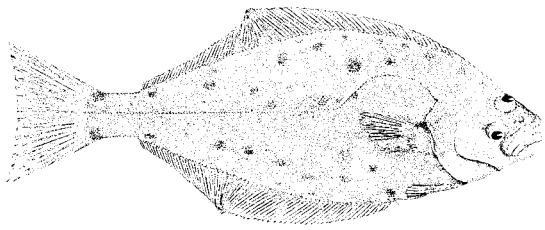




## Quebec Region

## Stock Status Report 2003/006



### Atlantic Halibut of the Gulf of St. Lawrence (4RST) – Update (2002)

#### 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 appears to be able to spawn during these periods.

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. 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.

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.

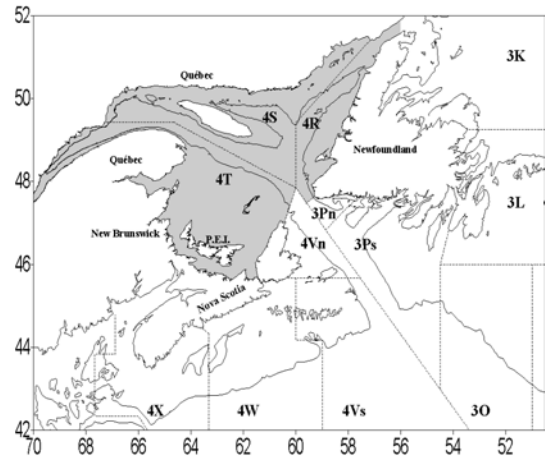


Figure 1. Map of the Gulf of St. Lawrence and neighbouring regions showing NAFO divisions 4RST.

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

#### The Fishery

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.

As of December 31, 2002, landings for the 2002 fishing year totalled 264 t, or 75% of the TAC of 350 t (Table 1). Total landings for the 2001 fishing season

were 301 t, or 86% of the TAC of 350 t

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

Division	Year						
	1953-1987 <sup>1</sup>	1988-1997 <sup>1</sup>	1998	1999 <sup>2</sup>	2000 <sup>3</sup>	2001	2002 <sup>4</sup>
TAC	n.a.	300	300	450	350	350	350
4R	144	82	116	105	58	93	71
4S	108	72	85	115	156	109	113
4T	84	88	120	120	72	99	80
Unknown	45	0	0	0	0	0	0
Total	337	242	320	340	286	301	264

n.a. Not applicable

<sup>1</sup> Average

<sup>2</sup> Fishing year, landings and TAC for the period between January 1, 1999 and May 14, 2000.

<sup>3</sup> 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

<sup>4</sup> Preliminary data as of December 31, 2002

for the period between May 15, 2001 and May 14, 2002. Once again in May 2002, the TAC was not met because fleets of mobile and fixed gear vessels longer than 65 feet did not harvest the amount of catch they were allocated. Although the landing average for the last five years is 302 t (January to December), it is below the 500 t and

more recorded in the 1960s (Figure 2) and seems even more insignificant when considering the thousands of tons that were landed regularly in the first half of the 20th century (Figure 3).

As in previous years, most of the catch was taken with fixed gear, primarily longliners (Figure 2). In 2002, more than 90% of annual landings were made between mid-May and late August, i.e. in under four months.

The Atlantic halibut fishery in Subdivision 3Pn does not have a TAC and is not regulated 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). Declared landings made in 3Pn in the last five years averaged 36 t (Figure 4).

As in previous years, the assessment of size structures of halibut in 2002

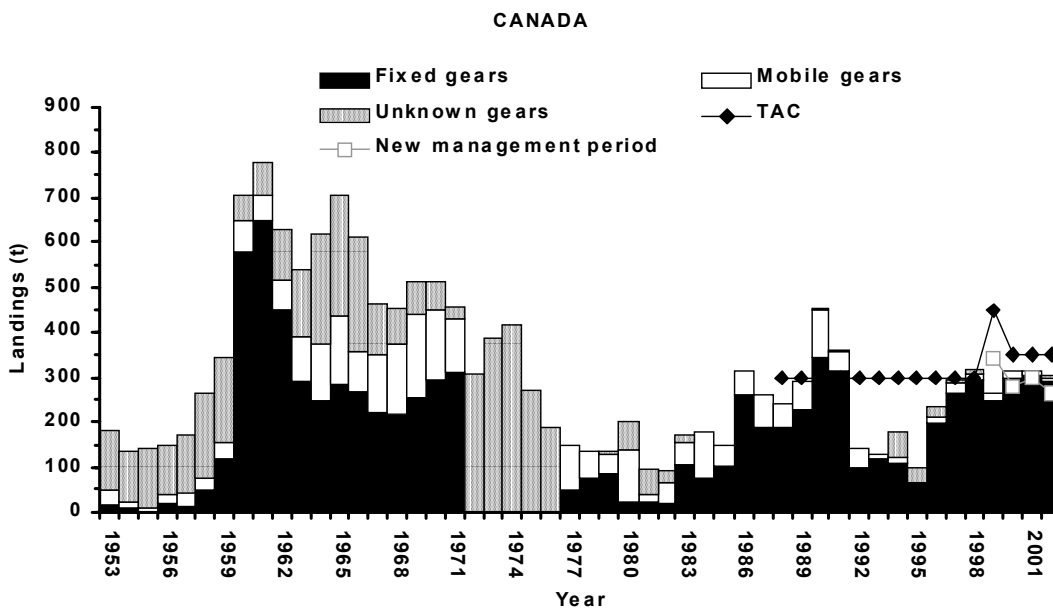


Figure 2. Historical series of commercial landings of Gulf Atlantic Halibut, 1953-2002.

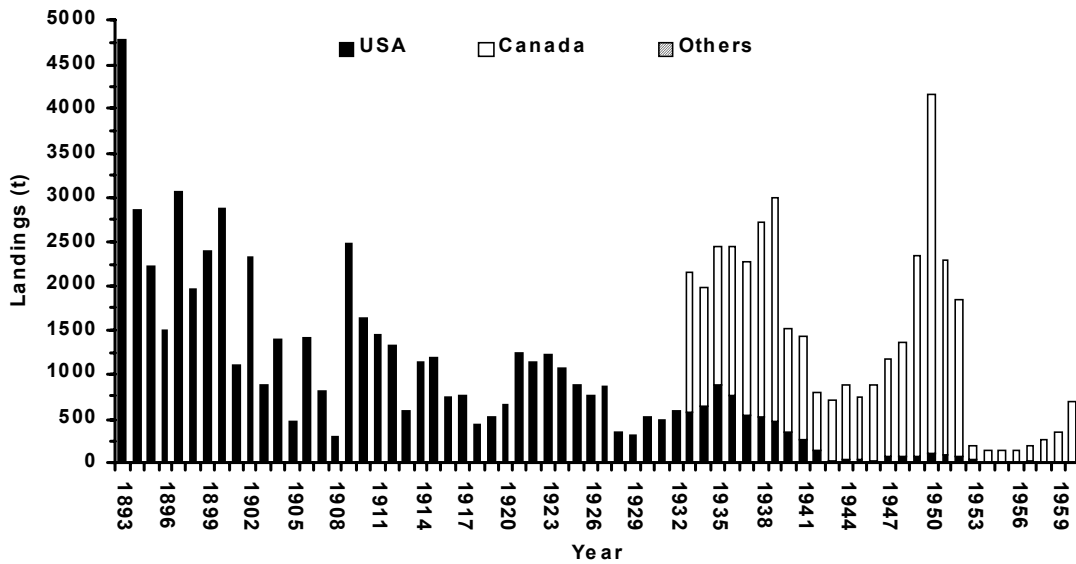


Figure 3. Historical series of commercial landings of Gulf Atlantic halibut, 1893-1960.

commercial landings using fixed gear indicates that a wide array of sizes were caught, ranging from a minimum of 36 cm to a maximum of 209 cm (Figure 5). Size structures obtained from samples measured at dockside between 2000 and 2002 show that landings mainly consist of individuals measuring between 81 cm (minimum legal size) and 100 cm. Size structures obtained from samples measured at sea by observers (i.e. before individuals smaller than 81 cm are thrown back) show that prerecruits were always found in 2002

landings. In fact, the comment most often made by fishermen in 2002 was that there was a significant number of halibut smaller than 81 cm in their landings that needed to be released.

In 2002, the mean size of halibut caught using fixed gear is smaller than those observed in previous years. This could be due to the greater number of small individuals recruited in landings.

**Resource status**

Data on the abundance of Atlantic halibut in the Gulf were provided by scientific groundfish surveys. No commercial catch per unit of effort (CPUE) is currently available. Although the total number of individuals caught in scientific surveys conducted in the summer is low (between 0 and 0.07 individuals per tow), this number has been on the rise in both Gulf surveys since 1996 (Figure 6). The fish caught were small, their mean size never exceeding 75 cm.

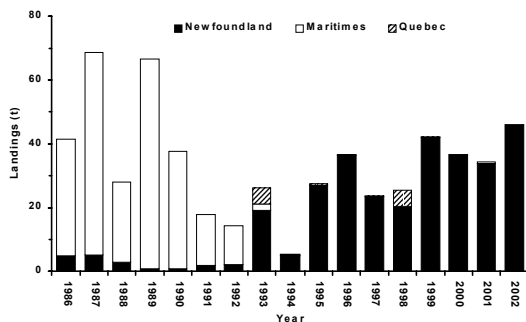


Figure 4. Commercial Atlantic halibut landings made in Subdivision 3Pn, 1986-2002.

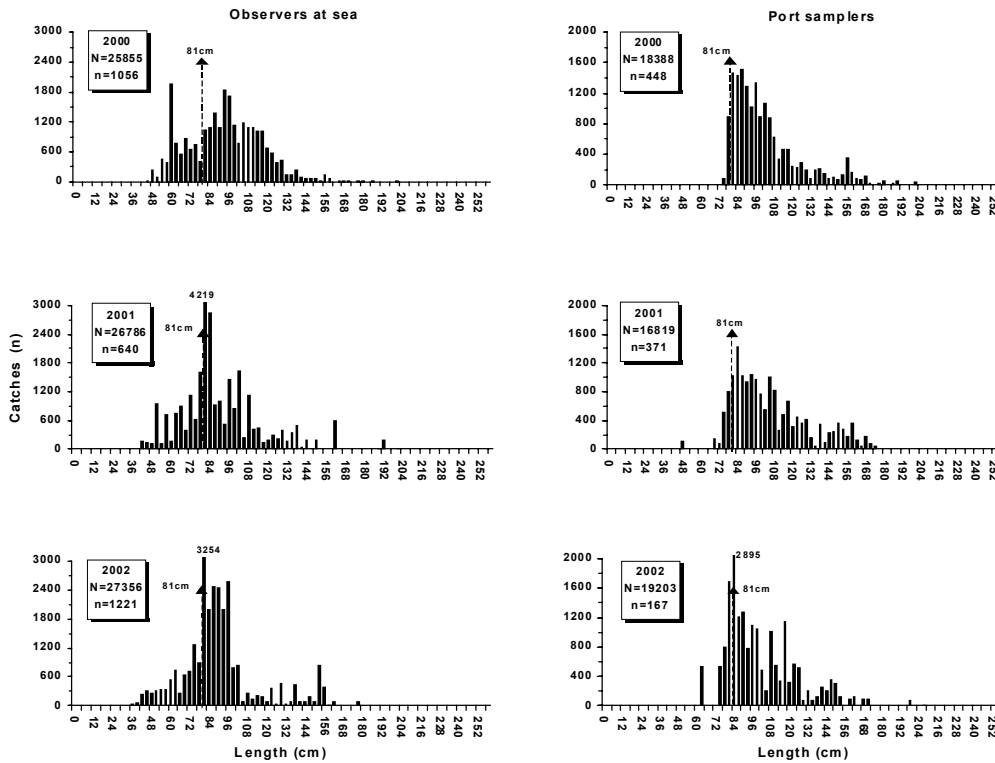


Figure 5. Size frequency distribution of Atlantic halibut in commercial catches using fixed gear (minimum legal size of 81 cm is shown).

**Tagging program**

Two of the main 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 by commercial fishermen.

The program was in its fifth year in 2002. To date, a total of 1,586 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 in each year of the program are shown in detail in Table 2. The size of individuals tagged in the last five years ranged from 35 cm to 81 cm. By the end of 2002, 84 individuals had been recaptured in the traditional fishing grounds: 13 in the southwestern Gulf; 8 south of Anticosti Island; 62 off the west coast of Newfoundland and 1 in 3Pn. The length

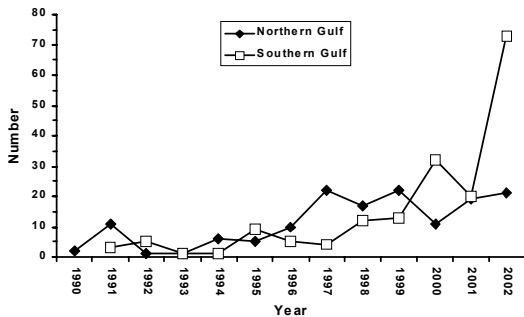


Figure 6. Total number of Atlantic halibut caught during summer scientific groundfish surveys aboard CCGS ALFRED NEEDLER, 1990-2002.

Table 2. Summary of tagging activities, 1998-2002.

Year	Sector				3Pn, 4RST
	West Coast Newfoundland	3Pn	Anticosti Island	Southwestern Gulf	
1998	89	-	-	-	89
1999	200	-	56	50	306
2000	206	-	45	59	310
2001	359	2	-	91	452
2002	264	50	-	115	429
1998-2002	1118	52	101	315	1586

of time between the tagging and recapture of an individual ranged from less than one month to nearly four 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. Therefore, all halibut recaptured off the west coast of Newfoundland (Division 4R) during the fishing season were individuals that had been tagged in that very area. 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 (Figure 7). 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 (Figure 7). The analysis of these data does not reveal any significant statistical relationship between the length of time

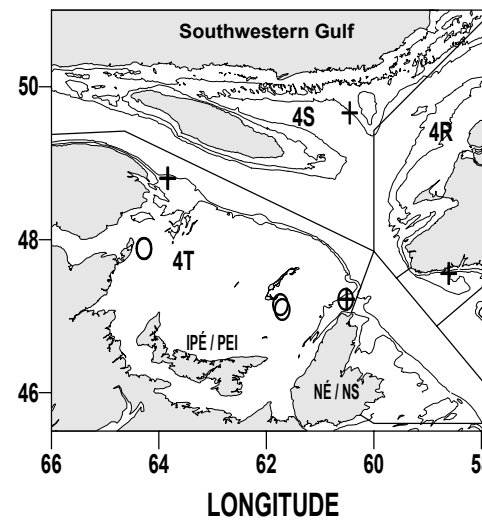
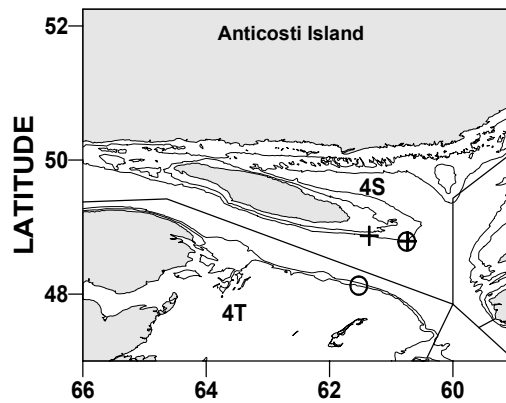
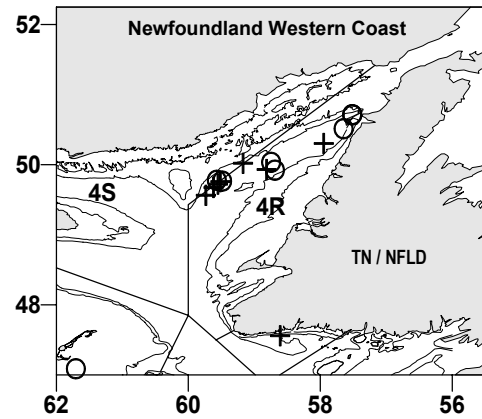


Figure 7. Atlantic halibut recapture sites in 2002, in the three traditional fishing grounds where tagging activities were carried out (circle: tagging site; cross: recapture site).

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**

The 2002 Stock Status Report indicated that the stock remains at a very low level according to current data. Landings remained below the +1,000 t level that was more commonly recorded during the first half of the 20th century. This assessment still applies to the stock in 2002, with the five-year landing average being no greater than 300 t, which is below the TAC of 350 t. Nevertheless, the assessment of landings made by the different fleets shows that, for many years now, fixed gear vessels smaller than 65 feet have always met, if not surpassed, their allocations after only a few months into the fishing season. Mobile and fixed gear vessels longer than 65 feet catch only a few dozen tonnes of Atlantic halibut per fishing season, accounting for a fraction of the by-catch of these fisheries.

The lack of limits on Atlantic halibut landings in Subdivision 3Pn could threaten Gulf halibut stock conservation, if fish in 3Pn belong to the same biological population as this one in the Gulf of St. Lawrence.

The size distribution observed for a number of years now in commercial catches made with fixed gear still varies greatly. 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. In 2002, a drop in the number of individuals measuring between 100 cm and 110 cm was noted. 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.

It is not currently possible to assess the maturation of Atlantic halibut in the Gulf of St. Lawrence because of the scarcity of samples (e.g. evisceration of fish at sea and the absence of commercial and scientific fisheries during halibut's winter spawning period). However, in the case of Atlantic halibut stock (Divisions 4VWX3NOPs) found off Canada's Atlantic coast, 50% of females reach sexual maturity between 110 cm and 115 cm, while males reach sexual maturity at 75 cm. If Atlantic halibut in the Gulf of St. Lawrence mature at the same size as those in the Canada's Atlantic waters, the minimum legal size of 81 cm may not ensure the adequate protection of spawning females.

Lastly, an increase in the abundance of small halibut has been noted in scientific surveys. Although data are limited, these trends confirm comments made by fishermen who are finding more and more small halibut in their landings. This increase can be explained by the fact that a greater number of juvenile Atlantic halibut have been surviving following the installation of Nordmore grate on shrimping vessels and a nearly complete halt in trawling activities as a result of the cod and redfish moratoria. Atlantic halibut born after these moratoria would now be close to commercial size. If this hypothesis is true, biomass and CPUEs should increase in the coming years.

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