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Length-Weight relationship for silver hake on the Scotian Shelf

by

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Introduction

The fishery for silver hake is one of the most important on the Scotian Shelf. The 1976 nominal catch was 97,100 tons, slightly under the catch quota of 100,000 tons. Recently the population has been assessed by Noskov (1977), and Doubleday and Hunt (1977). An important parameter for assessment purposes is the length-weight relationship. This paper contributes to up-dating the relationship.

Materials and Methods

Specimens used in the analysis were caught during the cruise of the R/V *Isla de la Juventud* to the Scotian Shelf from 1 July to 25 August 1977. 375 specimens were measured of which 96 were males, 236 females and 45 undetermined. Total length was measured in centimeters, and the weight was recorded in grams.

The length-weight curve was obtained using the equation:

$$W = a L^b$$

where W = weight
L = length
and a, b = constants

Data were transformed logarithmically. Constants were computed by the method of least squares.

Results

Equations computed by the method of least squares for males and females and for both combined including the unsexed specimens are as follows"

$$\text{males } W (g) = 0.004153 L^{3.115126}$$

$$\text{females } W (g) = 0.005566 L^{3.056983}$$

$$\text{combined } W (g) = 0.002865 L^{3.235476}$$

where L = length in cm.

Length-weight curves are shown in Figures 1, 2 and 3. Computed weights-at-length are given in Table 1.

Analysis of co-variance showed that regression lines were significantly different and could not be combined to give an overall length-weight relationship for the two sexes. Using the test for differences in the means gave $F_{0.95} (17.5) = 384$ and the test to see if a single line could be used gave $F_{0.95} (5.8) = 3.00$.

Table 1. Length-weight for combined male, female and unsexed specimens of silver hake.

Length (cm)	Computed wt (grams)	Length (cm)	Computed wt (grams)	Length (cm)	Computed wt (grams)
1	0.0	30	172.3	59	1537.2
2	0.0	31	191.6	60	1623.1
3	0.1	32	212.3	61	1712.3
4	0.3	33	234.5	62	1804.8
5	0.5	34	258.3	63	1900.7
6	0.9	35	283.7	64	2000.0
7	1.5	36	310.8	65	2102.9
8	2.3	37	339.6	66	2209.4
9	3.5	38	370.2		
10	4.9	39	402.7		
11	6.7	40	437.1		
12	8.8	41	473.5		
13	11.5	42	511.8		
14	14.6	43	552.3		
15	18.3	44	595.0		
16	22.5	45	639.9		
17	27.4	46	687.0		
18	33.0	47	736.5		
19	39.3	48	788.5		
20	46.4	49	842.9		
21	54.3	50	899.8		
22	63.1	51	959.3		
23	72.9	52	1021.6		
24	83.7	53	1086.5		
25	95.5	54	1154.2		
26	108.4	55	1224.8		
27	122.5	56	1298.4		
28	137.8	57	1374.9		
29	154.4	58	1454.5		

REFERENCES

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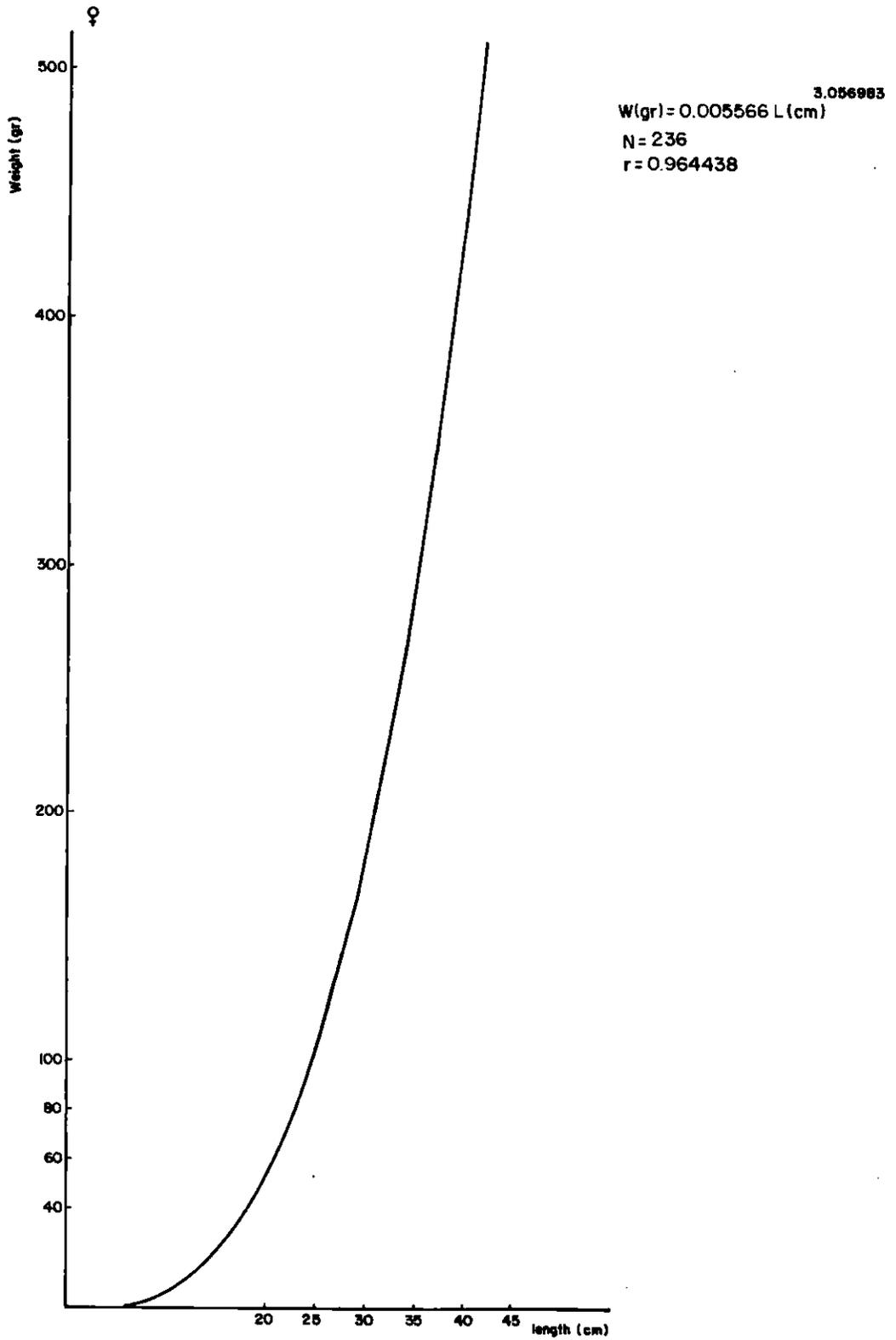


Fig. 1. Length-weight curve (female).

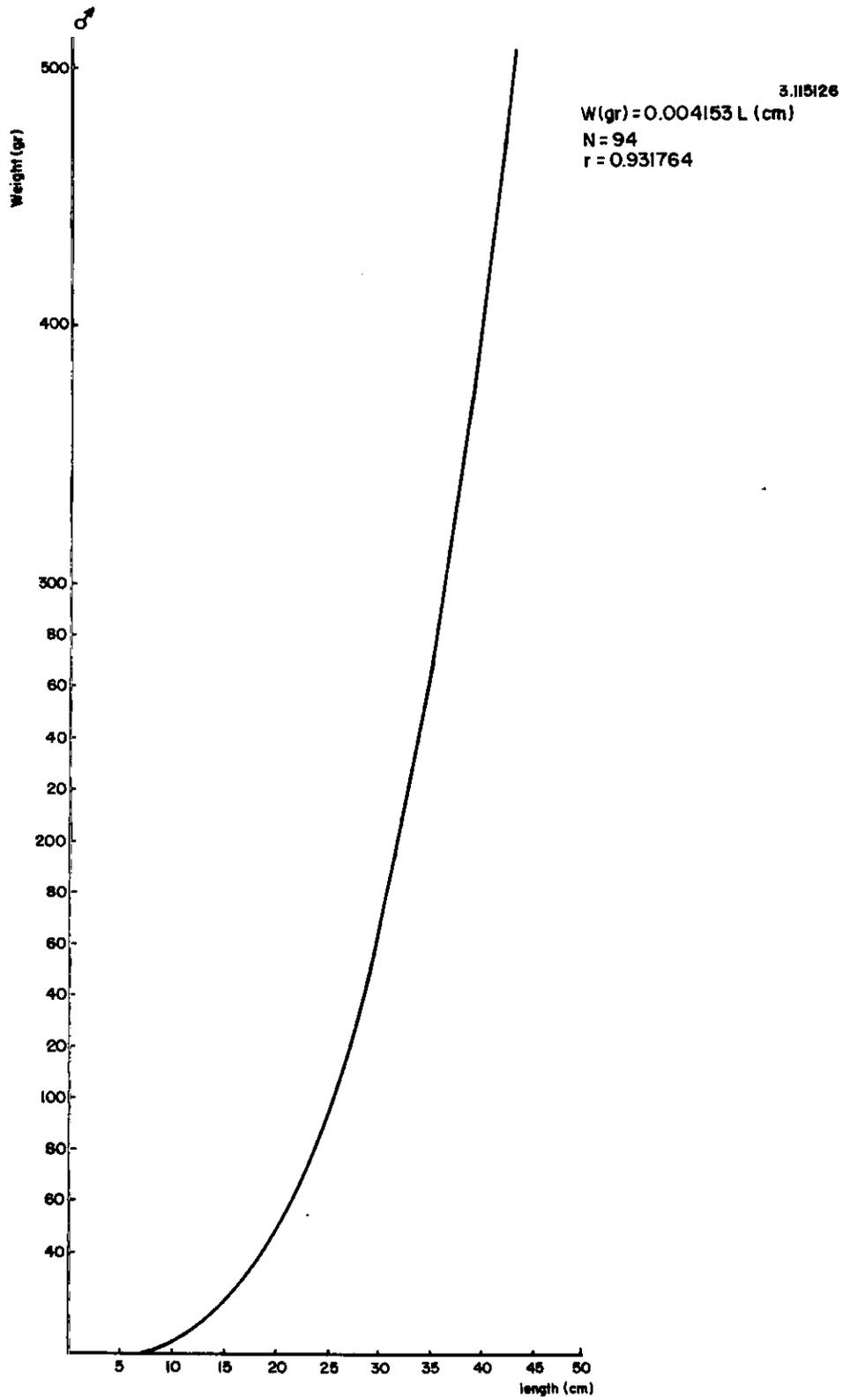


Fig. 2. Length-weight curve (male)

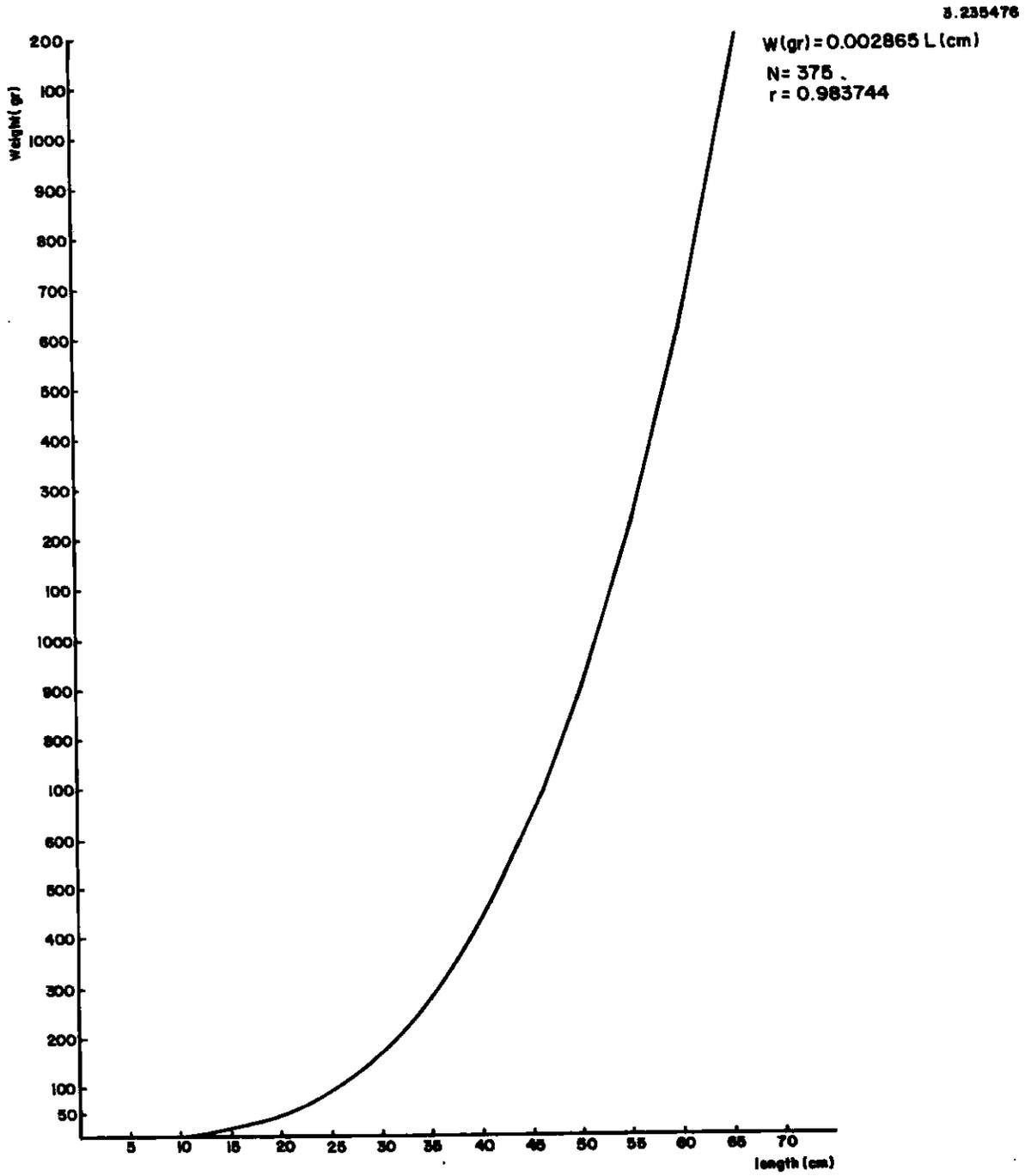


Fig. 3. Length-weight curve (combined).

