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Distribution of squid (*Illex illecebrosus*) on the Scotian Shelf, 1970-74

by

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Starting in 1970, the staff of the Department of Environment, Biological Station, St. Andrews, New Brunswick, has carried out an annual summer (June-August) bottom trawling survey of groundfish on the Scotian Shelf. The survey was based on a depth-stratified random survey design using the same vessel (*A. T. Cameron*), a standard #36 Yankee otter trawl and standard 1/2-hour trawl tows. At each preselected station, the total weight and number of each fish species were recorded as well as the starting and ending positions of the tow, depth to bottom, surface and bottom temperatures and numerous other data.

Each annual survey extended from the Fundian Channel and Bay of Fundy in the southwest to the Laurentian Channel in the northeast. The out-ward limit was the 200 fathom contour on the slope of the Continental Shelf. The inner limit was dictated by the suitability of the sea bed for trawling. It was about the 50 fathom contour between the Nova Scotia coast and the offshore banks but extended into about 20 fathoms in the Bay of Fundy. The areas off southwest Nova Scotia and the Continental Slope (100-200 fathoms) in the northeastern part of the Shelf were excluded because of excessively rough bottom and consequent difficulties in operating the fishing gear.

The extensive area covered (approximately 43,500 square nautical miles) and limited vessel time available resulted in minimal coverage of the area with an average of one fishing station per 300-350 square nautical miles on each annual survey. This coverage was sufficient to provide a gross measure of changes in relevant abundance of the various fishes, but not a detailed picture of fish distribution in any one year, or to show reliably year-by-year changes in distribution. However, assuming relatively similar distribution of the fish stocks during a given season from year-to-year, the aggregate of the five years' surveys from 1970 to 1974, inclusive, is considered to provide sufficient coverage as a basis for a qualitative account of the areas frequented by the various fish species, including squid. The number of trawl tows made in each year was: 1970 - 143; 1971 - 124; 1972 - 156; 1973 - 146; 1974 - 165: Total - 734.

The squid catch is expressed graphically (Fig. 1) as weight (kg) per tow. Most of the catches were small (<10 kg per tow), possibly a reflection of the inefficiency of the bottom trawl for capture of squid. The disposition of trawl catches in the 1970-74 period (Fig. 1) indicates that squid were widely distributed over the Scotian Shelf, but were particularly concentrated in the central and western parts and in deep water all along the edge of

the Shelf from the Fundian Channel to the Laurentian Channel. On the Shelf, there was an apparent preference for intermediate depths between 50 and 100 fathoms with relatively few and smaller catches on the banks and in the deep basins. They were noticeably absent from the Bay of Fundy.

A general comparison of annual catches in the 1970-74 period indicates that the distribution and abundance of squid were much the same from year-to-year. However, considerable differences in abundance do occur and preliminary examination of the 1976 research survey cruise results, as well as reports from fishing vessels and other sources, show that squid were exceptionally abundant on the Scotian Shelf and in the Bay of Fundy in the summer of 1976.

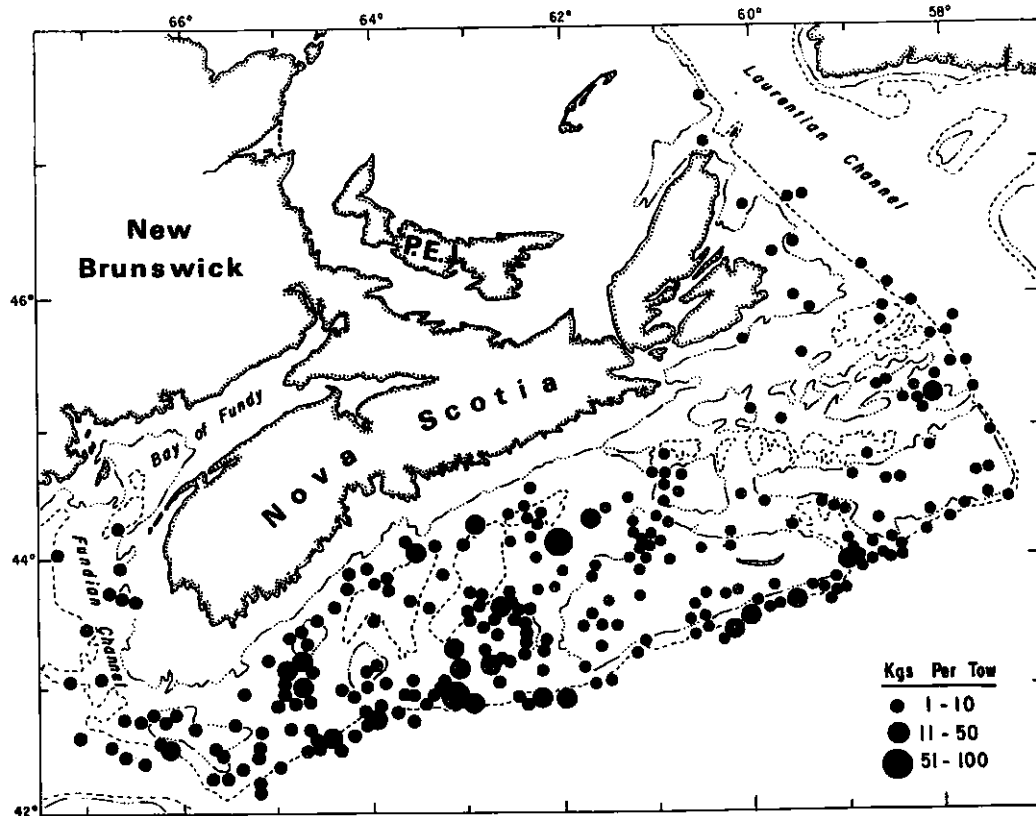


Fig. 1. Squid catches per 1/2-hour tow on research vessel trawl surveys in the summers of 1970-74.