

Parasites of fish of the hypersaline Bardawil Lagoon, North Sinai

A preliminary communication

by

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Bardawil Lagoon is a 650 sq. km perennially hypersaline lagoon of salinities ranging normally from 50-75 ‰; it is situated on the northern Mediterranean coast of Sinai. Parasitological investigations have been in progress since July 1973. In the course of this study, samples of the dominant components of the local ichthyofauna were collected and studied bimonthly. The samples included four species of grey mullets (Mugilidae), and also *Dicentrarchus punctatus*, *D. labrax*, *Sparus auratus*, *Crenidens crenidens*, *Aphanius dispar* and *Atherina mochon*. In addition to the above mentioned species, occasional specimens of less common species, mostly marine fish which enter the lagoon when hypersaline conditions moderate during winter and spring, were also collected: *Argyrosomus regius*, *Solea vulgaris*, *Hemirhamphus far*, *Umbrina cirrosa* and *Epinephelus aeneus*.

Results from the material processed so far show that the parasitofauna of the lagoon fish is predominantly Mediterranean, with only one (possibly two) endemic species. Comprehensive data on the Ichthyoparasitofauna of the eastern Mediterranean fish is presently available only for grey mullets: 13 parasite species were recorded from mullets in the lagoon, compared with the overall 35 species so far recorded from the eastern Mediterranean basin (23 from mullet caught at sea, 22 from inland estuarine waters and 6 from inland freshwater). The number of parasite species (excluding metacercariae, whose identification has not yet been completed) in the other fish is as follows:

D. labrax and *D. punctatus* - 6 species each, *S. auratus* - 3, *C. crenidens* - 1, *A. dispar* - 1, *A. mochon* - 1, *A. regius* - 5, *S. vulgaris* - 0, *H. far* - 2, *U. cirrosa* - 2, (3), *E. aeneus* - 2.

The parasitofauna of the lagoon fish includes the following groups: Myxosporidia: *Myxobolus* cf. *parvus* in grey mullets and *Dicentrarchus* spp., and *Myxidium* sp. A in grey mullets; Monogenea: *Ancyrocephalus vanbenedenii*, *Gyrodactylus* n.sp. A and *Microcotyle* sp. in mullets, *Diplectanum aequans* in *Dicentrarchus* spp., *Diplectanum similis* and *Calceostoma calceostoma* in *A. regius*, *Furnestia echeneis* in *S. auratus*, *Gyrodactylus* n.sp. A in *A. dispar* (*Ancyrocephalus salinus* found on the same fish in the Mediterranean and Red Sea was not found on the lagoon fish), *Diplectanum similis* and *Diplectanum aculeatum* in *U. cirrosa*, *Diplectanum* cf. *epibepheli* in *E. aeneus* and *Axine* sp. in *H. far* (*H. far* is associated in the Red Sea in addition to *Axine* sp. also with two Ancyrocephaline Monogenea, *C. crenidens* in the Mediterranean and Red Sea is associated with species of *Lamellodiscus*; neither of these parasites have yet been found on fish in the lagoon); Crustacea parasitica: *Pseudocaligus apodus* on gills of grey mullets, *Caligus minimus* in mouth cavity of *D. labrax*, rarely in *D. punctatus*, *Lerneanthropus* sp. on gills of *Dicentrarchus* spp., and *Scieanophilus* (*S. tenuis*?) on the inner side of the operculum of *A. regius*. Endoparasites' taxonomy is still being processed. The endoparasites found include several species of trematodes in grey mullets (4), *Dicentrarchus* spp. (1), *S. auratus* (1), and *C. crenidens* (1); one species of Acanthocephala (*Neoechinorhynchus agilis*?) of which adult worms are common in grey mullets, while cystacanths and small adults were found in a wide range of fish hosts in the lagoon, mainly juvenile fish, including *S. auratus*, *D. punctatus*, *A. mochon*, *H. far* and *A. regius*. Heretophyiid metacercariae, predominated by the human parasite *Heterophyes heterophyes* produces heavy infections in grey mullets (95-100 %

prevalence with up to 6,000 cysts per gram muscles), *D. punctatus* (90 %, 23-82 cysts per gram muscles) and *D. labrax* (75 %, 7-49 cysts per gram muscles), they were rare or absent in other lagoon fish species. Non heterophyiid metacercariae are particularly common the liver and viscera of fingerlings of *S. auratus*, *Dicentrarchus* spp. and all stages of *A. mochon* and *A. dispar*. Induced infection of dogs yielded three heterophyiid species : *H. heterophyes*, *H. aequalis*, and *Stictodora sawakiensis*.

Pirenella conica, the snail vector of *Heterophyes* spp. and apparently other heterophyiids is extremely prolific in the lagoon. The intimate association between the snail host and the fish host results in this super-intense transmission. This intense transmission which takes place in the lagoon is reflected in the high prevalence of infection already found in very young mullets, while being absent from fish of similar sizes along the Israeli Mediterranean coast and mouth of coastal rivers, where *P. conica* is rare and apparently there is no transmission. In Bardawil Lagoon prevalence of infection is as follows : 9 % in 21-30 mm long fish, 45 % in 31-40 mm long fish, and 100 % in fish 70-90 mm long, while in estuaries on the Israeli coast : 0 % in 20-50 mm, 5 % in 51-90 mm, 25 % in 91-150 mm and 67 % in 151-200 mm long fish. Heterophyiid transmission is intense also in the hypersaline lagoons of the Nile Delta [KHALIL, 1937]. In the heavy populated Nile Delta, humans and dogs are the main definite hosts of *Heterophyes* spp., while in the scanty populated areas around the Bardawil Lagoon, water birds apparently are the main definite hosts; human infections in north Sinai are rare.

Reference

- KHALIL (L.), 1937. — The Life History of the Human Trematode Parasite “ *Heterophyes heterophyes* ”
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