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Mean lengths of herring of various age-groups and year classes obtained during the onset and peak of the spawning season from ICNAF subareas 4 and 5, 1966-1970

by

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This report presents data on lengths of year classes as various age-groups for sea herring (Clupea harengus harengus L.) obtained immediately prior to and during the peak of the spawning season from ICNAF subareas 4 and 5 for 1966 through 1970.

The collections and determinations of age-groups for 1966 through 1970 were similar to those reported for 1960 through 1965 by Boyar (1968, Int. Comm. Northw. Atlant. Fish., Spec. Pub. 5: 49-61) except that the comparison of the mean lengths of herring from the various age-groups and year classes for 1960-1965 were made with the combined lengths of herring obtained in August and September. In the present report, however, we have combined the data for herring obtained from 16 August to 15 October, the time when the gonads of the fish were in either stage V, VI or VII of development.

Immediately prior to and during the spawning season (usually September through November) the mean lengths of gravid fish of a particular age-group are frequently equal to or slightly less than the mean lengths of herring collected during the latter part of the summer. This implies that the herring do not increase in length during this period or that our sampling, carried out over a relatively short period, is non-representative of the true length of the year class studied. We have evidence that the larger fish of a specific age-group spawn first, move off the spawning ground soon after spawning and are replaced by the smaller fish of the age-group (Boyar, op. cit.). The majority of the smaller fish spawn during the end of the spawning season. Lengths of spawners obtained during the end of the spawning season, therefore, would not be representative of a specific age-group.

The mean length of a given age-group from Georges Bank did not vary among the year classes more than 0.9 cm. except for fish of age-group III (1.1 cm.) (Table 1). The mean length of herring of age-groups IV-VIII among the year classes from coastal Gulf of Maine did not vary more than 0.9 cm. The mean length of herring of age-group III from the western section varied by 1.3 cm. and those from the eastern section by 0.4 cm. (Table 2). The mean length of herring of age-groups V-VIII among the year classes from Nova Scotia did not vary more than 0.7 cm., but fish of age-groups III-IV varied by 2.5 and 1.6 cm., respectively (Table 3).

A comparison of the data of Boyar for 1960 to 1965 (Boyar, op. cit.) and the data reported in the present report indicates that the mean lengths of fish of age-groups IV and V of the 1960, 1963 and 1965 year classes were generally smaller than those of the same age from other year classes. The mean lengths of fish of age-groups VI-VIII of the various year classes from the four areas were similar.

The approximate increase in annual length for herring from the four areas for a given year between 1966 and 1970 (Boyar, op. cit.) from the IV to the V-group fish was 1.8 cm.; from the V to VI-group, 1.5 cm.; from the VI to the VII-group, 1.3 cm.; and from the VII to the VIII-group fish, 1.0 cm. The annual increase in length between the various year classes is almost identical to those we previously reported for 1960-1965.

Table 1. Mean lengths (cm.) of herring of various age-groups and year classes from Georges Bank (combined data of 16 August to 15 October) 1966-1970.

Year-class	YEAR OF CAPTURE				
	1966	1967	1968	1969	1970
1958					
Age-group	VIII				
Length	33.0				
Number of fish	18				
1959					
Age-group	VII	VIII			
Length	31.8	32.9			
Number of fish	43	41			
1960					
Age-group	VI	VII	VIII		
Length	30.6	31.8	32.8		
Number of fish	164	176	47		
1961					
Age-group	V	VI	VII	VIII	
Length	29.3	30.5	31.7	32.0	
Number of fish	221	387	205	1	
1962					
Age-group	IV	V	VI	VII	VIII
Length	28.0	29.2	30.7	31.4	32.9
Number of fish	62	70	292	1	2
1963					
Age-group	III	IV	V	VI	VII
Length	25.8	27.1	29.2	----	31.9
Number of fish	3	43	217		7
1964					
Age-group		III	IV	V	VI
Length		25.5	27.1	28.7	30.4
Number of fish		10	70	3*	11
1965					
Age-group			III	IV	V
Length			25.2	27.1	28.9
Number of fish			33	13*	20
1966					
Age-group				III	IV
Length				24.7	27.1
Number of fish				5*	29
1967					
Age-group					III
Length					25.1
Number of fish					25

*Only data available were for the last week in July.

Table 2. Mean lengths (cm.) of herring from various age-groups and year-classes from coastal Gulf of Maine (combined data of 16 August to 15 October) 1966-1970. (W-Western Section, E-Eastern Section).

Year-class	YEAR OF CAPTURE									
	1966		1967		1968		1969		1970	
	W	E	W	E	W	E	W	E	W	E
1958										
Age-group	VIII	VIII								
Length	33.0	32.9								
Number of fish	34	13								
1959										
Age-group	VII	VII	VIII	VIII						
Length	32.0	32.0	33.0	33.1						
Number of fish	52	34	82	22						
1960										
Age-group	VI	VI	VII	VII	VIII	VIII				
Length	30.9	30.8	31.9	32.1	32.9	33.0				
Number of fish	93	72	43	65	23	12				
1961										
Age-group	V	V	VI	VI	VII	VII	VIII	VIII		
Length	29.5	29.4	30.6	30.6	31.9	31.8	33.0	32.9		
Number of fish	61	51	78	44	30	30	53	58		
1962										
Age-group	IV	IV	V	V	VI	VI	VII	VII	VIII	VIII
Length	27.9	27.7	28.9	29.0	30.6	30.8	32.0	32.1	32.9	32.9
Number of fish	32	63	39	19	37	38	90	74	60	48
1963										
Age-group	III	III	IV	IV	V	V	VI	VI	VII	VII
Length	25.9	24.7	27.2	27.3	28.9	28.9	30.6	30.7	32.1	31.7
Number of fish	90	113	141	65	91	146	97	115	94	59
1964										
Age-group			III	III	IV	IV	V	V	VI	VI
Length			25.7	24.4	27.2	27.3	29.2	29.6	30.6	30.7
Number of fish			59	87	100	148	83	33	112	12
1965										
Age-group					III	III	IV	IV	V	V
Length					24.9	24.8	27.0	27.3	28.9	28.9
Number of fish					102	186	103	19	92	13
1966										
Age-group							III	III	IV	IV
Length							24.6	24.8	27.4	27.4
Number of fish							528	43	206	53
1967										
Age-group									III	III
Length									25.3	25.3
Number of fish									397	98

Table 3. Mean lengths (cm.) of herring of various age-groups and year-classes from Nova Scotia (combined data of 16 August to 15 October) 1966-1970.

Year-class	YEAR OF CAPTURE				
	1966	1967	1968	1969	1970
1958					
Age-group	VIII				
Length	33.3				
Number of fish	101				
1959					
Age-group	VII	VIII			
Length	32.1	33.2			
Number of fish	118	135			
1960					
Age-group	VI	VII	VIII		
Length	30.8	32.0	33.0		
Number of fish	240	219	67		
1961					
Age-group	V	VI	VII	VIII	
Length	29.1	30.7	32.1	33.0	
Number of fish	111	196	105	6	
1962					
Age-group	IV	V	VI	VII	VIII
Length	28.4	29.4	30.5	32.0	32.8
Number of fish	21	28	106	11	35
1963					
Age-group	III	IV	V	VI	VII
Length	----	27.7	28.7	30.7	31.9
Number of fish		42	163	19	55
1964					
Age-group		III	IV	V	VI
Length		23.0	26.8	29.4	30.6
Number of fish		8	141	11	46
1965					
Age-group			III	IV	V
Length			25.5	26.9	28.8
Number of fish			7	5	47
1966					
Age-group				III	IV
Length				----	27.4
Number of fish					44
1967					
Age-group					III
Length					----
Number of fish					