. The other side of the yolk is devoid of any pigmentation.

Stage - 4 (Fig. 6d)

Egg diameter : 1.6 mm; yolk diameter : 1.1 mm; No. of smaller filaments : 33; No. of larger filaments : 21.

Chromatophores scattered over the occipital region; dense chromatophores at the origin of the pectorals and along the sides of the posterior half. Apart from middle of the body, the dorsal surface is not pigmented.

Acknowledgements

Thanks are due to Dr. M. Shahul Hameed Professor & Head, Department of Industrial Fisheries, Cochin University of Science and Technology for identifying the copepod parasite.