Immature digeneans from the alimentary tract of larval and juvenile pelagic stages of haddock, *Melanogrammus aeglefinus* (L.)

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(Received 18 September 1972)

Immature specimens of *Opechona* sp. are described from the stomach, pyloric caeca and intestine of larval and O-group haddock, *Melanogrammus aeglefinus* (L.), taken in the northern North Sea and to the west of Scotland. This appears to be a new host record and possible sources of infection are discussed, together with the occurrence of this normally intestinal parasite in the stomach. It is suggested that these infections may be worth taking into account when considering possible factors contributing to mortalities of haddock and other teleost larvae.

During investigations of the food of young gadoid fish, single infections of immature digeneans were found amongst the stomach contents of 11 out of 87 O-group haddock, *Melanogrammus aeglefinus* (L.), taken east of Shetland in July 1970. Subsequent examinations of the pyloric caeca and intestines of 11 of these 87 fish led to the discovery of nine infected with from one to 12 immature specimens of the same parasite. Two similar immature forms were found in the stomachs of one out of 235 and one out of 11 larval haddock from plankton hauls taken in May 1970 off the west coast of Scotland and in the northern North Sea respectively. The O-group haddock ranged in length from 44 to 130 mm and the infected larvae were 8-2 and 12-9 mm long. Since the material was formalin-preserved, all of the parasites were in a contracted condition and no fresh material has since been available for examination. One of the best-preserved specimens was drawn with the aid of a camera lucida and is shown in Fig. 1. The total body length varied from 0-52 to 1-14 mm and the maximum body width from 0-22 to 0-47 mm. The anterior end of every specimen was invaginated so that the oral sucker came to occupy a position around, or slightly anterior to, the pharynx, and could not therefore be measured accurately. The cuticle was spinous, the spines being more numerous towards the anterior, although this appearance may have been an artefact due to contraction. Eye-spots were present. The pharynx was 84-130 µm long by 59-93 µm wide and there was a distinct, fairly long oesophagus. No prepharynx could be observed because of the invagination of the anterior extremity. The bifurcation of the gut occurred at a level just anterior to the ventral sucker, which was situated in the anterior half of the body and measured 81-121 µm long by 87-143 µm wide. The caeca extended almost to the posterior extremity and the paired testes and the ovary were clearly visible.

These digeneans were identified as a species of the lepocreadiid genus *Opechona* Looss, 1907. Dawes (1947) recognized two species of this genus in British waters: *Opechona bacillaris* (Molin) occurs in the intestine of the mackerel *Scomber scombrus*
(L.), lumpsucker *Cyclopterus lumpus* L. and boar-fish *Capros aper* (L.), and *Opechona retractilis* (Lebour) in the stomach, pyloric caeca and intestine of the whiting *Merlangius merlangus* (L.). Neither species has previously been reported from haddock and the specimens described above were not mature enough or sufficiently well preserved for specific identification. Metacercariae of *O. bacillaris* were described from medusae, ctenophores and chaetognaths by Lebour (1916, 1917), and have been found on a number of occasions in these hosts from plankton samples examined at the Marine Laboratory in Aberdeen. Reimer et al. (1971) reported them also from the pelagic polychaete *Tomopteris helgolandica* Greeff. Large numbers of immature *O. bacillaris* were found in the lumpsucker by Nicoll (1914) and in a few other unnamed fish species by Lebour (1917), but Nicoll (1915) did not comment on the maturity of his specimens from the boar-fish. The occurrence of immature forms of *O. bacillaris* in hosts other than the mackerel may therefore be quite common and suggests that they may have short life spans in these hosts and may rarely, if ever,
develop to maturity in them. Nicoll (1910) and Lebour (1917) reported tailless post-
cercarial forms of *O. bacillaris* occurring free in plankton samples. Such free forms
may have been the source of infection for larval haddock, since fish of this size would
scarcely be capable of feeding on the intermediate hosts quoted above.

Since four different groups of planktonic invertebrates have already been reported
as hosts, it may be that smaller organisms may also be infected. The *Opechona*
described in this paper were found in the stomach, pyloric caeca and intestine of
juvenile haddock. *O. bacillaris* is an intestinal parasite, but *O. retracilis*, according
to Dawes (1947), occurs in both the stomach and intestine of whiting, although Lebour
(1908) described it from the upper intestine only. The occurrence of a parasite in
both stomach and intestine is unusual, probably due mainly to the different environ-
mental conditions encountered in these two habitats. MacKenzie & Gibson (1970)
reported considerable differences in physico-chemical factors such as pH, osmotic
pressure and concentrations of certain inorganic ions between the stomach and in-
testine of teleost and elasmobranch fish. In the present instance only a small
proportion of the parasites was found in the stomach; this may indicate an infection
which had occurred shortly before the capture of the host and which in the normal
course of events would have been carried into the intestine. Another possible
explanation of their occurrence in the stomachs of the two infected larvae may be
that the parasites were simply too large to pass into the intestines of such small fish.

A comparison of the relative sizes of the parasitised haddock larvae and the
digeneans found in them suggest that these parasites may be worth taking into account
when considering possible factors contributing to mortalities of haddock and other
teleost larvae. Lebour (1916) reported the frequent occurrence of *O. bacillaris* in
medusae from plankton samples taken off Plymouth, with a peak of infection in
early summer, so that parasitism of fish larvae may be heavier in other areas and at
other times of the year than that reported herein. Little is known of the parasites of
young marine fish, but Rosenthal (1967) claimed that about 10% mortalities in actively
feeding herring larvae were due to the effects of nematode, cestode and copepod
parasites.

I am indebted to my colleagues Messrs S. D. E. Devlin and W. Duncan and to Mr C. Yan-
nopoulos, a visiting worker from the University of Athens, for initially drawing my attention
to the parasitised fish.

References

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