

# Food Habits of Two Sciaenid Fish Species (*Pseudotolithus typus* and *Pseudotolithus senegalensis*) off Cameroon

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## Abstract

*Pseudotolithus typus* and *Pseudotolithus senegalensis* (Sciaenidae) sampled off Cameroon Coast, West Africa, have been found to feed mainly on shrimps (*Nematoplaemon hastatus* and *Parapenaeopsis atlantica*) and juvenile fish (mostly clupeids). The diet composition is presented and discussed.

## Introduction

The commercial fishery in Cameroon catches mainly sciaenids, especially *Pseudotolithus typus* and *P. senegalensis* (Djama 1988; Djama and Pitcher 1989). Early studies on food habits of the two fish species are documented in Longhurst (1957, 1960 and 1966), Cadenat (1954), Collignon (1960) and Troadec (1968). This paper analyzes the food composition of *P. typus* and *P. senegalensis* in order to position them in the food web on the Cameroon shelf.

## Materials and Methods

Monthly random samples of *P. typus* and *P. senegalensis* were bought from the Chalutcam fishing company from July 1989 to June 1990. Each sample consisted of 60 fish per species and was kept overnight either on ice or a deep-freezer. The total length of the fish was recorded (using a 1-m measuring board) to the millimeter above. The stomach contents of each fish were preserved in a 5% formalin solution for later analyses. A total of 991 stomachs were dissected and analyzed. Of these, 557 were of *P. typus* and 414 of *P. senegalensis*.

## General Characteristics of the Stomachs

The stomachs were classified as either empty or not empty. The average number of preys per stomach as well as their average weight were obtained from the total number of stomachs classified as not empty. This choice was made as many "empty" stomachs had become so as a result of the brutal change of pressure during hauling operations.

## Results and Discussion


In *P. typus*, approximately 30% of the stomachs examined were empty, 50% of which were regurgitated. The mean number of prey items per stomach was 3 and the corresponding mean weight, 1 g. In *P. senegalensis*, the number of empty and regurgitated stomachs (34% and 50%, respectively) is similar to those obtained for *P. typus*. The diet composition for both species is shown in Table 1. *P. typus* feeds mostly (80%) on shrimps whereas *P. senegalensis* feeds both on shrimps (47%) and on juvenile clupeids (45%). *P. atlantica* was the preferred shrimp species and *Sardinella maderensis* and *Illisha africana* were the dominant fish species. Other food items that could be identified to species level were juvenile *Pseudotolithus senegalensis*, the cephalopod *Lolligonada mercatoris*, and the crab *Dorippe arinata* for *P. typus*; and *Trichurus lepturus*, *Saleoides decadactylus*, *Brachydeuterus auritus* and *Cynoglossus browni* for *P. senegalensis*. Longhurst (1964) and Anyanwu and Kusemiju (1990) reported similar results from neighboring Nigeria; so did Troadec (1968) from the Ivory Coast.

Table 1. Diet composition of *Pseudotolithus typus* and *P. senegalensis* (% wet weight) off Cameroon.

Food item	<i>P. typus</i>	<i>P. senegalensis</i>
<i>Nematopalaemon hastatus</i>	28	4
<i>Parapenaeus atlantica</i>	46	35
Other shrimps	6	8
Clupeid fishes	18	45
Other	2	8

The strong interactions between *Pseudotolithus* spp. and shrimps, and between *Pseudotolithus senegalensis* and clupeids imply that these changes in the biomass of either of these groups will influence the others - an important feature of our multispecies stock, and one that must be considered when formulating management options for either of the fisheries relying on these groups.

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# Estimating the Girth of Fish by Applying an Elliptic Model

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## Abstract

A new method for estimating the maximum girth of roundfish is proposed and illustrated; this is based on an elliptic approximation of the cross sections of the fish body. Results derived from a small sample of horse mackerel, *Trachurus trachurus*, suggest that maximum girth estimates based on the elliptic model are more precise than the values estimated by applying a conventional method.

## Introduction

Since the pioneering work of F.I. Baranov (Nikolsky 1963; Hamley 1975), measuring the girth in fish has played an important role in fisheries science, particularly for those studies related to gear selection.

Inference from girth measurements represents one of the methods for assessing the selectivity pattern of fish, because these estimates usually correlate well with the probabilities of capture which, after all, depends on the shape of the fish body (Hamley 1975; Pauly 1984; Reis and Pawson 1992; Anon. 1993).

Obviously, different measures of girth can be derived depending on what cross section of the fish is considered, but the "greatest" or "maximum girth", i.e., the girth corresponding to the maximum body "height" and "width" ("depth" and "thickness", respectively, according to Holden and Raitt 1974) represents the most important measurement.

Nomograms for a quick estimation of the selection factor in fish from maximum girth and total length

relationship are often reported in the literature (for instance, in Pauly 1984). Even though the use of special devices such as "girthometer" has been proposed in order to obtain objective measures of girth in fish (for instance, by Hunter and Wheeler 1972), the most common method of measuring girths consists in using a rope or a metric plastic band as shown in Fig. 1a,b (Cárdenas and Fernandez 1981; Karlson and Bjarnasson 1986).

The body of the fish is surrounded by the rope at its (assumed) maximum girth and thereafter the measure is directly or indirectly read; the method is functional but inelegant and subjective, and in any case information is lost because it does not take explicitly in consideration the different contributions of "thickness" and of "depth", i.e., of the shape of the fish body.

In this note, a new method is proposed to obtain a more precise and informative measure of maximum girth in fish. The essential assumption of the model consists in considering that the shape of the transverse slices of a fish can be assimilated to an ellipse (Fig. 1c).

## Materials and Methods

Maximum body height ("depth") and width ("thickness") along with the total length ("LT" according to Holden and Raitt 1974) were individually measured in a sample of 17 horse mackerel (*Trachurus trachurus*); "depth" and "thickness" were measured, at 0.1 mm, by using a clock-caliper whereas total length was measured, with a precision of 1 mm, by placing the fish straight on a measuring