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CATCH AND EFFORT IN THE IRISH LOBSTER FISHERY DURING 1971.

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Catch and effort in the lobster fishery during 1971

Once again it must be reported that only a small number of fishermen participated in the log book scheme operated by the Fisheries Division of the Department of Agriculture and Fisheries. Valuable as the data given by these fishermen are, and important as they are to the future of management in the Irish lobster fishery, it must be said that the participation of a very much more extensive section of fishermen would greatly enhance the value of the catch effort data. A further appeal is made to the readers of this Leaflet, that they should join this scheme and thereby contribute information important to the future of this fishery, which in 1971 brought in £338,000 to the fishermen. Perhaps it is worth while pointing out the advantages of the log book scheme, once more.

(a) The data in the log books allow a reasonable measure to be made of the effect of fishing on the strength of the lobster stocks;

(b) The data further allow explanations to be given as to the causes of fluctuations in the landings;

(c) The log books remain the property of the fishermen, who have then an accurate record of their own fishing activity from year to year. This should be a most valuable asset to fishermen, and

(d) The log books, being the sole property of the fishermen, cannot be used for any purpose other than scientific analysis. The data contained in them are not divulged to any source whatsoever, without the approval of the fishermen concerned.

For all the above reasons, fishermen can only gain from partaking in the scheme, and therefore it is to be hoped that many more will join.

The details given in Table 1 show catch per effort for boats of different size categories, using either crawfish or lobster fishing gear

CRAWFISH TRAPS

Boat size	Total effort	Total catch of lobsters	Total weight of lobsters	Weight per 100 trap lifts
25'-29'	9,347	545	826	14.4
30'-34'	3,745	316	877	21.9
50'+	9,851	1,001	2,554	26.6
	7,648	621	1,419	21.0

+ in the case of crawfish traps, the average is that of the combined lobster and crawfish caught.

Table 2 shows that:-

(a) The total yield of lobsters from lobster traps in terms of weight per 100 trap lifts in 22.0 lbs. compared with 21 lbs. for lobsters and crawfish from gear designed to catch crawfish.

(b) In view of the evidence suggested by (a) above, no advantage is gained by pursuing a mixed lobster crawfish fishery. On the contrary the data suggest that by following either a lobster fishing using lobster gear and a crawfish fishing using crawfish gear more productive yields will be obtained from this specialisation.

Discussion

Rutherford et al (1967) analysed the rates of capture of lobsters in the Canadian lobster fishery for different species. (H. americanus) which is however similar to the species on the eastern side of the Atlantic (H. gammarus). H. americanus may differ by being more fecund than H. gammarus and may therefore produce greater numbers of marketable lobsters in the catch. These authors have shown that yields, on average, of 70 lbs. of lobster per 100 trap lifts are possible. The data given in Table 2, show that the yield, 22 lbs. of lobsters per 100 trap lifts, is very much less, than that in Canada.

The Canadian lobster fishery started about 1870, when 3,000,000 lbs were caught. Ten years later the annual catch was 90,000,000 lbs. However, by 1920 it had fallen back to 40,000,000 lbs. and up to the late 1960's the annual catch has fluctuated within the limits of 27,000,000 to 48,000,000 lbs. From 1901 the number of traps rose from 1,290,600 to 2,508,000 in 1960. Thus for greatly increased numbers of traps, there was no corresponding annual increases in catch and landings. This situation has a parallel in the Irish context, in as much as the Irish landings up to 1920 were high, averaging about $1\frac{1}{2}$ million lbs. annually. For the next 20 years the catch fell to some 1 million lbs. and since the mid 1940's to date have fluctuated about a mean of 600,000 lbs. annually. The fact that so much effort is made by our fishermen to pursue a mixed lobster/crawfish fishery obscures a reasonable estimation of the possible yield of lobsters in the event that they would fish only for lobsters. However, the implications are that an Irish lobster fishery, based on the use of lobster gear only, could be much higher than at present, perhaps approaching 1,000,000 lb or the former level of catch annually. An expansion to this rate of exploitation is within the capabilities of the Irish lobster fleet.

Table 1. Details of total catch and weight of catch together with average weight per trap per season, total fishing effort (or total trap hauls) catch of lobsters or lobsters and crawfish per 100 trap hauls and weight of same per 100 trap hauls.

Boat length	Effort	No Caught	Total Weight (lbs.)	Average Wt. per trap +	Catch per++ effort Nos.	Catch per++ effort Wt.	Average no months of fishing
20'-24'	3,095	377	832	2.2	12.2	26.8	
Lobster Traps	12,298	1,657	3,527	2.1	13.5	28.4	
	13,840	3,684	4,653	1.3	26.6	34.6	
	5,696	1,369	1,594	1.2	24.0	28.8	
	2,112	354	393	1.1	16.8	18.5	
Average	7,408	1,488	2,199	1.5	18.6	27.4	5.8
25'-29'	10,720	1,817	2,365	1.3	16.9	22.0	
Lobster Traps	7,040	933	1,208	1.3	13.3	17.3	
	24,651	1,629	2,097	1.3	6.6	8.6	
Average	14,137	1,460	1,890	1.3	12.3	16.0	6.0
Crawfish Traps	⌀10,685	809	1,149	1.4	7.6	10.6	
	⌀ 8,009	524	1,389	2.7	6.6	17.8	
Average	9,347	667	1,269	2.0	7.1	14.2	6.0
30'-34'	8,038	720	1,113	1.5	9.2	13.8	
Lobster Traps	15,375	1,502	2,236	1.5	10.0	15.0	
	11,707	1,111	1,675	1.5	9.5	14.3	6.0
Crawfish Traps	⌀ 1,600	274	503	1.8	17.1	30.8	
	⌀ 1,155	67	126	1.9	5.8	11.0	
	⌀ 1,000	72	156	2.2	7.2	15.8	
	⌀11,225	852	2,721	3.2	7.7	24.6	
Average	3,745	316	877	2.8	9.5	26.6	3.0
Over 50'	2,010	350	582	1.6	17.4	27.8	
Lobster Traps	20,700	2,622	3,904	1.5	12.3	18.5	
Average	11,355	1,486	2,243	1.5	15.0	24.0	3.0
Crawfish Traps	⌀ 9,851	1,001	2,554	2.6	10.2	26.5	4.5

⌀ = Combined lobster and crawfish catch
\+ = Average seasonal weight per trap either lobster or lobsters and crawfish.
++ = Catch per 100 trap hauls.

Table 1 indicates a number of interesting features concerned with lobster and crawfish fisheries, namely:-

(a) The total effort, i.e. the total number of trap hauls, by boats of 20'-24' in length, using only lobster fishing gear, averaged 7,408 hauls, which was much less than the equivalent figures for larger boats, when the length of the fishing season is taken into consideration.

(b) The average number of lobsters caught by boats of 20'-24' in length was equal to or greater than that by larger boats using lobster gear only, and this in spite of the considerably less total effort expended by the smallest category of boat.

(c) The implications contained in (a) and (b) above suggest that the maximum efficiency for lobster fishing, using lobster gear, may well result from the use of smaller rather than larger boats. It is perhaps worth noting, in this context, that at the beginning of the present century, when the Irish lobster catch fluctuated around 1 million for many years, the vast majority of the boats engaged in the fishery were under 30' in length and used lobster gear solely.

(d) All the yield figures in Table 1 are well above the national average. This may be explained by the fact that because the log book scheme is a voluntary one the more experienced and interested boat skippers tend to join it, thus providing data which one might expect would be better than average. In addition it shows what the yield might be if all fishermen attained the fishing efficiency of those who had taken part in the log book scheme.

In Table 2, the data in Table 1 have been re-grouped to show the results arising from lobster gear only and those from crawfish gear, combining lobster and crawfish fishing. The figures are given for different boat size and gear categories.

Table 2 Total fishing effort and catch (in weight) per 100 trap lifts, for lobster and crawfish traps.

LOBSTER TRAPS

Boat size	Total Effort	Total catch of lobsters	Total weight of lobsters	Weight per 100 trap lifts
20'-24'	7,408	1,488	2,200	27.9
25'-29'	14,107	1,460	1,890	16.0
30'-34'	11,707	1,111	1,675	14.4
50'+	11,355	1,486	2,243	29.6
Average	11,144	1,386	2,002	22.0

However, there is a limit to the number of boats and the number of units of fishing gear, which may be economically suitable for the Irish lobster fishery. In certain areas, notably off Wexford and Galway, there is already evidence available to suggest that increases in number of traps used, does not increase the catch per unit effort, and only marginally increases the total catch.

Bibliography

Rutherford, J.B. et al (1967). An Economic Appraisal of the Canadian Lobster Fishery. Fish. Res. Bd. Canada, Bulletin 157