

ON THE OCCURRENCE OF A BLUE-GREEN ALGA ON FISHES OF THE FAMILY LEIOGNATHIDAE

ABSTRACT

This note records the occurrence and association of the blue-green alga, chroococaceae on the fishes of the family Leiognathidae, especially on *Leiognathus dussumieri*, *L. brevirostris*, *L. splendens*, *L. lineolatus* and *L. berbis* from the Palk Bay and the Gulf of Mannar.

DURING the course of studies on the fishes of the family Leiognathidae collected from the Palk Bay and the Gulf of Mannar in the vicinity of Mandapam and at Madras, the author came across quite frequently, specimens of some species of this group which were light green in colour with the bases of fins and under surface of head bluish-green in colour. This colour, which masks the usual bright silvery colour of these fishes intensified on preservation in formalin. Scrappings from the surface of body of the fishes indicated that the colour is due to the presence of a blue green alga, a Chroococcaceae (Pl. I, A). It was also found that some fungi were associated with the alga. The purpose of this note is to bring to light this observation with some preliminary notes on the algal incidence.

Information on such instances of association of algae with fishes is meagre. The subject was reviewed by Caullery (1952). Other recent reports include those of Pillay (1953) and Isokawa (1956) as cited by Ross *et al.*, (1958).

In the present study, chiefly five species, viz. *Leiognathus dussumieri*, *L. brevirostris*, *L. splendens*, *L. lineolatus* and *L. berbis* have shown the presence of the alga,

of which the first two species had always conspicuous patches. Though a number of species of these fishes are caught at the same place in the same net and at the same time, all the species and all the specimens of a species may not have the algal patches.

Observations on the distribution of the alga on individuals of *L. dussumieri* and *L. brevirostris* (Pl. I, B & C) indicate that while the general surface of the body, top and lower half of sides of head have a thin coating of the alga giving it a light green colour, the bases of dorsal, anal, ventral and caudal fins, the axil of pectoral and the ventral margins of gill covers show heavy concentration of the alga, imparting a deep blue-green colour to these regions. A great degree of variation in the areas occupied by the alga was noticed in different individuals of the same species of fish. The alga was present usually on fishes caught by gear such as shore seines, bag nets or bottom-set gill nets in inshore areas especially of Gulf of Mannar (off Kilakarai and Vedalai) within about 10 metres depth while no alga was found on the same species of fish caught in deeper waters (20-26 metres) by trawl nets.

According to Desikachary (1959, p. 50) the blue-green algae are planktonic, or planktonic only in some stages or inhabit calcareous substrata both as epilithic and endolithic forms. Calcareous rocks, shells and corals are some of the common substrata. In this connection, it is interesting to mention that the two species which frequently and predominantly show the alga are caught around the islands in Gulf of Mannar with extensive calcareous rock deposits and coral reefs and where the bottom is known to be generally sandy, mixed with broken shells and coral pieces. The food of these fishes consists of, among other items, bivalves, gastropods, foraminifers and tubicolous polychaetes. It is possible, the movements of these fishes in search of such food in areas of abundance of algae may bring in the incidence of alga over them, especially since the same species from other localities and depths in the region where the bottom and surroundings are of a different nature, do not show the presence of alga. In this connection, it may be of interest to mention that Noble (1962) reported the occurrence of the blue-green alga *Aphenocapsa littoralis* Hansg. var. *macrococca* Hansg. causing colouration of the sand in the intertidal zone at Karwar and its relation with the tides.

Instances of the association of blue-green algae with the mucilage of animals such as rotifers and polyzoans are known (Desikachary, 1959, p. 55). Fishes of the family Leiognathidae also secrete large quantities of mucus which may perhaps explain the presence of alga on them. Other fishes like *Opisthopterus tardoore*, *Hilsa kanagurta*, *Thrissocles hamiltonii*, *Pellona ditchela*, *Anodontostoma chacunda* and a number of sciaenids caught in the same nets with leiognathids do not have the alga on their bodies. This may be due to the absence of large quantities of mucus in these species or its unsuitability for harbouring the alga. All blue-green algae are also known to secrete mucilage themselves and this on desiccation results in a contraction of the gelatinous material, often becoming coloured (Desikachary, 1959, pp. 21-22). Preservation of fish with alga in formalin as in the present case also seems to produce the same effect, the light-green colour of fresh fishes turning bluish-green on preservation.

Pillai (1953) reported that algal growth on mullet left prominent depressions indicating that there is some effect on the host. Similarly, Ross *et al.* (1958) also found that the kissing gourami with algal growth was emaciated and showed some tissue response as indicated by the presence of cellular debris and macrophages. According to them, smears of blood of the fish also revealed a definite hypochromic anemia which was suspected to be related to the presence of toxic substances from

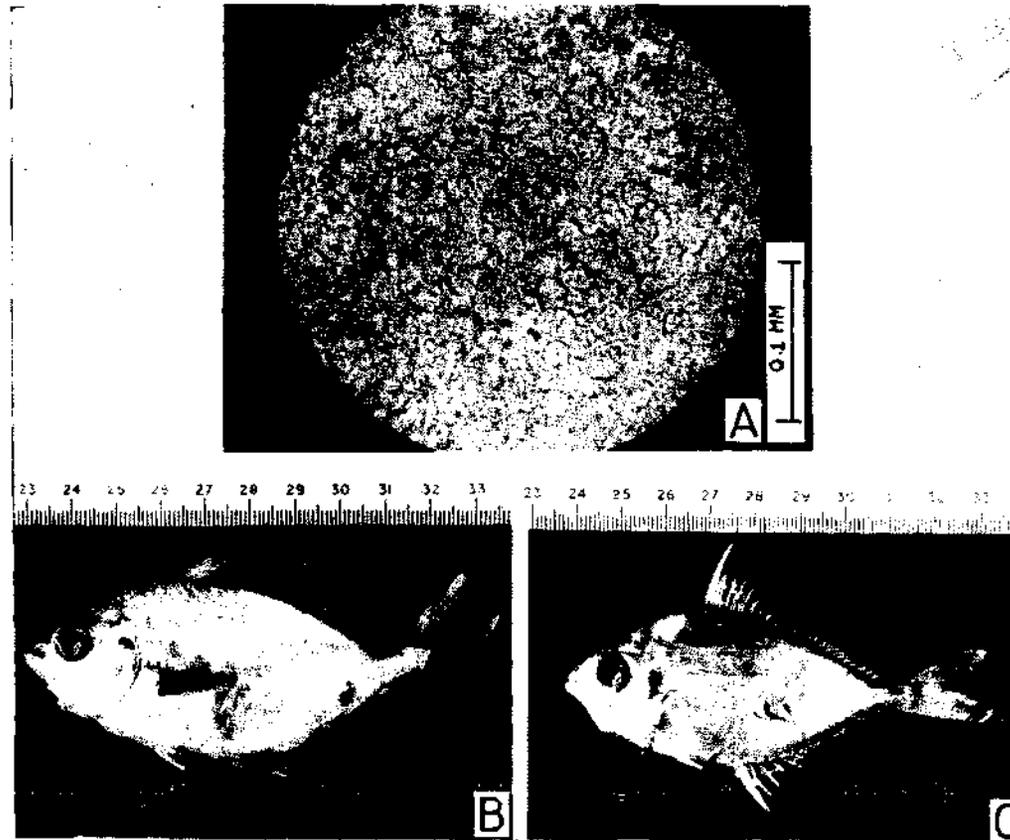


PLATE I. A. Photomicrograph of the alga as seen in scrappings from the body of *Leiognathus dussumieri* ;
B. *Leiognathus dussumieri*, and C. *Leiognathus brevisrostris* (the dark patches, especially those at bases of fins represent the algal concentration).

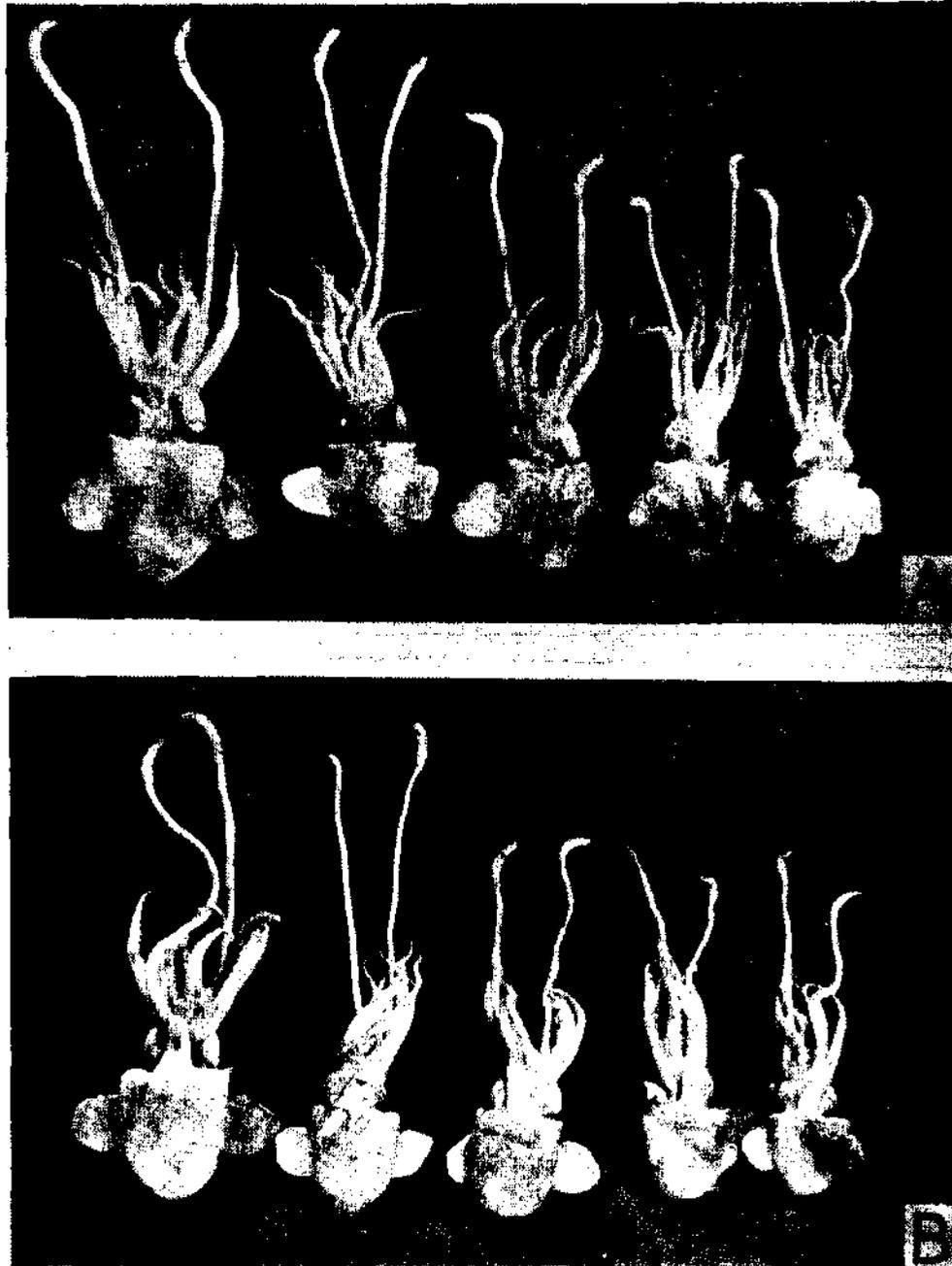


PLATE I. *Euprymna morsei* (Verrill, 1881). A and B. Dorsal and ventral views of five female specimens.

the green algae. However, in the present study, though the occurrence of alga on the two species of fishes mentioned is quite extensive and common, there is no trace of any pathological effect on the fishes. The frequent and constant occurrence of the alga on these fishes indicates some sort of association between them.

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