

## A PRELIMINARY SURVEY OF THE HELMINTH FISH PARASITES IN IMO RIVER

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### ABSTRACT

A preliminary survey of the helminth fish parasites was carried out in Imo River (around Umungwa Village). A total of 191 fishes belonging to 15 genera were examined and only 13.6% were infested with various species of helminth parasites which is a low percentage of infection.

The following helminth parasites were recorded:—

*Wenyonia Virilis Kainji*; *Wenyonia sp.*, *Procamallanus laeiconchus*; *Procamallanus sp.*, *Sprionoura congolense*; *Sprionoura sp.*, *Cucullanus sp.* and *Serradacnitis serrata*.

It was found that helminth parasites showed some degree of specificity in their distribution within their fish hosts. This specificity could be as a result of the physiochemical and physiological factors operating in the gut such as pH, Osmotic tension, Oxygen tension and Nutrient levels. The results also revealed that age and sex influence helminth parasites infections in fishes.

### INTRODUCTION

By virtue of their economic importance to man, especially with the rapidly increasing human population and consequent increase in protein demand (French, 1965), information on the parasites of fish becomes particularly important as these parasites may affect fisheries production. In natural populations, a complex dynamic equilibrium exists between organisms and their environment - both biotic and abiotic. Besides serving as food, the effect of worms as fish parasites is noteworthy (Nikolsky, 1976). There exists a relative susceptibility of different fish species to infection (Baldwin *et al*, 1967). The study of flatworms as parasites of fishes owes its first clarification to Zedar and Rudolphi. The study of helminth parasites and their life-cycles has contributed one of the most active fields of zoological research.

In Nigeria, not much work has been done on the parasite fauna of the local fishes. Some works include those done in Kainji Dam, River Niger, Benue and Ogun Rivers by Ukoli (1965) who investigated helminth infection of fish in the Niger River, Nwosu (1974) and Onyemachi (1976) who worked on parasites of fish in Opi Lake. This work, "A preliminary Survey of the Helminth Fish Parasites in Imo River", will invariably add to the work done on fish parasites in Nigeria.

### MATERIALS AND METHODS

The fishes were caught by means of cast nets of varying mesh sizes (2.5 cm and 5 cm), palm fruit baited local traps with funnel-shaped entrance were set in shallow areas near the river edges overnight and hooks (Nos. 7, 12, 14) baited with insects and earthworms. Both were harvested early the next morning. It was not easy to determine precisely the ages of the different fishes. Based on measurement of their total length and maximum width, the fishes were categorised into juveniles, medium, and adults. Sexes were determined only after dissecting the fishes and noting the presence of testes or ovary. Other parameters used for sex determination included size, colour, shape of anal fin especially for the Characidae.

### Collection and Preservation of Parasites

The skin, gills and fins were examined with hand lens for the occurrence of an helminth parasites before being preserved in formalin. Consequently, the fishes were dissected and the different portions of the gut (Mouth, Oesophagus, stomach, intestines) were examined for endoparasites and noted. Extraction of parasites was done with the aid of camel hair brush and pin after rinsing the sections of the gut in saline solutions in petri-dishes.

### Killing, Preservation and Fixing of Parasites

The different groups of endoparasites recovered were preserved by different methods. Preservation was in bottles or vials duly labelled indicating the name of host, date of collection and region of the fish from which the parasites were collected.

### Preparation of Slides and Labelling

Two methods were used for preparing the slides. First, the lactophenol method of Franklin and Gooday (1949) and Heindenham's Iron Haematoxylin method (Panti, 1969) which was used for the cestodes.

## RESULTS AND DISCUSSION

Out of 191 fishes examined, 26 (13.61%) were infected by helminth parasites.

A total of 441 helminth parasites belonging to two classes, the Cestoda and Nematoda were recovered from only the stomach and intestines. The following helminth parasites were recovered:—

*Wenyonia virilis* Kainji, *Wenyonia* sp, *Procamallanus laeviconchus*, *Procamallanus* sp. *Spironoura congolense*, *Sironoura* sp. *Cucullanus* sp, and *Serradacnitis serrata* (4).

No helminth parasites were recovered from the skin, gills and mouth. Thirty-four (34) helminth parasites (7.8%) were recovered from the stomach, while 402 (92.2%) were recovered from the intestines. This distribution of parasites in the gut of fishes could be due to the physico-chemical and physiological factors operating in the gut such as nutrient levels, pH, Osmotic tension and Oxygen tension. According to Smyth (1962), with the exception of blood sucking nematodes, the food materials of adult nematodes appear to be semi-solid or copious amount of absorbable materials. Also, the age and seasonal variation of fish food may affect the abundance of a parasite. These may account for the presence of helminth parasite in and preference for the intestines (92.2%). The juveniles showed no infection while the medium and adult showed 10.32% and 25.37% infection respectively. This investigation also revealed higher incidence of helminth parasites in females (28.1%) than the males (6.9%).

This was subjected to statistical analysis and was found to be highly significant. This result could be due to certain ecological factors emanating probably from feeding differences between the males and females.

Although, the overall helminth parasite infection rate in Imo River is rather low (13.61%), the infection rate is however enough to elicit much pathological effects on fishes by retarding their growth, causing tissue disruption and even death. This condition if prevented may help in improving the quality and quantity of fishes in Nigerian waters.

A proper study of the life-cycles of the helminth parasites of fishes could prevent infection of humans by such parasites whose intermediate or vector-host is fish.

## REFERENCES

BALDWIN, N., MILLEAUN, R. E. and KNAPP, S. E. (1967). Salmon poisoning disease. *Journal of Parasitology* 53: 556-564.

FRENCH, M. H. (1965). Animal Production and Work of F.A.O. World. *Review of Animal Production* 1: 7-10.

NIKOLSKY, G. V. (1976). The ecology of fishes. 5th ed. Acad. Press Inc. Ltd., London.

NWOSU, I. K. (1974). Preliminary Survey of the incidence of helminth infection of fish (gut) in Imo River at Umuahia. B.Sc. Thesis, University of Nigeria, Nsukka.

ONYAMACHI, F. A. (1976). Preliminary Survey of parasites of fish in Opi Lake. B.Sc. Thesis, University of Nigeria, Nsukka.

PANTI, C. F. A. (1969). Notes on microscopical technique for zoologists. Cambridge University Press. 1st Edition. 39-40.

SMYTH, J. D. (1970). Introduction of animal parasitology. English University of Press Limited, London.

5th Ed.

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