



DEEPFISHMAN

**Case Study 5
Greenland halibut in NAFO subarea 2 and divisions 3KLMNO**

Socio-economic study

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November 2010



1 Introduction

There are four main Greenland halibut (*Reinhardtius hippoglossoides*) populations in the north Atlantic. These are in the Gulf of St. Lawrence (Northwest Atlantic Fisheries Organization (NAFO) Divisions 4RST), off eastern Canada (NAFO subareas 0, 1, 2 and divisions 3KLMNO), the east Greenland, Iceland and Faroe Islands population (ICES subareas V and XIV) and the north east Arctic population (ICES subareas I and II). Although considered to be a single population, the Greenland halibut off eastern Canada and off the shore of west Greenland are managed as three separate stocks; one in NAFO subarea 1A inshore, one in subarea 1A offshore and Divisions 1B-F, and one in NAFO subarea 2 and Divisions 3KLMNO. (Morgan et al. 2001). This case study will focus on the Greenland halibut in NAFO Subarea 2 and Divisions 3KLMNO. Figure 1 shows a map of these NAFO areas along with the most important topographical features.

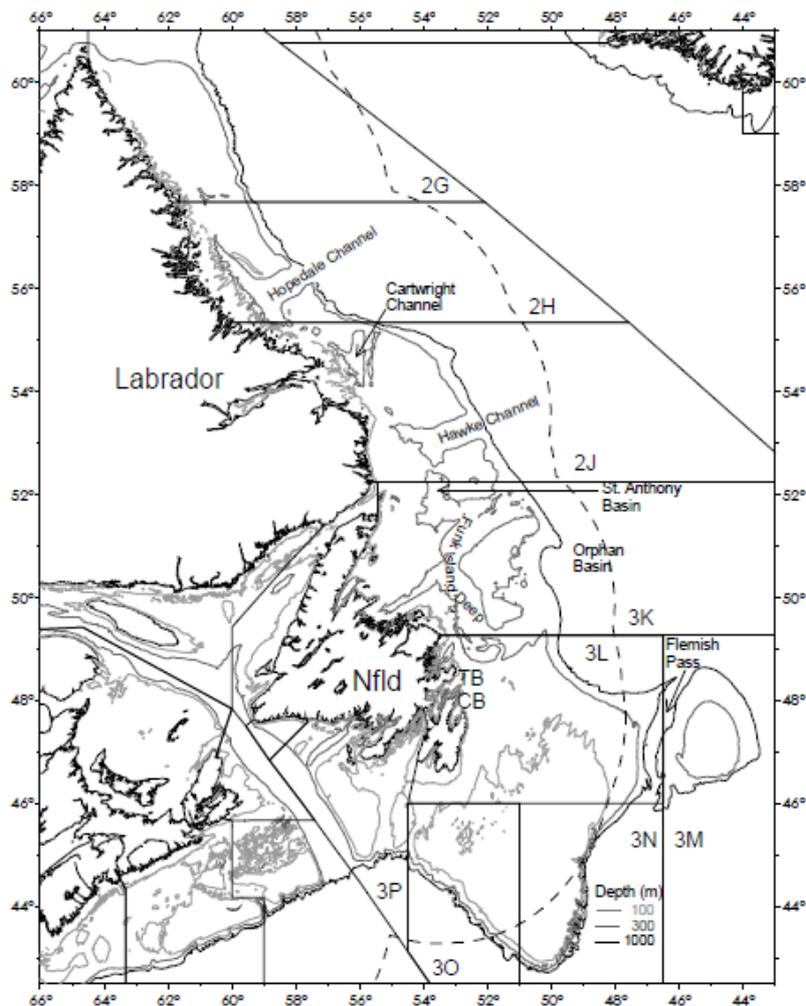


Figure 1: NAFO Subarea 2 and 3.
Source: DEEPFISHMAN Case Study 5 Report (2010).

Greenland halibut is a deepwater species with higher densities occurring at depths of about 500-1200 meters along the upper- and mid continental slope and the channels running between the offshore banks and the continental shelf, as well as the deep inshore bays of eastern Newfoundland and the fjords of Greenland and Baffin Island. In recent decades with advances in modern fishing technology, it has been found to be commercially abundant in some areas east of the Grand Banks (Bowering and Brodie 1995) and has been caught in long-line investigations as deep as 2200 meters off West Greenland (Boje and Hareide 1993) and the Flemish Cap (de Cardenas et al. 1996). The species is also of commercial importance in the Gulf of St. Lawrence and exists in limited quantities along the south Newfoundland coast, Fortune Bay and the Laurentian Channel (Morgan et al. 1997).

Vigo in Galicia is the home port for the Spanish NAFO fleet. The distance from the fishing grounds in the Flemish Pass (divisions 3L-3M) is approximately 1675 nautical miles. As the fishing grounds of the Portuguese fleet are the same as for the Spanish fleet, the distance between the fishing grounds and home and landings ports of the fleet are similar. Aveiro on the north coast of Portugal is the most important home port for the Portuguese fleet.

Canadian vessels fish much closer to home. The most important fishing grounds for the Canadian fleet are in divisions 2J-3K, with the distance to the home ports in Newfoundland less than 200 nautical miles.

2 History of the fishery

The target fishery for Greenland halibut in this management area began in the early 1960's in the deep-water bays of eastern Newfoundland, particularly Trinity Bay. As catches declined there, fishing effort increased in the other bays along the east and northeast coast of Newfoundland. Subsequently, vessels moved further offshore to the deep channels running between the shallow fishing banks. Catches increased from fairly low levels in the early 1960's to over 37,000 tons by 1969 and were 24,000-39,000 tons over the next 15 years (Figure 2). With the exception of 1987, catches in the late 1980's were around 20,000 tons.

In 1990, an intense fishery for Greenland halibut developed in the NAFO Regulatory Area (NRA), of Div 3L and 3M, in the deep-water areas known as Sackville Spur and Flemish Pass. The development of this fishery resulted in a rapid increase of catches to about 47,000 tons in the NAFO subarea 2 and divisions 3KLMNO in 1990. In the next three years, annual catches amounted to 62,000-65,000 tons, but in 1994 total catches declined to 51,000 tons. In

1995, the NAFO Fisheries Commission introduced management measures (extensive quota restrictions and a hundred per cent observer coverage in the NRA) and in the next years catches were below 20,000 tons. That corresponded to a reduction of about two-thirds compared to the average annual catch of the previous five years. Catches in the years 2000-2003 were in the 34,000-38,000 range, but in 2003, a 15 year rebuilding plan was implemented by Fisheries Commission for this stock. Since the introduction of the rebuilding plan estimated catches have exceeded the total allowable catches (TACs) by 22-45%. In 2007 total catches of Greenland halibut in the NAFO subarea 2 and divisions 3KLMNO amounted to 23,000 tons.

Below we describe the main features of the Canadian, Portuguese and Spanish fisheries.

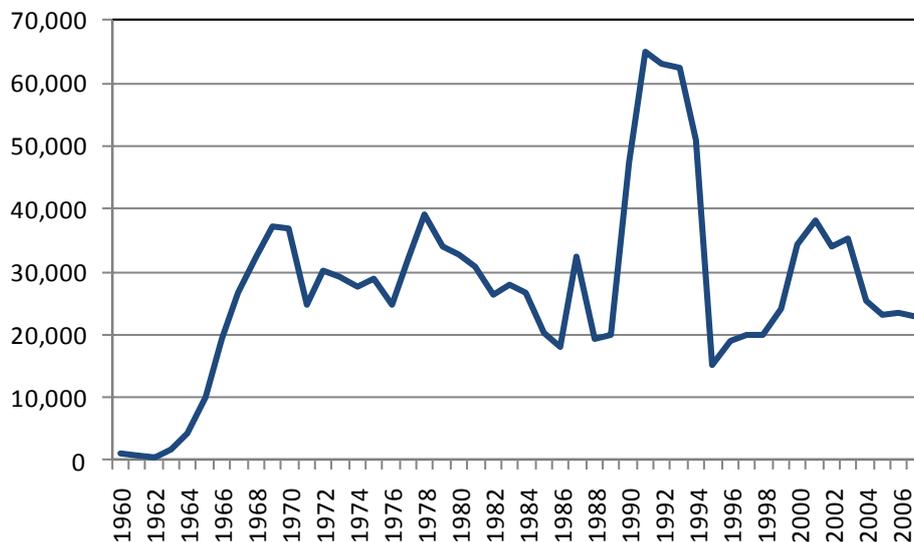


Figure 2 Catches of Greenland halibut in NAFO subarea 2 and divisions 3KLMNO 1960-2007.

Source: DEEPFISHMAN Case Study 5 Report (2010).

Canadian fishery

The Canadian fishery for Greenland halibut in subareas 2 and 3 began in the early 1960's, in the deep-water bays of eastern Newfoundland, particularly Trinity Bay. As catches declined there, fishing effort increased in the other bays along the east and northeast coast of Newfoundland. In later years, vessels moved further offshore to the deep channels, such as the area in the central part of division 3K and eventually to the continental slope. Canadian catches increased from fairly low levels in the early 1960's to almost 32,000 tons in 1980 then declined steadily to between 2,900 and 6,300 tons in each year from 1993-1999. This declining trend was mainly a result of low catch rates and reduced effort, as fishers pursued

other species such as snow crab, which were more profitable. In 2000, the Canadian catch in NAFO subarea 2 and divisions 3KLMNO increased to about 10,600 tons, more than two and a half times the catches in 1998 and 1999. However, catches have declined since then, to a level between 4,900 and 7,000 since 2002.

The Canadian fleet fishes within the Canadian EEZ and comprises otter trawlers and gillnetters while all the other fleets fish in the international waters of the NAFO Area (NRA) only with otter trawlers.

Portuguese fishery

First records of Greenland halibut catches of Portuguese vessels in the NAFO area date from 1973, but until 1981 there were only incidental catch records in all divisions. In 1982, a Portuguese fishery directed at Greenland halibut began in division 2J and this fishery lasted until 1986 when Portugal joined the European Community and lost the rights to fish within the Canadian EEZ.

Attractive concentrations of Greenland halibut were first detected in the NAFO Regulatory Area by trawlers in the late 1980's. These concentrations were located in the northwestern edges of the "Sackville Spur", a fishing ground to the north of the Flemish Pass, at depths of 700-900 meters. In the early 1990s, the deep-water trawl fisheries began to explore the edges of the West Flemish Pass and this marks the beginning of deep-water fisheries in the southern Grand Banks.

Since 1995, the Greenland halibut fishery, along with the red fish fishery, has been the mainstay of long-distance Portuguese fleet operating in NAFO. In recent years the Greenland halibut catches have remained stable in all divisions with the exception of division 3M where catches have increased.

Spanish fishery

In the last two decades the activity of the Spanish fleet in this area has focused mainly on deep-water Greenland halibut catches, while other targeted species include primarily skate, plaice and prawn. The Spanish fishery for halibut originally took mostly place on the boundaries of NAFO divisions 3L and 3M (Flemish Pass) and later extended to the North of division 3N (Junquera 1992; Hopper 1994). The technology and the skills of the fishermen have since steadily improved and the fishing methods for the deeper water are now designed to operate at depths up to 2,000 meters.

Since 2003, the Spanish fleet has, at least, four different fisheries in NAFO Subarea 3 characterized by different mesh size, target species, depth and fishing area. The Spanish fleet effort in NAFO area is mainly directed to Greenland halibut (mostly in Div. 3LM) with 135 mm mesh size, alternating with the skate fishery in the second half of the year (Div. 3NO) with 280 mm mesh size, shrimp fishery (Div. 3LM) with 40 mm mesh size, and in less degree redfish (Div. 3O and Div. 3M) with 135 mm mesh size.

3 Management

Management of Greenland halibut in subarea 2 and divisions 3KLMNO became the responsibility of the NAFO Fisheries Commission in 1995, which imposed a TAC of 27,000 tons for that year. In 2003, the Fisheries Commission established a fifteen year rebuilding plan for this stock, with TACs set at 20, 19, 18.5, 16 ('000 tons), respectively, for the years 2004-07. The TAC for subsequent years shall be established taking into account the progress made in the rebuilding of the stock. For the period 2008-2010 the TAC was set at 16.000 tons. Variations in TAC between years may though not exceed 15%.

Since 1995, it has been mandatory to carry an observer on board vessels in the NAFO Regulatory Area (NRA) to monitor the implementation of several technical measures. The observers gather information about the total catch, discards, effort and mesh size. Moreover, they follow the establishment of the TAC for the halibut of subarea 2 and divisions 3KLMNO by NAFO Fisheries Commission.

4 Fleet and ownership

In this section we briefly discuss the main characteristics of the Spanish and Portuguese fleet. Only four vessels took part in the Greenland halibut when Spain entered the fishery in 1990. The number of freezer trawlers though grew fast in the ensuing years – not least because of the extraordinary catches – and by 1994 the fleet counted 33 ships. The number of trawlers engaged in the fishery then remained much the same for the next decade and in 2005 there were still 35 vessels active in the fishery. However, since the recovery plan was introduced in 2004, the number of vessels has shrunk and in 2008 there were only 14 Spanish trawlers engaged in the Greenland halibut fishery.

All the trawlers currently taking part in the halibut fishery are equipped with on-board freezing facilities. These are large vessels, designed to stay out for 3-4 months, possibly even

longer. The average trawler active in the period 1992-2008 registered 762 gross tons (GRT), had a carrying capacity of 1111 tons and was able to process (freeze) up to 29 tons per day.

Apart from Greenland halibut, the Spanish fleet also catches other incidental species, mainly redfish, skate and roughhead grenadier, both in NAFO waters as well as in other fishing zones, such as Hatton Bank, Irminger, Svalbard, Reykjanes, Greenland, southwest Atlantic and the Falkland Islands. During the period 2001-2005, 43.6 per cent of this fleet's landings, came from NAFO zones and the remaining 56.4 per cent came from the other fishing grounds. Of these 43.6 per cent, 32.8 per cent correspond to Greenland halibut landings (Garza-Gil and Varela-Lafuente, 2009). Overall Greenland halibut makes up 14.3 % of the landings of this fleet.

Although trips take on average 3-4 months, the crew will in most cases remain unchanged through the duration of the whole trip. The trawlers have a crew of about 24 persons, but the number of seamen can be considerably higher as the same members do not always make up the crew.

In 2005 the 35 Spanish freezer vessels were owned by 20 harvesting companies (Garza-Gil and Varela-Lafuente, 2009). The trawlers are either registered in Vigo or other ports in Galicia, or in ports in the Asturias, Basque country or Canary Islands.

The Portuguese fleet

In 2007, the Portuguese fleet consisted of 13 freezing trawlers which registered on average 1,650 tons. The trawlers were owned by five companies, which were also engaged in processing and preserving of fish products. The trawlers typically have a crew of around 35 members and the average fishing trip lasts 4-5 months. The crew usually remains unchanged throughout the trip. Most of the vessels have their home port in Aveiro or Lisbon.

5 Labour

As mentioned above, 14 Spanish trawlers took part in the Greenland halibut fishery in 2008. Assuming an average on-board crew of 24 and a partial second shift of 12 it can be estimated that there were about 500 individuals employed by the halibut fleet. The crews were all-male. In recent years an increasing number of the crew, mostly deckhands, has been made up of immigrants from Africa and Latin America. However, no information is available on the share of these immigrants in the workforce at sea.

The trawlers process their catches at sea but some further processing may also take place on land. No information is available on the number of persons engaged in land-based processing or marketing. The majority of workers in the Spanish fish processing plants are women.

No information is available on unionization of the Spanish fleet.

The Portuguese vessels are generally larger with an average crew of 35 full time persons, all male. Assuming some level of crew rotation it can be estimated that 50 persons make up the crew of each vessel. Since there are 13 vessels currently in the Portuguese NAFO fleet, it can be estimated that 650 individuals are engaged in the Greenland halibut fishery. Although the higher ranked crew members are always Portuguese, the crew is also made up of immigrants from Africa, Eastern Europe and even Indonesia. The share of these foreigners in the workforce is though small, probably no larger than 10-15%. There are at least two unions present and active in the Portuguese work collective agreement.

A share system with a fixed minimum wage is the most common form of wage agreement in both the Spanish and Portuguese fleets.

6 Processing and markets

Catches of the Spanish and Portuguese NAFO fleets are landed in either country, with Vigo in Galicia in Spain being the most important port. The frozen catch is usually exported. For the Spanish fleet the most important frozen products are sold headed and gutted with skin for the national market, and without skin for the Japanese market. The fish is sometimes sold filleted with and without skin but this is uncommon. The principal export markets for Spanish Greenland halibut products are Portugal, France and Japan. The products are sold in open auction after processing.

The Portuguese vessels also process their catches on board; head and guts are removed and the fish then frozen by size category. After the landings have been sold buyers may process the fish further according to their needs and preferences. Portugal exports the majority of its Greenland halibut landings to Asian countries, such as Japan, China, and Korea, but and also to Europe. The exports are sold through brokers.

7 Financial performance

In a recent study, Garza-Gil and Varela-Lafuente (2009) analyse the profitability of the Spanish Greenland halibut fishery. Using data for the years 2001-2005, they show that during this period net profits were 10-22% of income of the fleet. Income from the NAFO fisheries

amounted to more than half of total income in the first part of the period, but in 2004 and 2005 income from fishing in other areas accounted for more than half.

Table 1 Economic performance of the Spanish NAFO fleet in 2001-2005.
 EUR '000 in fixed (2005) prices.
 Source: Garza-Gil and Varela-Lafuente (2009).

	2001	2002	2003	2004	2005
Variable costs, incl. wages	106,009	103,584	100,403	81,537	73,258
Income	161,821	143,679	144,083	108,978	97,164
NAFO income	85,323	72,179	76,948	53,399	46,124
Income from other areas	76,498	71,500	67,135	55,579	51,040
Gross cash flow	55,812	40,095	43,680	27,441	23,906
Amortisations	18,871	20,513	16,865	14,218	12,333
Interest	1,963	1,846	2,003	2,260	2,181
Net profits	34,978	17,736	24,812	10,963	9,392
Net profits as % of income	21.6	12.3	17.2	10.1	9.7

Although the Spanish fleet is engaged in other fisheries than the Greenland halibut fishery, that fishery has been very important in the last two decades. The figures above can thus be assumed to reflect well the profitability of the halibut fishery. In their study, Garza-Gil and Varela-Lafuente (2009) conclude that “the Spanish Greenland halibut fleet ... generates possibilities for profitability higher than those that might be obtained by making alternative investments” (p. 257). Profits of the Spanish and Portuguese fleet were not computed in the AER report (2009), suggesting all appropriate data are not available. Therefore, a comparison between national fleet engaged in this fishery and with other fishery cannot be done without a compilation of comparable data for the fleets to be compared.

Since NAFO’s Greenland halibut recovery plan was initiated in 2003, total allowable halibut quotas have been cut drastically. This decrease in quotas and landings has seriously affected the Galician economy. In a recent report it is estimated that the recovery plan may have caused a direct loss of more than 500 jobs and economic losses of at least EUR 300 million from 2003 to 2010.¹ The report further states that for each million Euros lost due to smaller catches in the NAFO area, the Galician economy would shrink by EUR 2.25 million and 43 full-time jobs would be lost.

¹ FIS World News. See: <http://fis.com/fis/worldnews/worldnews.asp?monthyear=9-2009&day=25&id=33963&l=e&country=0&special=&ndb=1&df=0>.

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