Fisheries and Oceans
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fishermen's information

The Bay of Fundy Scallop Fishery

Status and Prospects

Origins

The Bay of Fundy scallop fishery was established as a commercially important industry during the 1920's, following the discovery of dense scallop beds off Digby, Nova Scotia. The Bay of Fundy scallop fishery expanded rapidly to become the major supplier of Canadian scallops for over thirty years.

Since the development of an offshore scallop fleet after World War II, Georges Bank has accounted for the great majority of Canada's annual scallop catches. The Bay of Fundy fleet now contributes a relatively small proportion of overall scallop production but it is still of considerable importance to the Atlantic region.

Figure 1. Typical Bay of Fundy scallop operation.

Management

The Bay of Fundy scallop fishery is managed within the Scotia-Fundy Region of the Department of Fisheries and Oceans. An advisory committee comprising fishermen, processors and government provides managers with advice and recommendations on operating policy and regulations.

Limited Entry

In order to conserve stocks and improve economic conditions for participants, regulations were applied in 1972 to restrict the Bay of Fundy scallop fishery to the existing fleet. Between 1972 and 1973, approximately 60 limited entry licences were established in the fishery. Subsequently, additional licences were approved for vessels traditionally involved in the fishery, bringing the total number of licences to 94; 74 of the 94 vessels hold one or more licences for other fisheries but are primarily engaged in scalloping. Under current policy, only these licences may be renewed.

All vessels in the Bay of Fundy scallop fleet are under 19.8 m (65 ft.) length overall. Replacement for these vessels may not exceed 125% of the length of the vessel being replaced or 19.8 m (64 ft. 11 in.), whichever is smaller. These replacement vessels may not themselves be replaced with a larger vessel within the next five-year period. The licencee is permitted to drag for scallops in the Bay of Fundy as well as offshore waters of NAFO Division 4X and, with a special licence, in Subdivision 5Ze (Georges Bank). The special licence is only issued for particular fishing trips. While the special licence is in effect, all scallops caught by the vessel, irrespective of the areas fished, are regarded as having come from the offshore fishery and must comply with the maximum average meat count regulation. However, this does not apply when vessels are operating exclusively in other fishing areas. In the Bay of Fundy, the average meat count rarely exceeds this standard.

A total of 289 limited fishery licences have also been issued for inshore scallop fishing. These fishermen are only permitted to operate within 7 miles of the New Brunswick coast in the Bay of Fundy and the area defined as Lobster District No. 2 off Grand Manan Island. Vessels holding these licences are based in New Brunswick; they are for the most part smaller than the designated Bay of Fundy scallop fleet and operate in a multi-species fishery.

Fleet Characteristics

The Bay of Fundy scallop fleet is based mainly in Digby County, Nova Scotia, with additional home ports located in Annapolis, Shelburne and Yarmouth counties,

Canada

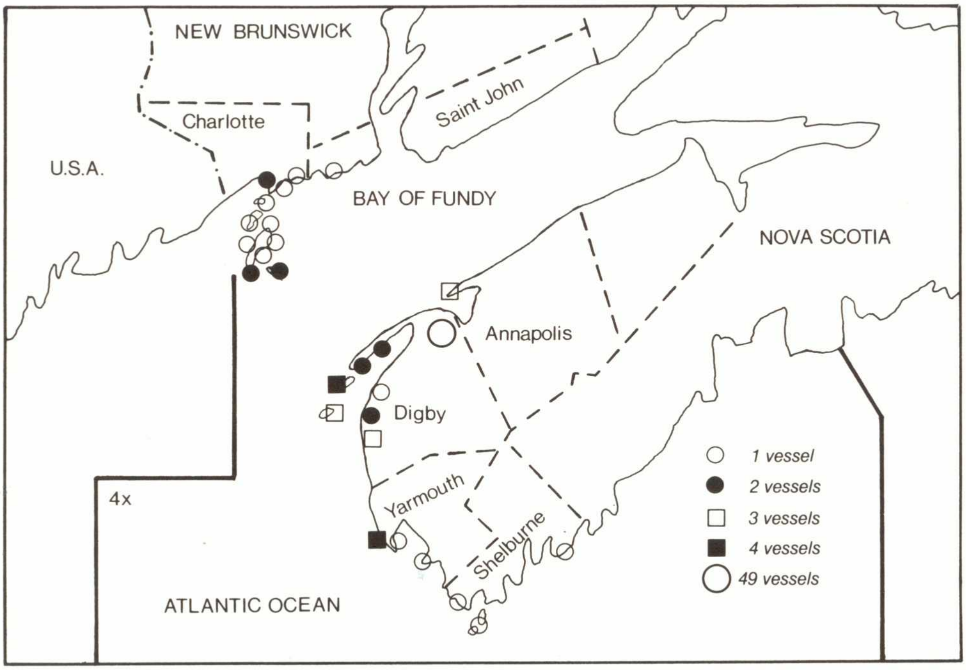

Figure 2. General location of home ports of the Bay of Fundy Scallop Fleet in 1982.

Nova Scotia and Charlotte County, New Brunswick.

Vessels vary in length from 11.6 to 19.8 m (38 to 64 ft. 11 in.). However, a large number of vessels fall between 18.3 to 19.8 m (60 to 64 ft. 11 in.). The range in gross tonnage is 11 to 104 G.T., with the majority of the fleet under 70 G.T. The age distribution of the fleet slants in the direction of newer vessels; just over half of the vessels were built between 1970 and 1982.

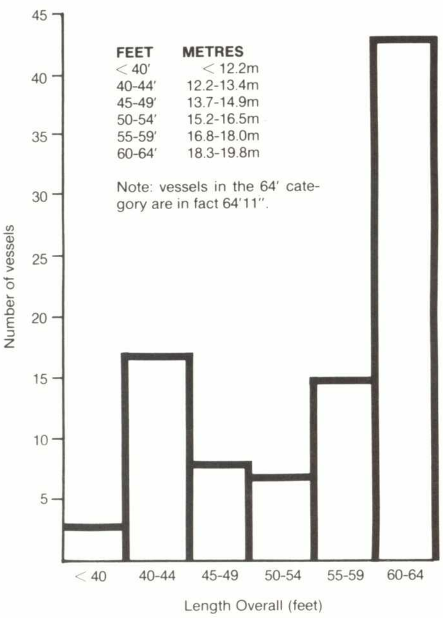

Figure 3. Distribution of Bay of Fundy Scallop Vessels by Length Overall (1982)

These draggers tow up to 7 drags at a time, attached to a long metal bar. Each drag consists of a 75 cm-wide frame with a bag made of wire rings attached, each, 76 mm in diameter. When fishing offshore on smoother bottom than normally found in the Bay of Fundy, fishermen often use a chain-sweep drag consisting of a frame about 3m wide with one large bag attached.

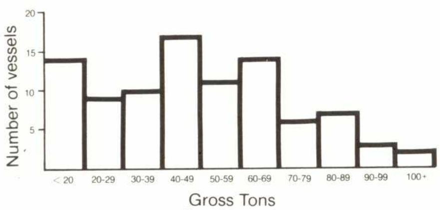

Figure 4. Distribution of Bay of Fundy Scallop Vessels by Gross Tonnage (1982)

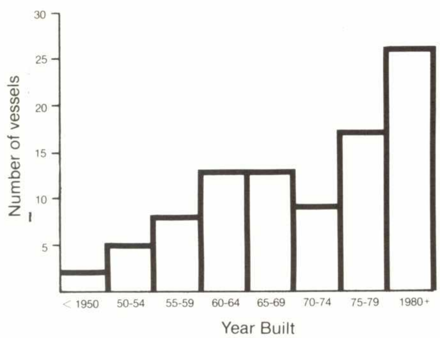

Figure 5. Distribution of Bay of Fundy Scallop Vessels by Year Built

Fishing Grounds

The traditional beds off Digby have continued to be important fishing grounds for the Bay of Fundy scallop fleet. However, in recent years a ground off Grand Manan Island has also been a focus of activity. Extensive fishing has been undertaken on the lower reaches of the Bay of Fundy, the southwest Scotian Shelf, and Georges Bank.

There are Bay of Fundy scallop draggers in operation every month of the year but the major catches are made between April and November. When fishing in the Bay of Fundy, trip duration is one day, while scalloping offshore on the Scotian Shelf it varies from two to three days and when on Georges Bank from four to five days.

A zone, 6 nautical miles from shore and stretching a total distance of 30 miles along the coasts of Digby and Annapolis counties, is closed to scallop fishing from May 1st to September 30th each year. This was established due to recommendations from the area's scallop fishermen. The purpose of the regulated closure is to leave stocks nearer to shore undisturbed so as to complete their summer's growth and also to reserve this area for unfavorable weather months in winter.

Scallop Stocks

Biological reports indicate that beds in the Bay of Fundy have recently been supporting the fishery well above the long-term average yield. This is mainly due to new concentrations occurring off Briar Island, Digby Gut and Grand Manan. However, stock assessments suggest that this above-average abundance of scallops has been largely depleted and, unless new concentrations are found, landings may be expected to decline to more traditional levels. The 1982 landings have been considerably lower than those in 1981.

Recent stock levels on Georges Bank and the Scotian Shelf have been reported to be at the long-term average of around 8,000 t (meat weight). They have declined from higher levels which were a result of above-average recruitment in the early 1970's.

Quota

Annually, the Bay of Fundy fleet is permitted to drag scallops on Georges Bank until it reaches a maximum of 2.9% of the total landings from the area during the previous year. However, there are no restrictions on the quantity of scallops which may be landed by these vessels in other fishing areas.

Landings[1]

In 1981 the Bay of Fundy scallop fleet landed 1,408t of scallops valued at $13.8 million. The catch was up over 1980 by 62%, reflecting both an increase in the

[1]All references to Bay of Fundy scallop fleet landings are from data compiled by the Statistics Division, DFO Halifax and apply only to landings by vessels over 25.5 G.T.

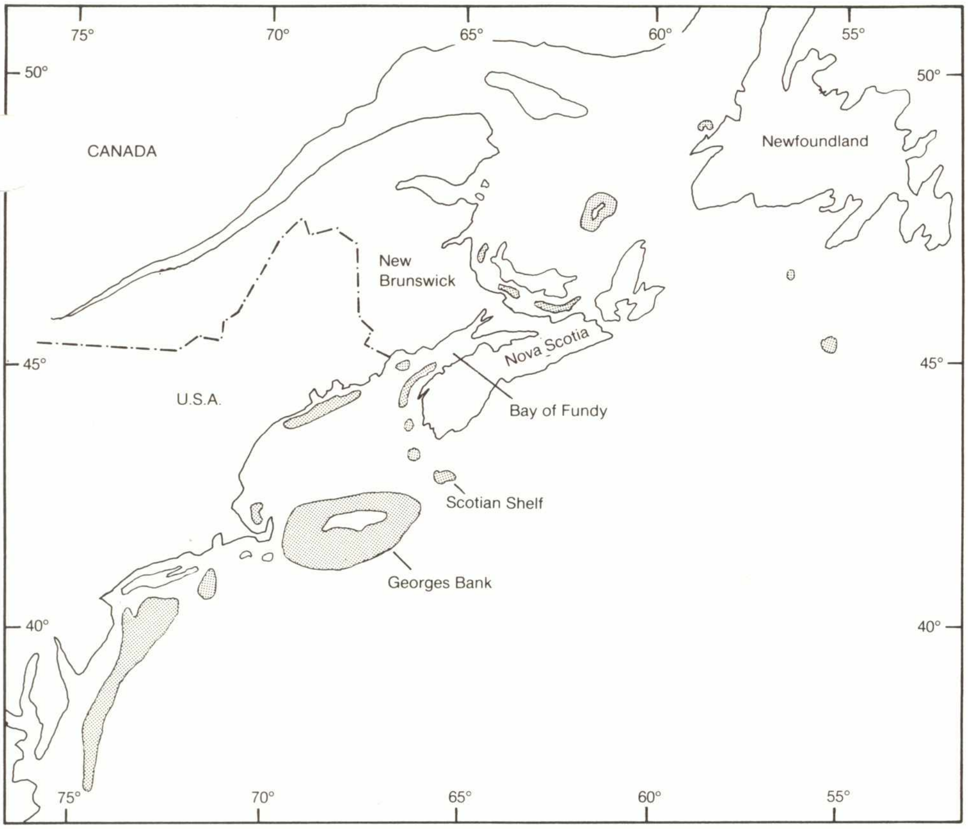

Figure 6. Sea Scallop concentrations in the northwest Atlantic. After G.S. Jamieson. 1981 ***The Sea Scallop,*** *Underwater World fact sheet. Communication Branch, Department of Fisheries and Oceans, Ottawa.*

nber of active vessels over 25.5 G.T. (75 1981 as opposed to only 59 in 1980) and the fleet's continued success in finding new scallop concentrations.

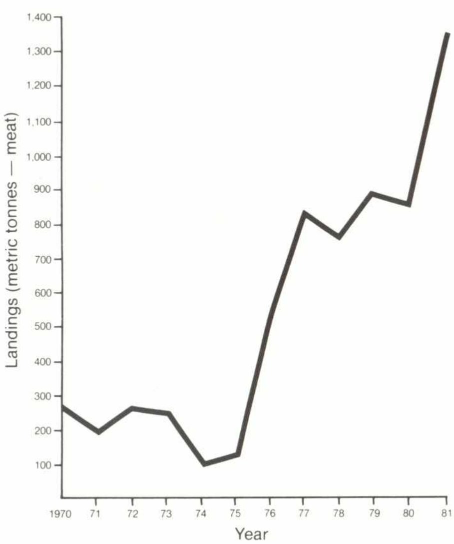

Figure 7. Scallop landings by Nova Scotia-based Bay of Fundy scallop vessels over 25.5 gross tons (1970-1981).

Historical statistics of scallop catches, for the period 1970-1980 with respect to Nova Scotia based Bay of Fundy scallop vessels over 25.5 G.T., illustrate an upward trend in annual fleet landings since 1976.

From 1970 to 1975 landings fluctuated below 300 t, then rose sharply in 1976, peaking in 1977 at 825 t. The 1981 landings by Nova Scotia vessels represent an increase of nearly 66% over the peak achieved in 1977.

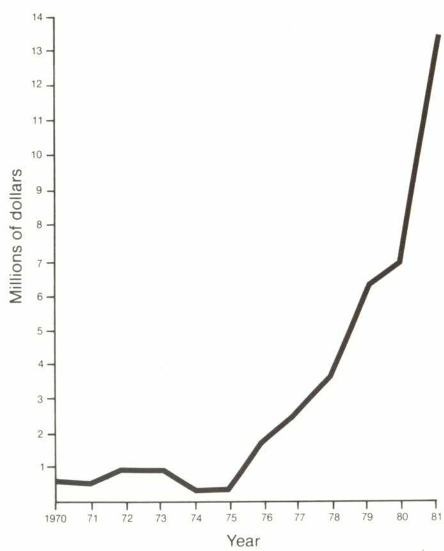

Figure 8. Value (current dollars) of scallop landings by Nova Scotia-based Bay of Fundy scallop vessels over 25.5 gross tons (1970-1981).

Landed Value

As a percentage of the total landed value of scallops in the Maritime Provinces, the contribution of the Bay of Fundy scallop fleet is small, amounting to 14% in 1981. However, at the local level, its growing importance over the past six years is clearly shown by statistics compiled for the Nova Scotia based vessels over 25.5 G.T. After passing the $1-million mark in 1976, the landed value has risen steadily to just over $13-million in 1981.

Taking inflation into account, as registered in the consumer price index during the period from 1972 to 1977, there was a slight decline in the landed price of scallops per tonne in constant dollars. Between 1977 and 1980 the scallop price index in constant dollars increased markedly but remained essentially unchanged from 1980 and 1981.

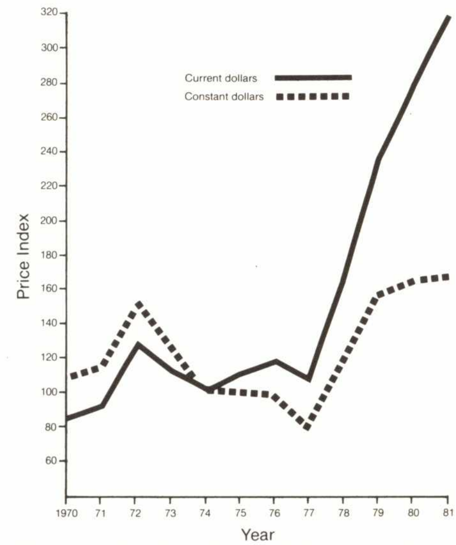

Figure 9. Scallop Price Indices (1970-1981). (1974 = 100)

Markets

The great majority of scallops landed in Canada are exported to the United States through extensive marketing networks existing between the two countries. Scallop products, mainly fresh-frozen scallop meats, are processed in Canada and trucked to wholesale centres in New England. There are about 13 firms engaged in scallop marketing in the Bay of Fundy region. These are located in Digby and Annapolis counties, Nova Scotia and in Charlotte County, New Brunswick.

There is no tariff on Canadian scallops entering the United States but, under a program established in 1982, all fresh scallop exports to the U.S. must be certified by the Government of Canada as having been caught in accordance with Canadian scallop management regulations. This is to ensure that American imports of scallops caught on Georges Bank conform to their regulated meat count. Inshore landings from the Bay of Fundy are certified for export to the United States and, under Canadian regulations are exempt from a meat count standard.

Statistics in recent shellfish market bulletins published by Fisheries and Oceans, Marketing Services Branch, show that scallop exports to the United States declined by 19% between 1978 and 1979, dropped another 17% in 1980 but rose in 1981 to approach the 1979 level. However, it may be noted that, as a percentage of the total annual Canadian scallop catch, exports to the U.S. have remained fairly steady averaging around 80%. An average of 4% is exported to other countries, mainly in Western Europe, and the remaining 16% is marketed in Canada.

In 1981, high landings of lower priced calico scallops in Florida were reported to have exerted a depressing influence on the U.S. demand for northern sea scallops but the situation improved during 1982. The effects of the calico scallop catches were reduced because of a drop in Canadian and American landings of sea scallops, as well as a somewhat lower level of calico scallop landings in the United States.

There is conflicting evidence regarding the extent to which the quantity of scallops demanded by U.S. consumers responds to changes in price. It appears, however, that over the long-term, demand is fairly elastic. With respect to landings, this implies that a decrease in the quantity of scallops brought to market would result in an increase in their price but would lower total revenue for producers and sellers. Analyses also indicate that as consumer incomes rise, a proportionately greater increase in the price of scallops tends to occur.

Economics of Vessel Operations

Ownership

Licensing records indicate that most of the Bay of Fundy scallop vessels are owner-operated. Ownership is spread among 76 individuals and 18 firms.

Labour Input

Based on an average of 4 crew members per vessel (including the captain), it is estimated that about 376 fishermen are engaged in the Bay of Fundy scallop fishery.

Operational Performance[2]

A 1981 fleet sample of 3 vessels indicated that an average of 55 trips and 97 days at sea (per vessel) resulted in average annual meat landings of about 31.2 t valued at $296,017. The average vessel output per hour of fishing was recorded at 25.9 kg or $245 and the average output per person-day at sea was 80.3 kg or $763.

Based on 1981 cost and earnings data and assuming an opportunity cost of capital of 10%, the average scallop vessel selected required about 20.7 t of scallop meats (or 29.9t at 20% opportunity cost of capital) in order to break-even (i.e. $0 profit).[3] The average net annual return per crew member including the captain is just above $29,533 at the 1981 level of operations. Additional income would accrue to those operators holding licences in other fisheries. It should be emphasized that this cost and earnings survey is not representative of the fleet as a whole since the vessels sampled tend to be above average in size and performance and newer than average in terms of age. The cost structure and crew returns, and the consequent break-even requirements of the remainder of the fleet, are probably substantially lower than the sample.

Fishermen receive a share of the gross landed value of each catch and although share arrangements may vary from one vessel to another, a widely used formula is 60% going to the crew and 40% to the vessel. Operating expenses such as fuel and food are generally deducted from the percentage designated as crew share.

Prospects

Given that recently productive scallop beds in the Bay of Fundy are now close to depletion, the fleet appears to be facing a period of adjustment to considerably lower catch levels than experienced in the past few years. Although some possibility exists that new scallop concentrations will be discovered, stock assessments suggest little reason for optimism and it is anticipated that such new concentrations, as may be located, will be small. Bay of Fundy fishermen are likely to see further increases in the price of their scallops as a result of lower landings by Canadian and American offshore scallop fleets which will, at least partially, offset the lower catch forecasts.

[2]*Information pertaining to the average operational performance of vessels is based on data for a 3-vessel sample of Nova Scotia — based Bay of Fundy scallop vessels (above 25.5 G.T.) reported in* ***Cost and Earnings of Selected Fishing Enterprises Nova Scotia 1981****, Economics Division, Fisheries and Oceans, Scotia-Fundy Region and Nova Scotia Department of Fisheries, Halifax, September 1982.*

[3]*A (straight line) depreciation rate of 6.67% in the case of wooden vessels and 5% for fiberglass was applied on the initial average vessel cost of $357,921 (plus improvements or additions less removals) over an estimated economic vessel life of 15 or 20 years respectively for wooden and fiberglass vessels.*

The opportunity cost of capital provides a measure of the forgone return on capital invested in this rather than the next best alternative investment.

Further Reading

Jamieson, G. S. 1981. *The Sea Scallop.* Underwater World Fact Sheet. Communications Branch, Department of Fishe[ries] and Oceans, Ottawa.

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