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FOOD AND FEEDING HABITS OF NILE SQUEAKER (*Synodontis schall*) FROM SEBORE RESERVOIR, MAYO – BELWA, ADAMAWA STATE NIGERIA

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ABSTRACT

This study was aimed at investigating the food and feeding habits of *Synodontis schall* in Sebore reservoir**,** Mayo-Belwa, Adamawa State Nigeria. A total of 72 specimens of *S. schall* were obtained from monthly sampling for a period of one year. Fishing was done using gill nets as the fishing gear and canoe was used as fishing craft. The fish specimens were washed with clean water and preserved in ice crest to minimize any post – mortem changes and taken to the laboratory for analysis of the food contents based on standard methods. The random samples of the stomach contents were studied and recorded. The contents of each of the samples were analysed using numerical method (NM) and frequency of occurrence method (FO). Results revealed 37 specimens (51.39%) had full stomachs with food while 29 (40.28%) had half-filled stomachs and 6 (8.33%) had empty stomachs. Seven major groups of food items constituted the diet of *S. schall* from Sebore Reservoir. In the NM, insects were the dominant and composed of 53.27% of the group of food items in the stomach, while phytoplankton were the least with 1.74%. In the FO detritus were dominant (92.42%) while the least was *Flagerllaria* spp. (15.15%). Based on the findings of this research, *S. schall* can be concluded to be specifically insectivore, detritivore, molluscivore, crustacivore and planktivore and could be broadly classified as omnivore and benthic feeder.

Keywords: *Synodontis schall,* Omnivore, Switching feeding habit, Sebore Reservoir

1.0 INTRODUCTION

The importance of food fish as cheap source of protein and other nutrients cannot be over emphasised both at subsistence and commercial fisheries scale (Adebayo *et al*., 2020; Ajibolade *et al*., 2021; Okunola *et al*., 2022). *Synodontis schall* (Bloch and Schneider, 1801) also known as the upside-down catfish belongs to the order Siluriformes, family Mochokidae and genus *Synodontis* (Olaosebikan and Raji, 2013). Idodo – Umeh (2003) reported the occurrence of many species of the genus *Synodontis* including *S. schall* distributed across various freshwater bodies in Nigeria. Abdulkarim *et al*. (2015) researched on abundance and spatio-temporal distribution of fish species in Gubi Dam, Bauchi-Nigeria where *Synodontis* was reported as parts of the species. Danbe *et al*. (2025) reported the feeding habit of *Synodontis budgetti*. The stomach contents can provide valuable information about diet and feeding habits of fish (Adebayo *et al*., 2020 and Isa *et al*., 2025) and can be used partly as a measure of physiological state (condition factor model) of fish (Abdulkarim *et al*., 2018). Researches have been carried out greately in Sebore reservoir which include the composition and relative abundance of Ichthyofauna in the Sebore reservoir (Yusuf *et al*., 2024A; Yusuf *et al*., 2024B and Useini *et al*., 2024); feeding habits of African Butter Catfish (*Schilbe mystus*) and *Raiamas senegalensis* (Ali *et al*., 2024A and Ali *et al*., 2024B) and that of *Heterotis niloticus* (Yusuf *et al*., 2023). This research is aimed at analysing the stomach contents of *Synodontis schall* in order to study the food and feeding habits of the species in Sebore reservoir.

2.0 MATERIALS AND METHODS

2.1 Study Area

Sebore Reservoir is located at Mayo – Belwa local government area, Adamawa State of Nigeria. Mayo – Belwa LGA lies within latitude 9° 3' 0' north and longitude 12° 3' 0' east. It covers an area of 1768km² (682.63 sq. m) and is 75 km away from Yola, the state capital.

2.2 Sample Collection

A total of 72 specimens of *S. schall* were obtained from monthly sampling for a period of one year, from December 2013 to November 2014. Fishing was done using gill nets as the fishing gear and canoe was used as fishing craft. The fish specimens were washed with clean water and preserved in ice crest to minimize any post – mortem changes and taken to the laboratory for analysis of the food contents.

2.3 Laboratory Analysis of Samples

Each specimen was weighed to the nearest 0.01g using a top loading Sartorius balance (model BP310S) and standard length was measured in centimetres (cm) using measuring board (Danba *et al*., 2025). The specimen's body cavity was opened using a pair of scissors, beginning ventrally from the anus to the mouth, the entire visceral and intestinal organs such as the liver, fat and other organs attached to the intestine and stomach were gently removed and emptied into a dish, the length and weight of the stomach were measured and recorded. Thereafter, the visceral and intestinal organs were kept in formalin solution of four percent (4%) to avoid any form of deterioration and contamination of the stomach contents (Yusuf *et al*., 2023). The stomach contents were dissected using a pair of scissors and the complete stomach contents were emptied into petri – dish for examination and identification based on the work of Paul *et al*. (2025). The random samples of the stomach contents were taken and dropped on a slide (counting chamber) with the aid of a dropping pipette and viewed under a light microscope. The general views were made with a binocular dissecting microscope Olympus SZ51 (0.80 – 4x). The stomach contents were studied and recorded. The stomach contents of each of the *S. schall* samples were analysed using the numerical and frequency of occurrence methods as described by Ali *et al*. (2024A).

In the numerical method (NM), the number of individuals in each food category was expressed as a percentage of the total individuals in all food categories:

$$NM\ (\%) = \frac{Total\ no.\ of\ a\ particular\ food\ item}{Total\ no.\ of\ all\ the\ food\ items} \times 100$$

In the frequency of occurrence method (FO), all stomach containing food were recorded and expressed as the percentage of the total number of stomachs examined:

$$FO\ (\%) = \frac{No.\ of\ stomach\ with\ a\ particular\ food\ item}{Total\ no.\ of\ fish\ examined\ with\ food\ in\ the\ stomach} \times 100$$

2.4 Statistical Analysis

Data collected were analysed using descriptive statistics (percentages).

3.0 RESULTS

Results from the 72 specimens of *S. schall* collected from Sebore Reservoir are shown as follows: 37 specimens representing 51.39% had their stomach full with food while 29 individuals representing 40.28% were observed to have a half – filled stomach and 6 individuals representing 8.33% were observed to have an empty stomach (Table 1). The relative contributions of the food items were expressed by the numerical and frequency of occurrence methods. Seven major groups of food items constituted the diet of *S. schall* from Sebore Reservoir. In the numerical method, insects were the dominant and composed of 53.27% of the group of food items in the stomach, while phytoplankton were the least with 1.74%. In the frequency of occurrence method detritus were dominant and found in 92.42% of the stomachs, while the least was *Flagerllaria spp.* found in 15.15% of the stomachs (Table 2).

Table 1: Stomach Fullness of *Synodontis schall* from Sebore Reservoir

No. of Full Stomach	Percentage of Full Stomach	No. of Half Stomach	Percentage of Half Stomach	No. of Empty Stomach	Percentage of Empty Stomach
37	51.39%	29	40.28 %	6	8.33%

Table 2: Stomach Contents Analysis of *Synodontis schall* from Sebore Reservoir

Food items	Numerical method		Frequency of occurrence method	
	Number of Items	Percentage (%)	Number of stomachs	Percentage (%)
Aquatic molluscs:				
Bivalves.	96	2.63	32	48.49
Gastropoda	87	2.39	26	39.40
Benthic organisms:				
Detritus	689	18.89	61	92.42
Crustaceans:				
Cladocera	91	2.50	37	56.06
Copepoda	83	2.27	34	51.51
Decapoda	80	2.20	30	45.45
Fish Parts:				
Fish scales	21	0.58	13	19.70
Insects:				
Coleoptera	203	5.57	40	60.60
Chironomus larva	801	21.96	60	90.90
Diptera.	436	11.95	46	69.70
Hemiptera.	224	6.14	39	59.09
Odonata nymphs	279	7.65	41	62.12
Phytoplankton:				
Diatomella spp.	23	0.63	15	22.75
Flagerllaria spp.	20	0.54	10	15.15
Oscillatoria spp.	21	0.57	11	16.67
Zooplankton:				
Daphnia spp.	169	4.63	41	62.12
Moina spp.	164	4.49	38	57.58
Rotaria spp.	161	4.41	36	54.54

4.0 DISCUSSION

The outcome of the stomach contents of *S. schall* elucidated that it is omnivorous but feed more on animal sources like insects, molluscs and crustaceans as they were found in the stomachs analysed depicting the fish to be also predatory carnivore, insectivore, crustacean feeders. In this study food items of plant sources were also, found phytoplankton; these findings agree with that of He *et al*. (2015) who reported that there could be high degree of overlap in diets of fishes even from the same community, hence, it could occur among different communities too; *S. Schall* population in Sebore reservoir feed on what is readily accessible and available to them. It is also a bottom feeder feeding on detritus (hence, detritivore) which corroborated the findings of Ukpatu and Asuquo (2023) who reported similar family of fish, *Synodontis obesus* as bottom feeders. *S. schall* as benthic feeder makes its feeding habit similar to cichlids as support by the work of Rao (2017) and Ali *et al.* (2015) that reported cichlids to be feeding on detritus. Also, *S. schall* can be considered to have switching feeding behaviour as habit similar to the cichlids as reported by Agbabiaka (2012); Rini (2013) and Houehanou *et al*. (2016) that reported that cichlids have the ability to explore numerous sources of food, similar to what has been observed in *S. schall*.

5.0 CONCLUSION

Based on the findings of this research, *S. schall* can be concluded to be specifically insectivore, detritivore, molluscivore, crustacivore and planktivore and could be broadly classified as omnivore and benthic feeder.

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