

Northwest Atlantic



Fisheries Organization

Serial No. N2844

NAFO SCR Doc. 97/15

SCIENTIFIC COUNCIL MEETING - JUNE 1997

**Length/Weight Relationships for some Species of Fish Encountered in the  
North West Atlantic (NAFO Regulatory Area: Divisions 3L, 3M and 3NO)**

by

X. Paz and E. Román  
Instituto Español de Oceanografía P. O. Box 1552, 36280 Vigo, Spain

**ABSTRACT**

Sampling length and weight data collected during Flemish Cap surveys (1995 and 1996) and fishing activity monitoring (1993 and 1994) were used to produce relationships and length-weight plots for some commercial and non-commercial species encountered in the Northwest Atlantic. Twenty two species from Flemish Cap and six species for 3L, 3M and 3NO divisions were analyzed. The parameter values were obtained by division and, in some cases, by semester each year.

**INTRODUCTION**

The relationship between length and weight is a necessary parameter in performing proper analytical assessments of fish stocks and is also required for intra- and inter-specific comparisons. Measurements of both length and weight (mass) of individual fish are commonly made in situ (on board, if the catches are processed) as part of routine monitoring programs (Gutreuter and Krzoska, 1994), as occurs in Spanish fisheries targeting Greenland halibut in the NAFO Regulatory Area (Junquera et al., 1992).

There are publications with data on several species, but these do not cover all the NAFO divisions and use data from some years ago (Kholer et al, 1969). Other later articles only refer to one or two species (Bowering and Stansbury, 1984; Savvatimsky and Atkinson, 1993). The NAFO Scientific Council has no updated parameters of length-weight relationships for many commercial species. In this paper, we present the length-weight relationships of some species, without restricting ourselves to commercial species.

**MATERIAL AND METHODS**

Information has been obtained from two separate sources: the Spanish sampling program developed in deep fisheries which provides a substantial amount of biological data, and the EU Surveys in the Flemish Cap. Data from years 1993 and 1994, and 1995 and 1996 respectively were considered. In two cases, length and weight data were taken on board. The total weight of

each fish was recorded in grammes and for many species. In the commercial vessels and in the Flemish Cap surveys the weight was measured to the nearest 5 g on a mechanical scale.

Length measurements have been made as total length to the nearest centimeter below, except in the case of Grenadier that was taken to the preanal length at the nearest mean centimeter below.

Length (L) and total weight (TW) was recorded, relationships and plots have been produced for length /total weight. For relationships between length and weight a function of the form:

$$W = aL^b$$

was fitted to the data, where W = weight (g) and L = length (cm).

The estimation of value parameters was obtained mediante the log log transformed expression:

$$\log W = \log a + b (\log L)$$

and the results retransformed.

The weight at length of many species is known to vary seasonally and, wherever possible, the length/weight relationships have been prepared by semester and division in each year and their coefficient of determination was estimated.

The application of all length-weight relationships should be limited to the observed length ranges.

It is not purpose of this report to compare length-weight relationships for areas or seasons, but rather to present the information available in a concise form.

## RESULTS

The data for 1993 and 1994 shown in Tables 1 and 2 summarizes the species studies sampled on board commercial vessels, the sample size, the minimum, maximum and mean lengths ( $\pm$ SE) and weights ( $\pm$ SE) used in analysis for each case as well as the value parameters of the length-weight relationships:  $a$  and  $b$  by semester and division, and the coefficient of determination  $r^2$  and their ( $\pm$ SE) are presented in Tables 3 and 4.

In Tables 5, 6, 7 and 8, the samples characteristics and value parameters for species from Flemish Cap (Division 3M) are shown for the two years: 1995 and 1996.

For Flemish Cap species, the mean value of  $b$  was  $3,0801 \pm 0,28$  for 1995 and  $3,0376 \pm 0,23$  for 1996. The median value of  $b$  was 3,0728 for 1995 and 3,0230 for 1996, whereas 50% of the values of  $b$  ranged between 2,9343 and 3,2376 for 1995 and 2,9244 and 3,1700 for 1996 (Figure 1).

REFERENCES

- Bowering, W.R. and D.E. Stansbury. 1984. Regressions of Weight on Length for Witch Flounder (*Glyptocephalus cynoglossus*) of the eastern Newfoundland Area. J. North A. Fish. Sci. 5:105-106.
- Bowering, W.R. and D.E. Stansbury. 1984. Regressions of Weight on Length for Greenland halibut (*Reinhardtius hippoglossoides*) of the eastern Newfoundland Area. J. North A. Fish. Sci. 5:107-108.
- Gutreuter, S. And D.J. Kroska, 1994. Quantifying Precision In Situ Length and Weight Measurements of fish. North American Journal of Fisheries Management 14: 318-322.
- Junquera, S, S Iglesias, and E. De Cárdenas. MS 1992. Spanish fishery of Greenland Halibut (*Reinhardtius hippoglossoides*) in 1990-1991. NAFO Sci Coun. Res Doc. N° 28, Serial N 2072: 14p.
- Savvatimsky, P.I. and D.B. Atkinson. 1993. Length-weight Relationships of Roundnose Grenadier (*Coryphaenoides rupestris* Gunn.) in Different Areas of the Northwest Atlantic. NAFO Sci. Coun. Studies 19: 71-98.

Table 1.- Total length and weight characteristics ( mean, range and standard error ) for 6 species, sampled in NAFO Regulatory Area by Division and semester during 1993. (SE\* standard error)

Code	Scientific name	Common name	Division	Individuals	Length characteristics			Weight characteristics		
					Mean	SE*	Range (cm)	Mean	SE*	Range (g)
January - June 1993										
RED	<i>Sebastes sp.</i>	Redfish	3L	656	28,53	0,174	(19-46)	333,7	7,8	(80-1420)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3L	810	17,976	0,182	(4,5-42)	656,3	20,99	(30-6550)
SKA	<i>Raja sp.</i>	Skate	3L	299	61,08	0,786	(32-88)	2680	88,61	(550-6800)
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	3L	196	8,92	0,19	(4-15)	200,3	11,47	(20-730)
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	3L	95	6,12	0,106	(4-8,5)	60,63	4,27	(5-190)
RED	<i>Sebastes sp.</i>	Redfish	3M	402	31,786	0,23	(24-49)	442	10,48	(165-1465)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3M	461	19,37	0,237	(7,5-40)	818,8	37,19	(40-6800)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3NO	199	18,38	0,362	(7,5-33,5)	734,4	40,15	(50-3100)
SKA	<i>Raja sp.</i>	Skate	3NO	198	62,43	0,823	(36-88)	2647	91,56	(600-6200)
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	3NO	199	12,63	0,296	(5,5-22,5)	484,9	30,38	(34-1800)
July - December 1993										
RED	<i>Sebastes sp.</i>	Redfish	3L	543	29,78	0,196	(19-47)	408,1	8,67	(105-1605)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3L	663	20,236	0,191	(7-35)	812,1	21,08	(30-3500)
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	3L	245	11,77	0,194	(5-21)	335,7	16,63	(20-1575)
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	3L	476	8,52	0,05	(5-11)	120,8	2,22	(20-265)
RED	<i>Sebastes sp.</i>	Redfish	3NO	237	34,23	0,236	(25-45)	552	14,49	(180-1550)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3NO	1029	20,55	0,139	(9,5-39)	801,3	17,65	(60-4810)
SKA	<i>Raja sp.</i>	Skate	3NO	80	72,6	0,987	(50-110)	3949	119,1	1450-7000
PLA	<i>Hippoglossoides platessoides</i>	American plaice	3NO	170	37,39	0,965	(14-68)	801	65,29	(20-4400)
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	3NO	923	11,3	0,075	(6-19,5)	296,1	6,58	(35-1450)
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	3NO	734	9,39	0,03	(6-11,5)	167,5	1,8	(30-315)

Table 2.- Total length and weight characteristics ( mean, range and standard error ) for 6 species, sampled in NAFO Regulatory Area by Division and semester 1994. (SE\* standard error).

Code	Scientific name	Common name	Division	Individuals	Length characteristics			Weight characteristics		
					Mean	SE*	Range (cm)	Mean	SE*	Range (g)
January - June 1994										
RED	<i>Sebastes sp.</i>	Redfish	3L	530	29,66	0,199	(18-44)	372,6	8,63	(65-1205)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3L	492	18,261	0,228	(6,5-34,5)	636,5	24,12	(30-3532)
PLA	<i>Hippoglossoides platessoides</i>	American plaice	3L	410	33,3	0,27	(22-57)	359,8	10,77	(100-2000)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3M	384	19,11	0,268	(7,5-39)	740,6	31,79	(48-5200)
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	3M	398	12,7	0,139	(6,5-20)	409,5	13,28	(66-1356)
ANT	<i>Antimora rostrata</i>	Blue antimora	3M	64	43,48	0,991	(28-62)	747,1	61,37	(136-2326)
RED	<i>Sebastes sp.</i>	Redfish	3NO	832	28,71	0,178	(16-47)	355,6	6,36	(50-1445)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3NO	981	18,63	0,172	(6-34)	726,4	18,23	(20-3350)
SKA	<i>Raja sp.</i>	Skate	3NO	156	57,54	0,938	(29-84)	2193	93,73	(280-5520)
PLA	<i>Hippoglossoides platessoides</i>	American plaice	3NO	1068	36,09	0,228	(18-66)	498,4	11,27	(40-3000)
July - December 1994										
RED	<i>Sebastes sp.</i>	Redfish	3L	660	30,48	0,195	(18-58)	414,4	9,45	(85-3300)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3L	592	18,98	0,18	(9,5-34)	653,8	18,57	(70-3380)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3M	591	20,73	0,195	(11,5-39)	829,2	25,52	(125-4065)
RED	<i>Sebastes sp.</i>	Redfish	3NO	389	30,6	0,227	(17-46)	407,1	9,11	(65-1290)
RHG	<i>Macrourus berglax</i>	Roughhead g.	3NO	902	19,27	0,143	(6,5-33)	688,7	15,16	(25-3300)
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	3NO	98	8,58	0,09	(6,5-10,5)	118,3	3,66	(50-240)
YEL	<i>Limanda ferruginea</i>	Yellowtail flounder	3NO	198	31,12	0,403	(20-46)	359,5	12,42	(110-950)

**Table 3.-** Parameters of the relationships ( $W = aL^b$ ) between total weight (g) and total length(cm) for 6 species, sampled in NAFO Regulatory Area by Division and semester during 1993. (SE\* standard error)

Code	Scientific name	Common name	Division	Parameters of the relationship					
				a	SE (a)*	b	SE (b)*	r <sup>2</sup>	SE (e)*
January - June 1993									
RED	<i>Sebastes sp.</i>	Redfish	3L	0,0061	0,036	3,2273	0,0248	0,9627	0,0407
RHG	<i>Macrourus berglax</i>	Roughhead g.	3L	0,2455	0,0238	2,6579	0,0192	0,9597	0,0748
SKA	<i>Raja sp.</i>	Skate	3L	0,0343	0,0527	2,7112	0,0297	0,9656	0,0517
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	3L	0,423	0,033	2,7188	0,0351	0,9686	0,0654
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	3L	0,0147	0,1113	4,4749	0,1418	0,9146	0,1035
RED	<i>Sebastes sp.</i>	Redfish	3M	0,0075	0,0395	3,1559	0,0263	0,9729	0,0324
RHG	<i>Macrourus berglax</i>	Roughhead g.	3M	0,1068	0,035	2,9496	0,0274	0,9619	0,0649
RHG	<i>Macrourus berglax</i>	Roughhead g.	3NO	0,2526	0,0329	2,6812	0,0262	0,9815	0,0469
SKA	<i>Raja sp.</i>	Skate	3NO	0,021	0,0597	2,8199	0,0333	0,9733	0,0399
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	3NO	0,1517	0,0255	3,0641	0,0235	0,9885	0,0501

July - December 1993

RED	<i>Sebastes sp.</i>	Redfish	3L	0,0169	0,0351	2,9534	0,0239	0,9658	0,0355
RHG	<i>Macrourus berglax</i>	Roughhead g.	3L	0,1441	0,021	2,823	0,0162	0,9787	0,0456
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	3L	0,1502	0,0277	3,0483	0,026	0,9826	0,0465
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	3L	0,1312	0,0377	3,1552	0,0406	0,9272	0,054
RED	<i>Sebastes sp.</i>	Redfish	3NO	0,0026	0,0981	3,4524	0,064	0,9253	0,0458
RHG	<i>Macrourus berglax</i>	Roughhead g.	3NO	0,0792	0,0165	2,9381	0,0126	0,9815	0,0372
SKA	<i>Raja sp.</i>	Skate	3NO	0,1609	0,1847	2,3533	0,0994	0,8778	0,0469
PLA	<i>Hippoglossoides platessoides</i>	American plaice	3NO	0,0013	0,0568	3,5699	0,0365	0,9826	0,0745
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	3NO	0,1687	0,0244	3,026	0,0214	0,9561	0,0562
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	3NO	0,2364	0,0556	2,9138	0,0572	0,7798	0,0686

**Table 4.-** Parameters of the relationships ( $W = aL^b$ ) between total weight (g) and total length(cm) for 6 species, sampled in NAFO Regulatory Area by Division and semester 1994. (SE\* standard error)

Code	Scientific name	Common name	Division	Parameters of the relationship					
				a	SE (a)*	b	SE (b)*	r <sup>2</sup>	SE (e)*
January - June 1994									
RED	<i>Sebastes sp.</i>	Redfish	3L	0,0086	0,0376	3,1265	0,0256	0,9659	0,0387
RHG	<i>Macrourus berglax</i>	Roughhead g.	3L	0,1213	0,03	2,8771	0,24	0,9671	0,067
PLA	<i>Hippoglossoides platessoides</i>	American plaice	3L	0,0044	0,0455	3,2	0,0299	0,9655	0,0419
RHG	<i>Macrourus berglax</i>	Roughhead g.	3M	0,1958	0,0271	2,7308	0,0213	0,9772	0,0515
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	3M	0,1953	0,0296	2,9543	0,027	0,968	0,0522
ANT	<i>Antimora rostrata</i>	Blue antimora	3M	0,0017	0,1276	3,4043	0,0781	0,9684	0,0491
RED	<i>Sebastes sp.</i>	Redfish	3NO	0,0283	0,0325	2,7854	0,0224	0,9491	0,0524
RHG	<i>Macrourus berglax</i>	Roughhead g.	3NO	0,2012	0,0207	2,7357	0,0165	0,9658	0,0679
SKA	<i>Raja sp.</i>	Skate	3NO	0,0378	0,0647	2,6896	0,0369	0,9716	0,0424
PLA	<i>Hippoglossoides platessoides</i>	American plaice	3NO	0,0037	0,0272	3,2525	0,0175	0,9699	0,0508

July - December 1994

RED	<i>Sebastes sp.</i>	Redfish	3L	0,0144	0,0332	2,9808	0,0225	0,964	0,0389
RHG	<i>Macrourus berglax</i>	Roughhead g.	3L	0,2294	0,0295	2,6588	0,0232	0,957	0,0563
RHG	<i>Macrourus berglax</i>	Roughhead g.	3M	0,1211	0,039	2,8659	0,017	0,9798	0,0222
RED	<i>Sebastes sp.</i>	Redfish	3NO	0,0133	0,0375	3	0,0253	0,9732	0,0324
RHG	<i>Macrourus berglax</i>	Roughhead g.	3NO	0,1014	0,0201	2,9362	0,0157	0,9748	0,0475
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	3NO	0,4147	0,1234	2,6159	0,1324	0,8026	0,0613
YEL	<i>Limanda ferruginea</i>	Yellowtail flounder	3NO	0,049	0,0438	2,5683	0,0294	0,9749	0,0332

Table 5.- Total length and weight characteristics ( mean, range and standard error ) for 22 species from Flemish Cap (Div. 3M) during 1995. (SE\* standard error)

Code	Scientific name	Common name	Individuals	Length characteristics			Weight characteristics		
				Mean	SE*	Range (cm)	Mean	SE*	Range (g)
July 1995									
SKA	<i>Raja radiata</i>	Thorny Skate	62	53,3	1,90	(12-74)	53,3	1,90	(10-4450)
SPE	<i>Notacanthus chernnitzii</i>	Spiny eel	37	59,1	2,07	(38-89)	663,2	88,50	(105-1900)
PAA	<i>Paralepis atlantica</i>	Paralepis atlantis	32	25,1	0,49	(19-29)	39,9	3,86	(10-90)
ANT	<i>Antimora rostrata</i>	Blue antimora	25	20,0	0,86	(13-30)	51,2	7,43	(10-155)
COD	<i>Gadus morhua</i>	Atlantic cod	1532	37,5	0,33	(14-102)	658,8	18,93	(19-13850)
HKC	<i>Urophycis chesteri</i>	Longfin hake	29	20,9	0,99	(10-30)	67,1	9,92	(15-200)
GAE	<i>Gaidropsarus ensis</i>	Threebeard rockling	37	22,4	0,68	(13-32)	100,2	9,60	(20-294)
ELR	<i>Lycodes reticulatus</i>	Artic eelpout	33	31,0	0,84	(22-44)	138,6	12,83	(35-410)
ELV	<i>Lycodes vahli</i>	Vahl's eelpout	59	32,1	0,90	(23-51)	32,1	171,95	(50-660)
ELE	<i>Lycodes esmarki</i>	Esmark's eelpout	17	35,4	1,63	(28-48)	238,5	36,22	(100-590)
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	117	6,0	0,13	(3-10)	55,8	3,18	(10-190)
RHG	<i>Macrourus berglax</i>	Roughhead g.	511	15,2	0,22	(4-32)	436,5	17,50	(5-2680)
REG	<i>Sebastes marinus</i>	Golden redfish	870	24,6	0,26	(10-53)	308,2	10,33	(20-2160)
REB	<i>Sebastes mentella</i>	Beaked redfish	1091	25,9	0,27	(8-47)	339,5	9,01	(5-1710)
REF	<i>Sebastes fasciatus</i>	Sebastes fasciatus	824	21,3	0,19	(7-40)	183,7	5,07	(4-1050)
REJ	<i>Sebastes juveniles</i>	Redfish juveniles	79	10,5	0,18	(7-15)	15,9	0,72	(6-45)
SMA	<i>Triglops murrayi</i>	Mailed sculpin	47	11,5	0,22	(9-16)	16,5	1,15	(5-40)
CAD	<i>Anarhichas denticulatus</i>	Northern wolffish	57	60,0	1,87	(37-121)	3250,2	503,59	(480-29000)
CAA	<i>Anarhichas lupus</i>	Atlantic wolffish	193	28,7	0,88	(12-61)	345,7	31,91	(14-2060)
CAS	<i>Anarhichas minor</i>	Spotted wolffish	51	56,3	2,11	(18-83)	2222,5	274,79	(55-10000)
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	35	37,4	1,65	(17-55)	481,9	71,05	(20-1410)
PLA	<i>Hippoglossoides platessoides</i>	American plaice	772	41,1	0,25	(17-60)	773,9	15,93	(40-2360)

Table 6.- Total length and weight characteristics ( mean, range and standard error ) for 22 species from Flemish Cap (Div. 3M) during 1996.(SE\* standard error)

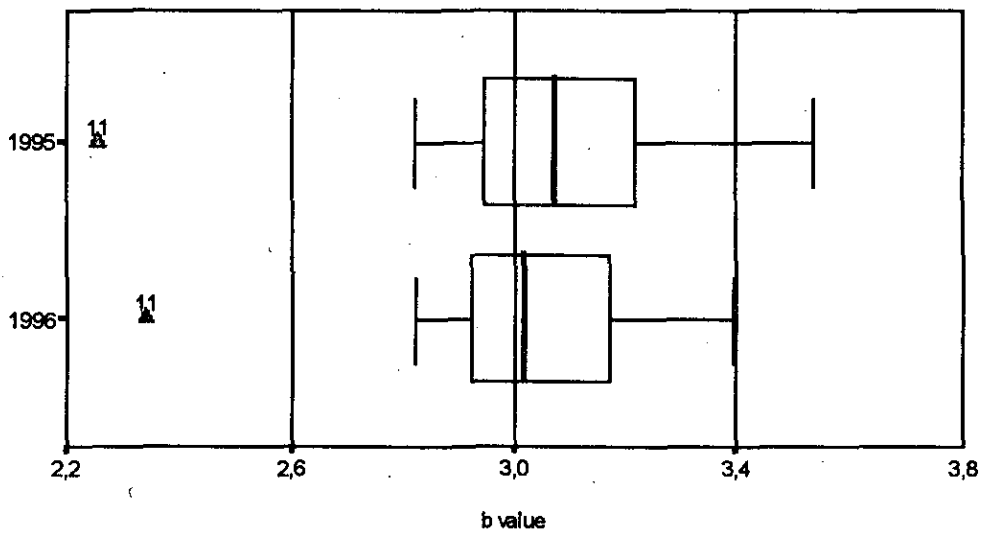
Code	Scientific name	Common name	Individuals	Length characteristics			Weight characteristics		
				Mean	SE*	Range (cm)	Mean	SE*	Range (g)
July 1996									
SKA	<i>Raja radiata</i>	Thorny Skate	66	48,7	2,06	(11-92)	1650,6	176,90	(10-8300)
SHS	<i>Chaliiodus sloani</i>	Viperfish	32	24,1	0,64	(14-30)	37,6	2,95	(10-70)
PAA	<i>Paralepis atlantica</i>	Paralepis atlantis	41	25,3	0,37	(16-28)	46,5	2,31	(10-80)
ANT	<i>Antimora rostrata</i>	Blue antimora	99	21,1	0,52	(13-37)	68,8	6,37	(10-350)
COD	<i>Gadus morhua</i>	Atlantic cod	1558	40,1	0,24	(15-83)	689,7	13,29	(30-5100)
HKC	<i>Urophycis chesteri</i>	Longfin hake	98	19,6	0,41	(11-32)	52,4	3,52	(10-210)
GAE	<i>Gaidropsarus ensis</i>	Threebeard rockling	24	20,4	1,04	(11-30)	84,8	13,92	(10-240)
ELR	<i>Lycodes reticulatus</i>	Artic eelpout	305	28,7	0,31	(19-46)	116,9	4,01	(25-420)
ELV	<i>Lycodes vahli</i>	Vahl's eelpout	37	28,7	1,19	(18-48)	130,4	18,45	(40-550)
ELE	<i>Lycodes esmarki</i>	Esmark's eelpout	113	33,1	0,74	(19-60)	205,3	16,95	(35-1220)
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	230	6,3	0,09	(3-10)	68,4	2,40	(5-180)
RHG	<i>Macrourus berglax</i>	Roughhead g.	423	15,5	0,26	(3-32)	454,5	19,51	(5-2940)
REG	<i>Sebastes marinus</i>	Golden redfish	1142	24,2	0,22	(10-57)	287,9	8,16	(10-2960)
REB	<i>Sebastes mentella</i>	Beaked redfish	1472	24,7	0,21	(11-48)	280,7	6,66	(15-1450)
REF	<i>Sebastes fasciatus</i>	Sebastes fasciatus	1003	20,9	0,19	(10-39)	182	4,75	(10-900)
REJ	<i>Sebastes juveniles</i>	Redfish juveniles	106	10,2	0,17	(7-13)	16,4	0,66	(8-35)
SMA	<i>Triglops murrayi</i>	Mailed sculpin	249	11,8	0,10	(9-16)	24,4	0,60	(10-50)
CAD	<i>Anarhichas denticulatus</i>	Northern wolffish	66	61,2	1,87	(41-121)	3552,2	457,90	(790-27800)
CAA	<i>Anarhichas lupus</i>	Atlantic wolffish	615	28,2	0,43	(11-84)	296,9	15,30	(10-2550)
CAS	<i>Anarhichas minor</i>	Spotted wolffish	236	46,7	1,07	(13-110)	1584,7	141,10	(20-18000)
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	79	39,6	0,74	(21-53)	518,7	31,47	(50-1310)
PLA	<i>Hippoglossoides platessoides</i>	American plaice	571	40,6	0,28	(12-60)	729,8	16,17	(15-2270)

**Table 7.-** Parameters of the relationships ( $W = aL^b$ ) between total weight (g) and total length (cm) for 22 species from Flemish Cap (Div. 3M) during 1995. (SE\* standard error)

Code	Scientific name	Common name	Parameters of the relationship					
			a	SE (a)*	b	SE (b)*	r <sup>2</sup>	SE (e)*
July 1995								
SKA	<i>Raja radiata</i>	Thorny Skate	0,0018	0,1173	3,4456	0,0687	0,9767	0,0962
SPE	<i>Notacanthus chemnitzii</i>	Spiny eel	0,0003	0,4244	3,5403	0,2405	0,8609	0,1296
PAA	<i>Paralepis atlantica</i>	Paralepis atlantis	0,00005	0,8618	4,1915	0,6156	0,6071	0,1715
ANT	<i>Antimora rostrata</i>	Blue antimora	0,0033	0,0970	3,1721	0,0749	0,9873	0,0332
COD	<i>Gadus morhua</i>	Atlantic cod	0,0072	0,0097	3,0633	0,0062	0,9937	0,0391
HKC	<i>Urophycis chesteri</i>	Longfin hake	0,0105	0,2116	2,8191	0,1614	0,9187	0,097
GAE	<i>Gaidropsarus ensis</i>	Threebeard rockling	0,0112	0,1451	2,8936	0,1078	0,9537	0,0520
ELR	<i>Lycodes reticulatus</i>	Artic eelpout	0,0025	0,1631	3,1608	0,1096	0,9641	0,0412
ELV	<i>Lycodes vahli</i>	Vahl's eelpout	0,0016	0,0821	3,2902	0,0588	0,9845	0,0372
ELE	<i>Lycodes esmarki</i>	Esmark's eelpout	0,0022	0,1571	3,2201	0,1018	0,9852	0,0327
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	0,8473	0,1326	2,2556	0,1713	0,6012	0,1844
RHG	<i>Macrourus berglax</i>	Roughhead g.	0,1102	0,0176	2,9481	0,0151	0,9868	0,0536
REG	<i>Sebastes marinus</i>	Golden redfish	0,0155	0,0151	3,0038	0,0109	0,9886	0,0431
REB	<i>Sebastes mentella</i>	Beaked redfish	0,0112	0,0125	3,0714	0,0090	0,9908	0,0493
REF	<i>Sebastes fasciatus</i>	Sebastes fasciatus	0,0148	0,0208	3,0175	0,0158	0,9779	0,0514
REJ	<i>Sebastes juveniles</i>	Redfish juveniles	0,0526	0,1063	2,4094	0,1047	0,8737	0,0612
SMA	<i>Triglops murrayi</i>	Mailed sculpin	0,0152	0,4136	2,8237	0,3902	0,5378	0,1451
CAD	<i>Anarhichas denticulatus</i>	Northern wolffish	0,0206	0,2217	2,8763	0,1252	0,9056	0,0882
CAA	<i>Anarhichas lupus</i>	Atlantic wolffish	0,0108	0,0504	2,9479	0,0351	0,9736	0,0854
CAS	<i>Anarhichas minor</i>	Spotted wolffish	0,0007	0,0799	3,0743	0,0460	0,9892	0,0403
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	0,0011	0,0709	3,5179	0,0454	0,9945	0,0319
PLA	<i>Hippoglossoides platessoides</i>	American plaice	0,0027	0,0303	3,3474	0,0188	0,9762	0,0407

**Table 8.-** Parameters of the relationships ( $W = aL^b$ ) between total weight (g) and total length (cm) for 22 species from Flemish Cap (Div. 3M) during 1996. (SE\* standard error)

Code	Scientific name	Common name	Parameters of the relationship					
			a	SE (a)*	b	SE (b)*	r <sup>2</sup>	SE (e)*
July 1996								
SKA	<i>Raja radiata</i>	Thorny Skate	0,0059	0,0663	3,1465	0,0398	0,9899	0,0636
SHS	<i>Chaliodus sloani</i>	Viperfish	0,0012	0,5110	3,208	0,3705	0,7142	0,1455
PAA	<i>Paralepis atlantica</i>	Paralepis atlantis	0,0019	0,5795	3,1097	0,4133	0,5922	0,1210
ANT	<i>Antimora rostrata</i>	Blue antimora	0,0018	0,0938	3,3904	0,0713	0,9589	0,073
COD	<i>Gadus morhua</i>	Atlantic cod	0,009	0,0137	3,0041	0,0086	0,9875	0,0336
HKC	<i>Urophycis chesteri</i>	Longfin hake	0,0103	0,1466	2,8261	0,1140	0,865	0,0987
GAE	<i>Gaidropsarus ensis</i>	Threebeard rockling	0,0027	0,2476	3,3598	0,1904	0,934	0,1014
ELR	<i>Lycodes reticulatus</i>	Artic eelpout	0,003	0,0689	3,1125	0,0475	0,9342	0,0685
ELV	<i>Lycodes vahli</i>	Vahl's eelpout	0,006	0,1522	2,9192	0,1051	0,9566	0,0658
ELE	<i>Lycodes esmarki</i>	Esmark's eelpout	0,0031	0,1017	3,118	0,0673	0,9509	0,0717
RHB	<i>Nezumia bairdi</i>	Nezumia bairdi	0,8158	0,0804	2,339	0,1010	0,7016	0,1590
RHG	<i>Macrourus berglax</i>	Roughhead g.	0,1488	0,0223	2,8249	0,0191	0,9812	0,0736
REG	<i>Sebastes marinus</i>	Golden redfish	0,0174	0,0150	2,9662	0,0109	0,9848	0,0503
REB	<i>Sebastes mentella</i>	Beaked redfish	0,0175	0,0139	2,9331	0,01008	0,9829	0,0558
REF	<i>Sebastes fasciatus</i>	Sebastes fasciatus	0,0226	0,0195	2,887	0,0149	0,974	0,0592
REJ	<i>Sebastes juveniles</i>	Redfish juveniles	0,1454	0,1135	2,0126	0,1130	0,7531	0,8886
SMA	<i>Triglops murrayi</i>	Mailed sculpin	0,1736	0,1405	1,9849	0,1316	0,4796	0,1200
CAD	<i>Anarhichas denticulatus</i>	Northern wolffish	0,0173	0,1450	2,9261	0,0816	0,9526	0,0651
CAA	<i>Anarhichas lupus</i>	Atlantic wolffish	0,0098	0,0263	2,9676	0,0184	0,9769	0,0743
CAS	<i>Anarhichas minor</i>	Spotted wolffish	0,0053	0,0385	3,1719	0,0234	0,9875	0,0581
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	0,0018	0,1126	3,3946	0,0765	0,9677	0,0477
PLA	<i>Hippoglossoides platessoides</i>	American plaice	0,0048	0,3595	3,1978	0,0224	0,9728	0,0417



Box covers 50% of data values, the vertical line shows the median

The outliers (case 11) correspond to the *Nezumia bairdi* each year.

**Figure 1.-** Box-Whiskers plots of the  $b$  value of the length-weight relationships for 22 Flemish Cap fish species. The horizontal line represents the range of values.