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On the accurrence of juvenile blue whiting (Micromesistius poutassou) at Iceland

by

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Introduction

The main spawning areas of blue whiting have been known for some time (Henderson 1957, Bainbridge and Cooper 1973, Bailey 1974) and even as early as in 1909 (Schmidt) the wide distributional range of the species was recognized.

In the summer 1969 an Icelandic trawlfishery of Norway pout for industrial purposes was established at the south coast of Iceland.

It soon became appearant that young blue whiting (10-25 cm) constituted a considerable part of the catch.

The question arose whether the presence of the blue whiting in the catch was due to spawning of blue whiting at south Iceland and the smaller length groups were therefore 0-group fish, or due to a drift of the planktonic stages of blue whiting from other spawning areas further south in which case the fish were probably 1-group.

The purpose of this paper is to present the available data on young blue whiting collected at south Iceland.

Bailey (1970) has demonstrated that the first winter ring in the otoliths is very faint or invisible. Therefore an attempt has been made to use length distribution for the purpose of distinguishing between 0-group and 1-group blue whiting in Icelandic waters.

Material and method

With the exception of one sample of larval blue whiting collected by Dr. Bjarni Sæmundsson in 1905 the present data have been collected during various investigations carried out on board research vessels and chartered vessels by the Marine Research Institute, Reykjavík.

All length measurements of blue whiting are pooled together, set up in tables according to year and month the samples were taken and a note made of the type of gear used.

Results

Table 1 shows the length distribution of each sample by year and by month. In table 2 the length measurements are combined to show an overall length distribution by month.

From tables 1 and 2 it becomes appearant that there are one, two and even three length groups present in the catch depending on the type of gear and time of year.

In May and June 1905 and 1952 respectively post-larval stages of blue whiting measuring 1.3-1.6 and 3.4 and 3.8 cm (tables 1 and 2) were collected during fish larval surveys at Iceland and during 0-group surveys in July and August fish ranging from 5-11 cm with a mode at 6 and 8 cm respectively were caught as shown by the length distribution of two samples from 1972 and 1973 (table 1). But other length groups appear in the July - August samples.

In July another length group with modal length of 11-13 cm appears in the catches and in August two other length-groups with modes at 11-12 cm and 22 cm appear (table 2).

In September blue whiting with a mode at 16 cm was caught and in October two size-groups with modes at 16 and 23 cm were caught (table 2). Two samples from November with mode at 16 cm were caught in 1974.

In the April samples only one length-group is present with a mode at 18 cm.

Discussion

The distinct length-groups in the samples make it clear that one is dealing with different age-groups. The smallest size-groups of blue whiting taken either in plankton samplers or pelagic trawl are certainly 0-group fish and reach a mean length of 6-8 cm by July - August.

At the same time another length-group appears of a mean length of about 12 cm which most probably is 1-group fish.

The third length-group in August of a mean length of 22 cm is therefore most likely 2-group. The presumed 1-group fish reaches a mean length of 16 cm in September - November.

The one sample from April with a mean length of 18.5 cm is likely to be 2-group fish which reaches a mean length of 22-23 cm by October.

In the seas around Scotland 0-group blue whiting reach a mean length of 7-9 cm by June (Bailey 1970, Anon 1974). This is considerably larger fish than the 0-group blue whiting caught at Iceland at the same time. This supports the idea that the spawning of blue whiting takes place progressively later from south to north (Schmidt 1909) although lower water temperature may play some part.

Fish with a mean length of about 12 cm appear in bottom trawl catches in July. This supports Bailey's idea (1970) that the fish remain pelagic until 1 1/4 years old.

There does not appear to be a great overlap in the length groups of 0-group and 1-group blue whiting in contrast to Bailey's findings (1970).

A suggested growth curve for young blue whiting, based on the data presented in this paper, is given in figure 1. It is in good agreement with the growth curve of other gadoids in Icelandic waters (Pálsson, unpublished paper) and agrees with Bailey's corrected value of l_1 for blue whiting, although the fish does not reach the same size the first year at Iceland as in Scottish waters.

The presence of 0-group blue whiting at south Iceland in July 1972 is of special interest because at that same time 0-group blue whiting with a mean length of 9.3 cm was recorded in large quantities extending over wide areas 40-90 n.m. NW of Flannan Lighthouse (Anon 1974).

Thus there is evidence that at least in 1972 the main

concentrations of O-group blue whiting resulting from the spawning areas west of Scotland and Ireland were in July well south of the Faroe Islands. The presence of O-group blue whiting at Iceland at the same time must on the other hand be taken as a clear indication of spawning of blue whiting in the oceanic area south or south east of Iceland. This is in confirmity with the distribution of post-larval stages of blue whiting as charted by Schmidt (1909) and Magnússon et al. (1965).

The importance of these north westerly spawning areas probably fluctuates a great deal but the recent increase of one year old blue whiting concentrations at the south coast of Iceland suggest that the north westerly spawning component of the stock may be of considerable importance at present.

Acknowledgment

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Table 1

Length distribution of young blue whiting caught at the south coast of Iceland

Size in cm

Year	Month	1-2	3-4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1905	May	6^{Pl}																						
1952	June		2^{Pl}																					
1970	Oct.												4	19	35	30	8	3^{P}						
1971	August					1	3	26$_{P}$	13	27	35	5^{P}												
1972	July			15	34	14	8	1^{P}																
"	"								23	82	72	25	2^{P}											
"	Oct.												2	28	40	24	6^{P}							
1973	April														1	10	35	28	15	8	1^{B}			
"	August					11	47	16	2	3^{P}														
"	"												2	5				2	1	27	32	10	1^{B}	
"	Oct.												2	10	9	11	6	3	1$_{B}$	7	18	22	10	1^{B}
1974	April														4	21	38	25	12^{B}					
"	"															9	19	13	4^{B}					
"	"																10	7	3	3^{B}				
"	July								4	39	54	27	4^{B}											
"	"								28	124	201	184	84	23	1^{P}									
"	Sept.												1	5	25	25	12	1^{B}						
"	"													9	26	23	4	1^{B}						
"	"											3	29	21	2^{P}									
"	Oct.													6	14	5	1^{B}							
"	Nov.												2	36	54	8^{P}								
"	"													2	10	4^{B}								

Pl = Plancton sampler
P = Pelagic trawl
B = Bottom trawl

Table 2

Length distribution of young blue whiting caught at the south coast of Iceland by month.

Size in cm	J	F	M	A	M	J	J	A	S	O	N	D
1-2					6							
3-4						2						
5							15					
6							34					
7							14	12				
8							8	50				
9							1	42				
10							32	15				
11							163	30				
12							255	35				
13							211	13	3			
14							88	2	25	8	2	
15							23	5	35	63	38	
16				5			1		53	98	64	
17				40					48	70	12	
18				102					16	21		
19				73				2	2	6		
20				34				1		1		
21				11				27		7		
22				1				32		18		
23								10		22		
24								1		10		
25										1		

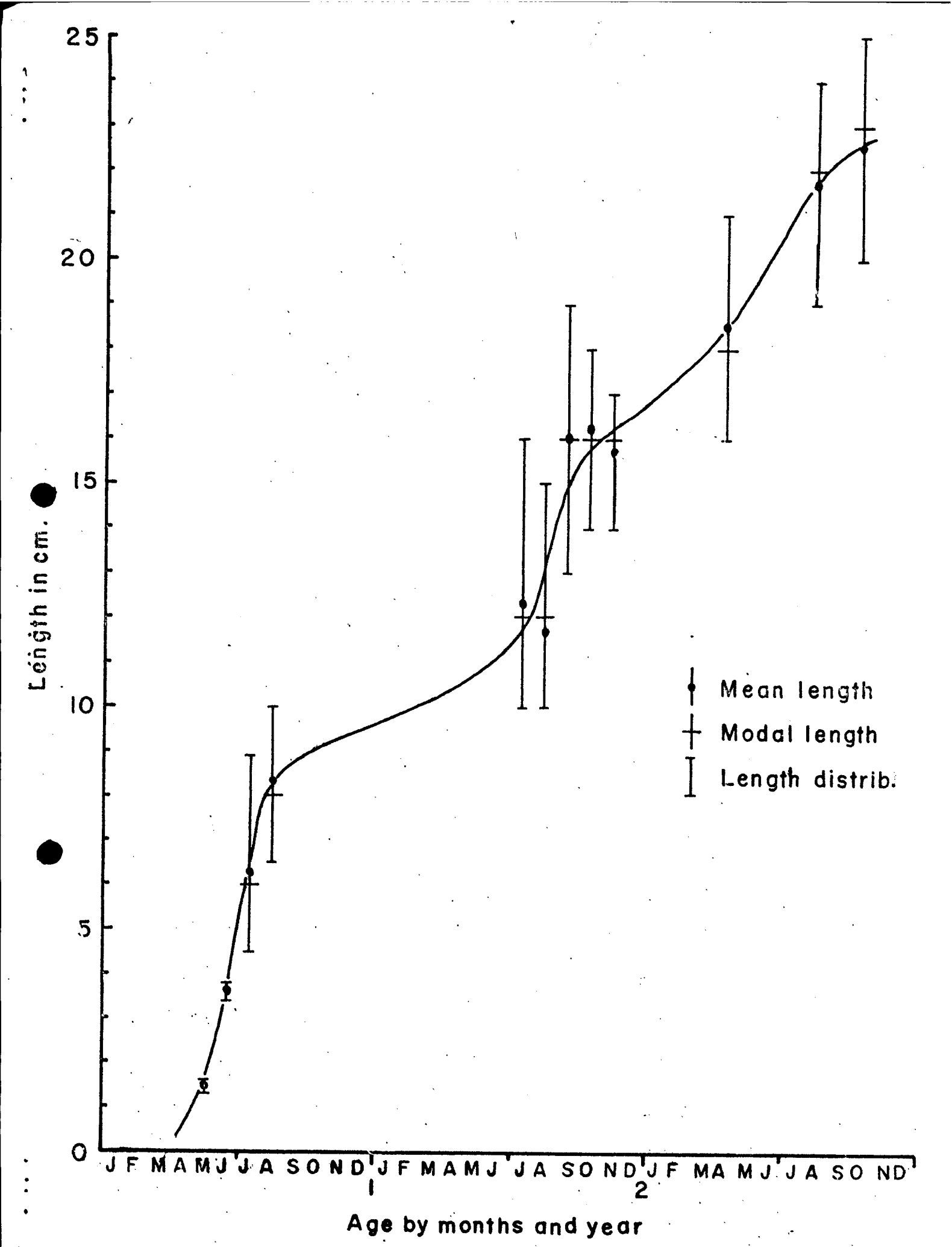

Fig. 1. Suggested growth curve of blue whiting at Iceland.