

Reproductive seasonality of *Opsaridium microlepis* (mpasa) in the Linthipe River in Central Malawi

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Abstract

Opsaridium microlepis is one of the fish species in Lake Malawi. The species is known to migrate to major river affluents for spawning. One of the rivers where they migrate is the Linthipe. The reproductive seasonality of this species into this river is however not well known. In this study, the reproductive seasonality of *O. microlepis* in River Linthipe was studied using 546 specimens for 12 months. The peak breeding activity was observed between January and April, a period that coincided with the onset of a rainy season. On the other hand, the condition factor of *O. microlepis* was found to be variable with lowest value in the month of August.

Key words: Gonadosomaticindex (GSI), Linthipe River, *Opsaridium microlepis*

Résumé

L'*Opsaridium microlepis* est l'une des espèces de poissons qu'on retrouve dans le lac Malawi. L'espèce est reconnue pour ses migrations vers les affluents principaux de la rivière pour y pondre. L'une des rivières où les *Opsaridium microlepis* migrent, est la rivière Linthipe. Le caractère saisonnier de reproduction de cette espèce dans cette rivière n'est cependant pas bien connu. Dans cette étude, le caractère saisonnier de reproduction des *O. microlepis* dans la rivière Linthipe a été étudié en utilisant 546 échantillons pendant 12 mois. L'activité de pointe de reproduction a été observée entre Janvier et Avril, une période qui a coïncidé avec le début de la saison des pluies. D'autre part, le facteur de condition des *O. microlepis* s'est avéré variable avec la valeur la plus basse au mois d'Août.

Mots clés: Gonadosomaticindex (GSI), Rivière Linthipe, *Opsaridium microlepis*

Background

Opsaridium microlepis is a fish species endemic to Lake Malawi. This species migrates for spawning during the rainy season to major affluent rivers. Linthipe River is one of the

major rivers, into which *O. microlepis* migrates (Tweddle, 1987). Linthipe River is in the southern part of Lake Malawi with its catchment being the densely populated area surrounding the lake (Mkanda and Barber, 1999). This river has traditionally been a hotspot for *O. microlepis* as recorded by Bertram-Ricardo *et al.* (1942). Although, some aspects of the biology of this fish have been studied, there is insufficient information on the reproductive seasonality of this species in Linthipe river. This information is an essential prerequisite to undertaking reproductive biology of the species, which will ultimately lead to improved management. The aim of this study was therefore, to estimate the reproductive seasonality of *O. microlepis*.

Study Description

Gillnets were set across the two sites, one at a fishing village near the Linthipe river mouth in Maganga (Mkama site) and the second near the confluence with Lilongwe River going down stream up to Kamuzu Bridge on M5 road (Kamuzu Bridge site). For each of the sites, specimens of *O. microlepis* were collected once per month over a period of three days. means of Sampling was conducted using a multimesh gillnet (survey nets type 'Norden', Lundgrens Fiskredskapsfabrik AB, Storkyrobrinken 12, 111 28 Stockholm, Sweden), consisting of 12 randomly distributed panels of various mesh sizes, ranging from 5 to 55 mm. The net was 30 m x 1.5 m and was set across the river at 18:00 hours and retrieved at 6:00 hours (Mattson and Mutale, 1992). The duration of casting and the number of fish specimens were recorded following guidelines outlined by Sparre *et al.* (1998). The trapped *O. microlepis* specimens were collected and placed in plastic buckets containing water from the river and later preserved in ice. Fork length (FL), standard length (SL) and total length (TL) measurements were made to the nearest (± 0.1 cm) using a measuring board. Fish were weighed to the nearest ± 0.01 g using HP – 20 K electronic weighing balance.

Research Application

Gonadosomatic index (GSI)for *O. microlepis* fluctuated throughout the year (Fig. 1). It ranged between 5.6 to 13% for females and between 0.3 to 1.4% for males respectively. GSI variation between the months was significantly different ($P < 0.05$). The highest GSI was observed in the month of February at the start of the rainy season while the lowest was recorded in the month of August when rains had ceased. A summary of the mean weights, condition factor and GSI are presented in Table 1. During the rainy season, suspended and dissolved solids are washed away to the lake (McCullough,

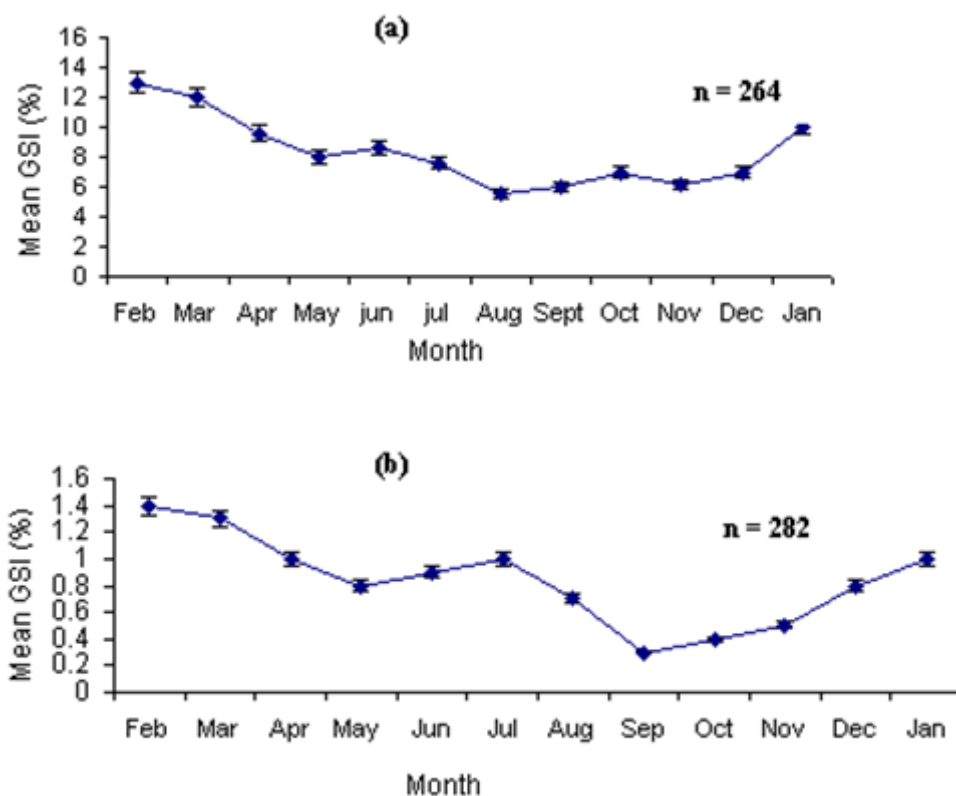


Figure 1. Mean monthly GSI values (\pm SE) for *Opsaridium microlepis* (a) female and (b) male caught in the Linthipe River (February 2006 – January 2007).

Table 1. Mean body weights, condition factor and GSI for *Opsaridium microlepis* from Linthipe River (February 2006 – January 2007).

Parameter	Female		Male	
	Value	Month	Value	Month
Mean highest body weight (g)	1831.8	February	1176	February
Mean lowest body weight (g)	62.1	November	76.4	October
Mean highest condition factor (%)	1.4	February	1.3	February
Mean lowest condition factor (%)	0.6	August	0.6	August
Mean highest GSI (%)	13	February	1.4	February
Mean lowest GSI (%)	5.5	August	0.3	September

1999), and this has been known to have an effect on when *O. microlepis* start migrating to the rivers for breeding (Tweddle, 1987). Turner (2004) reported that during the start of the rainy season, conditions are cool; implying that breeding in *O. microlepis* is favoured by low surface water temperatures. The study has furnished us with some information on the breeding of *O. microlepis* which will be important in further efforts towards the sustainable exploitation of this water resource in Malawi.

Acknowledgement

The study was funded by the Government of Malawi through the National Research Council of Malawi (NRCM) and the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM). We owe much gratitude to colleagues and friends for their valuable advice and assistance.

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