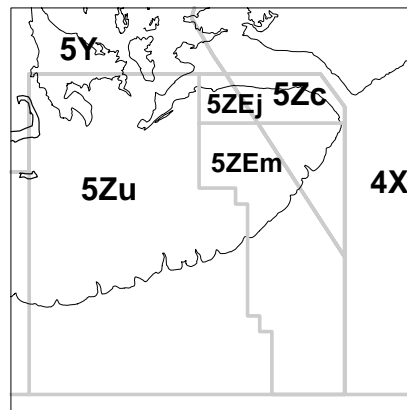


GEORGES BANK HERRING



Background

Atlantic herring is a pelagic species which occurs in the inshore and offshore waters on both sides of the Atlantic Ocean. In the western Atlantic it ranges from Labrador to Cape Hatteras. Herring are recruited to the spawning stock between ages 3 and 4 at 23 to 27 cm (9.0 to 10.8 in).

The Georges Bank herring stock (5Z) is one of three major stocks occurring in the Gulf of Maine. Between 1961 and 1977 this stock supported the largest commercial herring fishery on the western Atlantic. High levels of exploitation combined with poor recruitment during the early seventies resulted in the stock's collapse in 1977.

The first sign of a recovery occurred in 1984 when a large number of age 1 juveniles were collected on the Bank. However, it was not until 1986 that both Canadian and US research surveys began to detect reproductively active herring on the Bank and larvae in ichthyoplankton samples.

Assessment approaches for this transboundary stock differ between Canada and the US. In the US Georges Bank forms one component of the "Coastal Zone Complex" which includes all herring stocks in NAFO areas 5Y and 5Z. Canada takes the more historical approach and assesses Georges Bank as a separate stock unit based on the spawning area in 5Z.

The Fishery

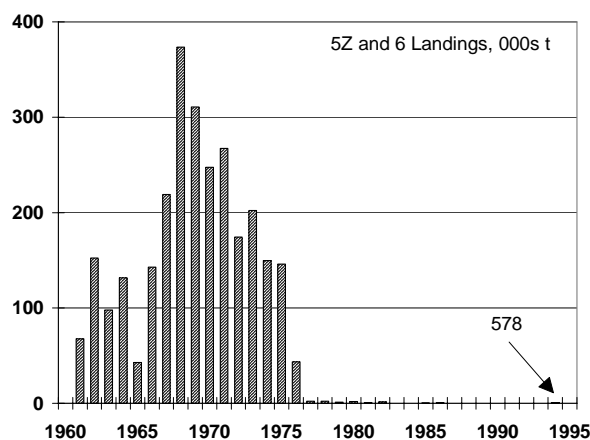
5Z and 6 Landings (thousands of tonnes)						
Year	61-70 Avg.	71-80 Avg.	81-90 Avg.	1993	1994	1995
TAC	-	150-33	0.00	5.00	5.00	20.00
TOTAL	178.5	99.00	0.30	0.00	0.58	0.00

Prior to the stock's collapse herring were fished primarily by drift gillnets (1961-63), side and stern trawlers (1963-72), mid-water trawl (1971-76) and purse seiners (1968-76) in international waters. Major foreign fleets included the USSR, Poland, Federal Republic of Germany, the German Democratic Republic, Japan and France. Reported catches during the late 1960s and early seventies exceeded 200,000t annually and are generally considered an underestimate of actual landings. Catches declined rapidly from 146,000t in 1974 to 2,000t in 1977. No directed herring fishery occurred on the bank between 1978 and 1992.

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An experimental fishery with a combined Canada/United States catch of less than 5,000t was recommended for Georges Bank in 1993 and 1994. Four Canadian purse seiners made a single excursion to Georges Bank in 1993. Although no fish were caught, the lack of catch was not attributed to the absence of fish, but to their distribution deep in the water column. Effort increased in 1994 when a total of 14 trips were made to the bank by seiners; 11 in June and 3 in July. The total catch during this period was 228t with the majority of sets occurring on the northern edge near the International Boundary. Herring landings for the US portion of Georges Bank (east of the Great South Channel) were estimated at 350t in 1994. In 1995 the Canadian recommended combined catch for Georges Bank was increased to 20,000t, based on continued signs of increasing stock biomass, however no landings were reported from the bank. Again in 1995 several excursions to Georges Bank found the herring too deep to capture by purse seine.

Resource Status

The assessment of stock status is dependent upon the evaluation of research abundance indices, general changes in biological characteristics, historical assessments and fishery information.

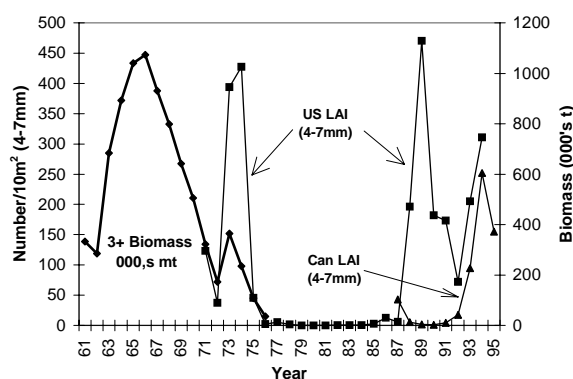
Sources of data used to evaluate the status of Georges Bank herring included the US fall bottom trawl survey (1963-1995), the US larval survey series (1971-1994), the Canadian fall herring survey (1987-1995), and the historical VPA biomass estimates (1961-1976).

Of the three indices of abundance examined for this stock only one, the US index of young larvae was considered suitable for linkage to past biomass estimates. Concern was expressed about the possibility of lost information due to the restrictive size range of this index. The US fall

bottom trawl index was discarded due to changes in catchability between the pre and post 1985 era.

The Canadian larval index, while consistent with the US index since 1992, was considered subject to variability attributable more to survey timing than abundance in earlier years. Uncertainty was also expressed about the quality of catch data used in the VPA, however, it was agreed that this was the best available estimate of biomass for the period 1961-1976.

The US index of young larvae (4-7mm) unfortunately covers only the latter period (1971-1977) of the stock decline. Peak levels were observed in 1973 and 1974 during the decline and in 1989 during the recovery.



From 1991 to 1994 both the US and the Canadian larval index increased. The 1995 Canadian index declined in 1995, but remained second highest in the Canadian series. The US larval survey was terminated in 1994.

Since 1986 the age structure from both the Canadian and US research samples have continued to indicate a strong presence of young (3 and 4 yr-old) fish in the catches. In addition, the large number of age 2 herring in the 1995 samples suggests the possibility of good future recruitment from the 1993 year-class. There was uncertainty regarding the absence of older fish in research samples. Spawning on the Canadian side of the bank was first documented in 1992 by four independent sources (Canada and US fall surveys, a seiner survey and the presence of eggs in groundfish stomachs). Both newly hatched (ie. less than 10 mm) and older larvae have broadened their geographical distribution from 1992-94; extending to the northeastern portion of the bank. Although the 1995 distribution of small larvae was contracted slightly from 1993 and 1994, larger larvae were found throughout the survey area. Spawning since 1995 appears to have returned to historical areas on the northern peak and west of Cultivator Shoals.

Outlook

The US index of young herring larvae abundance (4-7mm) has increased to about 50% of the peak observed in between 1973 and 1974. During that time VPA estimates of 3+ biomass were in the range of 200,000 to 400,000 mt. This suggests that the current Georges Bank 3+ biomass is about 100,000 - 200,000 mt. It is known that catches exceeding 100,000t, combined with poor recruitment, during the early 1970's led to a rapid collapse of the stock.. In spite of the uncertainty in the biomass estimate in recent years, a combined Canada/US catch of 20,000t would not exceed reference points commonly used for herring.

Discrepancies between the US and Canadian assessments are the result of differences in assessment unit and in the abundance indices as well. The 1995 US stock assessment reports record high biomass levels for the Coastal Stock Complex, which includes Georges Bank and the coastal Gulf of Maine (5Y), and is based on calibration with a spring bottom trawl index for the whole area. The Canadian stock assessment addresses only Georges Bank. These differences need to be discussed and methods for splitting Georges Bank herring from the rest of the Gulf of Maine need to be resolved in the near future.

For More Information

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