



SHORT COMMUNICATION

A Survey of Nematode Infection in *Oreochromis niloticus* (L.) (Teleostei: Cichlidae) in Lake Kyoga, Uganda

M.KADDUMUKASA*, J.B. KADDU and B. MAKANGA

Department of Zoology, Makerere University, P.O. Box 7062, Kampala, Uganda

*Corresponding author: E-Mail: mkaddumukasa@zoology.mak.ac.ug

Abstract

The incidence and intensity of nematode infection was investigated in Nile tilapia *Oreochromis niloticus* from Lake Kyoga, Uganda and 11% of the 406 fish examined were parasitized by nematodes of the genus *Contracaecum*. The prevalence of these parasites was greatest in the smallest and largest size classes, but this may reflect their small sample sizes. The prevalence of *Contracaecum* was similar to that in tilapias from a reservoir in India but much lower than in fish from South Africa and Ethiopia.

This study was carried out at Lake Kyoga, located in central Uganda between longitude 32°05' and 33°35'E and latitude 01°05' and 01°55'N. Fish were collected and all specimens weighed and measured to standard length; the condition factor (*K*) was calculated from the equation

$$K = \frac{(SL * 100)}{w^3}$$

where *SL* = standard length (cm) and *w* = weight (g). The visceral organs and gills were examined for nematode parasites and the prevalence (% infected fish) and intensity (no. of parasites per fish) determined.

A total of 406 fish were examined, and 43 of them were found to be infected with nematodes, giving a prevalence of 10.6%. The parasites were found on the surface of visceral organs in the pericardial and gill regions, and they were always coiled into a spiral shape when dead. The mean length and weight of these parasites was 40 mm and 0.0122 g respectively. Each had a relatively short, bulbless oesophagus and an armed, open sucking mouth at the tip of its head; they were identified as *Contracaecum* species.

The parasites usually caused extensive damage to the host in the form of wounds and ulcers in the pericardial region. The intensity of infection ranged from one to three parasites per fish, with higher values being reported from fish > 10 cm SL. The greatest

prevalence occurring in fish in the 5.0-9.9 cm class (22.2%) and the 30.0 to 35.0 cm size class where one-third of the fish were infected (Table 1). However, this may be an artefact resulting from the small sample of fish in these size ranges. Infected fish were indistinguishable in size and appearance from uninfected ones of the same age and sex and the condition factor was the same (*K* = 2.3) in both groups.

Table 1. The prevalence of the nematode *Contracaecum* in *Oreochromis niloticus* in Lake Kyoga, Uganda.

Size class (cm)	No. examined	No. infected	Prevalence (%)
< 4.9	1	0	0
5.0-9.9	9	2	22.2
10.0-14.9	31	1	3.3
15.0-19.9	281	29	10.3
20.0-24.9	64	8	12.5
25.0-29.9	15	2	13.3
30.0-34.9	3	1	33.3
35.0-39.9	2	0	0
Total	406	43	10.6

The prevalence of *Contracaecum* in tilapias from Lake Kyoga was similar to the 11.1% reported from *Oreochromis mossambicus* in reservoirs in India and Zimbabwe (Moyo *et al.*, 2009; Nimbalkar *et al.*, 2010)

but lower than the rate of 17-25% recorded in the same species in some South African waters (Madanire-Moyo *et al.*, 2012). Much higher prevalence rates of 40-50% were found in *O. niloticus* from Lake Tana and its tributaries in Ethiopia (Yimer and Enyew, 2003; Adem *et al.*, 2012). Also in Ethiopia, Yimer (2003) noted a prevalence of 15.6% in *O. niloticus* and 27.3% in *Tilapia zillii* from Lake Ziwayi.

These parasites had no obvious effects on these fish and, according to Paperna (1996) neither encysted nor free *Contracaecum* larvae have a severe effect on fish. However, these larvae migrate to the surface when an infected fish dies and such “wormy” fish deter consumers and cause significant losses in fisheries and aquaculture systems.

References

- Adem, M, Nuru, A., Fentahun, T. and Chanie, M. (2012). Study on prevalence of larvae of *Contracaecum* nematode in tilapia fish on tributaries of Lake Tana. *American Journal of Veterinary Medical Research* Online first 6 October 2012.
- Madanire-Moyo, G.N., Luus-Powell, W.J. and Olivier, P.A. (2012). Diversity of metazoan parasites of the Mozambique tilapia *Oreochromis mossambicus* (Peters, 1852) as indicators of pollution in the Limpopo and Olifants River systems. *Onderstepoort Journal of Veterinary Research* **79**: 9pp. [doi:10.4102/ojvr.v79i1.362]
- Moyo, D.Z., Chimbira, C. and Yalala, P. (2009). Observations on the helminth parasites of fish in Insukamini Dam, Zimbabwe. *Research Journal of Agriculture and Biological Sciences* **5**: 782-785
- Nimbalkar, R.K., Shinde, S.S., Tawar, D.S. and Nale, V.B. (2010). A survey on helminth parasites of fishes from Jaikwadi Dam, Maharashtra State, India. *Journal of Ecobiotechnology* **2**: 38-41.
- Paperna, I. (1996). Parasites, infections and diseases of fishes in Africa - an update. *CIFA Technical Paper*. No.31: 220 p. Rome, FAO.
- Yimer E (2000). Preliminary survey of parasites and bacterial pathogens at Lake Ziwayi. *Ethiopian Journal of Science* **23**: 25-33.
- Yimer, E. and Enyew, M. (2003). Parasites of fish at Lake Tana. *Ethiopian Journal of Science* **26**: 31-36.