



Prevalence of Gastro-Intestinal Parasites in *Clarias gariepinus* Caught in the Gwagwalada River, Gwagwalada, Abuja, Nigeria

C.G. Okoli¹, Y.S. Shawulu², A.S. Dankishiya² and I.C. Okoli³

¹Department of Environmental Health, National Open University of Nigeria, Abuja, Nigeria

²Department of Biological Sciences, University of Abuja, Abuja, Nigeria

³Department of Animal Science and Technology, Federal University of Technology Owerri, Nigeria

Corresponding author: I.C. Okoli; E-mail: drokolicharles@gmail.com

Abstract

This paper reports the prevalence of gastro-intestinal parasites in *Clarias gariepinus* caught in the Gwagwalada River, Abuja, north central Nigeria. Sixty specimens of wild catfish, *C. gariepinus* were obtained fresh from fishermen who caught them from the Gwagwalada River during the rainy season months of June to July. They were dissected, the stomach and intestines contents eviscerated and prepared following standard parasitological procedures on glass slides and thereafter, viewed under x400 magnification for the presence of gastro-intestinal parasites. The parasites were identified using the pictorial atlas of parasitic infections and diseases of African fish (1980). On the whole, 27 out of the 60 fish examined were infected with parasites, thus giving a prevalence rate of 45.00%. The protozoa *Toxoplasma gondii* recorded the highest prevalence rate (34.77%), followed by the cestode, *Bothriocephalus gowkongenesis* (18.87%). The highest prevalence rate and parasite intensity were also recorded in the 21 – 25 cm length group (20.00% and 13.17 respectively). The 501 – 951 g weight group had the highest prevalence rate (53.64%) and parasite intensity (13.50) and was followed by the 50 -500 g group that recorded 28.48% prevalence rate and 9.56 parasite intensity. The females recorded higher parasite prevalence rate (59.26%) but lower parasite intensity (10.88) than the males. It was concluded that wild *C. gariepinus* from the Gwagwalada River are moderately infected with gastro-intestinal parasites and that the young and growing fishes harbored more parasites than the older ones.

Keywords: Catfish, *Clarias gariepinus*, gastro-intestinal parasites

Introduction

Parasitic infections are major concerns of the fish production industry since they lead to poor production through the weakening of the hosts immunity, thereby increasing the hosts susceptibility to other infections that cause poor nutrient up-take and economic losses (Onyedineke *et al.*, 2010). Endo-parasites infection is particularly a major problem in fishes in warm water bodies, where high temperature and organic content accelerate the life cycle of the parasites and also promote their spread. These parasites cause damage to the stomach, intestines, liver and blood of affected fishes (Enayat *et al.*, 2008).

Oniye *et al.* (2004) reported high prevalence of helminth parasites in the catfish, *Clarias gariepinus* obtained from Zaria, north west Nigeria. Omeji *et al.* (2011) reported the presence of several protozoan species in wild and cultured *C. gariepinus* in Benue state, north central Nigeria. Dankashiya and Zakari (2007) examined wild *C. gariepinus* caught from the Gwagwalada River in Abuja, also in north central Nigeria and reported gastro-intestinal helminth parasites prevalence of 43.64%. These studies highlight the fact that natural water bodies in northern Nigeria harbor gastro-intestinal parasites that readily infect *C. gariepinus*. Since cat fish has become a major



cultured fish in Nigeria, frequent monitoring of the its natural disease agents is needed in order to develop proper preventive measures against potential outbreaks.

This paper reports on the prevalence of gastro-intestinal parasites of *Clarias gariepinus* caught in the Gwagwalada River, Abuja, north central Nigeria.

Materials and Methods

Sixty specimens of wild catfish, *Clarias gariepinus* were obtained fresh from fishermen who caught then from the Gwagwalada River in Abuja, north central Nigeria. Gwagwalada is a satellite town in the Federal Capital Territory, Abuja and is located at longitude 7.048^o E and latitude 9.067^o N. The river passes through several villages in the FCT before reaching Gwagwalada.

The fishes were caught during the rainy season months of June to July, when the river increases in volume and pollutants due to indiscriminate dumping of waste into it. They were transported to the Parasitology Laboratory of the Faculty of Veterinary Medicine, University of Abuja for parasitological analysis. At the lab, they were sexed, weighed and their lengths measured. Thereafter, they were dissected, the stomach and intestines eviscerated and opened following standard procedures. The contents of these were scraped into labelled Petri dishes containing normal saline. They were prepared following standard parasitological procedures on glass slides and viewed under x400 magnification for the presence of gastro-intestinal parasites. The parasites were identified using the pictorial atlas of parasitic infections and diseases of African fish (1980).

Data generated were used to calculate prevalence rates of the different parasites in relation to overall occurrence, sex, weight and length of the fish and presented in table format.

Results and Discussion

The overall prevalence of gastro-intestinal parasites in wild *C. gariepinus* caught at the Gwagwalada River is shown in table 1. On the whole, 27 out of the 60 fish examined were infected with parasites, thus giving a prevalence rate of 45.00%. The protozoa, *Toxoplasma gondii* recorded the highest prevalence rate (34.77%), followed by the cestode, *Bothriocephalus gowkongenesis* (18.87%). Mixed infection of Cestode and protozoa also recorded a prevalence rate of 17.55%. More parasites were found in the stomach than in the intestines of the fish.

Table 1: Prevalence of gastro-intestinal parasites in wild *Clarias gariepinus*

Parasite	No. of fish Infected	Percentage Prevalence	Parasite location		Total (%) Parasites
			Stomach	Intestine	
Cestode	4	6.67			
<i>B. gowkongenesis</i>			36	21	57(18.87)
Nematodes	7	11.67			
<i>P. larvinchus</i>			6	3	9(2.98)
<i>E. larval</i>			2	2	5(1.66)
<i>C. gracilis</i>			2	3	5(1.66)
Trematodes	5	8.33			
<i>A. labatum</i>			5	4	9(2.98)
Protozoa	6	10.00			
<i>T. gondii</i>			62	43	105(34.77)
Cestode and Protozoa	3	5.00			



<i>B. gowkongenesis</i>			12	15	27(8.94)
<i>T. gondii</i>			29	24	53(17.55)
Trematode and Protozoa	2	3.33			
<i>A. labatum</i>			2	2	4(1.32)
<i>T. gondii</i>			11	17	28(9.27)
Total	27	45.00	168	134	302 (100.00)

These results are in agreement with earlier reports by Dankishiya and Zakari (2007) and Aliyu and Solomon (2012) who also reported the presence of cestodes, trematodes, nematodes and protozoa in the gastrointestinal tracts of wild cat fishes caught in water bodies at Abuja.

Table 2 shows the prevalence of gastro-intestinal parasites in relation to fish length. The highest prevalence rate and parasite intensity were recorded in the 21 – 25 cm group (20.00% and 13.17 respectively). This was followed by the 31 – 35 cm group that recorded 16.67 % prevalence and 10.30 intensity. The 36 – 40 cm group were basically free of parasites.

Table 2: Prevalence of gastro-intestinal parasites in relation to fish length.

Standard Length (cm)	No. of fish examined	No. of fish infected	Total No. of parasites recovered	% Prevalence	Average infection/fish
21 - 25	28(46.67)	12(44.44)	158(52.32)	20.00	13.17
26 - 30	9(15.00)	5(18.52)	41(13.58)	8.33	8.20
31 - 35	21(35.00)	10(37.04)	103(34.10)	16.67	10.30
36 - 40	2(3.33)	0(0.00)	0(0.00)	0.00	0.00
Total	60(100.00)	27(100.00)	302(100.00)	45.00	31.67

Table 3 shows the prevalence of gastro-intestinal parasites in relation to fish weight. The 501 – 951 g group had the highest prevalence rate (53.64%) and parasite intensity (13.50) and was followed by the 50 -500 g group that recorded 28.48% prevalence rate and 9.56 parasite intensity. The 1402 – 1851 g group recorded the least values, indicating that the heavier fish were less parasitized. These finding on length and weight related prevalence tend to suggest that the fishes are more prone to gastrointestinal infections during growing the stage, probably because of their higher feeding habits during this period and the fact that they have not yet developed enough immunity against the parasites (Onyedineke *et al.*, 2010).

Table 3: Gastro-intestinal parasites in relation to fish weight

Body weight (g)	No. of fish examined	No. of fish infected	Total No. of parasites recovered and % Prevalence	Intensity
50 - 500	23(38.33)	9(33.33)	86(28.48)	9.56
501 - 951	27(45.00)	12(44.44)	162(53.64)	13.50
952 - 1401	9(15.00)	5(18.52)	47(15.56)	9.40
1402 - 1851	1(1.67)	1(3.70)	7(2.32)	7.00
Total	60(100.00)	27(100.00)	302(100.00)	39.46

The sex related prevalence of gastro-intestinal parasites in wild *C. gariepinus* is shown in table 4. The number of male fish examined was 28, while 32 females were also examined. The females recorded higher parasite prevalence rate (59.26%) but lower parasite intensity (10.88) than



the males. These sex differences in prevalence rates may be attributed to hormonal differences manifesting as different sex assigned physiological functions (Olaniyi *et al.*, 2018).

Table 4: Sex related prevalence of gastro-intestinal parasites in wild *C. gariepinus*

Sex	No. of fish examined	No. of fish infected	Total No. of parasites recovered and % prevalence	Intensity
Male	28(46.67)	11(40.74)	128(18.33)	11.64
Female	32(53.33)	16(59.26)	174(26.67)	10.88
Total	60(100.00)	27(100.00)	302(45.00)	22.52

Conclusion and Recommendation

It was concluded that wild *C. gariepinus* from the Gwagwalada River recorded moderate prevalence of gastro-intestinal parasites and that the young and growing fishes harbored more parasites than the older ones. Since cat fish has become a major cultured fish in Nigeria, frequent monitoring of its natural disease agents is needed in order to develop functional preventive measures against potential outbreaks.

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