

**A STUDY OF THE HELMINTH PARASITES OF FISH AND FISH-EATING BIRDS
IN THE MANYAME CATCHMENT, ZIMBABWE.**

By

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ABSTRACT

This study was done to determine the major helminth parasites of the sharptooth catfish, *Clarias gariepinus*, the straightfin barb, *Barbus paludinosus* and four species of piscivorous birds: *Phalacrocorax africanus* (Reed Cormorant), *P. carbo* (White-breasted Cormorant), *Anhinga melanogaster* (Darter) and *Ardea cinerea* (Grey Heron), in the Manyame catchment area. The study also aimed to determine the effect of host size, sex and season on the rate of infection, and to study aspects of the life cycles of some of the parasites. Metacercariae of the digenean trematode, *Harvardia sandgroundi*, were found on the skin of *B. paludinosus* from the Marimba River, which drains into Lake Chivero and is polluted mainly by the effluent discharged from the Crowborough sewage treatment plant (Prevalence (P) = 12.2-22.0%, Intensity (I) = 1-11, Mean Intensity (MI) = 3.3), but they were not present in the same host species from Lake Chivero and the Munwahuku Dam. Plerocercoid larvae of the tapeworm, *Ligula intestinalis*, infected only *B. paludinosus* from the Munwahuku Dam (P = 7.2%, I = 1-3, MI = 1.1). Adult *Proteocephalus* sp., another tapeworm species, were found only in the intestine of *C. gariepinus* from Lake Chivero (P = 7.1%, I = 1-14, MI = 5.6) but were absent from the other sampling localities. Third-stage larvae of the nematode, *Contracaecum* sp., were also recovered from the body cavity of *C. gariepinus* from Lake Chivero (P = 42.6%, I = 1-7, MI = 2.2) but not from the other sampling locations. In all cases, the prevalence and intensity of infection were not significantly correlated to the respective host size or sex ($p > 0.05$), with the exception of *B. paludinosus* from the Munwahuku Dam where the size of *Ligula* increased with an increase in host weight. Monthly samples were usually small and were not uniform. The effect of season on helminth prevalence was also not significant for all the parasite species although there was a marked reduction in the prevalence of *Contracaecum* larvae in *C. gariepinus* from Lake Chivero between June and August 2001 (winter) because the temperatures might have been too low for the parasite's eggs to hatch. The helminths did not affect the normal condition of their fish hosts and no gross pathological conditions were detected. A low parasite index was recorded for *B. paludinosus* from the Munwahuku Dam infected by ligulae (PI = 7.97 ± 3.38). Barbs from the Marimba River were not infected by *L. intestinalis* perhaps because there were very few copepods, which are the first intermediate hosts of the parasite, in the flowing water than in the dam. Barbs from Lake Chivero, which has high zooplankton abundance, were however not infected probably because they do not preferentially feed on copepods in the lake, where alternative food is abundant. The fish-eating birds harboured four species of adult *Contracaecum*: *C. rudolphii*, *C. microcephalum*, *C. carlislei* and *C. tricuspis*. These species are described for the first time in Zimbabwe although they have been recovered from the same host species in the neighbouring South Africa. One darter and one white-breasted cormorant each had a single clinostomid fluke (*Clinostomum complanatum*) lodged in their buccal cavities. Stomach content analysis showed that the infected birds mainly fed on the cichlids *Pharyngochromis acuticeps* and *Oreochromis niloticus*, suggesting that these fish, as well as *C. gariepinus*, are possible intermediate hosts of *Contracaecum*. Future work should consider other fish and bird species from the catchment that were not included in this study and larger samples would yield sufficient data for seasonality studies. Further taxonomic work on the parasites, especially the proteocephalid cestodes and trematodes, is recommended, and so are some applied aspects of fish parasitology, such as relationships with pollution levels.