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COMPARISON OF HADDOCK FROM NORTHERN NORTH SEA

/IVa/ AND NW COAST OF SCOTLAND /VIa/

by

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Biological investigations of haddock from the Northern North Sea and NW Coast of Scotland were carried out on board the Sea Fisheries Institute's r.v. "Wieczno" - a scientific-research vessel, in June and July 1973. The biological data presented here were worked out from material caught especially for investigations by means of a standard herring bottom trawl. The number of hauls from the particular Northern North Sea and NW Coast of Scotland grounds with catch yields of haddock, are given in Table 1 and Figure 1.

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Table 1

Yield of Haddock in experimental catches
in Northern North Sea and NW Coast of
Scotland Grounds in 1973

Ground	No of hauls	Catch Yield kg/hour	ICES Division	Period of investigation
Slope	10	20	IVa	June
Fladen Ground	17	100	IVa	June
Bressay Ground	16	135	IVa	June
Stanton Bank	13	150	VIa	July
Kilda	7	190	VIa	July

Size Composition

The comparison of haddock length class composition in catches from Divisions IVa and VIa is given in Table 2 and Fig. 2.

These data show that the length class composition in haddock catches in these Divisions differed. Length classes from 22 to 29 cm dominated in the northern part of the North Sea. Larger haddock was caught in NW Coast of Scotland, the 34 to 41 cm length class being most frequently represented.

Table 2

Size composition of haddock /in %/
 in experimental catches from Northern
 North Sea /IVa/ and NW Coast of Scotland
 /VIa/ in 1973.

Length in 2-cm groups	Northern North Sea		NW Coast	
	Number	%	Number	%
< 15	134	17	-	
16 - 17	259	31	16	1
18 - 19	375	44	74	7
20 - 21	627	74	319	33
22 - 23	801	94	118	11
24 - 25	1000	118	131	12
26 - 27	1378	162	238	25
28 - 29	1169	137	286	30
30 - 31	660	78	435	45
32 - 33	456	54	774	80
34 - 35	493	58	1271	131
36 - 37	335	39	2001	206
38 - 39	243	29	2012	207
40 - 41	185	21	1152	119
42 - 43	151	18	547	56
44 - 45	95	10	193	20
46 - 47	56	6	91	8
48 - 49	34	4	29	3
50 - 51	15	2	25	3
52 - 53	9	1	9	1
54 - 55	4	1	7	1
56 - 57	4	1	4	1
58 - >	2	1	-	-
T o t a l	8498	1000	9732	1000

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Age Composition

The different length composition observed in the respective Divisions resulted from a different age composition in haddock catches. Table 3 and Fig. 3 give the data as to participation /in %/ of particular year classes in Divisions IVa and VIa.

Table 3

Age composition of haddock /in %/ in experimental catches from Northern North Sea and NW Coast in 1973

Year class	Northern North Sea IVa in %	NW Coast VIa in %
1973	9	-
1972	78	50
1971	590	101
1970	239	258
1969	51	457
1968	22	124
1967	9	10
1966	1	-
1965	1	-
TOTAL	1000	1000

The fertile generations of haddock born in 1971 comprised part of the catch yields in the northern part of the North Sea in 1973 /590 %/, whereas the generations born in 1969 dominated in catches from NW Coast of Scotland /457 %/. Generations born in 1970 were fairly numerous in both Divisions /239 % in Division IVa and 258 % in

Division VIa/.

According to assessments of fecundity of generations of haddock from the North Sea /Hilsop - 1973/, the generation from 1971 was fertile from the point of view of larvae and juveniles.

The present investigations confirmed the fact of the early appearance of this generation in industrial catches for 1973. The predominance of young year classes and small number of older individuals born prior to 1970; illustrates the intensive fishing for haddock taking place in the North Sea.

Growth Rates

Growth coefficients for haddock from both the above Divisions, were calculated by the von Bertalanffy equation modified by Beverton and Holt /1957/, by substituting mean lengths in the particular year classes. The following sizes of haddock were obtained from the two Divisions:

haddock from Div. IVa: $L_{\infty} = 53.8$ cm, $K = 0.33$, $t_0 = - 0.15$

haddock from Div. VIa: $L_{\infty} = 50.0$ cm, $K = 0.29$, $t_0 = - 1.0$.

The length of fish in the particular years of life was calculated by these parameters and a growth curve was drawn /Fig. 3/.

The growth rate of haddock observed in these Divisions indicated that during the first three years of their lives, fish from the northern part of the North Sea grow much slower than fish from the NW Coast of Scotland. In later

years, the growth rate in Division IVa is faster than in Division VIa.

Size and Weight Relationship

A similar relationship as in the case of length to age, was observed in respect of weight depending upon body length in both Divisions /Fig. 4/.

Haddock caught in the NW Coast of Scotland and having lengths from 15 to 34 cm, were heavier than haddock of the same length from the northern part of the North Sea. However, as from lengths of 34 cm., a rapid increase in weight was observed in haddock caught in Division IVa as compared with that from Division VIa.

The curves illustrating the increase in body weight depending upon the length of haddock from Divisions IVa and VIa are as follows:

for haddock from Division IVa - $W = 0.0016 \times L^{3.53}$.

for haddock from Division VIa - $W = 0.00863 \times L^{3.05}$.

Investigations of haddock from the Northern North Sea and NW Coast of Scotland in 1973, showed fundamental differences. These consisted of different length and age composition of fish caught, and different growth rate.

R e f e r e n c e s

1. Beverton R.J.H., Holt J.S.: On the dynamics of exploited fish population. Fish Invest. London /2/; 1957.
2. Hislop J.R.G.: Scottish surveys of pelagic O-Group Gadoid in the Northern North Sea 1969-1972. ICES, C.M. 1973/F:16.

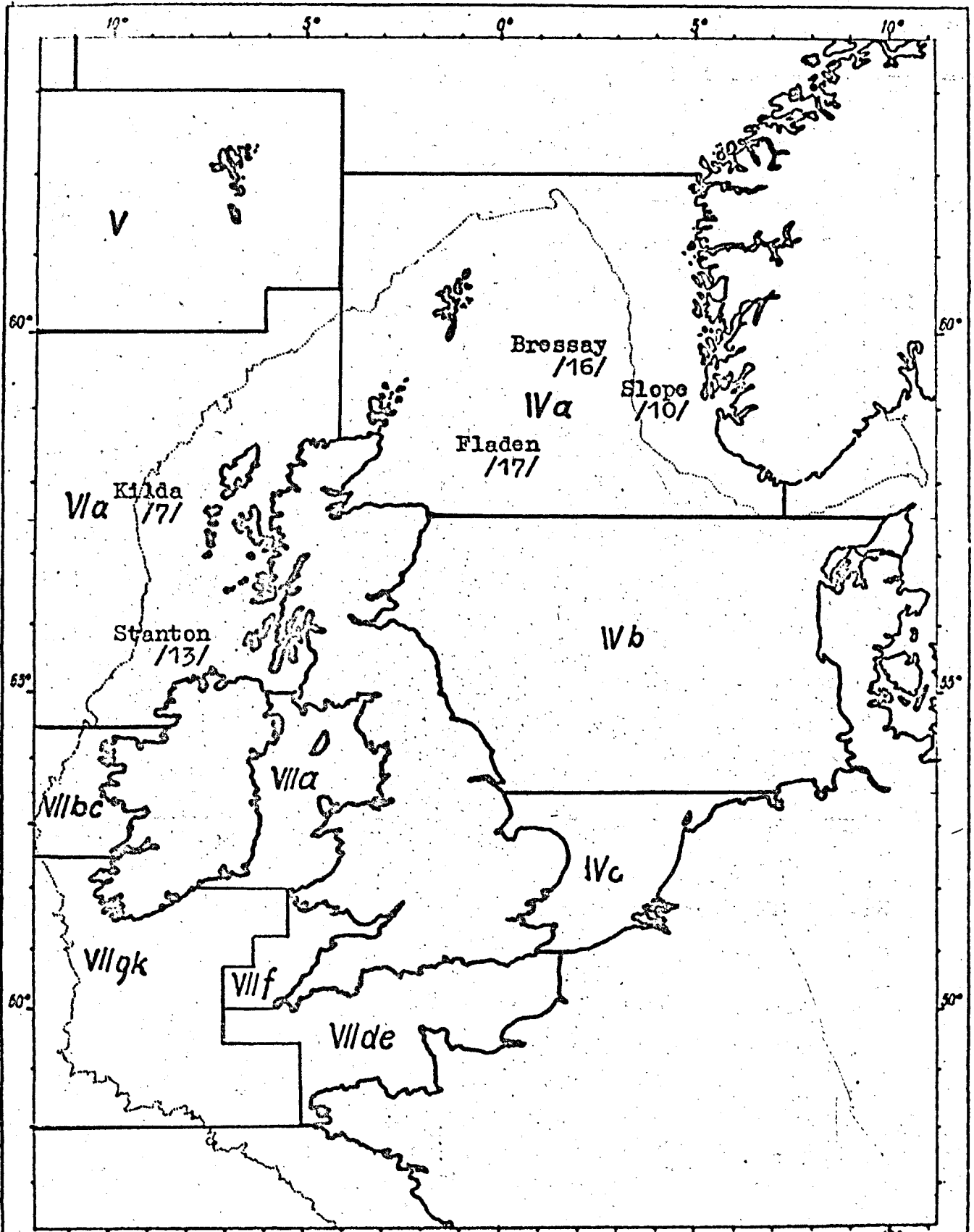


Fig. 1. Distribution of hauls performed by herring bottom trawl in Divisions IVa and VIa during June and July 1973
 /number of hauls performed in particular fishing grounds are given in brackets/.

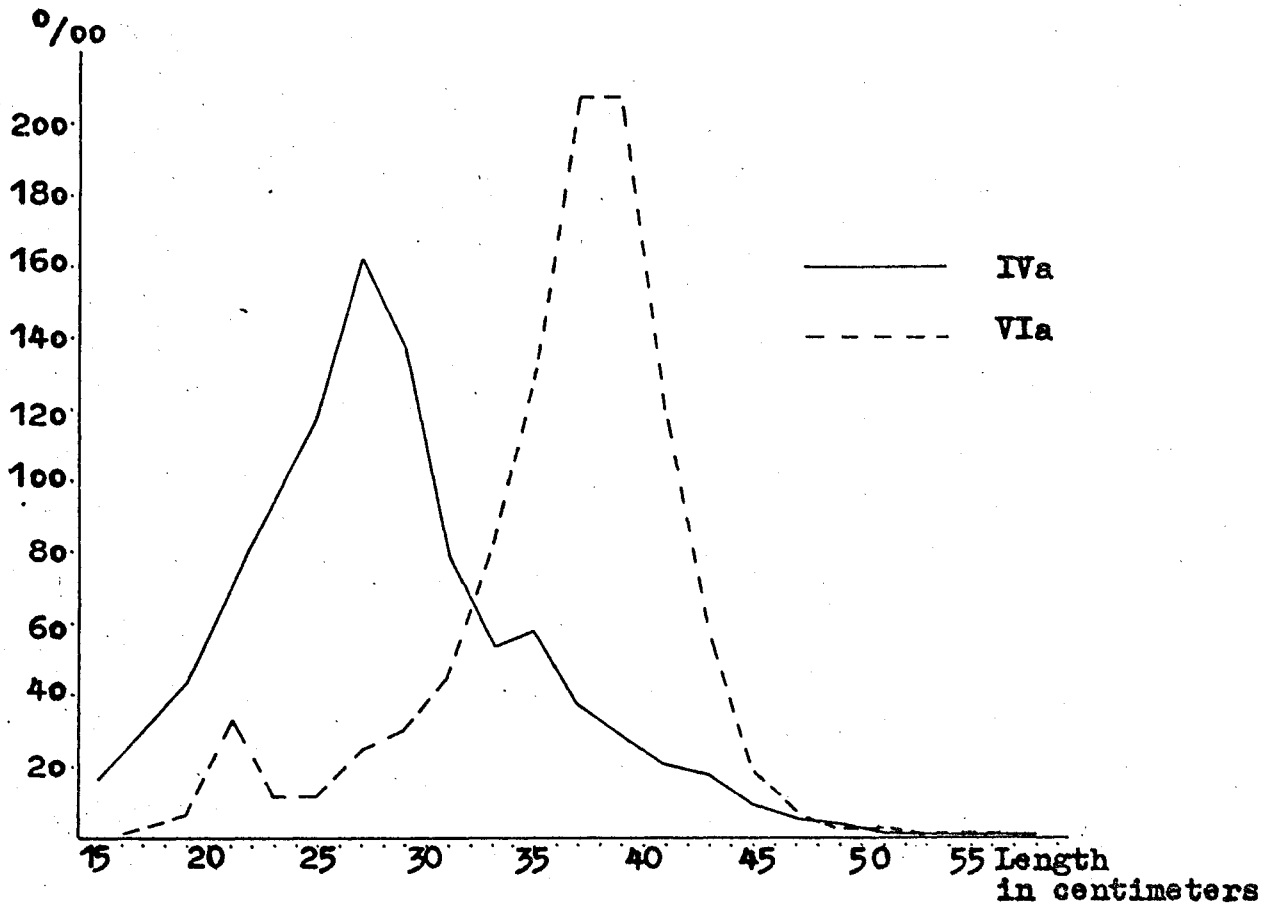


Fig. 2. Size composition of haddock catches from Northern North Sea and NW Coast

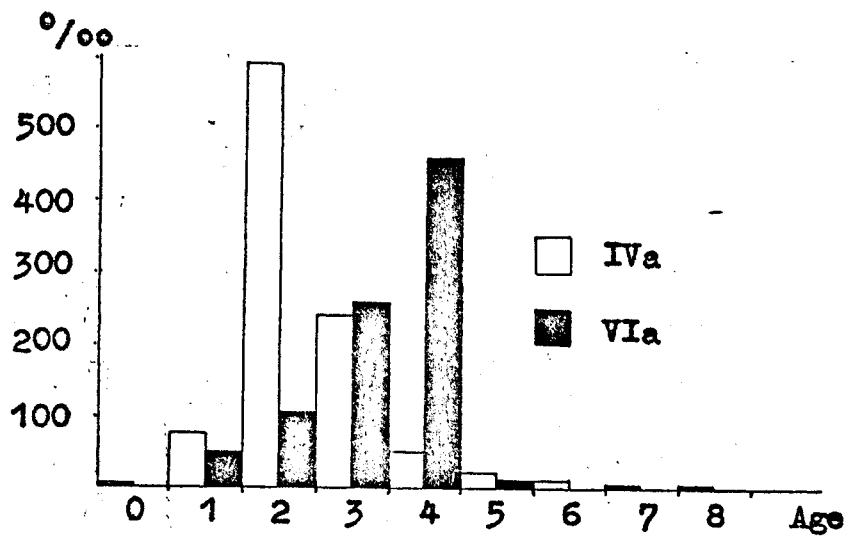


Fig. 3. Age composition of haddock /in ‰/ catches from Northern North Sea and NW Coast in 1973

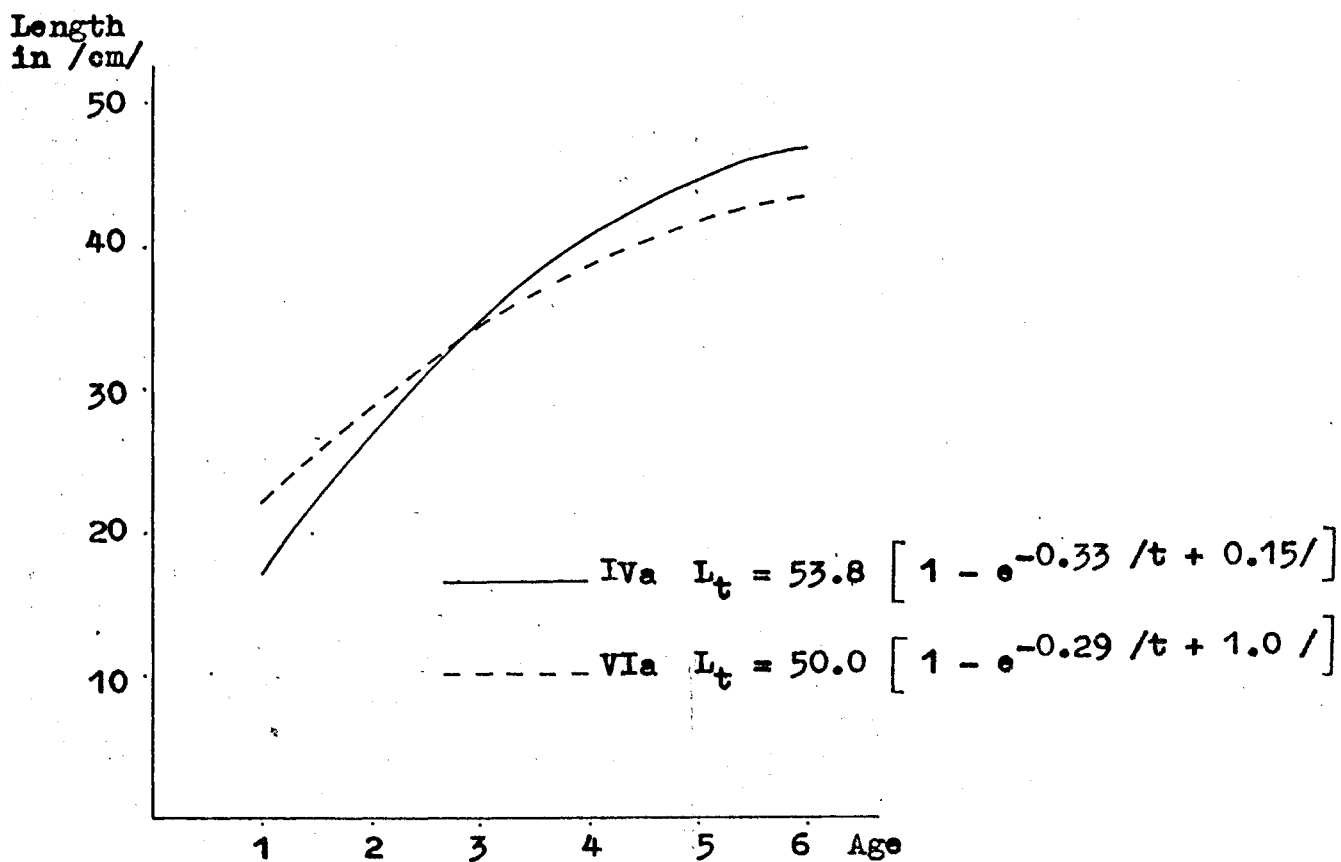


Fig. 4. Curves of growth for haddock drawn by the aid of the v.Bertalanffy's equation based on mean length of fish in particular age groups

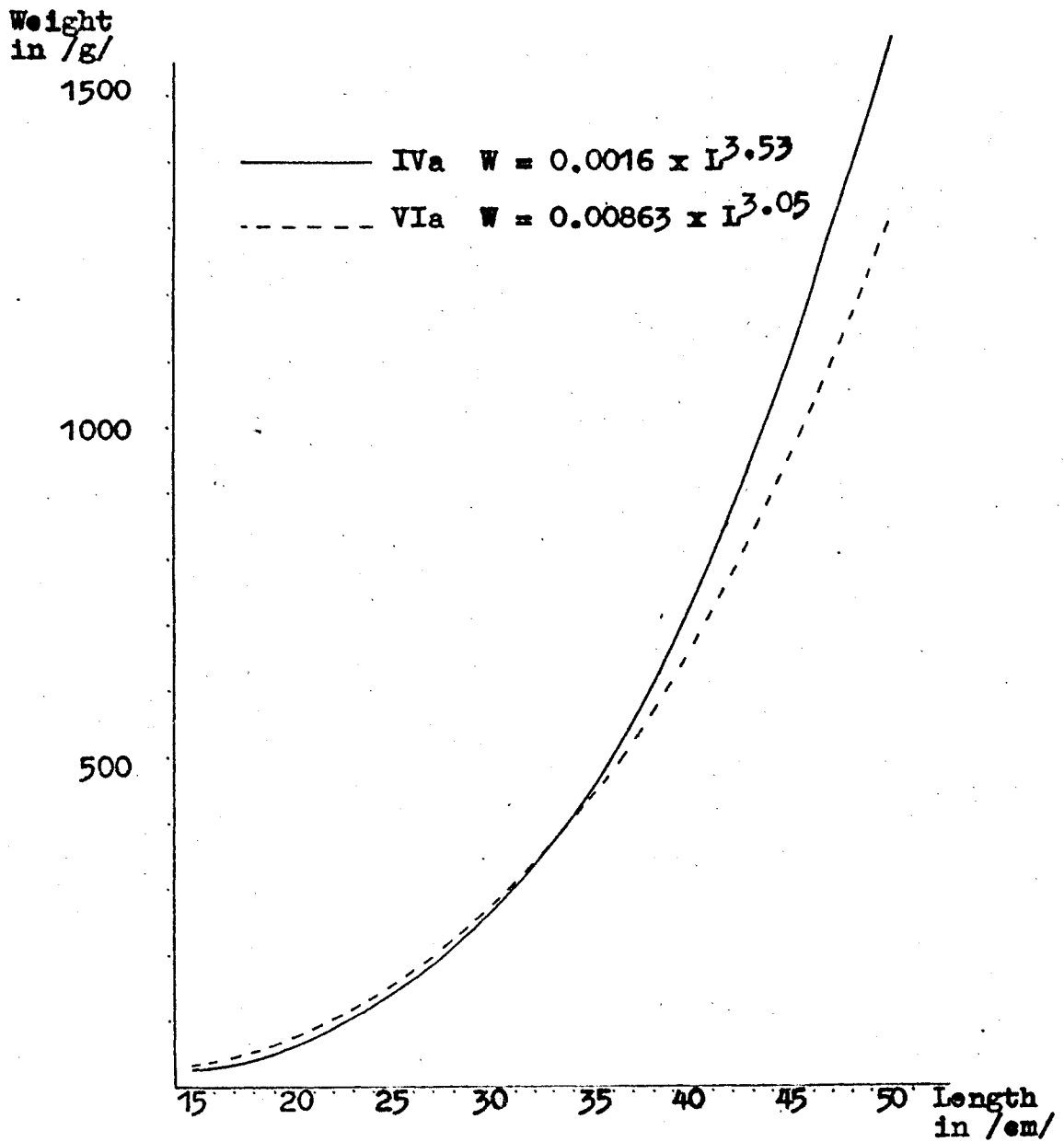


Fig. 5. Length and weight relationship in haddock from Northern North Sea and Nw Coast in 1973