

Preliminary Study of Fish Parasite in Lake Belbela

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Abstract

A preparatory consider of angle parasite in Lake Belbela was carried out by collecting angle species by utilizing gillnets of different work sizes. A add up to of 116 angle tests were collected from haphazardly chosen location of Lake Belbela. These included 74 (63.79%) Nile tilapia (*Oreochromis niloticus*), 11 (9.48%) *Cyprinus carpio* and 31 (26.72%) *Labeobarbus intermius*. The angle was inspected altogether both outside and inside. Out of 116 people of angles inspected amid the consider period, 26 (22.41%) were contaminated with parasites of which 6 (23.07%) were *Labeobarbus intermius*, 5 (19.23%), *Cyprinus carpio* and 15 (57.69%) were *Oreochromis niloticus*. The major parasites distinguished amid the examination incorporate grown-up *Contraecum* (Nematoda), *Eustrongylides* (Nematoda), and metacercariae of *Clinostomum* spp. (Digenea). Among the parasites recorded in the show think about, the Clinostomatid digeneans and *Contraecum* nematodes seem be restoratively vital from open wellbeing point of see since the parasites can be transmitted to people by eating crude or smoked fish.

Keywords: Fish parasites; Prevalence; Lake Belbela

Introduction

The angle division makes a crucial commitment to the nourishment and dietary security of 200 million Africans and it gives wage for over 10 million individuals locked in angle generation, handling and exchange. In addition, angle has gotten to be a driving trade product for Africa, with a yearly trade esteem of US\$ 2.7 billion [1]. Africa has an incredible differences of freshwater angle of which more than 3,000 species have been recognized. However the benefits are at chance as the abuse of normal angle stocks is coming to its restrain [2].

Freshwater angle can serve as conclusive, middle of the road or paratenic (transport) has in the life cycles of numerous species of protozoan, helminthes and shellfish parasites. The parasites as a rule exist in balance with their hats as a survival technique [3]. In any case, in occurrences where the hats are packed, such as in angle ranches, parasitic maladies can spread exceptionally quickly and cause net mortalities, misfortunes in

efficiency in diverse water bodies and too human illnesses in numerous regions of the world [4-6]. They can moreover ruin the appearance of angle and more often than not influence the attractiveness of commercially delivered angle, hence raising open wellbeing concerns particularly in ranges where crude angle is eaten. In characteristic frameworks, they may debilitate the wealth and differences of inborn angle species.

The relative wealth of endo and ecoparasites of angle in a specific sea-going framework can too be utilized as a pointer of natural push. Ectoparasites, for occasion, are more in contact with water; if they are touchy to a poison, there will be less ectoparasite than endoparasites in a contaminated framework [7].

One of the primary accentuations in Ethiopia is to create capture fisheries and aquaculture to its full potential making a huge commitment to national nourishment accessibility, nourishment security, financial development, and exchange and progressed living guidelines. Few ponders were done on angle parasites of common water bodies in Ethiopia. The propensity of crude angle eating is common among anglers and individuals in Ethiopia, particularly individuals close to water bodies. Conducted pilot overview shown Lake Belbela is the supporter of angle source for the nation but potential angle parasites that can effectively be dispersed to these water bodies are not adequately known.

Research questions

- What are the common fish parasites in Lake Belbela?
- Are there parasites of medical importance to humans in the study sites?

Hypotheses

- There are no differences of epidemiological parameters of fish disease between the season.
- There are no parasites of medical importance to humans in the study sites.

Objective

To assess the prevalence of common economically important parasite of fish in Lake Belbela.

Materials and Methods

Collection of fish species and parasites: Samples of fishes were collected by using different mesh size of gill nets from the selected sites. The next morning, the gears were raised after being set in the afternoon. Furthermore, fish harvested by fishermen was added to offer a diverse assortment of fish and to enhance the information regarding certain facets of fish parasite infestation. Immediately after capture, Total Length (TL) and Total Weight (TW) of each specimen were measured to the nearest 0.1 cm and 0.1 g, respectively. Each specimen was then dissected and its sex determined by inspecting the gonads. Maturity stages were rated visually and recorded. Five-point maturity scales were used for this purpose [8]. The procedure of Paperna was followed to collect the parasites of the fishes. The parasites that get each fish were kept in a plastic bag containing 4% formaldehyde solution. Samples was then be transported to center for further laboratory studies.

Fixation, preservation and identification of parasites: The technique, method appearance and procedures of Paperna and Bykhovskaya-Pavlovskaya were used as a guideline in fixing, preserving and identification of each parasite specimens [9]. After being preserved in 4% formalin, larval nematodes were subsequently kept in saline solution. Before the tissue was preserved, the encapsulated larvae were meticulously dissected. After being cleaned in lactophenol, preserved larvae were examined under a low power magnification. To ensure their relaxation, adult nematodes were fixed in hot formalin and kept in 4% formalin mixed with 1% glycerine to prevent unintentional drying.

Table 1: Prevalence of parasites on sex base of the host (n: 216).

Sex	Number of examined	Number of infected	% Age (infected)
Male	58 (50%)	9	15.51
Female	58 (50%)	17	29.31

Total prevalence of parasite species: The prevalence of each parasite shows different rates in fishes that were recorded during the study period. Among the types of fishes examined of which 26 were positive from the total (n: 116) twenty two (of them were infected by *Contracaecum* larvae (18.96% of the total and 84.61% of the infected) while seventeen (14.65% of the total

Alcohol Formalin Acetic acid (AFA) was used to fix parasite cestodes. For microscopic study, nematodes were cleared in lactophenol for 24 hours and examined under lower magnification microscopy. In the case of cestodes, diagnoses were made after being carmine stained and cleared in absolute alcohol followed by 70% alcohol.

Data management and analysis: The data collected during the study period were entered into Microsoft Excel Sheet computer program and were analyzed using descriptive statistics and mean comparison procedure of the Social Science Statistical Package (SPSS V. 21.0).

Results and Discussion

Occurrence of parasites in sampled fishes: Out of 116 individuals of fishes examined during the study period, 26 (22.41%) were infected with parasites of which 6 (23.07%) were *Labeobarbus intermius*, 5 (19.23%), common carp and 15 (57.69%) is *Oreochromis niloticus*. The common identified parasites were recorded as, *Contracaecum*, *Clinostomum* and *Eustrongylides*.

Prevalence in sex's difference: Sexes were assessed to observe their influence on the parasite infection results. When analyzing the infection rate of all examined parasites larvae by host sex shown fifty eight males examined of which 9 (15.51%) infected, on the other hand, out of 58 females examined, 17 (29.31%) were infected (Table 1).

and 65.38% of the infected), and thirteen (11.20% of the total and 50% of the infected) were *Clinostomum* sp. and *Eustrongylides* respectively. These indicate higher prevalence of *Contracaecum* parasite during study period in Lake Belbela (Table 2).

Table 2: prevalence of each parasite recorded among examined fishes.

Sp. of parasite	Number observed	<i>O. niloticus</i>	<i>Labeobarbus intermius</i>	<i>Tilapia zilli</i>
<i>Contracaecum</i>	22	12 (54.5%)	6 (27.7%)	4 (18.2%)
<i>Clinostomum</i>	17	15 (88.2%)	0 (0.0%)	2 (11.8%)
<i>Eustrongylides</i>	13	10 (76.9%)	1 (7.7%)	2 (15.38%)

The most prevalent larval nematodes were *Contraecaecum* spp. recovered from pericardial cavity of Nile tilapia and *Labeobarbus intermius*. Prevalence of *Contraecaecum* spp. in Nile tilapia from Lake Belbela was 15.4% which is again lower than the works of Eshetu Yimer and Muluaem Eneyew in Lake Tana (59.8%) and far higher than the findings of Eshetu Yimer et al. which were 2.09% from Lake Chamo [10]. This study was also indicate higher prevalence as compared with the findings of Amare Tadesse in which the prevalence of *Contraecaecum* spp. From Nile tilapia in Lakes Awassa and Chamo was 10.6% [11]. It is challenging to identify these larval nematodes to the species level unless DNA sequencing methods connected to their adult identification from the definitive avian hosts are used as assistance. According to Paperna, encapsulated larval nematodes are known to produce fibrous capsules, while non-encapsulated larvae migrate and inflict significant tissue damage.

In addition, it was noted that *Contraecaecum multipapillatum* larval stages may be zoonotic parasites in Mexico [12]. This study reveals that *Eustrongylides* spp., a common parasite species, is also infectious to humans. *Eustrongylides ignotus* has also been reported to be infectious to humans. The work of Eshetu Yimer et al., indicates the presence of the genus *Eustrongylides* in the mesentery of African catfish from Lake Chamo.

According to Eshetu Yimer's 2003 research on Lake Tana, *Clinostomum* spp. were the most common digenean parasites of Nile tilapia in lakes. Which is exactly in line with my research, which indicates that 14.65% of Nile tilapia have intestinal parasites.

Conclusion

In addition to their impact on the economy and public health, parasites hinder fishing operations. At the lakes, the harvested fish, fishing equipment and fishermen are loaded on the too narrow boat. Therefore, parasites that detach from the fish host bite the bare foot of fishermen causing pain, bleeding and breakage of skin that might allow the entrance of other organisms which may cause anxiety and fear among young fishermen employed in the job. The present study shows, the proportion of parasites differ in prevalence. Thus based on this investigation public awareness should be created on the effect of parasite infestation and their seasonal dynamics.

Recommendations

Eating fish that is raw or only marginally cooked or smoked may expose humans to health concerns from Clinostomatid digeneans and *Contraecaecum* nematodes. So, based on their risk to human being:

- Medical survey on occurrence of laryngo-pharyngitis should be done on people eating uncooked/smoked fish.
- Identification of the genera and to species level is important to check for the occurrence of zoonotic parasites.
- Parasite status should be taken into consideration in the study of stocking density of fish.
- Focus should be given for capacity building in fish parasitology and pathology by establishing network with international institutes experienced in the field.
- Consumers should not eat uncooked or slightly cooked fish and health education should be given for them on the risk of eating raw and partly cooked fish.

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