Survey on Some Helminthes Parasites of Synodontis schall (Bloch and Schneider, 1801) at Blue Nile River , South-East of Khartoum, Sudan

- **Naglaa Mohammed Khalid Mohammed, Ministry of Animal Resources, Animal Resources Research Co-operation, Fisheries Research Center, Al Shagara Fisheries Station, Sudan**
- **Eshraga Dafa Alla Mahmoud Abubker, Department of Fisheries , Faculty of Agriculture Technology and Fish Sciences. University of Al –Neelain, Khartoum, Sudan**
- **Mamoun Makawi Obeida Mohammed, White Nile University, White Nile Center for Scientific Research, Water and Environmental Studies Center, Kosti, Sudan.** mamounobeida@wnu.edu.sd

Abstract

This survey was conducted during the period at April,2018 and terminated in March, 2019, on the one main Fisheries sites in the Al Masid area on the Blue Nile 60 km of South-East of Khartoum town. The study focused on the genus *Synodontis schall* from Catfish family Mochokidae the survey covered some endoparasite of the fresh water fishes in the Sudan 250 specimen were examined the study found 83 fish in number were infected with Prevalence 33%,the total of non-infected 147 specimen with Prevalence rate 58%. Seven of endoparasite species isolated from the visceral organs of Synodontis schall 71 in number from the stomach with Prevalence 28.1% 15 in number from the gills with Prevalence 5.9% and 7 in number from the intestine with Prevalance 2.8% the endoparasite were isolated two species of nematodes identified spirocammllanu and Spinitectus infected 83 number of Synodontis schall with Prevalance 58.1%, two species of trematodes identified clinostomum and phagicola infected only one from the total of fish numbers with Prevalence 0.4%, two species of curstean isolated from two fish with Prevalance rate 0.8% identified as Argulus and lrenae cyprinceae and one species of acanthocephalan larvae according to the sex the survey observed 142 male and 111 female were infected with Prevalence 56%, 43.9 respectively.

Keywords: Synodntis schall, Helminthes Parasites, Blue Nile River.

المستخلص

تم إجراء هذا المسح خلال الفترة من أبريل 2018 الى مارس 2019، على أحد مواقع مصايد الأسماك الرئيسية في منطقة المسيد على النيل الأزرق على بعد 60 كم جنوب شرق مدينة الخرطوم. ركزت الدراسة على جنس ساينودونتيس شال من الاسمك القطية عائلة موشوكيدي وشمل المسح بعض الطفيليات الداخلية لأسماك المياه العذبة في السودان وتم فحص 250 عينة ووجدت الدراسة أن 83 سمكة مصابة بنسبة انتشار 33٪ وإجمالي العينات غير المصابة 147 عينة بنسبة انتشار 58٪. تم عزل سبعة أنواع من الطفيليات الداخلية من الأعضاء الحشوية لسمكة ساينودونتيس شال، 71 نوعًا من المعدة بنسبة انتشار 28.1% و15 نوعًا من الخياشيم بنسبة انتشار 5.9% و7 أنواع من الأمعاء بنسبة انتشار 2.8%. تم عزل نوعين من الديدان الخيطية تم تحديدهما بالأسبيروكملانس واسبنتكيتس ، وأصابت 83 سمكة ساينودونتيس شال بنسبة انتشار 58.1%، كما أصاب نوعان من الديدان الخيطية تم تحديدهما كلينوستمم وفيجوكولا سمكة واحدة فقط من إجمالي أعداد الأسماك بنسبة انتشار 0.4%، وتم عزل نوعين من الديدان الخيطية من سمكتين بنسبة انتشار 0.8% تم تحديدهما وهما الأرجويولس واللرنيا سيبرانيدي ، كما أصاب نوع واحد من يرقات الاكانثوسيفالا وفقًا للجنس، ولاحظ المسح إصابة 142 ذكرًا و111 أنثى بنسبة انتشار. 56%، 43.9 على التوالي.

الكلمات المفتاحية: ساينودونتيس شال ، طفيليات الديدان الطفيلية، نهر النيل الأزرق.

Introduction:

The Sudan is rich with respect to water bodies and most of them are stocked with fish these water bodies include. The River Nile with a total length of 4160 miles of which not less than 214 miles lie within the borders of the Sudan . Furthermore, 500 miles are included for the Blue Nile and at least 1250 miles for the White Nile. Adding to those the intermitted river such as Atbara - Dinder and Rahad , so over 4000 miles habitat are found in the Sudan suitable for different varieties fish there are about 200 species belong to 22 families, but 50 of these species are of economic importance in addition, This mean Sources are contribution in the total fish catch is 82.2% for the Blue Nile, 3.4% Freshwater fishes occurring in the Sudan may represent a great potential for the future development of aquaculture with economic and social Consequences (Alian and Tomas, 2006).

In the world there are 13,000 freshwater fish species, 25% of them are in African freshwater bodies (Lévêque et al., 2008). The catfish, Synodontis species of the family Mochokidae are freshwater tropical fish of high commercial value in most African countries; they inhabit rivers and lakes especially the Nile and its tributaries, and represent an important food fish (Bishai and Abu Gideiri, (1967); Steffens, (2006) and Eyo and Effanga, (2018).

Synodontis species are currently restricted to freshwaters of Africa, occurring mostly in central and West Africa (Koblmuller et al., 2006). They are the most widely distributed Mochokid genus occurring throughout most of the rivers in the sub-Saharan Africa and Nile systems (Friel and Viglotta, 2009).

Parasites can act as severe pathogens competing for food with the fish host, thereby depriving them of essential nutrients and inhibiting their growth leading to morbidity or even mortality, rendering the fish more vulnerable to predators (Azadikhah et al., 2014 and Omeji et. al., 2015) as well as, they may have zoonotic threats to animal and human consumers (Hamouda et al., 2018 and Hamouda, 2018).

Materials and Methods

3.1. Description of the study area

Al Masid is located in Al gazer State; North of Blue Nile River located between latitude 015° 25’ N longitudes 032° 95’E, with elevation 508 m and is at 60 km South-East wards to the Capital of Sudan.

Figure (1): Map of the study area.

3.2. Sampling Procedures and Identification

The study started in April,2018 and terminated in March, 2019, sampling took place every month. During each time the samples were randomly selected from the collect catch.

After measuring the standard size, the fish were observed under a binocular magnifier for the search of ectoparasites. Then, they were dissected under the binocular microscope and the digestive tract, muscles, liver, gills and, abdominal cavity was carefully examined for digeneans.

The Trematodes encountered were removed with flexible forceps and placed in clean salt shakers containing 2% isotonic saline solution.

Digeneans were rinsed in distilled water after a stay in 70° alcohol. They were stained with Boracic Carmine, then passed for a few seconds in 1% hydrochloric alcohol. They were then dehydrated in a series of increasing degrees of ethyl alcohol (70 to 100).

3.3. Collection of fish specimen

A total of 250 samples of *Synodontis schall* of different sizes were collected. Fishes were sorted by size and sexes, and were identified according to Abu Gidiri (1984) and Bailey, (1994).

Specimens of *Synodontis schall* (Bloch and Schneider, 1801) collected from the catches of artisanal fishermen using gillnets (with length 100 m and mesh sizes of 6 cm, 8 cm, 10 cm, 12 cm, 14 cm and 16 cm) and hooks.

Results and Discussion

Results

In this survey searched endoparasite of Synodontis schall collected from Blue Nile River at Al Al Masid area South – East of Khartoum two hundred and fifty *Synodontis schall* specimen were examined the total of fish infected 83 with percentage 32.2% and that rate of non-infection 147 specimen with percentage 58.1%.

Seven of endoparasite isolated from the skin and visceral organs the stomach. Frequency infected 71with percentage 28.1%, frequency of intestine infected rate 7 with percentage 2.8%, the gills 5.9% and skin frequency 1 with percentage 0.4% show that in and Table (2). Major Synodontis schall in this search notes that high nematodes infection were 14 in percentage 8.5% and the infected rate of Trematodes and Crustacean 1.2 with percentage 0.4%, 0.8% respectively show that in and Table (1).

The study separating infection related to the sex it found number of male infected 142 with the prevalence 56 % and the female with the prevalence 43.9 % show that in and Table (2) end parasite in this results identification and classification according to Paperana (1980) and Khalil (1971) and Mahmoud (2008).

Isolation of parasites including three species of nematodes procammallance, spirocammallance with high recorded and spiniticus sp with low recorded, two species of Termatodes metacerica of clinostomum and phagicola sp, two species of crustacean Argulus sp and Lernae cyprindae and one species of Acanthocephalan larva

Table (1): The Prevalance infection of endoparasite of S. schall at Al Masid area north of Khartoum in the Blue Nile River

S	Prevalence %
Nematodes	58.1
Trematodes	0.4
Crustean	0.8
Acantheocephala larvae	1.2

Table (2): The number of S.schall infection and the prevalence infection organs at Al Masid area north of Khartoum state.

Organ	N. of s. schall infection	Prevalence %
Stomach	71	28.1
Gills	15	5.9
Intestine	7	2.8
Skin		

Table (3): Specimen Percentage of S.schall infected and non-infected according to sex

Speciment	Number	Percentage %
non infected	143	58
Infected	83	33
Male	111	43.9
Female	142	56

Table (4): The Type and species of parasites Isolated from S. schall at Almasid area north of Khartoum in the Blue Nile River

Nematodes	Trematodes	Crustean	Acanthocephalan
Cammllanus	Clinostomum	Argulus	Larvae
Spinitectus	phagicola	Lernae	-

Discussion

The endoparasite infection S. schall in Almasid area in Blue Nile Nile around Khartoum recorded the same with found of Nuru at. El. 2018 in Nigeria at kowa Dam recovered the same Nematodes from the stomach and intestine but in different species of fish also Nuru at El. 2018 identified 90 species from the helminthes the total of nematodes 83.34

compared with the present study recorded ten species of helminthes 32%nematodes was not found significant infections between male and female but in this survey I think there were significant infections between them from the result of analysis in table (3)

Khalil recorded 40 species of nematodes from 9 families of fishes from elementary systems in present study recorded 3 species of nematodes from one species of Catfish. Taha (2003) found nematodes infections in visceral organs of fish Tilapia, Akther at,al (2004) isolated nematodes from the skin and body cavity and Molnar (2006) and lbwoye (2004) all the reveal confirmed in the information site but in deferent fishes but the major was O. niloticus and galileaeus from freshwater in Africa in present study confirm with them recorded nematodes from skin and visceral of school. schall with Prevalance 32%highest infection

Acanthocephalans are intestinal parasites of fish they are cylindrical in shape hooked proboscis worms from few mm to 70 cm in long without digestive system Jadwiga (1991) this morphological description confirms the study found with Prevalance infection 20%among infection fishes 0.4%amonge all fishes examined with intensity 1_4per fish

. Parasites curstean are macroscopic found in freshwater fishes specially genus lernaea (anchor worms) infected the Catfish and carp inflmntened gills Hoffman (1999) moreover (Lasee,

1995) found that lernaea infection gills of most fishes in water systems and Channel Catfish. Fryer 1968 reported lernaea in the major freshwater in Cichlidae and and Ergasilus spreaded in Atlantic in tilapia and carp Robert (1970) found that lernaea distributed in North America and South Africa and

lake Victoria found in gills of fish cyprindeae and Catfish in the present survey records lernaea in fish S. schall one of the fresh water fishes in the Sudan infected gills with low prevalence 5.9% show that in Table (2)

Conclusion

The endoparasite Isolated in this survey from the visceral . skin and gills of synodntis schall

Recovered nematodes Cammllanus ,Spinitectus trematodes clinostomum and phagicola Crustean Argulus and Lernae and acanthocephalan larvae the recommended that *Synodntis schall* more important economic fish resource in the Sudan for that done more study for this helminthes linked with genetic .

Total of fish infected 83 with percentage 32.2% and that rate of non-infection 147 specimen with percentage 58.1%. Ten endoprasite isolated from the skin and visceral organs the stomach. Frequency infected 71with percentage 28.1%, frequency of intestine infected rate 7 with percentage 2.8%, the gills frequency 45 with percentage 5.9% and skin frequency 1 with percentage 0.4%. Major Synodontis schall in this search not is that high nematodes infection and the risk of cestodes was lower in frequency 6 and prevalence 2.5% the frequency of both infection with cestodes and nematodes were 14 in percentage 8.5% and the infected rate of Termatodes and Crustacean 1.2 with percentage 0.4%, 0.8% respectively .Based on this research Synodontis schall in the study area, were infected with stomach and intestinal parasite that could pose public health concern to fish consumers who consume raw, improperly cooked or smoked need for proper cooking of fish before consumption.

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