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Status of *Camallanus Cotti* and *Camallanus Polypteri* in *Oreochromis Aureus* and *Clarias Gariepinus* in Ase River Delta State, Nigeria

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ABSTRACT: Fishes are the main source of food for human consumption as they remain the major source of protein (Haruna, 2006). Fish is important as a vector of pathogenic infection of human being and animals. A total number of 83 fishes were examined which comprises *Oreochromis aureus* (n=40), *Clarias gariepinus* (n=43), were studied for helminthes infection, 75 and 90.3% were infected; *C. gariepinus* had the highest infection rate with 40 and 93.0% while *O. aureus* had the lowest infection rate with 35 and 87.5%. The organs were examined for helminthes parasite, small intestine had the prevalence rate mounted at 10 and 25% *O. aureus*, *C. gariepinus* 22 and 51.1% while large intestine had the prevalence rate of 17 and 42.5%, *O. aureus* and *C. gariepinus* 25 and 58.1% respectively. The highest intestinal parasites were found in large intestine with the total load of 42 and 50.6% while small intestine had the lowest infection rate with 32 and 30.5%. Analysis of variance (ANOVA) showed that there was no significant difference ($p > 0.05$). The high helminthes parasite found in this study may cause high mortality rate and low production of fish in the study areas. The study unveiled the prevalence of endoparasitic disease in Ase River. The prevalence shown in this study may hinder the developmental growth and output of the fish species.

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KEYWORDS: Status, Endoparasites, *Camallanus cotti* and *Camallanus polypteri*, Ase River, Nigeria.

INTRODUCTION

Fishes are the main bases of food for humans which account 25% to 30% of the total protein consumed. Fish contains major nutrient of human's diets in developing countries. It is a major source of protein and micronutrients, and improves the quality of protein in largely vegetable and starch-based diets by providing essential amino acids (Tadlo, 2017). Fish are vulnerable to infections with parasites which causes severe damages and cells, organs, destruction of the infected organs, parasites constitute nuisance by causing diseases to the host fish and transmit pathogenic diseases to humans through feeding on the infected fish (Ibiwoye et al; 2004).

Human infection from fish parasites are public health concern in Nigeria and the world at large, consumption of fresh raw or not properly cooked fish causes parasitic diseases found in humans such as *Camallanus cotti, Camallanus polypteri, Anisakis, Diphyllobothriasis* etc, (Nawa et al;2005). The aim of this study was to study the status of endoparasites in *Camallanus cotti, Camallanus polypteri,* in Ase River, Delta State, Nigeria, the fish species are *Oreochromis aureus* and *clarias gariepinus* .The fishes are consumed as a major source of protein in the study area. Accordig to (Stumpp 1975), *Camallanus* ***cotti*** and *Camallanus polypteri* are gut parasitic nematode; that feeds on fish host's blood, transmitted through intermediate host. The presence of *Camallanus* worms damages the intestinal fish which leads to secondary bacterial infection and internal bleeding. *Camallanus* is

the most common nematode that affects fishes; *Camallanus* has smooth, cylindrical and relatively short round worms that are found in the gut of fish. Nematodes are one of the most important and harmful parasitic worms that deprive their host food and feed on host tissues as opined by (Haftey et al; 2017).

MATERIALS AND METHODS

Description of the study area

The study was conducted in Ase River, located approximately on Latitudes 5^0 17 and 5^0 53 North of the Equator and Longitude 6^0 17 and 6^0 31 East of the Greenwich Meridian. It is a tributary of the Forcados River and a branch of the River Niger in the Niger Region of Southern Nigeria. Ase River is used for water supply, transportation, industrial and agricultural purposes within its geographical locations. Geographically, the length of the Ase River is approximately 292 kilometers, covering the areas of Obikwele, Iselegu, Afor, Osemele, Kwale, Beneku Ashaka, Iberede, Ase, Asaba-Ase, Ibedeni etcetera, in Delta North Senatorial District, Nigeria.

Description of the Methods

Laboratory examinations were performed on freshly killed fish specimens. Fish were collected with the assistance of local fishermen using different fishing and apparatus techniques such as cast nets, seine nets (150 – 200 mm mesh size), and hooks. The collections were made during the dry and the wet seasons, within the study areas. The total number of fish collected was 83, including 40 *Oreochromis aureus*, and 43 *Clarias gariepinus* the fishes were identified using the guidelines of (Bruno et al., 2006), and (Olaosebikan and Raji 2013).

Experimental Design

Each fish collected was taken to the Research Laboratory for parasitological analysis, with internal features of specimens identified based on procedures adopted in (Edeh and Solomon 2016).

Endoparasites Examination of fish

Incisions were made on the ventral sides of fish samples, extending from the anal openings to the lower jaws, with dissecting scissors to expose the body cavities and most internal organs. These organs were then separated and placed in separate petri dishes containing 0.9% normal saline solution. A drop of Giemsa stain was added to each specimen and examined under a light microscope (Olympus c ×40), using 10× objectives to observe various endoparasites. The dissected abdominal cavities were checked for free or unattached endoparasites, and those recovered were examined microscopically before being preserved in 10% alcohol. The count of endoparasites found per fish specimen was also documented. The procedures followed were consistent with (Paperna 1996), and (Marcogliese and PMSC 2011).

Preservation

The endoparasites obtained from the fish were preserved and kept in glass bottles with a 10% alcohol solution.

Data Collection

The data collected were based on examination of fish endoparasites. The methods of data collected followed published standard methods as stated in laboratory manuals of the National Wild Fish Health Survey (NWFHS USA), Laboratory Procedure Manual. (Fifth Edition), May 2009. Data was investigated using SPSS version 20.0 (IBM Corporation, Armonk, USA), the percentage occurrence was calculated using the formulae below:

$$\text{Percentage Prevalence} = \frac{\text{Number Infected}}{\text{Number Examined}} \times 100$$

Analysis of variance (5% level) was used to test for significant difference infection in each fish species in the stations.

RESULTS

Prevalence of infected fish species, Intensity of helminth parasites and Endoparasitic load across fish species.

A total number of 83 fishes were examined which comprises *O. aureus* (n=40), *C. gariepinus* (n=43), were studied for helminthes infection, 75 and 90.3% were infected, *C. gariepinus* has the highest infective rate with 40 and 93.0% while *O. aureus* had the lowest infection rate with 35 and 87.5%. The organs were examined for helminthes parasite, small intestine had the prevalence rate stood at 10 and 25% in *O. aureus* and *C. gariepinus* 22 and 51.1% while large intestine had the prevalence rate of 17 and 42.5% in *O. aureus* and *C. gariepinus* 25 and 58.1% respectively. The highest intestinal parasites were found in large intestine with the total load of 42 and 50.6% while small intestine had the lowest infection rate with 32 and 30.5% as shown in the table below. Analysis of variance (ANOVA) was statistically significant ($p < 0.05$).

Table 1. Prevalence of infected fish species and gut contents in Ase River, Delta State Nigeria

Fish Species	Number examined	Number infected (%)	Small intestine	Large intestine
O. aureus	40	35(87.5)	10(25)	17(42.5)
C. gariepinus	43	40(93.0)	22(51.1)	25(58.1)
Total	**83**	**75(90.3)**	**32(30.5)**	**42(50.6)**
P<0.05 p-value = 0.024				

The comparative intensity of endoparasites of helminthes parasite recovered in the study area is described in the table 2 below. The parasitic species found in this study were *Camallanus cotti and Camallanus polypteri* with infection rates of 21 and 52.5% and 7 and 16.2% respectively. Further, fish were infected with parasitic load of 149 with endoparasites across fish species as shown in table 2 below. The intensity of the two parasites C. *cotti* and *C. polypteri* in the fish species were 52.5% and 16.2% respectively. The helminth parasites were within the range of 16 – 52 %. *C. cotti had* the highest prevalence with 21 and 52.5% while *C. polypteri* had the lowest prevalence with 7 and 16.2%. The total Intensity of helminthes parasites in fish species of Ase River were 83 in prevalence and infected number of 28 and 33.7%. Helminth parasites intensity was not significantly different between the species ($p > 0.05$).

Table 2. Intensity of helminthes parasite in fish species of Ase River, Delta State, Nigeria

Fish species		Parasite species	Number infected (%)
O. aureus (n=40)		*C. cotti*	21 (52.5)
C. polypteri (n=43)		*C. polypteri*	7 (16.2)
Total	**83**	***Camallanus***	**28 (33.7)**

The highest parasitic load recorded in this study was found in *C. gariepinus* with a parasitic load of 87 followed by *O. aureus* with 62 fish observed. *C. gariepinus* recorded the highest prevalence percentage of 58.3% while *O. aureus had* 41.6% as shown in table 3 below. Endoparasitic load across fish species was not statistically significant between the species ($p > 0.05$).

Table 3. Endoparasitic load across fish species of Ase River, Delta State, Nigeria

Fish species	Examined Fish	Parasitic load	Prevalence%
O. aureus	40	62	41.6
C.gariepinus	43	87	58.3
Total	**83**	**149**	**99.9(67.0)**
P>0.05 p-value = 0.147			

DISCUSSION

Status of Endoparasite *Camallanus Cotti* and *Camallanus Polypteri* in Ase River was prevalent. A total of 83 fishes were examined belonging to two different species (Cichidiae and Clariidae). Two species were examined for endoparasites in Ase River, the total overall prevalence of 90.3% was observed which is relatively high, the infected fish species in *O. aureus* 87.5% and C. gariepinus 93.0% were severely high. The endoparasites found in the gut were moderately high; large intestine had the highest prevalence with 42 and 50.6% while small intestine had 32 and 30.5% the gut parasite showed the presence of endoparasites which occurred in the intestine according to (Aliyu and Solomon 2012), Comparatively, a much lower parasitic infection rate was recorded by (Nmor et al; 2003; and Bichi et al; 2009), with the prevalence of 60.66% and 53.49% respectively. In the same vain (Ito, E.E. 2017), and (Onyishi et al; 2018), had overall parasites of 50.00% and 64.5% on endoparasite helminth prevalence. Consequently,(Nwani et al; 2008), (Uneke et al; 2015), studied on helminth parasite prevalence and intestinal helminthes and protozoan parasites with the infection rates of 41.9% and 75% respectively. The prevalence of gastrointestinal helminth parasite infecting *C.* gariepinus was examined were nematode *Procamallanus laevionchus and Camallanus polypteri* had intestinal parasite, female 72 and 90% and male 58 and 48.33% were recorded. Therefore, parasitological study examined by (Rewaida et al; 2015), was assessed that helminth parasites reported was only nematode parasites with prevalence infection rates of 7.5% while 15% was recovered in winter season, the morphological analysis reported that the results observed were all *Camallanus* genus connected to *Camallanu polypteri*.

CONCLUSION

The endoparasitic fish species found in the study area in Ase River had high helminth parasite infection. Status of Endoparasite *Camallanus Cotti* and *Camallanus Polypteri* in Ase River was prevalence. The overall prevalence infection rates of 90.3% in this study considered to be relatively high. Consequently, the tables and data seen in this study, reveal the high endoparasitic load.

Conclusively, fish is vital and important to human therefore, it is recommended that hygienic control of fish from wild is important. Thus, appropriate training on preventive and epidemiological measure is suggested to evade zoonotic disease.

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