

Atlantic Halibut of the Gulf of St. Lawrence (4RST) – Update (2003)

Background

Atlantic halibut in NAFO Divisions 4RST can be found throughout the Estuary and Gulf of St. Lawrence. In the northern Gulf, the species is more abundant in the Esquiman, Laurentian and Anticosti channels, at depths of 200 m and over. In the southern Gulf, the greatest concentrations occur in shallower waters (at depths less than 100 m), near the Miscou Bank, north of Prince Edward Island, northwest of Cape Breton and around the Magdalen Islands.

The species grows fast and continuously, at a mean rate of about 7.5–8.5 cm per year in the Gulf. While male and female growth rates are comparable, female halibut reach a larger maximum size than males. This could be due to the fact that Atlantic halibut females reach sexual maturity at a larger size than males, as observed in the species in Canada's Atlantic waters. Based on observations made during scientific trawl surveys conducted in January and May, halibut in the Gulf is able to spawn during these periods.

The current Atlantic halibut management unit for the Gulf, which corresponds to Divisions 4RST, was established in 1987 based on the findings of tagging–recapture studies and by taking into account additional biological data such as size and growth rate.

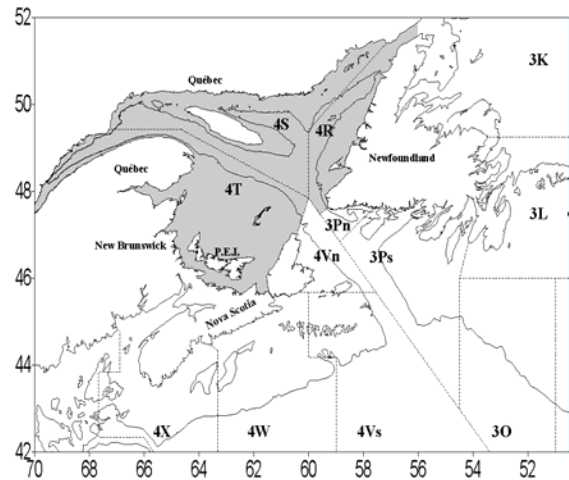


Figure 1. Map of the Gulf of St. Lawrence and neighbouring regions showing NAFO divisions 4RST.

Summary

- As at December 31, 2003, preliminary landings totalled 334 t, which represents an increase of 18% over the cumulative landings for the 2002-2003 fishing season. These landings account for more than 95% of the TAC of 350 t and represent the second highest figure recorded over the past five years.
- In 2003, as in previous years, halibut caught with fixed gear cover a broad range of sizes (35–250 cm). However, catch samples taken over the past five years have consisted mainly of individuals measuring between 81 cm (minimum legal size) and 110 cm. The results of at-sea sampling indicate that pre-recruits were still well represented in catches in 2003.
- Halibut abundance as assessed during the four scientific surveys has followed a general uptrend since 1999. The mean catch per tow has also increased, although this pattern is less generalized. Catches are made up primarily of small individuals.

- According to the Atlantic halibut tagging program in the Gulf, tagged individuals are typically recaptured in the fishing division where the tagging was carried out.
- Efforts are ongoing to collect information that will shed light on sexual maturity in the Atlantic halibut of the Gulf. This research is aimed primarily at confirming whether the present minimum legal size of 81 cm is adequate for protecting stock spawners in the Gulf.
- Although stock abundance is not known, a comparison of recent landings (roughly 300 t) with landings posted before the 1970s (more than 500 t) shows that the harvestable fraction of the stock remains at a low level. Nonetheless, an upward trend in the abundance of small halibut has been identified based on the findings of scientific surveys and at-sea sampling of commercial catches. This trend may indicate that recruitment increased during the 1990s.

The most recent Atlantic halibut stock assessment was conducted in 2000 (DFO, 2000). This document is an update based on recent data from the scientific groundfish surveys, the commercial fishery and the tagging program.

The fishery

The high landings (average of 1,500 t) of Atlantic halibut in the Gulf during the first half of the 20th century indicate that the Gulf of St. Lawrence stock was once very abundant and that it was subjected to intense fishing pressure (Figure 2). Halibut landings, which were 650 t in the early 1960s, hit a record low in 1982 at 91 t. Since then, landings have rarely exceeded the 300 t mark, which is equivalent to the precautionary total allowable catch (TAC) established in 1988. Since 1995, Atlantic halibut landings have increased significantly, which is thought to be mainly due to the increased fishing effort by the fixed gear fleet, notably longliners.

Owing to a recommendation made by the Fisheries Resource Conservation Council (FRCC, 1999), the TAC for the 1999 fishing season (January 1 to December 31) was increased to 350 t. An additional 100 t was authorized in order to take into account the extension of the 1999 fishing year to May 14, 2000 under the new groundfish management plan. Since 2000, the fishing season and TAC have covered the period from May 15 of the current year to May 14 of the following year.

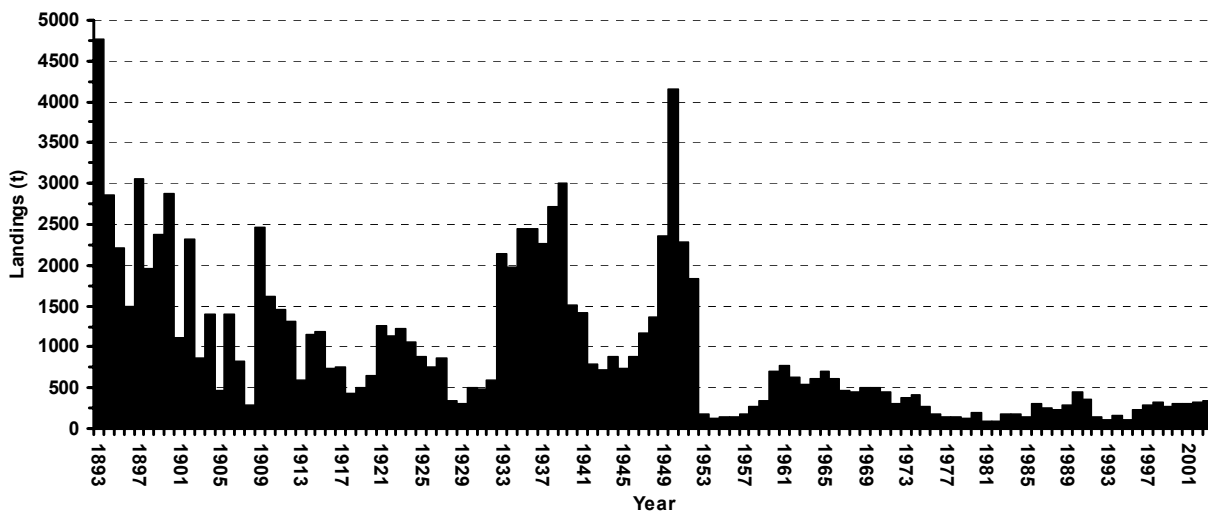


Figure 2. Historical series of commercial annual landings of Gulf Atlantic halibut, 1893-2003.

As of December 31, 2003, landings for the 2003 fishing year totalled 334 t, or 95% of the TAC of 350 t (Table 1). As in previous years, most of the catch was taken with fixed gear, primarily longliners. In 2003, the majority of fishing activities took place between June and September. Total landings for the 2002 fishing season were 282 t, or 81% of the TAC of 350 t.

Table 1. Atlantic halibut landings in the Gulf of St. Lawrence (t)

Division	Year					
	1988-1998 ¹	1999 ²	2000 ³	2001	2002	2003 ⁴
TAC	300	450	350	350	350	350
4R	85	105	58	93	82	146
4S	73	115	156	110	104	77
4T	91	120	72	99	95	111
Total	249	340	285	301	282	334

n.a. Not applicable

¹ Average

² Fishing year, landings and TAC for the period between January 1, 1999 and May 14 of the following year

³ As of 2000, the fishing season, landings and TAC for the period between May 15 of the current year and May 14 of the following year

⁴ Preliminary data as of December 31, 2003

The TAC was not met between 1999 and 2002 because fleets of mobile and fixed gear vessels longer than 65 feet did not harvest the total amount of catch they were allocated. Although the landing average for the last five years is over 300 t, it is below the 500 t and more currently recorded in the 1960s (Figure 2). It seems even more insignificant when considering the thousands of tons that were landed regularly in the first half of the 20th century.

Resource status

Data on the abundance of Atlantic halibut in the Gulf were provided by four scientific groundfish surveys. There is considerable variability in abundance estimates, however, owing to the low susceptibility of halibut to bottom trawls.

The halibut catches made during surveys are distributed throughout the Estuary and Gulf of St. Lawrence. In the northern Gulf, the species is more abundant in the Esquiman, Laurentian and Anticosti channels, at depths of 200 m and over. In the southern Gulf, the greatest concentrations occur in shallower waters (at depths less than 100 m), near the Miscou Bank, north of Prince Edward Island, northwest of Cape Breton, around the Magdalen Islands, and on the southern edge of the Laurentian Channel.

Halibut abundance has generally been found to be low in the different surveys (fewer than 0.5 halibut per tow), although an uptrend has been observed since the late 1990s (Figure 3). In parallel with the increase in abundance, there has been an increase in the mean catch per tow of halibut but it is less consistent.

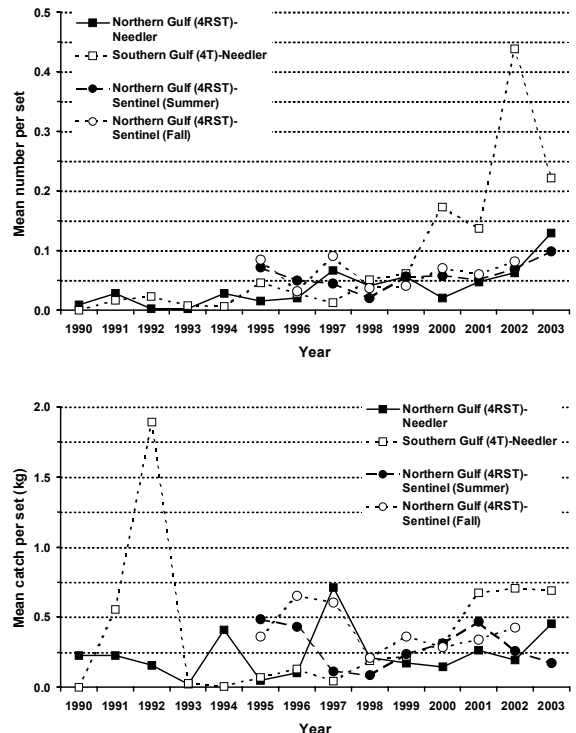


Figure 3. Atlantic halibut abundance indices derived from groundfish stock assessment surveys, 1990–2003.

Scientific survey and commercial fishery data also provide information on the size of the fish caught and on the presence of pre-recruits (individuals smaller than 81 cm). The mean size of halibut measured during surveys has seldom exceeded 75 cm. A steady downtrend has been observed in the mean size since 2000, and in 2003 the mean size was close to 50 cm. The mean size of individuals caught with fixed gear was similar in 2003 to that recorded in 2002, i.e. about 85 cm, which is slightly larger than the minimum size limit of 81 cm (Figure 4). Commercial catches sampled at dockside between 2001 and 2003 were made up

mostly of individuals measuring between 81 cm (minimum legal size) and 110 cm. Samples taken at sea by observers—before individuals smaller than 81 cm are returned to the water—provide evidence of the sustained presence of pre-recruits in catches during this period. The size structure of fixed gear catches still exhibits a very wide range, with a minimum size of 34 cm and a maximum size of 248 cm. Once again in 2003, fishers’ comments typically related to the large number of halibut less than 81 cm long in their catches.

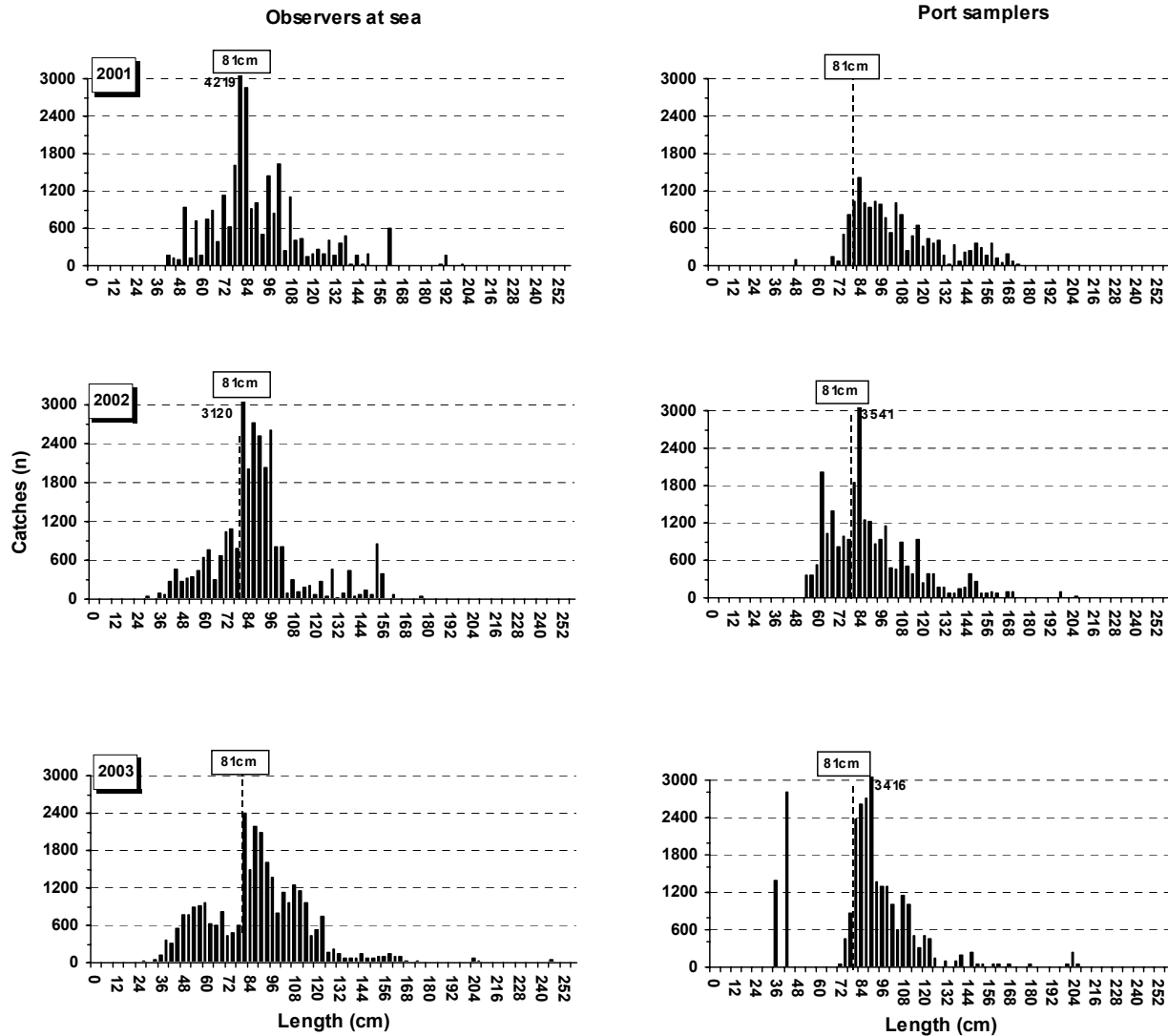


Figure 4. Size frequency distribution of Atlantic halibut commercial catches using fixed gear (minimum legal size of 81 cm is shown).

Tagging program

The objectives of the tagging program for Atlantic halibut in the Gulf are to study the movements of Atlantic halibut in the Gulf and to examine the potential link between 3Pn halibut and adjacent stocks in 4RST and 4VWX3NOPs. The tagging program consists of tagging individuals under 81 cm, which must be thrown back in water by commercial fishermen.

The program was in its sixth year in 2003. To date, a total of 2 057 Atlantic halibut have been tagged in the three traditional fishing grounds for this species in the Gulf and in Subdivision 3Pn by volunteer commercial fishermen and those under the Sentinel Fisheries Program. Tagging activities carried out in each of these regions are shown in detail in Table 2. The size of individuals tagged in the last six years ranged from 35 cm to 81 cm.

Table 2. Summary of tagging activities, 1998-2003.

Year	Sector				
	West Coast Newfoundland	3Pn	Anticosti Island	Southwestern Gulf	3Pn, 4RST
1998	89	-	-	-	89
1999	200	-	56	50	306
2000	206	-	45	59	310
2001	359	2	-	91	452
2002	279	43	-	115	437
2003	371	2	-	90	463
1998-2003	1504	47	101	405	2057

By the end of 2003, 4 halibuts have been recaptured in 3Pn and 109 individuals had been recaptured in the traditional fishing grounds: 25 in the southwestern Gulf, 8 south of Anticosti Island and 76 off the west coast of Newfoundland. The length of time between the tagging and recapture of an individual ranged from less than one month to nearly five years. Although the maximum distance between the tagging and recapture sites of an individual was 350 km, most of the distances recorded were under 200 km (Figure 5). All halibut recaptured off the west coast of Newfoundland (Division 4R) and in Subdivision 3Pn during the fishing season were individuals that had been tagged in those respective areas.

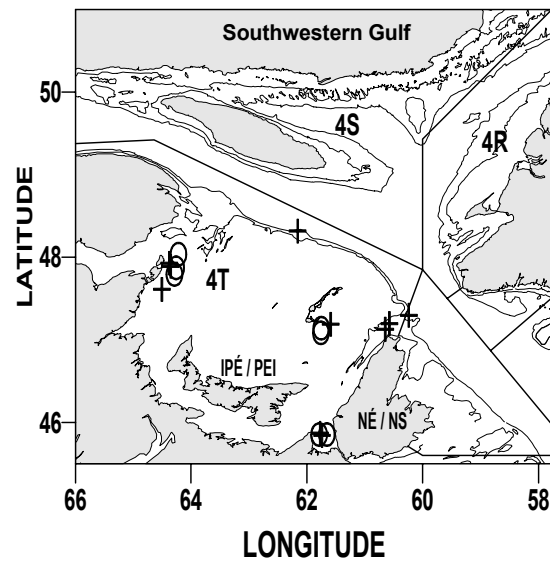
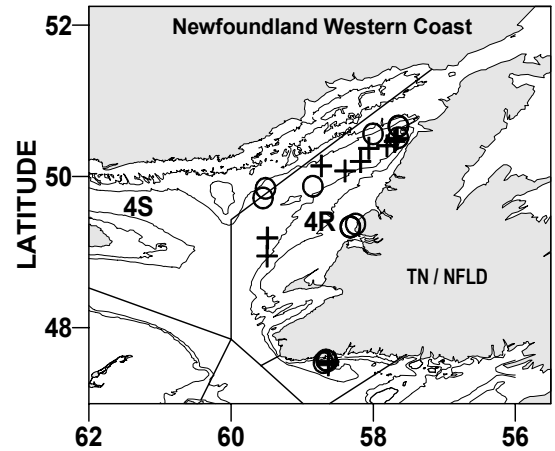


Figure 5. Atlantic halibut recapture sites in 2003 following tagging activities carried out between 1998 and 2003 (circle: tagging site; cross: recapture site).

Likewise, all individuals recaptured in the waters surrounding Anticosti Island had been tagged in that area, except for one individual that had been tagged near the Laurentian Channel southern boundary. This individual was recaptured two years later along the Channel's northern boundary, southeast of Anticosti Island. The farthest distances (more than 200 km) between tagging and recapture sites were observed for three halibut tagged in the southwestern Gulf. Thus, two halibut tagged

south of the Magdalen Islands were recaptured: one individual was recaptured two years later near the Laurentian Channel, at the eastern tip of the Gaspé Peninsula, and the other was recaptured the year following its tagging in Subdivision 3Pn. A third individual, tagged on the Miscou Bank, was recaptured the following year, southwest of the Beaugé Bank. The analysis of these data does not reveal any significant statistical relationship between the length of time between tagging and recapture and the distance between tagging and recapture sites, nor between the size of fish at tagging and the distance between tagging and recapture sites.

Outlook

Overall, the conclusions that can be drawn about stock status in 2003 are much the same as for last year. The stock remains at a very low level. Although total landings in 2003 represent the second highest figure recorded over the past five years, the average catch (308 t) remains below the TAC of 350 t.

Over the past five years, a wide range of sizes has been observed in the commercial catches made with fixed gear. However, the commercial fishery focuses mainly on halibut measuring between 81 cm and 110 cm, i.e. sizes just above the minimum legal size of 81 cm. This could be explained by an increase in the number of recruited individuals just over the minimum legal size of 81 cm, or by fishing effort focused on smaller halibut, resulting from higher market prices, or it could be due to a significant decrease in the abundance of large halibut.

It appears that the abundance of small halibut has increased. The greater abundance of small halibut found in scientific surveys in recent years, which is corroborated by at-sea sampling of commercial catches and by fishers' comments, appears to be attributable to the nearly complete cessation of trawling activities as a result of the moratoria on cod and redfish, as well as to shrimpers' use of

the Nordmore grate. Atlantic halibut born after these measures were implemented appear to be recruiting to the fishery.

Uncertainties

Determination of size at sexual maturity in the Atlantic halibut of the Gulf is still an important issue. According to information available on the Atlantic halibut stock of the Canadian Atlantic (divisions 4VWX3NOPs), 50% of females reach sexual maturity at a size of 115 cm and 50% of males at a size of 75 cm. If sexual maturity follows the same pattern in Gulf halibut, this would mean that the present minimum legal size of 81 cm is insufficient to protect spawning females, especially since the majority of commercial catches consist of intermediate sizes (81 to 110 cm). In view of this, it is imperative that efforts be devoted to completing the halibut gonad sampling surveys that were initiated in 2003 with the co-operation of the fishing industry.

The Atlantic halibut fishery in Subdivision 3Pn does not have a TAC because it is not taken into account in the two management units established in 1987 for both Atlantic halibut stocks found in Canadian waters. However, in 2002, the FRCC recommended that a cap of 40 t be set for Subdivision 3Pn as a provisional measure until the stock's structure was better defined using tagging data (FRCC, 2002). This recommendation is justified particularly in light of the fact that the absence of restrictions on halibut catches in this subdivision could jeopardize conservation of the halibut stock in the Gulf, if the fish in 3Pn belong to the same biological population as those in the Gulf of St. Lawrence. Declared landings made in 3Pn in the last five years averaged 33,8 t.

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