

RESEARCH COMMUNICATION

Parasites of South African freshwater fish. VII Nematodes of some scaled fishes from the Hartbeespoort Dam, Transvaal

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ABSTRACT

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The nematode parasites of 16 large-scaled yellowfish, *Barbus marequensis*, six silverfish, *Barbus mattozi*, six small-scaled yellowfish, *Barbus polylepis*, 52 canary kurper, *Chetia flaviventris*, 11 carp, *Cyprinus carpio*, 45 Mozambique bream, *Oreochromis mossambicus* and a single-banded bream, *Tilapia sparrmani*, caught in the Hartbeespoort Dam, Transvaal, were collected, identified and counted.

Contraecaecum spp. larvae were recovered from one *O. mossambicus*, 40 *Chetia flaviventris*, three *Cyprinus carpio*, one *B. marequensis* and five *B. mattozi*, *Rhabdochona esseniae* from five *B. marequensis*, *Rhabdochona* spp. from one *O. mossambicus* and four *Cyprinus carpio*, and unidentified nematode larvae from two *O. mossambicus*, three *Chetia flaviventris*, two *Cyprinus carpio* and from the single *T. sparrmani*. Burdens in the infected fishes were generally small, and small-scaled yellowfish did not harbour any worms.

Only Mozambique bream and canary kurper were caught at regular intervals, but even in these species no pattern of seasonal prevalence of the nematodes was evident.

INTRODUCTION

The nematode parasites of freshwater fishes in South Africa are poorly known and only a few papers dealing with incidental findings, surveys, taxonomy and diseases or mortalities caused by these worms, have appeared (Lombard 1968; Whitfield & Heeg 1977; Jackson 1978; Bruton 1979; Mashego & Saayman 1981; Mashego 1989, 1990; Boomker 1982, 1993a, b; Boomker & Petter 1993). Host-parasite lists for many of the fish species were first established by Khalil (1971) and Van As & Basson (1984).

The nematodes recovered from catfish examined in a survey conducted in the Hartbeespoort Dam, Transvaal, during 1979 have previously been reported (Boomker 1982). The present paper records the species and numbers of nematodes present in the scaled fish species collected at the same time.

MATERIALS AND METHODS

All the fishes were caught in the Hartbeespoort Dam (25°42'–25°45'S; 27°48'–27°54'E), which is situated about 40 km to the west of Pretoria, Transvaal. All were collected at the same time and sites, and in the same manner as previously reported for catfish (Boomker 1982).

A total of 137 fishes, comprising 16 large-scaled yellowfish, *Barbus marequensis*, six silverfish, *Barbus mattozi*, six small-scaled yellowfish, *Barbus polylepis*, 52 canary kurper, *Chetia flaviventris*, 11 carp, *Cyprinus carpio*, 45 Mozambique bream, *Oreochromis mossambicus* and one banded bream, *Tilapia sparrmani*, were collected and examined. All the nematodes were removed, identified and counted with the aid of a compound microscope with interference contrast illumination.

With the exception of July 1979 (*O. mossambicus*) and July and August 1979 (*Chetia flaviventris*), *O. mossambicus* and *Chetia flaviventris* were caught during every month of the survey. The parasites of the other fish species were collected as the fish became available.

RESULTS AND DISCUSSION

No helminths were recovered from *B. polylepis*. The nematodes recovered from the other fish species are listed in Table 1. The terms "intensity" and "prevalence" are used here in accordance with the definitions given by Margolis, Esch, Holmes, Kuris & Schad (1982).

Contraecaecum spp. have been recorded from a large variety of freshwater and marine fishes (Prudhoe & Hussey 1977; Whitfield & Heeg 1977; Mashego &

Saayman 1981; Boomker 1982, 1994; Van As & Basson 1984). These nematodes were recovered from *O. mossambicus* for the first time by Whitfield & Heeg (1977) who found a prevalence of 15%. In this study, a single *O. mossambicus* harboured one *Contraecaecum* sp. larva, while none of the 83 *O. mossambicus* examined in a separate survey in the Kruger National Park were infected (Boomker 1994).

Mashego (1989) recovered *Contraecaecum* spp. larvae from five *Barbus* spp. in Lebowa and Venda, and recorded a prevalence of 13% and 50% in *B. marequensis* and *B. mattozi*, respectively. In this study both the prevalence and intensity of these nematodes in *B. marequensis* were lower than those recorded by Mashego (1989). The prevalence in *B. mattozi*, however, was considerably higher, while the intensity was almost the same as that noted by Mashego (1987).

Chetia flaviventris has previously been mentioned as a host for *Contraecaecum* spp. larvae (Boomker 1982). After *B. mattozi* these fishes had the highest incidence and prevalence of these larvae, which is rather surprising, when one considers the relatively small size of the fish (159 ± 34 mm as opposed to 330 ± 109 mm for *B. mattozi*).

The *Rhabdochona* spp. recovered from *O. mossambicus* and *Cyprinus carpio* in this study could not be identified to species level. Those recovered from

TABLE 1 The mean total intensities, range and prevalence of larval and adult nematodes of scaled-fish species in the Hartbeespoort Dam, Transvaal

Host and parasite species	Mean total intensity		Range	Prevalence (%)
	Larvae	Adults		
<i>Oreochromis mossambicus</i> (45 fish)				
<i>Contraecaecum</i> sp.	1	—	—	2,2
<i>Rhabdochona</i> sp.	0	1	—	2,2
Unidentified nematode larvae	5	—	1-4	4,4
<i>Chetia flaviventris</i> (52 fish)				
<i>Contraecaecum</i> spp.	6	—	1-15	76,9
Unidentified nematode larvae	1	—	1-2	5,8
<i>Tilapia sparrmani</i> (1 fish)				
Unidentified nematode larva	1	—	—	100,0
<i>Cyprinus carpio</i> (11 fish)				
<i>Contraecaecum</i> spp.	5	—	1-12	27,3
<i>Rhabdochona</i> spp.	0	4	1-5	36,4
Unidentified nematode larva	1	—	—	18,2
<i>Barbus marequensis</i> (16 fish)				
<i>Contraecaecum</i> spp.	7	—	—	9,1
<i>Rhabdochona esseniae</i>	—	2	1-7	31,3
<i>Rhabdochona</i> sp.	—	1	—	9,1
<i>Barbus mattozi</i> (6 fish)				
<i>Contraecaecum</i> spp.	14	—	6-28	83,3

— Not applicable

B. marequensis, however, were identified as *R. eseniae*, a nematode recently described from several *Barbus* spp. (Mashego 1989, 1990). Mashego (1989) found 16 % of *B. marequensis* in Venda and Lebowa to be infected with this nematode and Boomker (1994), 20 % of the same host in the Kruger National Park. The prevalence in the present study was considerably higher. The mean intensity of nematodes was slightly higher than that recorded by Boomker (1994), but lower than that reported by Mashego (1989) for this host.

The differences in the mean intensities and prevalences in the various fish species are thought to be due to differences in their feeding habits. *O. mossambicus* and *T. sparrmani* feed mostly on vegetable matter, while *Cyprinus carpio* are mainly bottom-feeders. The *Barbus* species and *Chetia flaviventris* are predatory, feeding on a variety of aquatic arthropods. From this and previous studies, it appears that the small *Barbus* spp., as well as *B. marequensis* and *B. mattozi*, and *Chetia flaviventris*, could be highly predatory. Thus the possible high ingestion rate of the intermediate hosts of the *Contraecaecum* spp. larvae resulted in the high infection rates.

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