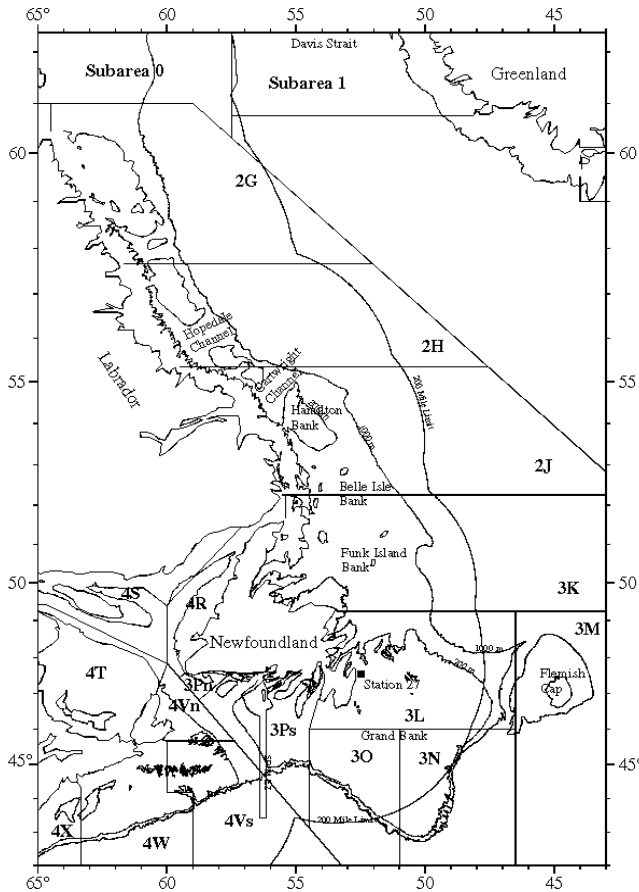




STOCK ASSESSMENT UPDATE ON GROUNDFISH IN NEWFOUNDLAND AND LABRADOR REGION



Context

In Newfoundland and Labrador, Science Branch of the Department of Fisheries and Oceans is responsible, either directly or indirectly, for advising on the status of numerous groundfish stocks located from Davis Strait in the north to the south coast of Newfoundland in the south.

In this area, there are 5 cod stocks (2GH, 2J3KL, 3M, 3NO and 3Ps), 5 redfish stocks (SA2+3K, 3LN, 3M, 3O and Unit 2), 4 American plaice stocks (SA2+3K, 3LNO, 3M and 3Ps), 3 witch flounder stocks (2J3KL, 3NO and 3Ps), 2 Greenland halibut management areas (SA0+1 and SA2+3KLMNO), 2 haddock stocks (3LNO and 3Ps), 1 yellowtail flounder stock (3LNO), 1 pollock stock (3Ps), 2 roundnose grenadier stocks (SA0+1 and SA2+3), thorny skate, white hake and monkfish in 3LNO, as well as a portion of the 3NOPs4VWX Atlantic halibut stock. In addition, there are coastal fisheries for lumpfish and winter flounder.

Scientific information on the above stocks is provided either through the DFO Science Branch regional review process or the Scientific Council of NAFO. Quotas are set by the NAFO Fisheries Commission for 3NO and 3M cod, 3LNO and 3M redfish, 3LNO and 3M American plaice, 3LNO yellowtail flounder, 3NO witch flounder, 3NO thorny skate, 3NO white hake, 2+3 grenadier and SA2+3KLMNO Greenland halibut. The NAFO Scientific Council also reviews the Canadian assessment of 2J3KL cod and 2J3KL witch flounder on an annual basis. Greenland halibut and roundnose grenadier in SA0+1 are managed bilaterally by Denmark, on behalf of Greenland and Canada. Quotas for the other stocks are set by the Minister of the Department of Fisheries and Oceans.

Detailed technical information on each of the stock assessments can be found in the research documents listed with each stock report. Technical information for the NAFO stocks is available through the NAFO SCR Document series. **This report includes updates for stocks not formally assessed in 2005.**

SUMMARY

- Prospects for rebuilding of the 2+3K American plaice stock continue to be extremely poor.
- The 2+3K redfish stock remains at a low level. Since 2001 there has been improvement in recruitment, although the average biomass index is only about 7% of what it was in the 1980s.
- Subdivision 3Ps haddock are at low numbers. There are very few mature fish and prospects for recovery do not look good under current conditions.
- Divisions 3LNO haddock are at low numbers, with very few mature fish. Any increase in population size in the near future may be dependent on the survival of the 1998 year-class.
- The 2GH cod stock remains at a low level compared to earlier periods.

DESCRIPTION OF THE ISSUE

This report provides an update on the status of **2+3K American plaice, 2+3K redfish, 3Ps haddock, 3LNO haddock, and 2GH cod**. Updated information and status was provided by the responsible scientists, and while full assessments were not conducted, the updated information was tabled and reviewed through the Regional Advisory Process (RAP) in 2005.

A Science Advisory Report (SAR) was produced for **cod in Divisions 2J3KL** (SAR 2005/024) in the winter of 2005. **Cod in Subdivision 3Ps** (SAR 2005/047), **American plaice in Subdivision 3Ps** (SAR 2005/048), **witch flounder in Subdivision 3Ps** (SAR 2005/050), and **pollock in Subdivision 3Ps** (SAR 2005/049) were also assessed regionally during the RAP in the fall 2005.

Information on the status of stocks assessed by NAFO, as well as the 2005 advice of Scientific Council, is available in the report of the June 2005 meeting (**NAFO SCS Doc. 05/18**).

ASSESSMENT

Subarea 2 and Division 3K American Plaice

This stock has been under moratorium since 1994. Bycatches across Subarea 2 + Division 3K are generally low; 34 t and 17 t have been taken in the past two years (2003 and 2004, respectively). In 2005, preliminary catch data from January to September 2005 shows the bycatch to be at slightly more than 1 t. Bycatch is mainly taken from the Greenland halibut (otter trawl) fishery and the remaining bycatch taken from gillnet fisheries. In 2004, the shrimp fishery discarded 15 t of American plaice; a partial estimate of the discards is 4 t in the shrimp fishery in 2005.

DFO research vessel (RV) surveys indicate that this stock has remained at a low level since 1991. However, in 2004, Division 2H was surveyed for the first time since 2001; the biomass index was about 1500 t, a slight increase from the 1990s. In 2004, RV survey coverage of Division 3K was incomplete; however both biomass and abundance were consistent with these indices from 2003. Overall, in Divisions 2J3K, where the majority of the stock resides, levels of biomass and abundance indicate that the status of this stock has not improved (Fig. 1 and Fig. 2). In 2004, the biomass index is only 4% of the 1980-85 average; the 2004 level is estimated at 10 000 t. The abundance index in 2004 is only 9% of the 1980-85 average; the 2004 abundance level is estimated at 71 million fish. Biomass and abundance shown on a log scale indicate that over the entire time series, both indices have declined by approximately two orders of magnitude.

Prospects for rebuilding of this stock continue to be extremely poor.

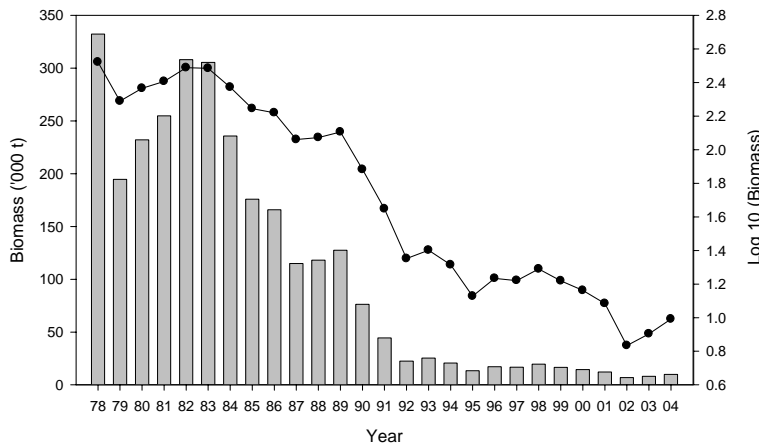


Figure 1. Research survey biomass index for Divisions 2J3K American plaice (bars), 1978-2004. All data 1978-1994 are in Campelen data equivalents. Data from 1995-2004 are Campelen data. Log scale (line) shown on the right.

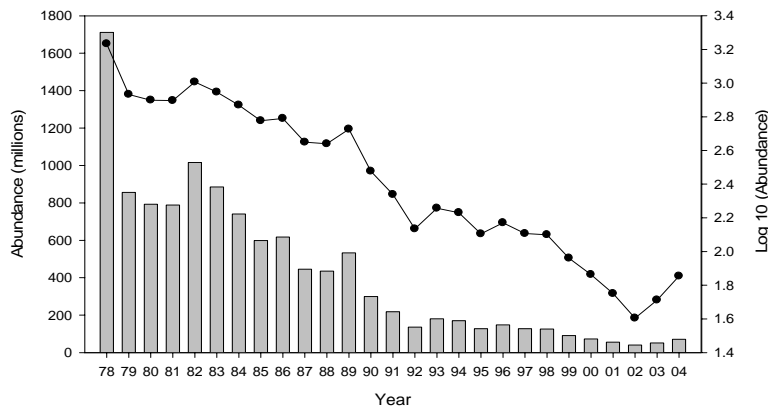


Figure 2. Research survey abundance estimates for Divisions 2J3K American plaice, 1978-2004 (bars). All data 1978-1994 are in Campelen data equivalents. Data from 1995-2004 are Campelen data. Log scale (line) shown on the right.

Subarea 2 and Division 3K Redfish

This stock has been under moratorium to directed fishing since 1997. Prior to this, there had not been a persistent directed effort on this stock since 1990 when 2400 t were landed (Fig. 3). Landings declined to 280 t in 1991, and were less than 19 t in each year from 1992-1997. Catch increased rapidly from 1600 t in 2001, to 5600 t in 2003 then declined to 5100 t in 2004. The increases beginning in 2001 were from non-Canadian directed fisheries outside the 200-mile limit in Divisions 2HJ utilizing large opening midwater trawls. It is presumed these catches were from the pelagic stock of redfish that resides primarily in the Irminger Sea between Greenland and Iceland. This stock is managed by the Northeast Atlantic Fisheries Commission (NEAFC). In recent years mid-summer trawl-acoustic surveys of this Irminger Sea population, conducted by member countries of NEAFC, have measured a portion of the concentration within the SA 2 + Division 3K boundary in the NAFO Regulatory area. Canadian landings since the moratorium in 1997 are from bycatch in Greenland halibut fisheries and have been less than 40 t with the exception of 2004 when 170 t were landed.

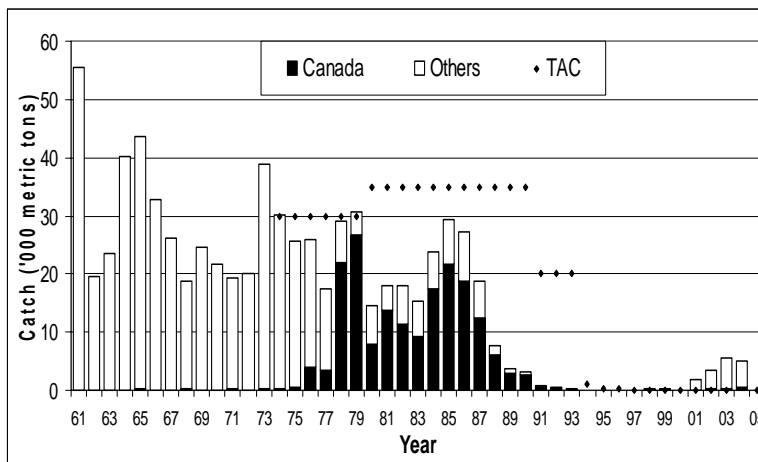


Figure 3: Reported catches and TACs (t) for redfish in SA2+Div. 3K.

Based on observer data, estimates of redfish bycatch discarded from shrimp fisheries in the Division 2G to Division 3K area since 1980 have ranged from 14 t in 1983 to 665 t in 1990. In recent years, discard estimates have increased from 60 t in 2000 to 252 t in 2004.

Results from **research vessel surveys** in Divisions 2J and 3K suggest the resource was at an historically low level in 1994 (Fig. 4). The survey biomass index increased by a factor of six from 1994 to 1998 and has averaged about 34,000 t to 2003. In 2004 the survey estimate was 63,000 t. The average of the index from 2001-2004 was only 7% of the index averaged from 1981-1990, a period over which the index began to decline.

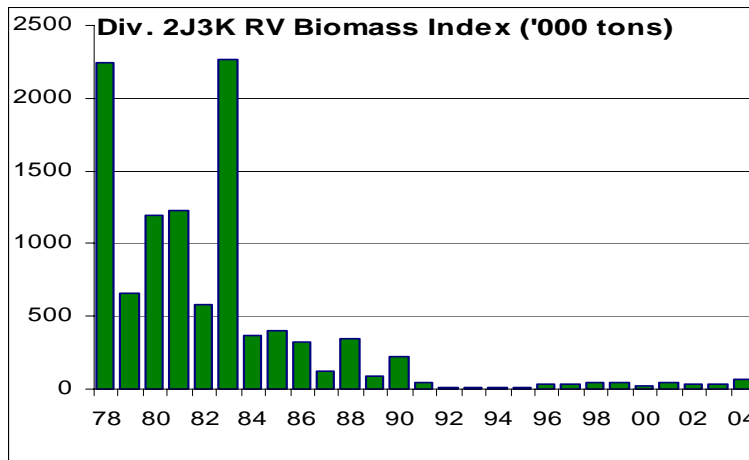


Figure 4: RV Biomass Index for redfish in Divisions 2J3K.

There has been an improvement in recruitment from the 1997, 1998 and 2000 year classes (Fig. 5, fish less than 19 cm), although these are considered poor in comparison to year classes of the early 1970's. Prior to the 1990s a substantial portion of the stock was comprised of fish greater than 30 cm (fish 15 years and older). Since 1994 these older fish are not well represented in the survey abundance even though exploitation is assumed low.

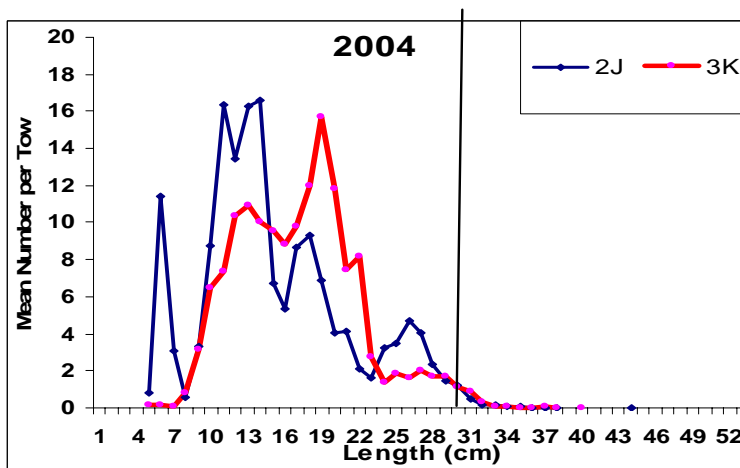


Figure 5: RV length distribution Index for redfish in Divisions 2J3K.

This **stock remains at a low level**. Since 2001 **there has been improvement in recruitment**, although the average biomass index is only about 7 % of what it was in the 1980s.

Subdivision 3Ps Haddock

Catches of haddock in Subdivision 3Ps since 1960 have been mainly in the 1000 to 2000 t range, increasing to 7500 t in 1985 then falling below 1000 t after 1990 (Fig. 6). The preliminary estimate of catch in 2004 is 318 t. The increase in the mid-1980s was a result of a relatively

strong 1981 year class and increased effort by France. A moratorium on cod established by Canada in 1993 and small bycatch quotas have resulted in decreased catch.

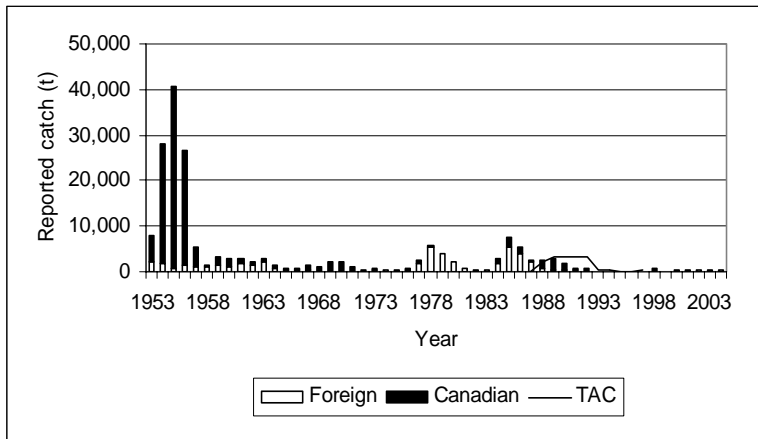


Figure 6: Historical landings and TACs for haddock in Subdivision 3Ps, 1953-2005.

Research vessel surveys have been conducted by Canada since 1972. The trawl indices of haddock from these surveys were low from 1972 to 1982, peaked in 1985 due to the presence of the relatively strong 1981 year class, but then declined again to low levels (Fig. 7) In the late 1990’s the survey index again increased due to the presence of the 1998 year-class. This year-class although giving the appearance of being strong has not appeared in significant numbers in recent surveys.

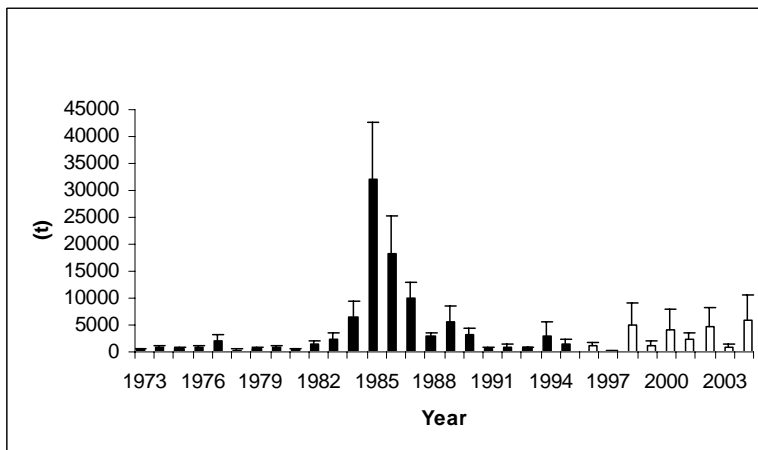


Figure 7: Biomass estimates for haddock from RV surveys in Subdivision 3Ps. The 1996-2005 points are with the Campelen 1800 shrimp trawl. Pre-1996 data have not been converted and are not directly comparable.

Haddock are thought to be at the northern extent of their range in Subdivision 3Ps due to temperature. **Currently all indicators are that haddock numbers are low. There are very few mature fish and prospects for recovery do not look good under current conditions.**

Divisions 3LNO Haddock

Catches in 2002 and 2003 were in the 300 t range and resulted from bycatch in the yellowtail fishery (Fig. 8). Provisional catches for 2004 and 2005 were only 25 and 43 t respectively. These low catches maybe partially due to efforts to reduce bycatch in the yellowtail flounder fishery

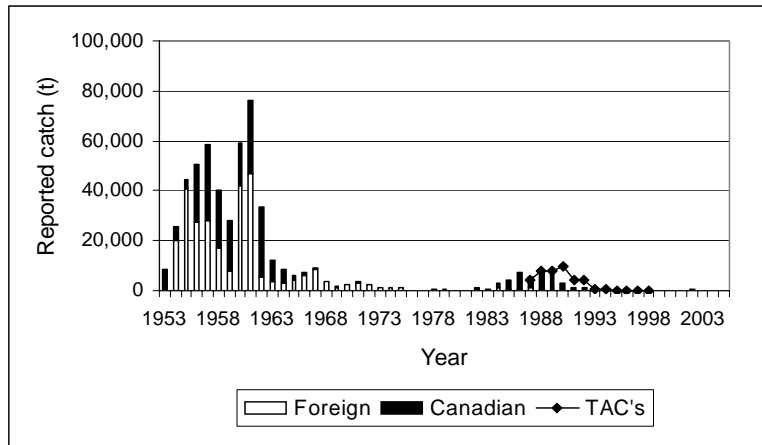


Figure 8: Landings of haddock from Divisions 3LNO from 1953-2005.

The relative abundance and biomass of this stock is measured by a Canadian **research vessel spring survey** 1972-2005 and an autumn survey 1990-2004 (Fig. 9 and Fig. 10). The spring series showed an increase in the mid 1980's attributed to the relatively strong 1981 year-class. It subsequently declined to early 1980's levels increasing again sharply in 1997 compared to 1996 due to one large catch of large pre-spawning fish. No juvenile haddock were caught during the 1997 survey. The index increased again in 1999 with the appearance of the 1998 year class and has since declined.

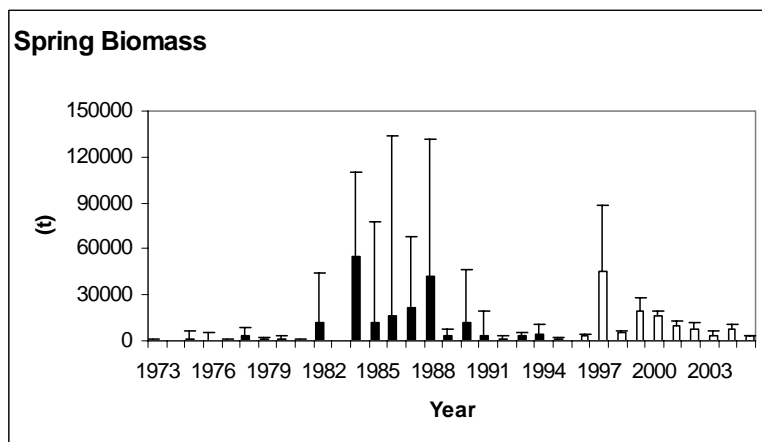


Figure 9: Biomass estimates for haddock from spring Canadian Research Vessel Surveys Divisions 3LNO. The 1996-2004 points are with the Campelen 1800 shrimp trawl. Pre-1996 data have not been converted and are not directly comparable.

The autumn survey showed a similar pattern though missing the increase in 1997. It also tracked the 1998 year-class but it has all but disappeared in recent surveys.

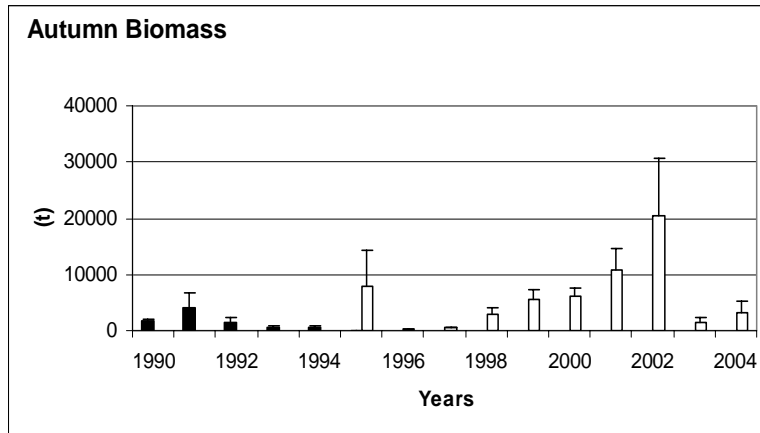


Figure 10: Biomass estimates for haddock from autumn Canadian RV Surveys Divisions 3LNO. The 1995-2004 points are with the Campelen 1800 shrimp trawl. Pre-1995 data have not been converted and are not directly comparable

The autumn surveys showed very few haddock until the 1998 survey which caught high numbers of young of the year. Biomass estimates have increased as this year-class grows. However, the most recent survey suggests that very few of this year-class have survived to maturity.

Divisions 2GH Cod

There has been no catch reported from the area since 1991 (Fig. 11). Annual estimates of discards in the shrimp fishery have been estimated to be less than 200 kg.

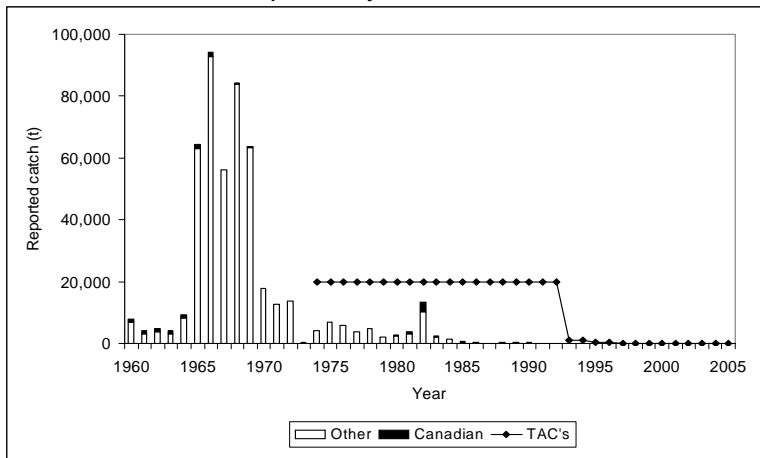


Figure 11: Historical landings and TACs (t) for cod in Divisions 2GH, 1960-2005.

Attempts by Canada to conduct semi-annual **research vessel** surveys in the area have had mixed results due to vessel problems, timing and or coverage. Nonetheless no survey has encountered significant numbers of cod.

In July of 2005 an industry survey using the same gear as the Canadian multi-species surveys was conducted covering depths from to 750 meters. The survey is to be repeated for five (5) years and will cover NAFO Divisions 2G, OA and OB. The timing is more appropriate to shrimp but it may be of use to monitor signs of recovery.

Although historically there has been no appropriate survey to monitor this stock, catch and by-catch information indicate it is currently at a low level.

SOURCES OF INFORMATION

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FOR MORE INFORMATION

Contact: Don Power
Fisheries and Oceans Canada
PO Box 5667
St. John's, NL A1C 5X1

Tel: 709-772-4935
Fax: 709-772-4105
Email: powerd@dfo-mpo.gc.ca

This report is available from the:

Regional Advisory Process (RAP) Office
Newfoundland and Labrador Region
Fisheries and Oceans Canada
PO Box 5667
St. John's NL
A1C 5X1
Telephone: (709) 772-2302/8892
Fax: (709) 772-6100
E-Mail: richardsed@dfo-mpo.gc.ca
Internet address: www.dfo-mpo.gc.ca/csas

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