FISHBYTE

Fisheries Section of the Network of Tropical Aquaculture and Fisheries Professionals

EDITORIAL

Spreadsheets are being increasingly used by fisheries scientists and one of the masters of the game is Tony Pitcher from the Fisheries Centre, UBC. The use of spreadsheets has been promoted by the FAO/Danida Training Courses in Fish Stock Assessment, and they are indeed excellent for creating an understanding of the underlying calculations. Because of the ease of building applications in spreadsheet they are also a very convenient tool for the experienced user. Needless to say there is a danger associated with them with regard to quality control. Errors can be easily introduced and it is difficult to verify results from such analyses. As creation of software is becoming a more and more complex task, we need to consider when it is best to use spreadsheets and when distributed software. We hope that Prof. Pitcher's contribution will help to stimulate this discussion.

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Length-Weight Relationships of Demersal Fishes from the Gulf of Salamanca, Colombia

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Abstract

The parameters **a** and **b** of the length-weight relationship of the form $W=aL^b$ are presented for 37 fish species, belonging to 17 families, caught during a demersal trawl survey over the period December 1995 to March 1998 in the Gulf of Salamanca, Colombia.

Introduction

This paper is the second one documenting the length-weight relationship (**LWR**) parameters of the most abundant demersal fish species caught during two years of sampling in the Gulf of Salamanca (Fig. 1). This article presents the length-weight relationships of 37 fish species. The **LWR** of 46 other species has been documented in Garcia et al. (1998).

Materials and Methods

Fifteen cruises were conducted from December 1995 to March 1998 on the continental shelf of the Gulf of Salamanca. A total of 78 trawl stations were sampled, varying in depth from 12 to 158 m.

The parameter **a** (proportionality constant or intercept) and **b** (exponent) of **LWR** of the form:

$$W = aL^b \qquad \ldots 1)$$

were estimated using the routines of the computer program FISHPARM (Prager et al. 1989) that implements Marquardt's algorithm for nonlinear least squares parameter estimation.

Results and Discussions

During the sampling, 149 fish species were caught comprising a total of 17 761 individuals. The

Table 1. Length-weight relationship (LWR) *of 37 fish species caught between December 1995 and March 1998 in the Gulf of Salamanca, Colombia (*SL=*standard length,* FL=*fork length,* TL=*total length).*

Family/Species	N	Length range min-max (cm)	LW parameters	
			a	b
Ariidae				
Cathorops spixii	2164	10.2 - 21.9SL	8.30E - 03	3.18
Bagre marinus	12	12.0 - 32.5SL	4.93E - 02	2.76
Balistidae				
Balistes capriscus	692	13.9 - 35.0FL	1.92E - 02	2.36
Carangidae				
Caranx hippos	19	15.0 - 34.5SL	4.04 - 02	2.91
Caranx latus	15	16.5 - 23.5SL	9.47E - 03	3.31
Hemicaranx amblyrhynchus	19	13.5 - 29.9SL	3.98 - 02	2.93
Selene browni	172	8.0 - 3.0SL	1.89 - 02	2.44
Selene vomer	31	9.0 - 30.4SL	1.36E - 02	2.58
Trachinotus carolinus	9	29.0 - 43.0SL	4.53E - 02	2.30
Trachinotus falcatus	11	34.5 - 46.0SL	1.59 - 02	3.19
Dasyatidae				
Dasyatis guttata	22	44.0 -167.0TL	2.84 - 04	3.34
Fistulariidae				
Fistularia tabacaria	12	32.0 - 82.5TL	5.29E - 03	2.59
Gerriidae				
Eucinostomus argenteus	676	7.0 - 15.3SL	3.59E - 02	2.91
Eucinostomus gula	982	6.2 - 16.0SL	5.52E - 02	2.75
Eugerres plumieri	294	8.6 - 26.6SL	4.81E - 02	2.93
Haemulidae				
Anisotremus surinamensis	14	19.0 - 33.5SL	1.78E - 02	2.60
Anisotremus virginicus	8	12.0 - 21.0SL	1.44E - 02	2.58
Conodon nobiliis	153	13.2 - 28.2SL	2.43E - 02	3.06
Haemulon aurolineatum	44	8.6 - 23.5SL	1.09E - 02	2.56
Haemulon melanurum	14	16.0 - 23.6SL	8.04E - 02	2.63
Haemulon plumieri	15	19.2 - 24.5SL	1.02E - 01	2.63
Pomadasys corvinaeformis	481	9.6 - 17.4SL	1.05E - 02	3.39
Holocentridae				
Myripristis jacobus	10	12.4 - 17.5SL	1.11E - 01	2.72
Lutjanidae				
Lutjanus vivanus	18	10.2 - 31.0SL	4.56E - 02	2.80
Lutjanus mahogoni	11	11.0 - 22.5SL	9.47E - 02	2.57
Mullidae				
Pseudupenaeus maculatus	18	10.0 - 19.0SL	2.40E - 03	3.44
Upeneus parvus	15	12.0 - 17.7SL	4.03E - 02	2.76
Ostraciidae				
Acanthostracion quadricornis	22	11.0 - 22.5SL	2.53E - 02	2.41
Pomacanthidae				
Pomacanthus paru	15	11.0 - 34.5SL	1.19E - 02	2.85
Sciaenidae				
Ctenosciaena gracilirrhus	549	8.3 - 24.0SL	5.30E - 02	2.75
Larimus breviceps	385	9.6 - 18.2SL	2.53E - 02	3.03
Micropgonias furnieri	192	12.7 - 36.4SL	2.97E - 02	2.86
Umbrina coroides	273	12.1 - 20.6SL	3.74E - 02	2.87
Scorpaenidae				
Scorpaena plumieri	22	16.5 - 22.4SL	1.24E - 02	3.49
Synodontidae				
Saurida normani	12	7.3 - 26.0SL	5.12E - 02	2.56
Sphyraenidae				
Sphyraena picudilla	12	21.5 - 36.2SL	1.78E - 02	2.72
Torpedinidae				
Narcine brasiliensis	20	14.8 - 47.0TL	2.45E - 02	2.25

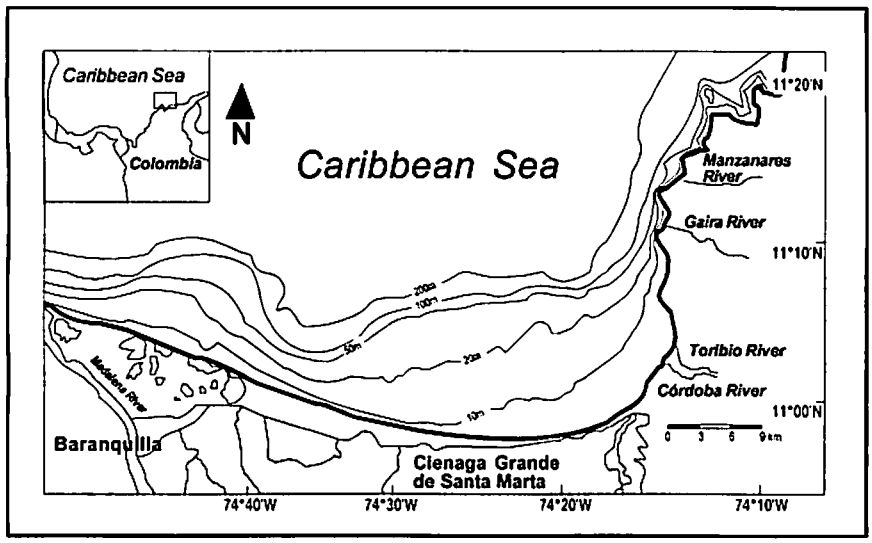

Fig.1. Map of sampling area in the Gulf of Salamanca, Colombia.

LWR parameters of 37 species are presented in Table 1. Eleven of the data sets here were recalculated from the first paper (Garcia et al. 1998) with their length ranges enlarged by the inclusion of more samples.

Fig. 2 shows the frequency distribution of the b values of the 72 species presented in Garcia et al. (1998) and the 37 species in this article. The shape of the distribution is more symmetrical than that observed in the first paper. This may be attributed to the larger number of data sets analyzed here. The estimates of the parameter b ranged from 2.12 to 3.49. These values fall within the limits reported previously for the Caribbean (García-Arteaga et al. 1997) and other regions (Torres 1991; Kulbicki et al. 1993; Yanagawa 1994; King 1996). The mean b of 2.81 is lower than the mean b of 3.0 reported for other multispecies samples of fishes (Lagler et al. 1962; Yanagawa 1994; Entsua-Mensah et al. 1995). The demersal fishes of the Gulf of Salamanca studied here tend to show a negative allometric function.

Acknowledgments

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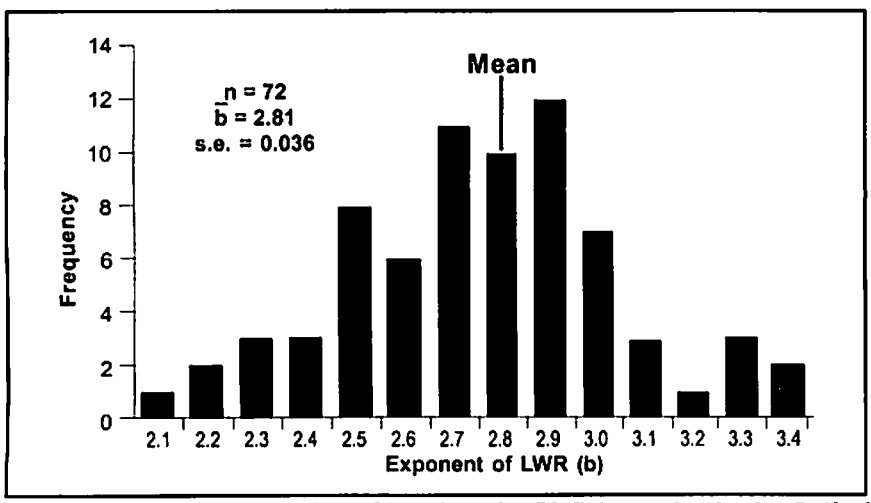

Fig. 2. Frequency distribution of b values for 72 fish species in the Gulf of Salamanca, Colombia.

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