

FOOD AND FEEDING HABITS OF *Synodontis budgetti* 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 budgetti* in Sebore reservoir, Mayo-Belwa, Adamawa State Nigeria. A total of 84 specimens of *S. budgetti* were sampled monthly for a period of a 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 chest to minimize any post-mortem changes and taken to the laboratory for analysis of the stomach 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 elucidated that 35.71% had their stomach full with food, 46.43% were having a half-filled stomach and 17.86% were observed to have empty stomachs. Four major groups of food items constituted the diet of *S. budgetti* from Sebore Reservoir. NM elucidated that insects were the dominant composing of 60.33% of the group of food items in the stomach, benthos made up 25.90%, crustaceans were 9.00%, while aquatic molluscs were the least with 4.77%. FO method indicated that, chironomus larva were dominant and found to occur in 85.50% of the stomach contents, detritus in 82.60%, diptera in 60.87%, odonata nymphs in 57.97%, while the least was gastropoda. in 30.34%. it can be concluded that *S. budgetti* is specifically insectivore, molluscivore, crustacivore, detritivore and broadly predatory carnivorous feeder and benthic feeder.

Keywords: *Synodontis budgetti*, Insectivore, Molluscivore, Crustacivore, Detritivore, Predatory carnivorous feeder

INTRODUCTION

Marine and freshwater fishes are popular relatively cheap food that is widely consumed in Nigeria; They are valuable sources of protein and other nutrients to the Nigerian populace. The importance of food fish for both subsistence and commercial fisheries cannot be over emphasised (Adebayo et al., 2020; Ajibolade et al., 2021; Okunola et al., 2022). *Synodontis budgetti*, is freshwater fish with commercial value among captured fishes in Nigeria. It is native to Africa with pan African distribution including Nigeria. It belongs to the family Mochicidae often referred to as necked catfish due to their lack of scales (Ukpatu & Asuquo. 2023).

The stomach contents can provide valuable information about diet and feeding habits of fish (Adebayo et al., 2020). This information can be used to assess the nutritional value and to develop management strategies for fisheries (Ajibolade et al., 2021). Abdulkarim et al. (2018) investigated association between degree of stomach fullness and prediction of condition factor of fish as measure of their physiological state through the use of mathematical models.

Researches carried out in Sebore reservoir include study of the composition and relative abundance of Ichthyofauna in Sebore reservoir (Yusuf et al., 2024); study of the feeding habits of African Butter Catfish (*Schilbe mystus*) of Sebore reservoir (Ali et al., 2024); study on the food and feeding habits of *Heterotis niloticus* of Sebore reservoir (Yusuf et al., 2023). However, this research was aimed at studying the food and feeding habits of *S. budgetti* in Sebore reservoir.

MATERIALS AND METHODS

Study Area

Sebore Reservoir is located at Mayo-Belwa local government area (LGA), Adamawa state 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.

Sample Collection

A total of 84 specimens of *S. budgetti* were sampled monthly 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 chest to minimize any post-mortem changes and taken to the laboratory for analysis of the stomach contents.

Laboratory Analysis of Sample

The specimen 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 about four percent (4%) to avoid any form of deterioration and contamination of the stomach contents. 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 Yusuf *et al.* (2023). 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 samples were analysed using the numerical and frequency of occurrence methods as described by Balogun (2006).

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:

$$NM (\%) = \frac{\text{Total no. of a particular food item}}{\text{Total no. of all the food items}} \times 100 \quad (1)$$

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:

$$FO (\%) = \frac{\text{No. of stoma with a particular food item}}{\text{Total no. of fish examine with food in the stomach}} \times 100 \quad (2)$$

Statistical Analysis

Data collected were analysed using descriptive statistics.

RESULTS AND DISCUSSION

Results from the 84 specimens of *S. budgetti* obtained at the Sebare Reservoir shows that 30 specimens representing 35.71% had their full stomach filled with food, while 39 specimens representing 46.43% were having a half-filled stomach and 15 specimens representing 17.86% were observed to have an empty stomach (Table 1). Relative contributions of the food items are expressed by the numerical and frequency of occurrence methods. Four major groups of food items constituted the diet of *S. budgetti* from Sebare Reservoir. Numerical method shows that insects were the dominant and composed of 60.33% of the group of food items in the stomach, bottom organisms made up 25.90%, crustaceans were 9.00%, while aquatic molluscs were the least with 4.77%. Frequency of occurrence method indicated that, chironomus larva were dominant and found in 85.50% of the stomach, detritus in 82.60%, diptera in 60.87%, odonata nymphs in 57.97%, while the least was Gastropoda. in 30.34% (Table 2).

Table 1: Stomach Fullness of *S. budgetti* from Sebare 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
30	35.71%	39	46.43%	15	17.86%

The outcome of the stomach contents of *S. budgetti* elucidated that it is carnivorous feeder as insects, molluscs and crustaceans were found in the stomachs analysed depicting the fish to be likely predatory carnivore unlike commonly reported to be omnivore. In this study, food items of plant were not found. However, He *et al.* (2015) 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. budgetti* population in Sebare reservoir feed on what is readily accessible and available to them. It is also a bottom feeder feeding of detritus which corroborated the findings of Ukpato and Asuquo (2023) who reported similar family fish, *Synodontis obesus* as bottom feeders. *S. budgetti* 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.

Table 2: Stomach Contents of *S. budgetti* from Sebore Reservoir

Food items	Numerical method		Frequency of occurrence method	
	Number of items	Percentage (%)	Number of stomachs	Percentage (%)
Aquatic molluscs:				
Bivalves	69	2.47	34	49.28
Gastropoda	64	2.30	21	30.43
Benthic organisms:				
Detritus	723	25.90	57	82.60
Crustaceans:				
Cladocera	96	3.44	38	55.07
Copepoda	81	2.90	33	47.83
Decapoda	74	2.66	31	44.92
Insects:				
Coleoptera	214	7.67	38	55.07
Chironomus larva	717	25.69	59	85.50
Diptera	335	12.00	42	60.87
Hemiptera	192	6.88	32	46.37
Odonata nymphs	226	8.09	40	57.97

CONCLUSION

Conclusively, *S. budgetti* is specifically insectivore, molluscivore, crustacivore, detritivore and broadly predatory carnivorous feeder and benthic feeder based on the findings of this research from Sebore reservoir. However, further replication of this research in same water body as well as in other water bodies is recommended.

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