



Southern Gulf of St. Lawrence Herring Fishery

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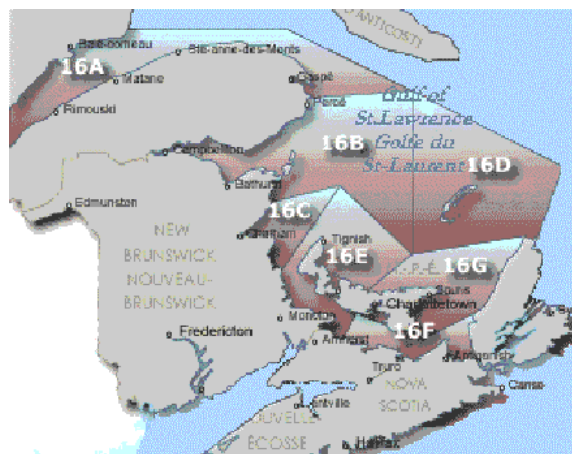
History of the Commercial Herring Fishery

The Atlantic commercial herring fishery has been in existence since the late 1800s in the Southern Gulf of St. Lawrence and has been very important for the fishermen of St. Georges Bay. Until the late 1970s, the species were mostly used for bait, fishmeal, and farm field fertilizer due to stock abundance and low commercial value. From the 1950s up until the 1970s herring landings and values for the whole Southern Gulf of St. Lawrence were fairly stable. The 1970s though, saw many changes and transitions in the global market. In 1972, the Total Allowable Catch (TAC) management system was introduced to the herring fishery, and in 1978 the face of the herring fishery changed with its transition to a commercial food fishery. Although the species was still being used as meal and bait, the expansion of the fishery resulted in increased landed value, an increase in employment for processing and an overall increase of value added (DFO 1977).

The transition to a food fishery occurred in the late 1970's as a result of the expansion of two significant markets. The first market that opened up to Canadians was the European market and was due to significant declines in the North Sea herring landings. The second market opened up when the Japanese were expelled from traditional herring grounds in various locations. Canadians have managed to maximize their involvement in these markets and now have established trade relations with Japan where there is a large herring roe market. The roe market constitutes a very valuable sector of the Southern Gulf's herring fishery and has become the driving force behind the fall inshore landings (DFO 1998). The roe is extracted, frozen, and then exported to Japan, the only market available for herring roe. The three main types of roe sold in Japan are: salted roe, flavored roe, and roe mixed with other seafood products (DFO 1999). Landings are market driven which results in high fluctuations in value. Historically, the value for roe herring has ranged between 3-4 cents/pound in 1991 to 18-20 cents/pound in 1996 (DFO 1998, 2001).

There have been various changes in gear used to fish herring over the past century. Until the mid 60s, herring was fished with gill-nets on the spawning grounds. It was in 1965 that purse seiners were first permitted to enter the fishery. In just five years the number of seiners fishing herring in Herring Fishing Area (HFA) 16 had reached 65 (see Figure 1).

Figure 1: Herring Fishing Areas in the Southern Gulf of St. Lawrence



Source: Department of Fisheries and Oceans website http://www.glf.dfo-mpo.gc.ca/fm-gp/maps-cartes/images/map_herring-hareng_zone.gif

Little is known about the herring's preferred habitat but it is known that spawning occurs anywhere between April and October, often concentrated between the months of May and September. Preferred habitat for spawning grounds tends to be sea-beds mostly composed of rock, gravel and algae where the eggs can easily adhere to the hard substrate (DFO 1984).

Historically, spawning areas were determined to be along the eastern shore of St. Georges Bay and near Port Hood for the spring spawners, and west of Cape George and between Port Hood and the Margaree River for the autumn spawners (Davis et al. 1999). In 1982, Lambert et al. reported that the largest spawning sites were located at Malignant Cove and Havre Boucher for both the fall and spring stocks. The most recent report of spawning grounds stated that small numbers have been seen at Ballantynes Cove and Port Hood (Davis et al. 1999).

Today, for the fishermen of St. Georges Bay, the herring remains instrumental mostly as a bait fishery as it continues to be low in commercial value and

Integrated Fisheries Management Plan for Herring (HFA 16)

Recently, in 1999 a new management strategy was introduced to the herring fishery. The “Integrated Fisheries Management Plan” uses the existing TAC management system while integrating people from different sectors of the industry with DFO Science Branch to act as a collective governing body. The reason for the change of management strategy was largely due to quotas of 1997 and quotas of previous years not being caught. In Herring Fishing Area 16F, the fishermen were becoming concerned.

Many fishermen in the Southern Gulf of St. Lawrence began working with DFO to create a more effective and efficient management plan. Greg Egilsson, a local fisherman, was particularly instrumental in setting up the new management plan and today he is president of the Gulf Nova Scotia Herring Federation. In this role he has been able to work together with DFO to implement a grassroots management plan. The Gulf NS Herring Working Group is an advisory group formed by fishermen, to work with fishermen, processors, and DFO to establish the yearly management strategy. The one year management plan covers the spring and fall herring fisheries and revolves around the establishment of Total Allowable Catches (TAC.) The TAC is divided between the inshore fleet and the large seiner fleet for the spring and the fall fishery. The inshore fleet fishes the TAC on a competitive basis and the seiner fleet fishes their TAC on an Individual Transferable Quota (ITQ.)

Table 1: Features of the HFA 16 Management Plan

Measures (HFA 16)	Inshore Fleet	Large Seiners
Limited Entry Licenses	YES	YES
Fishing Areas	YES	YES
Quotas	Competitive	ITQ
Seasons	YES	YES
Opening Dates	YES	YES
Trip Limits	YES	No
Weekend Closures	Most	No
Spawning Area Closures	No	YES
Gear Types	YES	YES
Minimum Mesh Size	YES	YES
Fish Size	No	YES
Catch Monitoring	YES	YES
<i>Source: Integrated Fisheries Management Strategy 1999</i>		

How is Total Allowable Catch Determined?

The Gulf NS Herring Working Group decides on the TAC by looking at the information gathered from two different, annual surveys. A bottom trawl survey is carried out in September and an acoustic survey in September–October. These surveys are used to collect data pertaining to age structure and catch rates. DFO also collects information directly from fishermen through an annual telephone survey of 20-25% of the active herring gill netters. This survey has been conducted since 1985 and provides very valuable information on effort, numbers of nets used, mesh sizes, and opinions on stock abundance. Fall abundance was reported as being the same or less in 1998 by comparison to 1997, while Spring abundance was felt to be the same for both years (DFO 1999:6).

Trends in Landings

When looking at the trends in landings and values, it is evident that they have experienced significant increases over the past five decades (see Figure 2). Although the data has not been found for the 1970s, this is where the major transition to a higher volume, higher profit fishery was made. As previously discussed, the 1978 transition from a fish meal fishery to a food fishery was the event that caused these changes. The landings for the 1990s show that they were 22 times higher than the landings reported in the 1950s. Since the 1980s, both landings and values have been somewhat more stable but landings and values for the 90s were still double those of the 80s (values have not been converted into constant dollars).

Figure 2: Herring Landings and Values for Gulf Nova Scotia 1953—1999

This graph looks at landings for the Southern Gulf of St. Lawrence but indicates the general trends in herring landings and values that were also seen in the smaller area of St. George’s Bay. Unfortunately, data for the 1970s and early 1980s is not available.

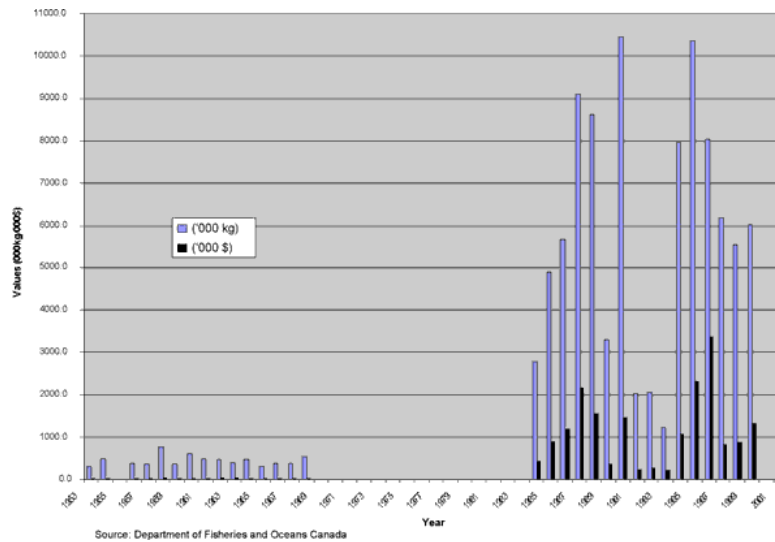


Table 2: Herring Landings by Decade

Decades	Landings (000 kg)
1950s	2669
1960s	4029
1970s	data not available
1980s	34367
1990s	59834

Current Stock Status

When calculating the stock status of a fishery, DFO Science Branch tends to look at larger areas than a single bay or strait. For this reason, this paper summarizes the stock status of the herring fishery for the entire Southern Gulf of St. Lawrence. Stock status is calculated for two separate components; the fall spawner component and the spring spawner component. The F0.1 Harvesting Strategy has been used in past years to establish the overall Total Allowable Catch. F0.1 is a variable used by biologists in a mathematical formula to estimate how much harvesting can be done in a fishery without depleting future stocks.

For the fall spawners, the inshore catches for 2000 were equal to 1999 at 59,086 tonnes. These catch rates were the highest since the time series began in 1978. During a phone survey of the inshore fleet, a general opinion of increased abundance was similarly expressed. Expressed data for 1995 and 1996 show that spawners in all age classes were estimated then to be the most abundant since 1978. As a result, the biomass for 2001 for all herring four years or older has been estimated to be at its highest level since 1978 (DFO 2001). Using the F0.1 mathematical formula, DFO has calculated that catches in 2001 will have to be below 51,000 tonnes in order to minimize the risk of exceeding the sustainable harvest level of the fishery. According to DFO calculations a harvest of 51,000 tonnes would mean that the risk of exceeding a sustainable catch would be 25%. Higher risk factors have been used in previous years when setting the TAC (DFO 2001).

For the spring spawners, landings for 2000 were reported at 16,703 tonnes, exceeding the TAC of 16,500 tonnes. The stock status of spring spawners is much lower than that of the fall spawners. This is not a development that has started over the past five years but is the consequence of a long term decline in numbers. The spring spawner inshore catches for 2000 were the second lowest since 1990. Spawning biomass for herring four years and older has been on the decline since 1995, and at the same time was over-exploited in 2000 (DFO 2001).

Future of the Herring fishery

In Canada and abroad, we have begun to realize the need for local control and input from all sectors of the fishing industry. With integrated fisheries management strategies such as the one discussed in this paper, perhaps those involved in fisheries management and those who harvest its resources will be increasingly equipped to adequately manage future stocks. Even though we know that herring continues to be an abundant and instrumental species for the fishermen around St. Georges Bay, it is essential that we continue to look at the future of the herring fishery objectively and with much caution, particularly since herring is a cornerstone species in the marine ecosystem.

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