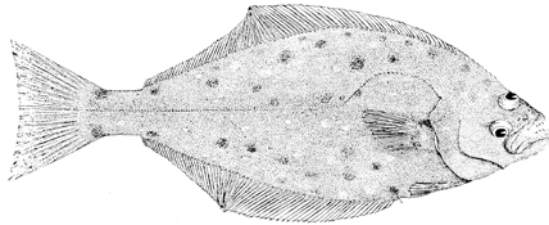




Quebec Region

Stock Status Report A4-02 (2002)



Atlantic Halibut of the Gulf of St. Lawrence (Divisions 4RST) – Update (2001).

Background

The Atlantic halibut of divisions 4RST can be found throughout the Estuary and Gulf of St. Lawrence. In the northern Gulf, this 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 (less than 100 m deep) near the Miscou Bank, north of Prince Edward Island, northwest of Cape Breton Island 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 the growth rate for males and females is 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, the Gulf halibut appears to be able to spawn during these periods.

The high landings of Atlantic halibut during the first half of the 20th century (1,000 to 2,000 t) 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 defined in 1987 based on the findings of tagging-recapture studies and by taking into account additional biological data such as size and growth rate.

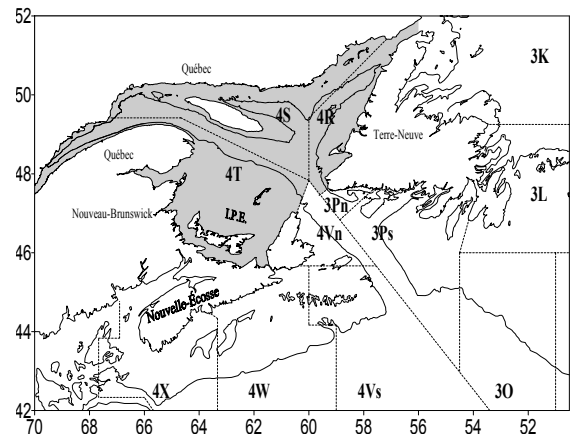


Figure 1. Map of the Gulf of St. Lawrence and adjacent areas showing NAFO divisions 4RST.

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

The fishery

As of December 31, 2001, landings for the 2001 fishing year totalled 216 t, or 62% of the authorized TAC of 350 t (Table 1). Total landings for the 2000 fishing season were only 281 t, or 80% of the authorized TAC of 350 t for the period between May 15, 2000 and May 14, 2001. However, it should be noted that 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.

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. Management authorized an additional 100 t 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 authorized TAC have covered the period from May 15 of the current year to May 14 of the following year.

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

Division	Year						
	1953-1987 <sup>1</sup>	1988-1996 <sup>1</sup>	1997	1998	1999 <sup>2</sup>	2000 <sup>3</sup>	2001 <sup>4</sup>
TAC	n.a.	300	300	300	450	350	350
4R	144	79	105	116	110	56	67
4S	108	68	108	85	122	155	82
4T	84	89	83	120	123	70	67
Unknown	45	0	0	0	0	0	0
Total	337	236	296	320	355	281	216

n.a. Not applicable

<sup>1</sup> Average

<sup>2</sup> Fishing year, landings and TAC refer to the period from January 1st, 1999 to May 14th, 2000

<sup>3</sup> Commencing in 2000, fishing year, landings and TAC refer to the period from May 15th of the current year to May 14th of the following year

<sup>4</sup> Preliminary data at December 31th, 2001

As in previous years, most of the catch was taken with fixed gear, primarily longlines (Figure 2). Once again in 2001, more than 95% of annual catches were made between April and October.

An examination of size structures for halibut in 2001 commercial catches using fixed gear

indicates that a wide array of sizes were caught, ranging from a minimum of 44 cm to a maximum of 201 cm (Figure 3). Size structures obtained from samples measured at sea by observers (i.e. before individuals smaller than 81 cm are released) show that prerecruits were always found in 2001 catches. Size structures measured at dockside between 1999 and 2001 indicate that landings consist mainly of individuals measuring between 81 cm (minimum legal size) and 110 cm.

### Tagging Program

The tagging program for Atlantic halibut in the Gulf consists of tagging individuals under 81 cm, which must be thrown back in commercial fishing. Two of the main goals of the program are to study the movements of Atlantic halibut in the Gulf and examine the potential link between 3Pn halibut and adjacent stocks in 4RST and 4VWX3NOPs. A total of 1,157 Atlantic halibuts were tagged in the three traditional fishing grounds for this species in the Gulf and in

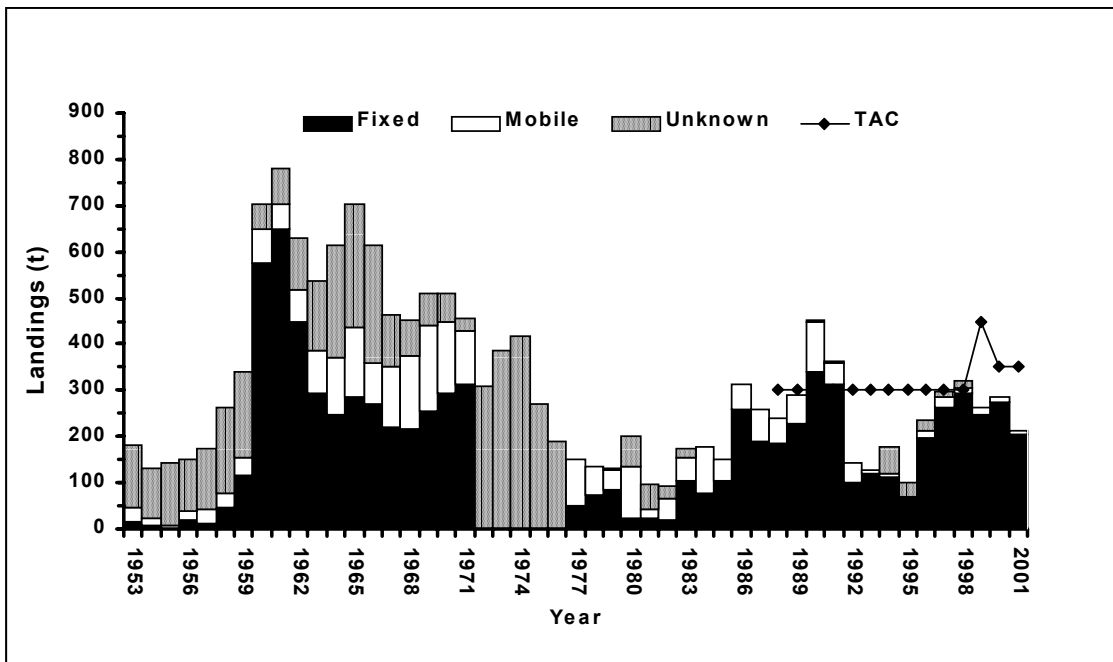


Figure 2. Historical series of commercial landings of Gulf Atlantic Halibut, 1953–2001.

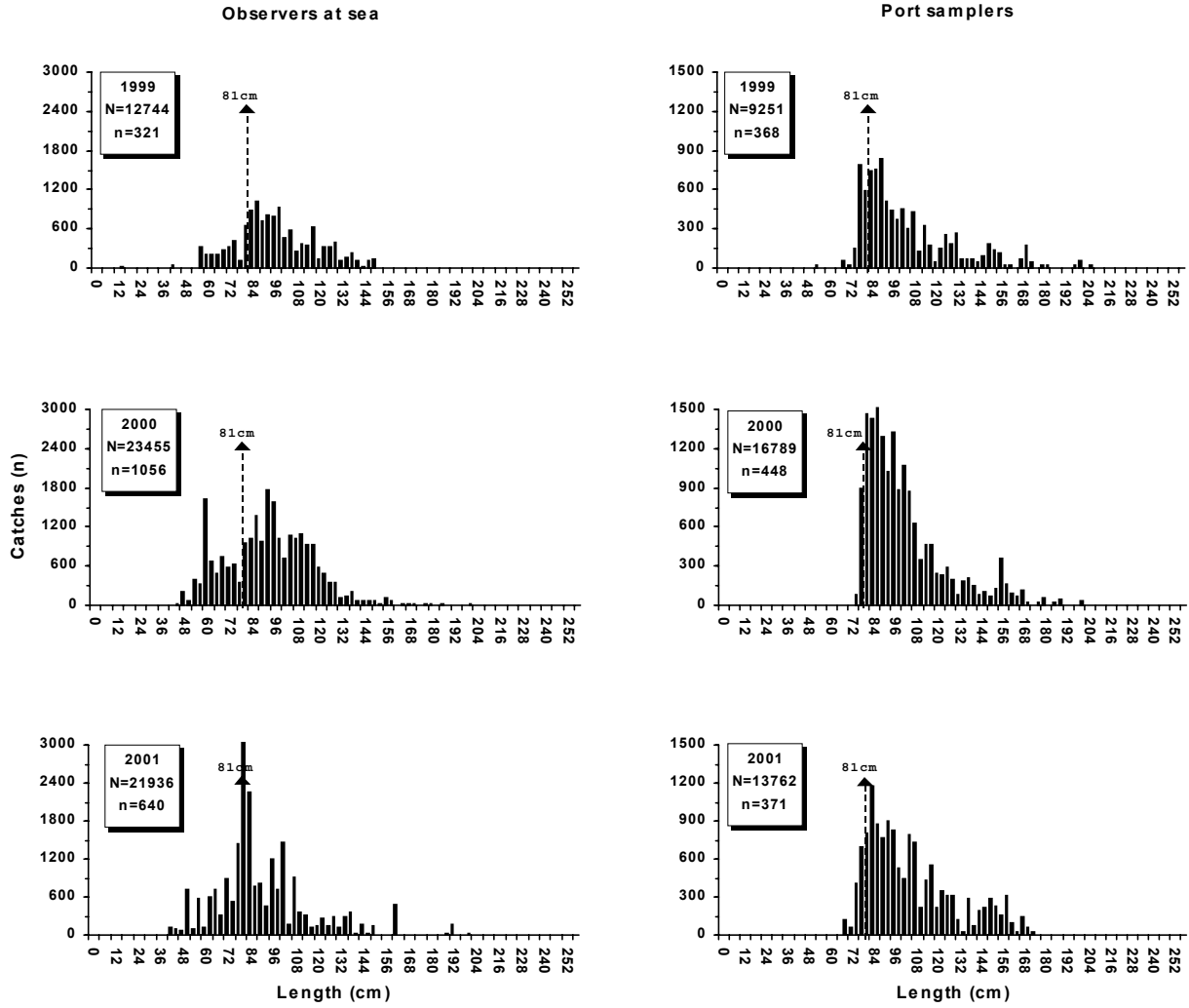


Figure 3. Size frequency distribution of Atlantic halibut in commercial catches using fixed gears (minimum legal size of 81 cm is shown).

subdivision 3Pn. Volunteer commercial fishers and those under the Sentinel Fisheries Program participated in the tagging effort.

Tagging activities carried out in each of these regions are shown in detail in Table 2 and Figure 4. The size of the individuals tagged over the four years ranged from 35 cm to 81 cm.

By the end of 2001, 44 individuals had been recaptured in the same traditional fishing grounds where they had been tagged: nine in the southwestern Gulf; seven south of

Anticosti Island; and 28 off the west coast of Newfoundland (Figure 5). It should be noted that all fish recaptured to date were tagged no more than two years ago.

Table 2. Overview of tagging activities, 1998–2001.

Year	Sector			
	West Coast Newfoundland	3Pn	Anticosti Island	Southwestern Gulf
1998	89	-	-	-
1999	200	-	56	50
2000	206	-	45	59
2001	359	2	-	91
1998-2001	854	2	101	200

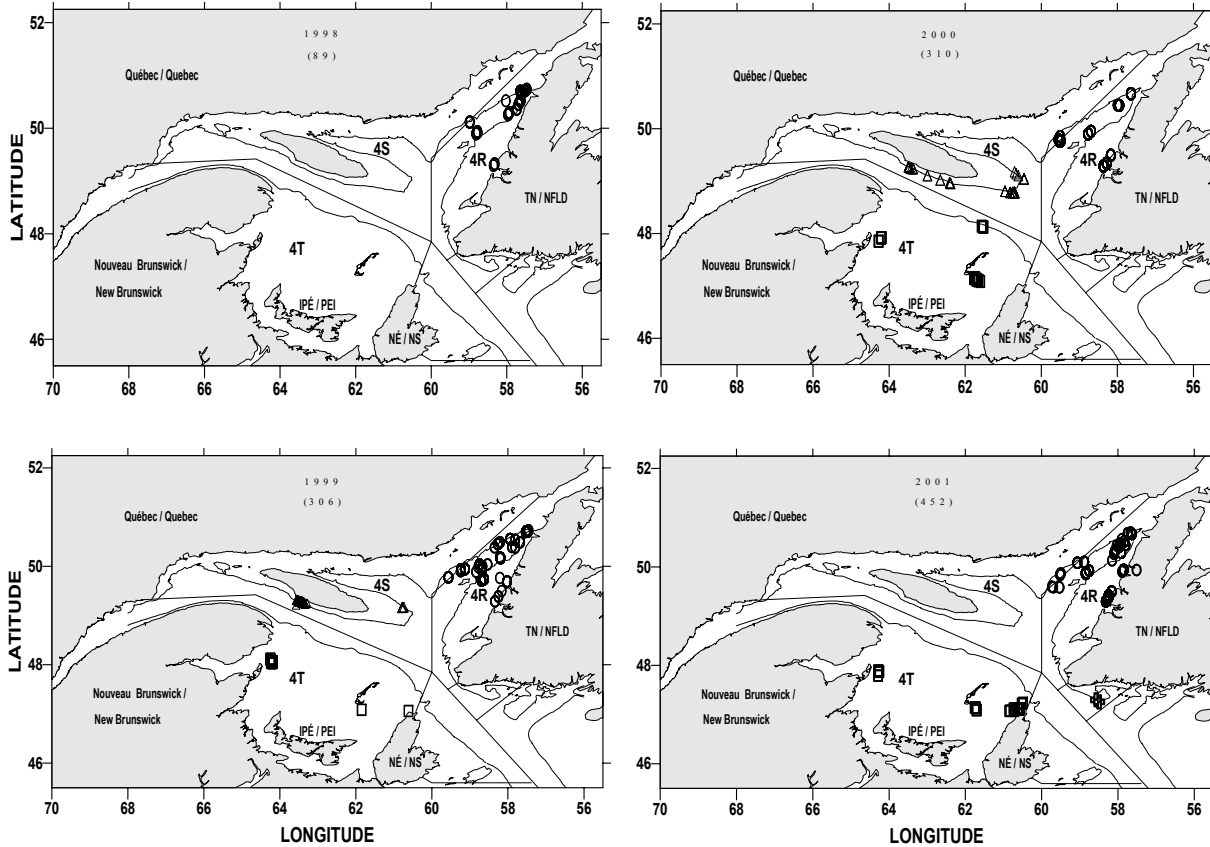


Figure 4. 1998–2001 halibut tagging sites for Gulf Atlantic halibut (circle: west coast of Newfoundland; cross: 3Pn; triangle: Anticosti Island; square: southwestern Gulf).

As in 2000, the distance between the tagging and recapture sites of an individual was no more than 175 km. To date, tagging-recapture data show that Gulf Atlantic halibut recaptured during the fishing season were present in the same area where they had been tagged. An analysis of these data does not reveal any significant statistical relationship between the length of time between tagging and recapture and the distance between the tagging and recapture sites, or between the size of fish at tagging and the distance travelled.

Again in 2001, some of the length data measured at recapture appear to be aberrant, suggesting that fish were smaller than they had been when tagged or that growth rates were exceptionally high during the study period. These types of error have already been observed in a number of tagging

programs; in many cases, length at recapture is estimated visually or is not measured using the same criteria used during tagging.

### **Resource Status and Outlook**

The 2000 Stock Status Report indicated that:

*“Although landings in the last few years have been higher than those recorded in the early 1990s, the Atlantic halibut stock in the Gulf still appears to be at a very low level, if fishery data going back over a longer period are considered.”*

Current data show that the stock remains at a very low level. Landings remain below the +1,000 t level that was more commonly recorded during the first half of the 20th century.

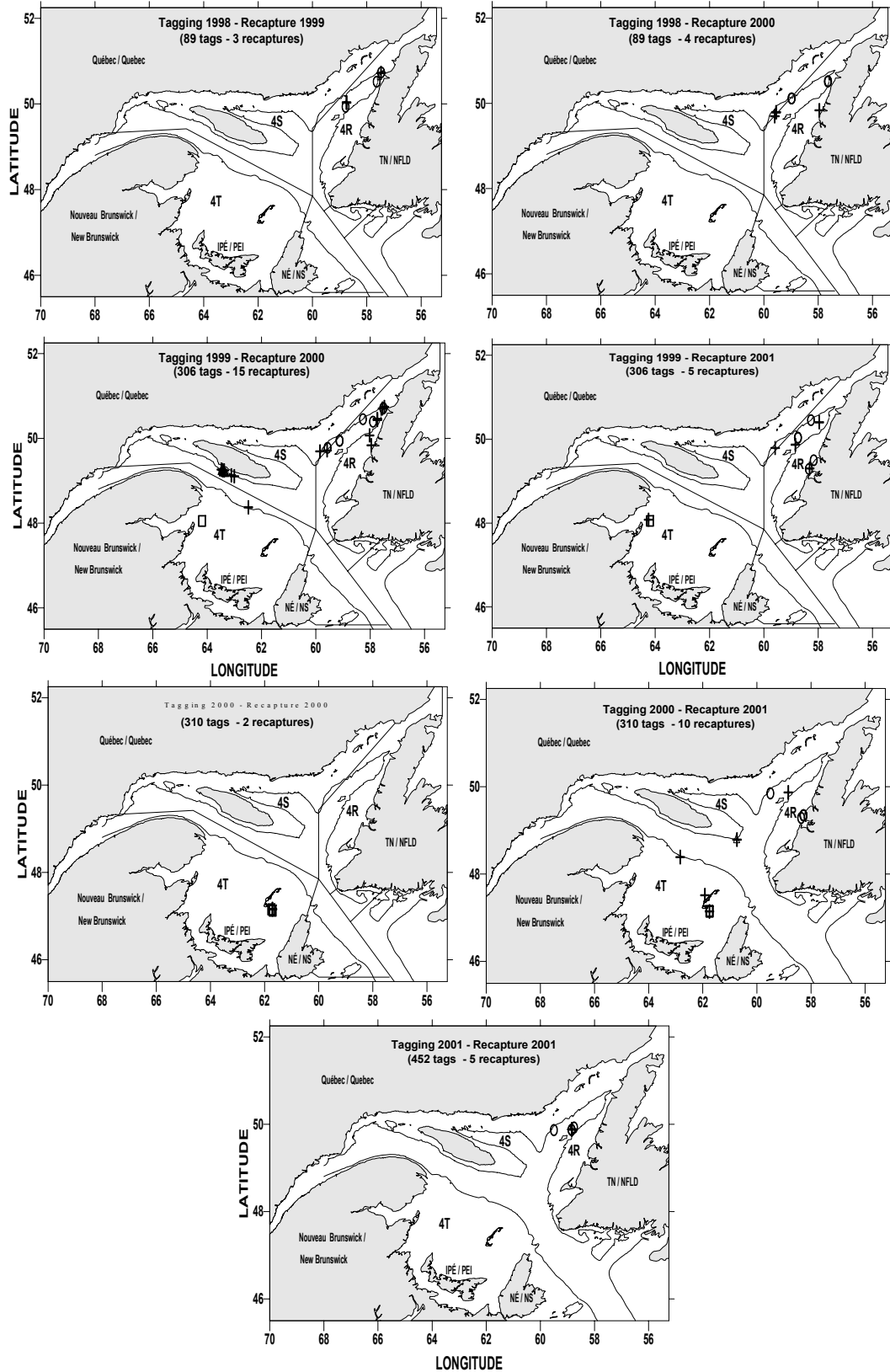


Figure 5. 1998–2001 recapture sites for Gulf Atlantic halibut (circle: west coast of Newfoundland; triangle: Anticosti Island; square: southwestern Gulf; open symbol: tagging site; cross: recapture site).

The 2000 report also stated that:

*“Size structure derived from commercial catch data, notably fixed gear landings, still indicates a broad range, which means that the fish can still live to be quite old.”*

The size distribution observed over the last three years in commercial catches made with fixed gears has not changed; catches include both small (40 cm to 80 cm) and large (over 120 cm) individuals. These elements seem to indicate that even at the current harvesting rate, Gulf Atlantic halibut stock has maintained some degree of stability over the last few years. However, the size of halibut harvested by the commercial fishery has ranged from 81 cm to 110 cm (i.e. sizes just above the minimum legal size of 81 cm). This size structure may indicate that the fishery's success essentially depends on the annual recruitment of halibut of minimum size.

Lastly, the report states that:

*“The lack of recent data on sexual maturity for the Gulf's halibut stock makes it impossible to confirm whether the minimum legal size of 81 cm is adequate to protect the spawning stock.”*

Gathering information to determine the size at which 50% of halibut of each sex reach sexual maturity remains essential. Most commercial landings consist of medium-sized individuals (81 cm to 110 cm). Research carried out on halibut stock found off Canada's Atlantic Coast indicates that 50% of females reach sexual maturity at around 115 cm and 50% of males reach sexual maturity at 75 cm. Although these data pertain to a different stock, they indicate that sexual maturity is reached at sizes that are significantly larger than the minimum legal size imposed in the Gulf. It is therefore possible that the current minimum legal size of 81 cm may not ensure the adequate protection of spawning

stock and that it would be worthwhile to consider increasing the minimum legal size in the coming years.

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***For more information:***

Diane Archambault  
Maurice Lamontagne Institute  
850 Route de la Mer  
Mont Joli, Quebec  
G5L 2H3  
Tel.: (418) 775-0705  
Fax: (418) 775-0740  
E-mail: archambaultd@dfo-mpo.gc.ca

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**Regional Stock Assessment Office,**  
Department of Fisheries and Oceans,  
Maurice Lamontagne Institute,  
P.O. Box. 1000, Mont-Joli,  
Quebec, Canada  
G5H 3Z4

**Email:** Stocksrl@dfo-mpo.gc.ca

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