International Council for the
Exploration of the Sea

C.M. 1963
Scombriform Fish Committee
No. 112 K

Mackerel Investigations on the South Coast of Ireland 1962/63

by
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Mackerel investigations commenced in September, 1962, off the south coast of Ireland. Samples were obtained from the following ports: Helvick, Co. Waterford, Castletownshend, Union Hall, Ballycotton, Clonakilty and Castletownbere, Co. Cork. A total of 734 fish was examined in 1962 under the following headings - length, weight, sex, maturity, age, and dorsal fin-ray count. The overall results are given below.

A. Length: the total length was measured from the tip of the snout to the tip of the longest caudal fin and a range from 22.0 cm to 42.5 cm was found, with the majority of fish being between 26.0 and 38.0 cm (see length distribution in Table 1 and length distribution per age-class in Table 2).

B. Weight: each fish was weighed to the nearest gramme and weights ranged from 60-520 g (see length/weight relationship in Table 3). No fish were weighed from Castletownbere.

C. Maturity: the maturity stages of the gonads were classified according to the Stevens' scale. In addition an extra stage (stage VIII) was included to distinguish recovering spents from immaturing virgins (stage II). In September the older fish were composed of approximately 50% spents and 50% recovering spents (see maturity distribution per age-class for all localities combined and percentage maturities in Tables 4 and 5).

D. Age and Growth: otolith readings were taken from a total of 734 during September and October. All readings were taken from the basal portion of the otoliths. The age distribution and mean length per age-class for all localities combined are summarised in Tables 6 and 7.

E. Dorsal Fin-Ray count: the number of rays in the first dorsal fin were counted. These ranged from nine to fifteen and the count was always higher in the younger fish, Table 8.

The 1963 sampling programme began in May. The main sampling effort was concentrated in Castletownbere, Co. Cork, where the largest landings were made. Smaller samples were also obtained from Baltimore, Cork (150 fish), Dingle, Co.Kerry (110 fish) and Dunmore East, Co. Waterford (123 fish). Sampling from Castletownbere and Dunmore East will be continued throughout the season. Fish numbering 1,906 were examined from these ports, using the same sampling methods employed during 1962, except that the fish were not weighed and the sexes were separated. The results from Castletownbere and Dunmore East showing mean length and mean fin-ray count per sex per age-class can be seen in Table 9.

Table 9 for Castletownbere shows that the dominant age class was that with seven winter rings followed by those with three and four. The majority of these fish were in advanced maturity stages (V and VI) with smaller numbers in stages IV, VII and VIII. In June, however, there was a large influx of smaller fish with 0 and 1 winter ring, most of which were in stages I, II, and III. The dominant age-class was the 1 winter ring, followed by 0 winter rings and 2 winter rings. In July the number of young fish present decreased slightly. Fish with 2 winter rings were dominant followed by 3 winter rings and 7 winter rings. Most of the young fish were in stages II and III, while the older fish were found to be mostly stage VII and stage VIII.

Reference

Stevens, G. H. 1952 In Journ. Mar.Biol.Assoc., XXX(3), pp.549-67.

Table 1.

Length distribution

	Length (cm)	22	26	27	28	29	3o	31	32	33	34	35	36	37	38	39	4o	41	42	T o t al
Castletownshend	No. of fish				2	2	8	6	9	12	11	16	4	4	1					75
Helvick	" " "						1	3	5	13	13	8	9	3	3					58
Union Hall	" " "		2	11	31	25	2	4	6	8	12	7	3	1	-	1				113
Ballycotton	" " "	1		7	21	15	5	4	14	11	18	11	8	6	2	1	1			125
Clonakilty	" " "			7	21	16	8	3	11	2o	26	2o	11	18	8	4				173
Castletownbere	" " "			2	3	5	5	8	23	38	6o	4o	33	15	6	2	-	-	1	241
Totals		1	2	27	78	63	29	28	68	1o2	14o	1o2	68	47	2o	8	1	-	1	785

For Table 2. Please see next page.

Table 3.

Length/weight relationship

	22	26	27	28	29	3o	31	32	33	34	35	36	37	38	39	4o
Castletownshend				157	164	2o4	214	244	258	275	3o9	329	345	367		
Helvick						2o9	237	269	272	296	3o5	346	363	413		
Union Hall		122	139	165	173	191	23o	245	259	279	298	36o	339	-	398	
Ballycotton	59		145	16o	175	189	219	245	248	285	328	341	366	434	377	486
Clonakilty			14o	156	172	194	219	235	265	276	298	333	375	385	424	
Average	59	122	141	159	171	197	223	245	261	28o	3o6	34o	36o	397	4o6	486

Table 2. Length/age distribution. All localities

Length(cm)	No. of winter rings											Total
	0	1	2	3	4	5	6	7	8	9	9+	
22	1											1
26		2										2
27		25										25
28		68	1									69
29		55										55
3o		23	3									26
31		7	2o	1								28
32		6	41	11	5							63
33			45	3o	17	1						93
34			9	48	61	1o	7	3				138
35			1	23	35	18	14	6		1		98
36				2	5	11	27	11	7	1	1	65
37					2	6	14	12	9		2	45
38						1	7	4	3	1	1	17
39							2	1	3	1		7
4o											1	1
42											1	1
Totals	1	186	12o	115	125	47	71	37	22	4	6	734

For Table 3, see page 2

Table 4. Maturity distribution/age-class All localities

Winter rings	Stages					Totals
	0	I	VII	VIA	VIII	
0	1					1
1		169	1		16	186
2		13	31		76	12o
3			52		63	115
4			51		74	125
5			28		19	47
6			3o		41	71
7			14	1	22	37
8			7		15	22
9			1		3	4
9+			3		3	6
Totals	1	182	218	1	332	734
% distribution	o.1	24.8	29.8	o.1	45.2	loo%

Table 5. Percentage maturity stages (adult fish)

Locality	VII (spents)	VIII (recovering spents)	
Castletownshemd	41.5	58.5	)
Helvick	56.1	43.1	)
Union Hall	55.o	45.o	) September
Ballycotton	52.2	47.8	)
Clonakilty	59.2	4o.8	)
Castletownbere	15.2	84.1	- October

Table 6. Age distribution. (All localities)

Winter rings	0	1	2	3	4	5	6	7	8	9	9+	Total
No. of fish	1	186	12o	115	125	47	71	37	22	4	6	734
% distribution	o.1	25.3	16.3	15.8	17.o	6.4	9.7	5.2	3.o	o.5	o.7	loo.o

Table 7. Mean length per age-class

Winter rings	0	1	2	3	4	5	6	7	8	9	9+
Mean length	22.o	29.6	32.8	34.1	34.9	36.4	36.o	36.5	37.4	38.o	4o.1

Table 8. Number of fin rays per age-class from October - Castletownbere

Winter rings	1	2	3	4	5	6	7	8	9	9+	Total
No. of fish	19	39	32	63	15	34	18	15	2	4	241
Males	11.75	11.57	11.5o	11.47	11.63	11.4o	11.o9	lo.9o	11.oo	lo.75	
Females	12.6o	11.86	11.7o	11.2o	11.oo	11.35	11.42	11.oo	-	11.oo	
Mean	12.38	11.69	11.61	11.34	11.46	11.38	11.22	lo.94	11.oo	lo.8o	

Table 9.

MAY CASTLETOWNBERE

Winter rings	1	2	3	4	5	6	7	8	9	9+	T o t a l
Males. No. of fish	15	16	3o	22	9	21	3o	6	8	13	17o
Mean length (cm)	31.o	32.4	33.8	34.6	36.o	36.2	36.4	37.3	37.6	37.9	
Fin-ray count	11.75	11.94	11.87	12.o	11.44	11.o9	11.4o	1o.83	11.12	1o.61	
Females. No. of fish	-	14	21	25	1o	17	36	13	1	19	156
Mean length (cm)	-	32.9	34.3	34.8	35.9	36.7	36.8	37.7	39.3	38.5	
Fin-ray count											
Total nos.	15	3o	51	47	19	38	66	19	9	32	326
Length (cm)	31.o	32.7	34.o	34.7	36.o	36.5	36.6	37.6	37.8	38.2	
Fin-ray count	11.75	11.77	11.87	11.79	11.31	1o.95	11.67	11.o5	11.11	11.[illegible]	

JUNE CASTLETOWNBERE

Winter rings	0	1	2	3	4	5	6	7	8	9	9+	T o t a l
Immature juvenile nos.	1											1
Mean length (cm)	22.9											
Fin-ray count	14											
Males. No. of fish	78	214	18	11	13	4	-	7	3	2	5	355
Mean length (cm)	25.2	29.8	33.o	33.5	34.7	35.1	-	36.4	38.1	36.2	37.4	
Fin-ray count	11.74	11.97	11.66	11.27	11.38	1o.75	-	1o.28	11.33	11.oo	11.6o	
Females. No. of fish	74	249	32	24	1o	2	5	17	2	1	6	422
Mean length (cm)	25.4	29.8	32.9	33.8	34.1	33.1	36.7	36.5	37.5	37.3	38.6	
Fin-ray count	11.78	11.94	11.56	11.45	11.3o	11.5o	1o.8o	1o.76	1o.5o	11.oo	1o.83	
Total nos.	153	463	5o	35	23	6	5	24	5	3	11	778
Length (cm)	25.3	29.8	32.9	33.7	34.5	34.4	36.7	36.5	38.1	36.6	38.1	
Fin-ray count	11.77	11.95	11.6o	11.4o	11.34	11.oo	1o.8o	1o.62	11.oo	11.oo	11.18	

Table 9 continues on page 6 .....

Table 9 - continued

JULY CASTLETOWNBERE

Winter rings	0	1	2	3	4	5	6	7	8	9	9+	Total
Males. No. of fish	3	98	12o	41	2o	2o	16	25	7	1	9	36o
Mean length (cm)	26.7	29.3	32.5	33.8	34.9	36.2	37.3	36.8	37.6	35.4	38.2	
Fin-ray count	11.66	11.44	11.43	11.39	11.25	11.oo	1o.87	1o.76	11.28	1o.oo	11.44	
Females. No. of fish	4	74	1o5	4o	29	17	6	29	5	6	4	319
Mean length (cm)	27.3	3o.1	32.5	33.9	34.7	35.9	37.4	37.2	37.8	38.1	37.8	
Fin-ray count	11.75	11.81	11.51	11.17	11.27	11.58	11.33	1o.86	1o.6o	11.18	11.5o	
Totals	7	172	225	81	49	47	22	54	12	7	13	679
Length (cm)	27.1	29.6	32.5	33.9	34.8	36.1	37.3	37.o	37.7	37.7	38.1	
Fin-ray count	11.71	11.6o	11.47	11.28	11.26	11.27	11.oo	1o.81	11.oo	11.oo	11.46	

JULY DUNMORE EAST

Winter rings	0	1	2	3	4		7	8		9+	T o t a l
Males. No. of fish	21	22	5	4	3		2	1		-	58
Mean length (cm)	27.2	29.9	33.7	33.9	34.5		34.9	36.1		-	
Fin-ray count	12.oo	11.22	11.4o	11.oo	11.33		9.oo	11.oo			
Females. No. of fish	15	28	6	6	3		4	1		2	65
Mean length (cm)	27.3	29.6	33.7	33.9	34.8		36.7	36.8		39.6	
Fin-ray count	11.25	11.78	1o.5o	11.66	12.oo		11.25	11.oo		11.5o	
Totals	36	5o	11	1o	6		6	2		2	123
Length (cm)	27.2	29.8	33.7	33.9	34.7		36.1	36.5		39.6	
Fin-ray count	12.oo	11.54	11.18	11.4o	11.66		1o.5o	11.oo		11.5o	