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(Department of Agriculture and Fisheries)

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CATCH EFFORT AND SIZE DISTRIBUTIONS OF THE CATCH
IN THE IRISH LOBSTER FISHERY (1968).

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Introduction: The object of this Leaflet is to discuss methods of comparing the success (catch per unit effort) of various types of traps for the capture of lobsters and the relationship of the information thus obtained to the lobster stocks themselves.

A simple comparison of the total catch by one type of trap with that of another, from year to year, provides little practical information about their respective merits. A comparison, however, of the catch by one trap with that of another in terms of catch of lobsters per trap haul provides much more useful data; this is known as catch/effort data. For convenience, catch/effort data are expressed as catch per 100 trap hauls. This method does not, of course, take into account the ability of the individual fisherman to choose good fishing grounds or use more attractive bait, both of which affect the yield per trap haul. Neither does it measure the rate of entry of lobsters into a trap. Despite these shortcomings, however, catch per 100 trap hauls is a useful means of assessing the merits of individual types of traps and the effects of fishing on the stocks from one year to the next.

A well stocked fishery, whatever species is concerned, will, within certain limits, react to increased fishing by yielding increased catches, or, in other words, as the fishing rate increases the catch increases also. The effect of fishing on the stocks can only be measured when data are available from one year concerning the changes in the volume of the catch in relation to the fishing effort.

Lobsters are solitary animals living in rock crevices and amongst boulders. They are found in depths of down to 40 fathoms or more. They are slow moving and non-migratory and are lured into traps by the use of fresh or salted bait of good quality. While they are less active by day, being voracious feeders they can be attracted into traps at any time of the day or night, provided

the traps are set near to them.

Methods: The results set out in this Leaflet have been obtained mainly from information supplied by a number of fishermen from various parts of the Irish coast, who voluntarily filled in daily log books of their catch and effort during 1968. Only nineteen log books, containing sufficient information to justify full analysis, were satisfactorily completed in 1968 but it is hoped to get more extensive information in future years. The type of information recorded in these log books is indicated in Figs. 1 and 2. The data available to date, while not extensive enough to provide an overall picture of the lobster stocks, are of great value in relation to an understanding of the lobster fishery.

Results: Generally the catch of lobsters was greater in the case of boats using specialised lobster gear than those using crawfish gear (Fig. 1A). The weekly catch of lobsters per boat increased progressively with an increase in the size of boat, i.e. from 88 lobsters in the case of boats in the 20 to 30 foot category, to 185 for boats in the 40 to 60 foot category (Fig. 1B). The estimated average weekly catch of lobsters was as follows:-

<u>Boat size</u>	<u>No. of lobsters per week</u>
Under 20'	88
20' - 30'	117
30' - 40'	162
40' - 60'	185

The boats from which this material was obtained were clearly above national average in their catching power because if all other boats in the fishery had fished at the same rate the total catch would have been approximately 900,000 instead of the 525,000 recorded in 1968.

Firm conclusions cannot be reached from the 1968 figures until data for other years have been obtained. If catch and effort remain relatively steady year by year, then the stocks and catch are in

equilibrium (the rate of fishing being balanced by the rate of entry of commercial sized lobsters into the stocks by natural means). If catch and effort continue to rise over a sustained period, then the stocks can be said to be withstanding the increasing rate of fishing. If, however, the effort is increasing and the catch remains the same, or worse, falls, then the situation becomes serious. Many fishermen, particularly on the east and south east coasts, have reported in 1968 that they were obliged to increase their fishing effort considerably in order to keep their catches up to the level of previous years. Fishermen who did not use extra traps stated that their catching rate had fallen off. However, in the absence of more definite information in the form of catch/effort data, it would be premature to draw any conclusions on the state of our lobster stocks at present.

The catches of lobsters per 100 trap-lifts for 1968 from French barrels, Kilmore Quay traps and Scottish creels are shown for individual boats (irrespective of boat size) in Fig. 2A. Collective catches are shown in Fig. 2 B. The variation in catch for French barrels was from 6 to 20 lobsters per 100 trap hauls; for Kilmore Quay traps the variation was from 18 to 26, and for Scottish creels the variation was from 14 to 45 lobsters. The average catch by these three gears was as follows:-

<u>Type of gear</u>	<u>Average catch/100 trap lifts</u>
French barrel	16
Kilmore Quay traps	22
Scottish creels	28

An interesting result from the survey concerns the average weight of lobsters caught in various areas with different types of gear. The national average weight of individual lobsters caught in Irish waters in 1968 was 1.35 lb. The average weight of the catch recorded in the fishermen's log books was as follows:-

<u>Coast</u>	<u>Average</u>
East	1.3 lb.
South east	1.5 lb.
South	1.5 lb.
South west	1.6 lb.
West	1.6 lb.
North	1.4 lb.

The average weight of lobsters recorded in the log books was $1\frac{1}{2}$ lb., or 0.15 lb. above the national average. There was a tendency for French barrels to catch very small lobsters. This may be because French barrels are chiefly fished during daylight hours when small lobsters may be more active and therefore more likely to enter traps. Scottish creels and Kilmore Quay traps are fished mostly at night, and these records showed that the size of lobsters caught by them was considerably larger than in the case of French barrels.

During 1968 measurements of lobsters were made by the Department of Agriculture and Fisheries at a number of centres and the size distribution of this material has been indicated in Figs. 3 and 4, for different coastal regions. In the heavily fished west coast there is no evidence that stocks are being overfished (Fig. 3), even though the majority of specimens caught there were in the small to medium size ranges. On the north and east coasts the small to medium lobsters also made up the greatest part of the catch (Fig.3). Similarly, on the Cork and Waterford coasts small to medium sized lobsters were dominant (Fig.4). Conversely, the Kerry catch (Fig.4) contained no undersized lobsters and individuals of medium to large size dominated the catch, which indicates a lower rate of fishing mortality. A disturbing feature in all but the Kerry area was the presence of sub-legal sized lobsters in all catches.

The enforcement of a legal size limit (83 mm carapace length) is the best available means at our disposal to regulate the lobster fishery. If fishermen and merchants persistently continue to catch

and handle undersized lobsters the stocks will suffer badly. The data obtained through the keeping of log books by fishermen, though hitherto lacking in quantity, should prove most useful in relation to the national exploitation of the lobster fishery. The co-operation of more fishermen is, therefore, being sought in future so that useful information can be provided about the valuable lobster fishery, in the interest of all who fish for this species.

ACKNOWLEDGEMENT

Mr. James J. Bowman of University College, Dublin, an undergraduate holding a bursary with the Department of Agriculture and Fisheries, made the lobster measurements relating to the Galway coast.

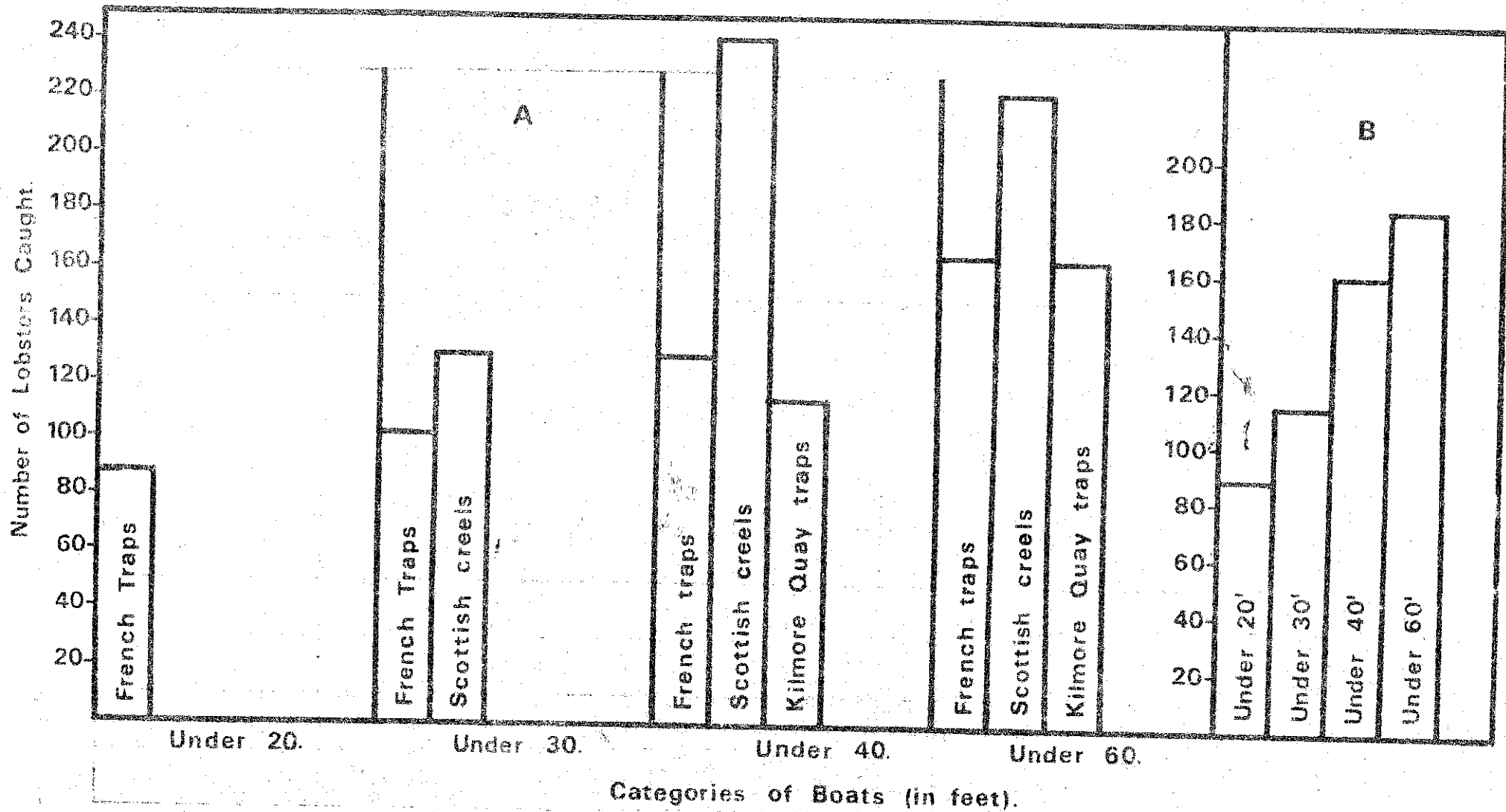


Fig. 1. A. = MEAN NUMBER OF LOBSTERS CAUGHT PER TYPE OF FISHING GEAR BY BOATS OF DIFFERENT SIZE CATEGORIES.
 B. = MEAN CATCH BY ALL SIZES OF BOATS IRRESPECTIVE OF GEARS USED.

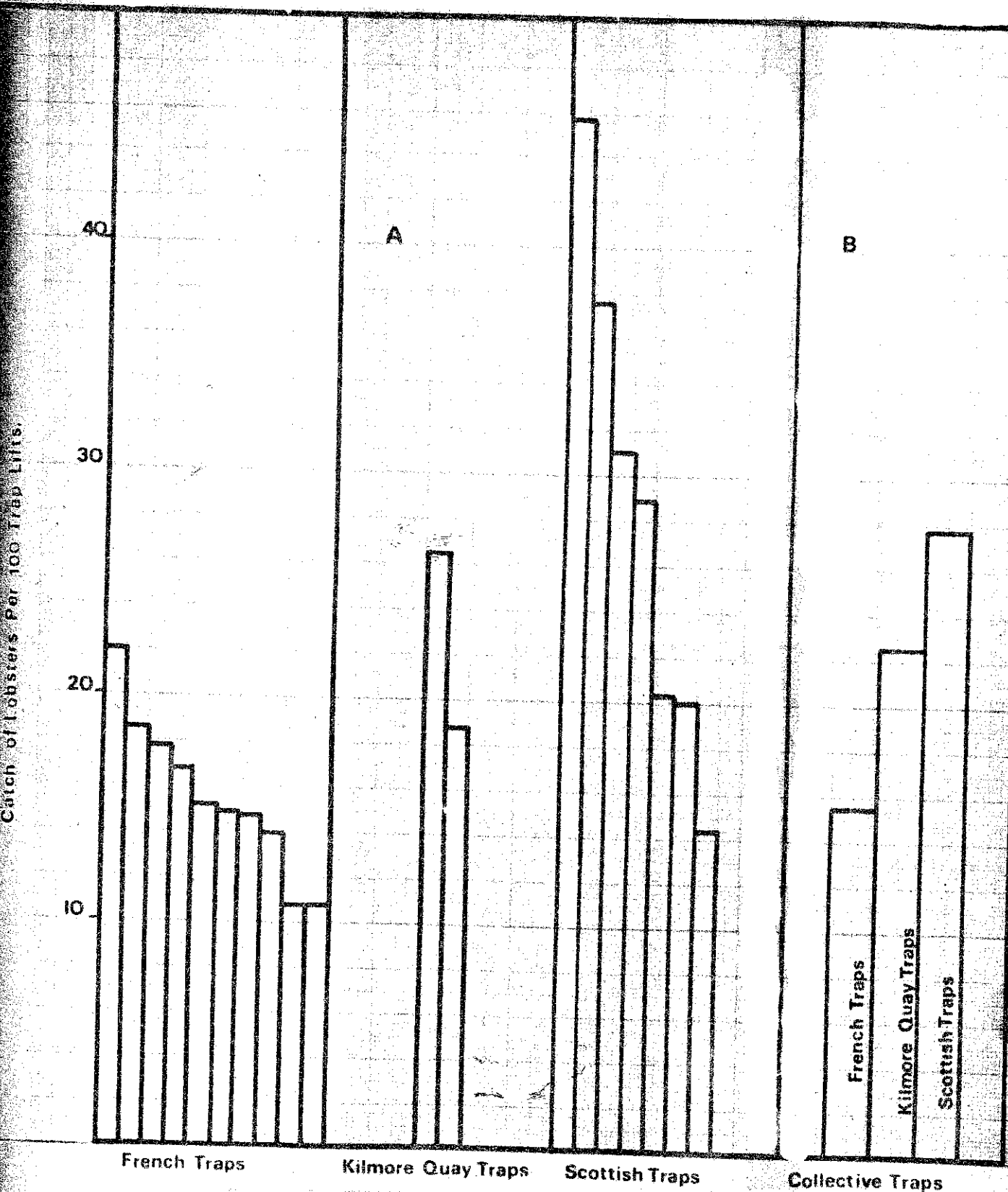


FIG 2. A = ACTUAL CATCH OF LOBSTERS PER 100 TRAP LIFTS BY EACH BOAT USING THE THREE DIFFERENT KINDS OF TRAPS.

FIG 2. B = AVERAGE CATCH PER 100 TRAP LIFTS BY BOATS FOR EACH OF THE THREE DIFFERENT KINDS OF TRAPS COMPARED.

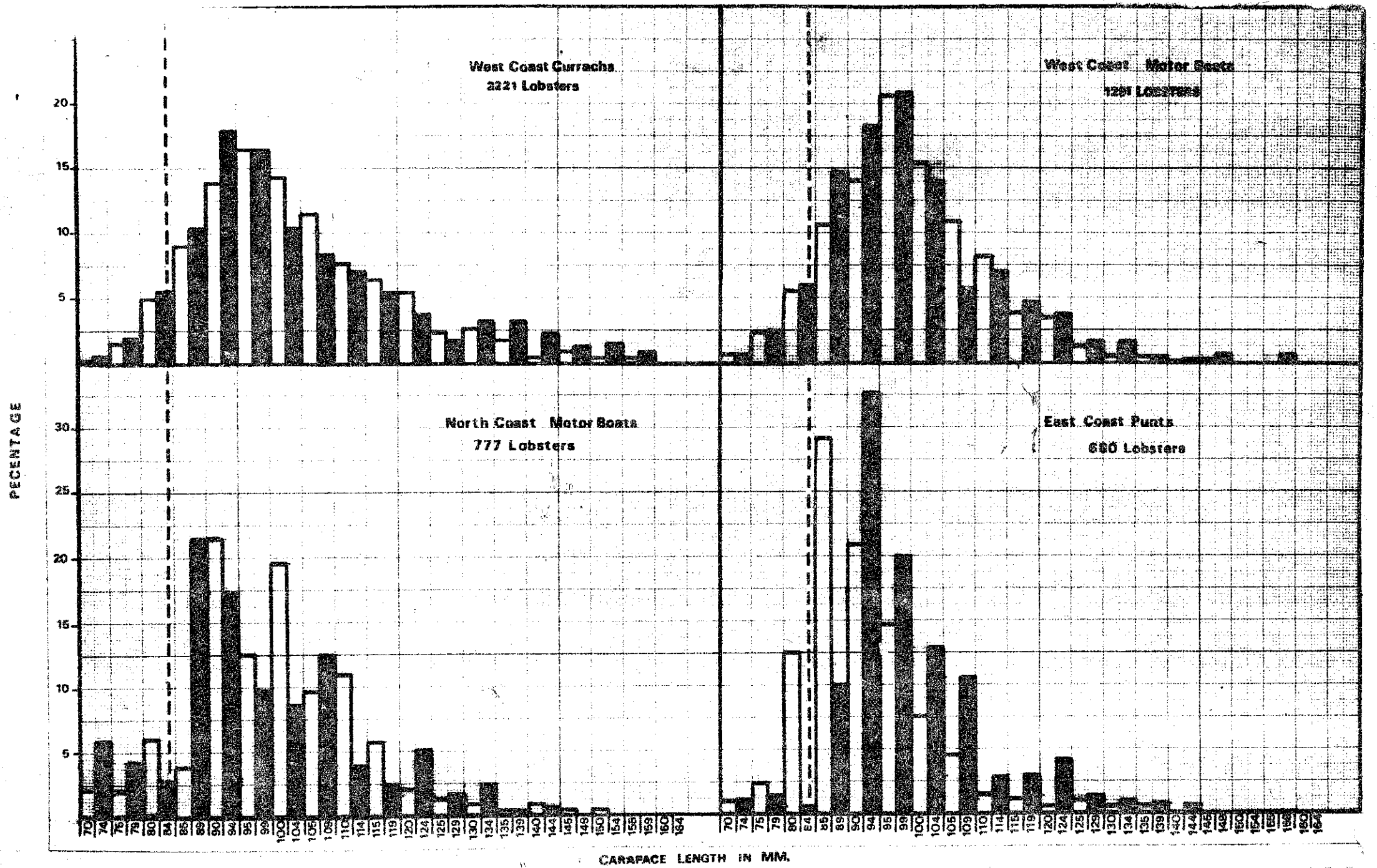


FIG. 3. PERCENTAGE OCCURRENCE OF SIZE OF LOBSTERS IN THE LANDINGS ON THE WEST, NORTH AND EAST COAST (BLACK = FEMALES AND OPEN

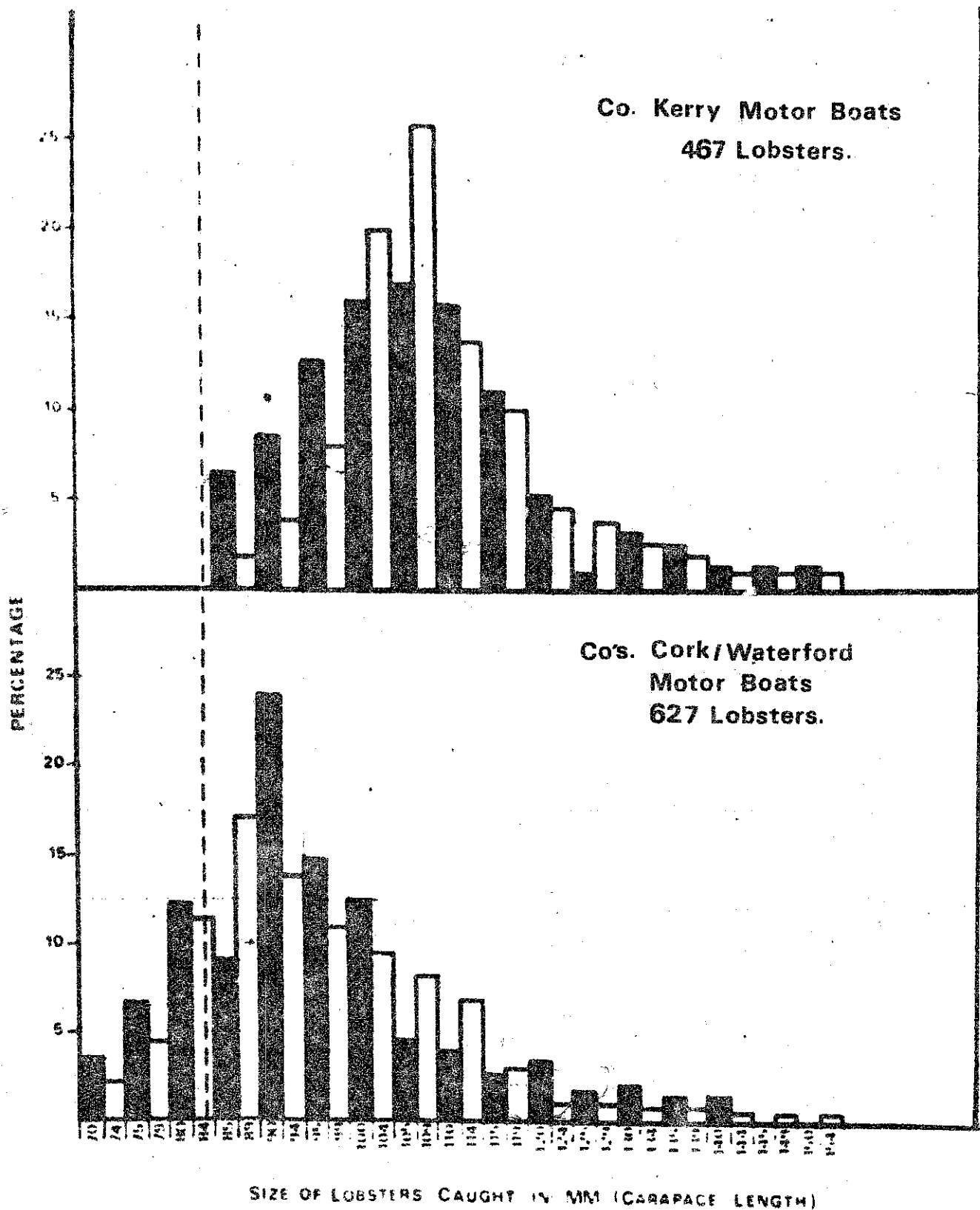


FIG. 4. PERCENTAGE OCCURRANCE OF SIZE OF LOBSTERS IN THE LANDINGS ON THE SOUTH AND SOUTH EAST COASTS (BLACK AREA = FEMALES AND OPEN AREA MALES) VERTICAL BROKEN LINE REPRESENTS THE MINIMUM LEGAL SIZE LIMIT OF 83MM CARAPACE LENGTH.