

Food type preference, breeding seasonality and size at first maturity of *Synodontis njassae* of southeast arm of Lake Malawi

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Abstract

The food type preference in the southeast arm of Lake Malawi was studied. Frequency of occurrence, gravimetric, volumetric and index of relative importance was used to assess food preference. It was found that *S. njassae* is an omnivore, consuming a range of aquatic insects, detritus, phytoplankton's and other fish. Therefore, this species may accept a wide range of formulated diets that contains ingredients derived from plants, aquatic macro-invertebrates or animals. This makes the culturing of this species in captivity potentially possible.

Key words: Bottom feeders, cage farming, detrivores, fish, omnivorous fish

Résumé

La préférence de type d'aliment dans le bras Sud-Est du lac Malawi a été étudiée. La fréquence de l'événement, gravimétrique, volumétrique et l'indice de l'importance relative ont été utilisés pour évaluer la préférence alimentaire. Il a été constaté que *S. njassae* est un omnivore, consomme une variété d'insectes aquatiques, des détritus, du phytoplancton et d'autres poissons. Par conséquent, cette espèce peut accepter un large éventail de régimes alimentaires formulés qui contient des ingrédients dérivés de plantes, de macro-invertébrés aquatiques ou d'animaux. Cela rend la mise en culture de cette espèce en captivité potentiellement possible.

Mots clés: Poissons nourrisseurs de fond, élevage en cage, detrivores, poisson omnivore

Background

Synodontis njassae is one of the 131 species in the *Synodontis* genera, the most widely distributed genus of the Mochokid family. It is endemic to Malawi. Like most *Synodotis* species, *S. njassae* is a prized ornamental fish because of the bright coloration and general body shape. It is also considered as a delicacy in the diet of riparian communities (Meye *et al.*, 2008). There is conflicting data on the breeding season, natural feeding

habits and food preference of this species. This paper answers what this fish's natural food items are and their corresponding importance. This information will be useful for designing approaches for breeding this species in captivity.

Literature Summary

Most *Synodontis* species are omnivorous, largely feeding on a wide spectrum of different foods. Some are bottom-feeders and may be detritivores while other species exhibit an adaptation to filter feeding (Laleye *et al.*, 2006). Species of *Synodontis* genus are thought to reproduce during the flooding period of the rainy season (Laleye *et al.*, 2006). Histological criteria from ovary samples can be used to classify the maturity stage of fish based on characteristics and classification systems described by Schaefer (1996).

Study Description

A total of 472 fish sample were collected on board the Ndunduma fisheries research vessel over a period of twelve months in the southeast arm of Lake Malawi. Fish gut and gonads were removed using a surgical kit. The stomach contents were analysed according to methods described by Hyslop (1980). The type of food material found in the gut were separated in different categories and quantified. The Index of Relative Importance (IRI) of a particular food item was estimated using a formula $IRI = (\% N + \% V) \times \% F$, where N is percentage by number of a specific food item, V is the volume of the specific food item and F is frequency of occurrence (Hyslop, 1980).

Table1. Gut contents and their corresponding frequency of occurrence in the guts of *Synodontis njassae* captured from lake Malawi.

Type of food item	Frequency of occurrence method		Numerical method	
	No. of occurrence	% of occurrence	Number	%
Nematodes	213	39.34426	825	7.798469
Scales	264	48.36066	1876	17.73325
<i>E.sardella</i>	125	23.77049	138	1.304471
Detritus	213	38.93443	585	5.529823
Water beetle	191	36.88525	343	3.242272
Water bugs	229	43.03279	364	3.440779
Water fly	247	46.51639	523	4.943756
Bivalves	388	72.13115	1816	17.16608
Insect larvae	135	26.63934	167	1.578599
Flagellates	124	23.97541	125	1.181586
<i>M. tuberculata</i>	274	48.77049	2453	23.18745
<i>L. solidus</i>	94	13.52459	316	2.98705
Tissue	297	55.7377	1048	9.906418

Research Application

The study has shown that *S. njassae* is an omnivore (Table 1). Thus, this fish may accept a wide range of formulated diets that contains ingredients derived from plants, aquatic macro-invertebrates or animals.

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