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The Newfoundland herring fishery
and its implications concerning the resource

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Although Newfoundlanders have probably fished for herring in their inshore waters since the establishment of the first settlements on the island, it was not until 1856 that any continuing record of catch became available. Annual exports of herring products are given in the Journals of the House of Assembly, Newfoundland for the years 1856 to 1932. Annual exports by product weight are given in the Economic Bulletins of the Newfoundland Government, Department of Natural Resources for the years 1936 to 1948. Records of local food consumption and of bait sold directly to cod fishing boats (which involved large quantities of herring prior to the decline in the banking fleets in the early 1900's) are not available for this period. Since 1952, the Markets and Economics Branch of the Canadian Department of Fisheries has provided records of actual landings (as well as products) with detailed breakdowns by area and month of landing since 1956.

Prior to the development of a mobile purse seine fishery in 1965, area of landing probably coincided closely with area of capture. With the advent of the seine fishery, however, catches were transported considerable distances to processing plants and in 1967, appreciable quantities of Newfoundland-caught herring were landed at processing plants outside the province. Thus landings no longer accurately reflected catches in areas along the coast or in the province as a whole. The collection and reporting of seine catches by area and date of capture was therefore undertaken by the St. John's Biological Station beginning in 1965.

Long term trends in annual landings

Annual landings by form of utilization (food, bait or reduction) have fluctuated considerably over the history of the fishery (Fig. 1). In general, landings appear to reflect demand for the product rather than the abundance of the resource. The immediate, extensive and sustained response of landings to a heavy demand for food during and just after World Wars I and II suggests that only in such periods of high demand has the resource been exploited to an extent approaching its potential yield.

Landings have shown a similar response to the recent introduction in Newfoundland of a major industry for the reduction of herring into meal and oil. While landings processed for food and bait have remained fairly constant since 1956 at 5600 to 8700 metric tons (Fig. 1), following the introduction of the reduction fishery in 1965, total landings rose to 28,000 tons in 1966 and over 80,000 tons (preliminary estimate) in 1967.

Since the purse seine fishery supporting the reduction industry is a winter fishery extending over two calendar years, the recent increase in catch over the past three fishing seasons is even more dramatic (Fig. 2) than indicated by annual landings (Fig. 1). The increase in catch in the 1966-67 season over that in 1965-66 represents a larger increase proportionately (200%) and in quantity (47,000 tons) than between any two calendar years on record.

Regional and seasonal trends

Herring are caught on virtually the entire coast of the island of Newfoundland. However, during the present century at least, most of the catch has been taken by a few, localized fisheries operating on the south and west coasts of the island in the winter and spring (Table I).

For the century preceding the mid 1900's the Newfoundland herring fishery was located chiefly in the Bay of Islands on the west coast (Tibbo, 1956). However, in the early 1950's herring failed to appear on the traditional Bay of Islands fishing grounds. Landings in this area (Division 4R) continued at a respectable level as the fishermen shifted their efforts first southward to the Port au Port area and then northward to Bonne Bay (Fig. 3). Since 1959, almost all of the catch from Division 4R has been taken in the Bonne Bay region (Table I).

During World War I and the preceding years, the high demands for herring as food supported extensive, but smaller fisheries in Fortune Bay and Placentia Bay on the south coast (Fig. 3) and in Notre Dame Bay on the northeast coast (Tibbo, 1956). During and after World War II, the main catches outside the Bay of Islands area were taken in Fortune Bay on the south coast (Tibbo, 1957).

The recent upsurge in catch is accounted for by the development of a winter seine fishery along the western part of the south coast, mainly between Hermitage Bay and Port aux Basques (Table I). This region, which had contributed only token amounts to the catch in the preceding years, became the major fishing area in 1965-66 (Table I). As catches on the southwest coast dropped towards the end of the 1965-66 season, some seiners moved eastward to St. Mary's Bay to finish the season. In 1966-67 others finished the season in Fortune Bay. This has resulted in a sharp increase in landings in these bays, but the amounts of fish involved have been small compared to catches on the southwest coast (Table I).

The seasonal distribution of the catch has directly reflected the waxing and waning of the regional fisheries. The Bonne Bay fishery extends from mid-November to mid-January. The Fortune Bay and Placentia Bay fisheries usually take place in April and/or May but start as early as late February in some years. Consequently, during the 1950's and early 1960's, the catch peaked between November to January and again in April or May. With the advent of the south coast seine fishery in 1966, which extends mainly from late November to late April, the seasonal catch pattern changed into a broad "hump" of six months of good catches (November to April) followed by a six month "trough" of rather low catches (May to October).

The regional and seasonal distribution of the catch suggests that the Newfoundland herring fishery operates mainly on bodies of herring that migrate onshore in a broad wave in the late fall and migrate offshore again in the spring. The differences between various regions in the timing of the inshore and offshore migrations (as reflected in the catches) and the gaps between centers of concentration along the coast suggests the presence of several stocks, some of which were not evident a decade ago (Tibbo, 1956). However, these differences are not great enough to preclude some intermingling of stocks during their migrations. The

virtual disappearance of herring from the Bay of Islands area in the 1950's, after supporting a major fishery for over a century, and the sudden development of a major fishery on the western portion of the south coast in the late 1960's would indicate wide fluctuations in the survival of individual stocks. Fall spawning (spent) fish, which were absent from the Bay of Islands catches in the 1940's (Tibbo, 1956, 1957), have been prominent in the recent catches off the southwest coast (Humphreys, 1966) suggesting one source of differences in survival between the two groups of fish.

Samples of herring collected from commercial catches in the major fishing areas since 1965 are currently being analyzed for differences in age composition, growth, maturity and vertebral numbers to check, clarify and quantitatively assess these indications from the fishery.

References

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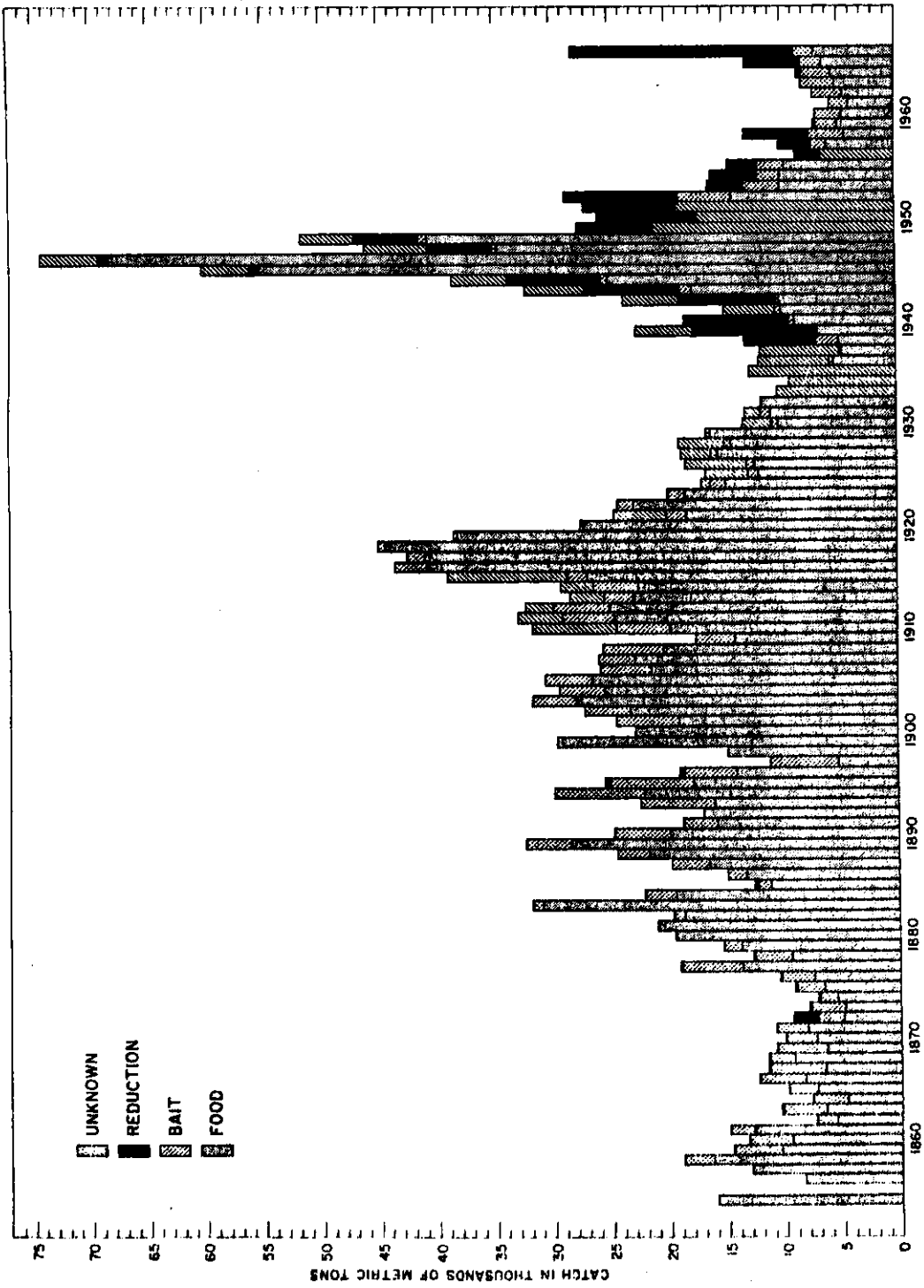


Fig. 1. Annual herring landings in Newfoundland and their form of utilization. "Unknown" represents surplus of total catch over that accounted for in product records when shown above reduction catch and combined food and bait catch when shown below reduction catch.

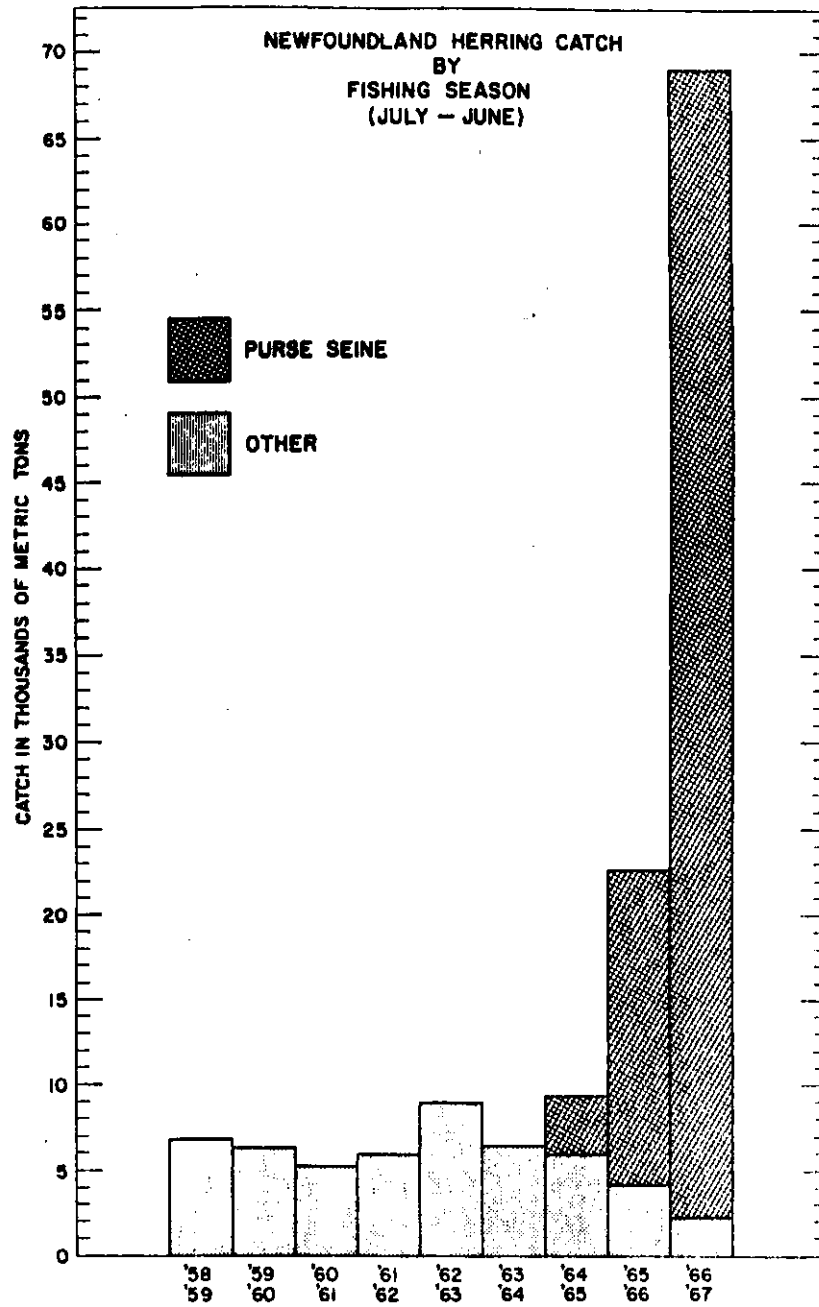


Fig. 2. Newfoundland herring landings by fishing season (July to June).

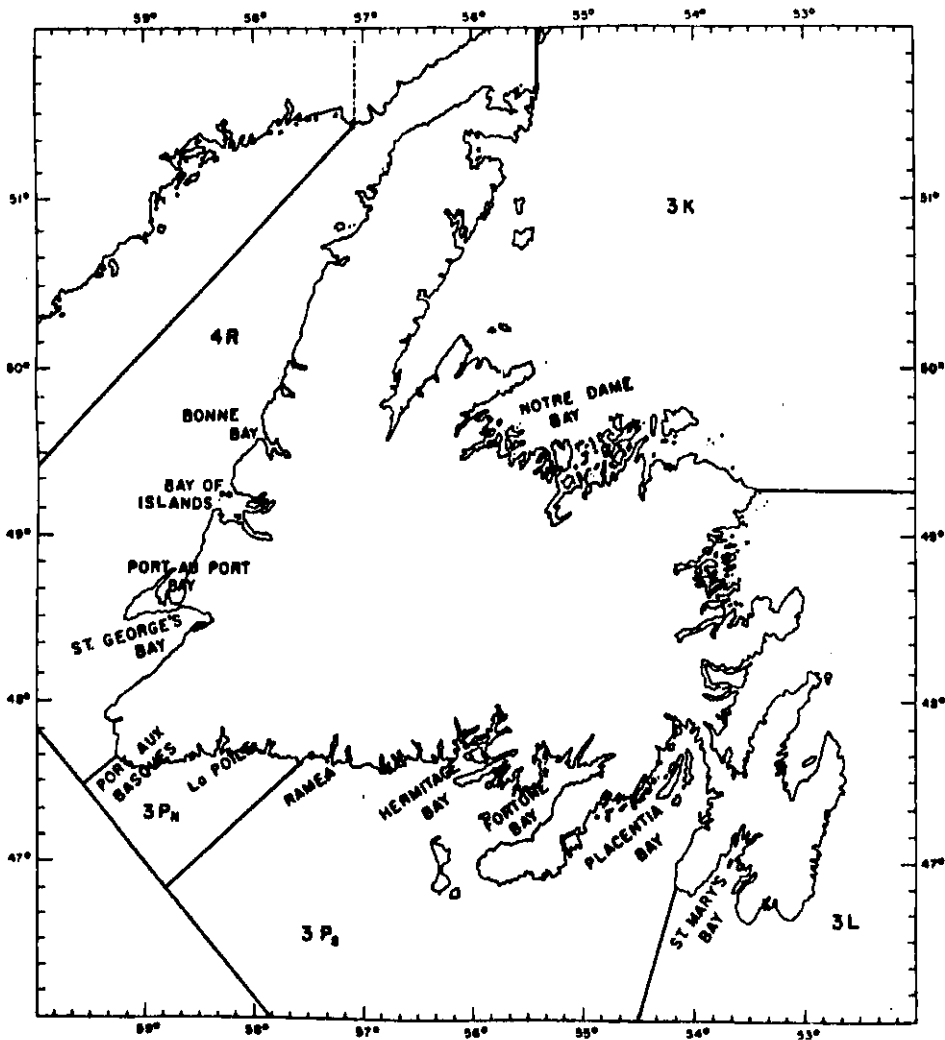


Fig. 3. Map of Newfoundland showing divisions and regions discussed.

Table I. Herring catches (metric tons) in Newfoundland coastal waters by region and fishing season (July to June) since 1953-54.

SEASON (July to June)	DIVISION AND REGION															
	3K Northeast coast	St. Mary's Bay	3L Other		3Ps Hermitage Bay			3Pn Port aux Basques		4R St. Georges Bay			Bay of Islands	Bonne Bay	Other	Total
1953-54 ^a	105.4	-	550.4	550.4	1827.4	3350.5	←	←	←	←	←	←	11534.7	-	-	11534.7
1954-55 ^a	172.7	53.9	1178.1	1232.0	1685.7	1606.6	←	←	←	←	←	←	7258.2	-	-	7258.2
1955-56 ^a	103.8	89.0	2114.2	2203.2	1047.6	552.9	←	←	←	←	←	←	2687.8	-	-	2687.8
1956-57 ^a	439.4	182.2	835.5	1017.7	678.3	97.3	←	←	←	←	←	←	2671.9	-	-	2671.9
1957-58	1245.5	221.6	3451.1	3672.7	1952.8	20.9	←	←	←	←	←	←	11455.7	108.0 ^b	32.4	11601.7
1958-59	448.6	389.4	1763.2	2152.6	1736.9	68.1	145.5	3.7	1954.2	-	67.6	67.6	2053.3	20.9	15.6	2146.1
1959-60	419.5	492.0	1639.6	2131.6	2718.8	44.0	75.5	16.9	2855.2	-	28.7	28.7	2426.9	75.8	163.8	2794.4
1960-61	474.9	603.0	1124.6	1727.6	1624.9	45.4	139.6	12.5	1822.4	-	27.9	27.9	112.0	1014.4	36.7	1241.1
1961-62	535.0	531.6	943.4	1475.0	2283.0	91.4	27.9	37.9	2440.2	14.2	22.9	22.9	88.5	1278.8	45.5	1516.2
1962-63	805.5	360.2	1506.3	1866.5	3669.1	63.8	120.7	57.8	3912.3	1.7	25.9	25.9	142.8	207.7	57.8	2485.0
1963-64	523.3	279.6	787.1	1066.7	1066.2	155.4	501.0	70.0	1792.6	90.1	59.2	59.2	128.8	200.2	44.3	3026.8
1964-65	237.8	258.5	470.9	729.4	1097.8	761.2	224.7	1588.0	3671.7	.3	442.6	442.6	158.5	213.7	14.6	4410.8
1965-66	372.5	1028.0	664.3	1692.3	2068.1	334.4	4589.8	8046.3	15038.6	-	2258.6	2258.6	104.1	209.1	53.5	4017.2
1966-67 ^c	315.7	1323.0	223.2	1546.2	230.3	5510.7	18419.5	22321.6	46482.1	6332.5	5861.7	5861.7	13.9	1645.5	28.8	9613.8

^aExcludes fish whose area of capture was not known (2156.9 tons in 1953-54, 1908.1 tons in 1954-55, 1232.2 tons in 1955-56 and 220.3 tons in 1956-57).

^bIncludes some fish from other regions of Division 4R.

^cExcludes catches by gears other than purse seine for the period January to June, 1967.