



Preliminary Report on the October 2001 Mobile Sentinel Survey In the Northern Gulf of St. Lawrence (3Pn, 4RS)

October 2001

Sentinel Fisheries

Fisheries and Oceans Canada biologists are required to assess the status of fish and invertebrate stocks each year in accordance to the Department's mandate. To perform this assessment, scientists use data provided by mobile gear sentinel fishers. Once analysed, the collected data will be used to derive an abundance index and to estimate the status of stocks. Sentinel fisheries must cover the entire northern Gulf of St. Lawrence.

The sentinel survey requires a great deal of precision and involves collecting a variety of data. Sentinel fishers must sort fish by species, weight and measure some individual species of fish. Otoliths are collected from cod for analysis by DFO Science. Moreover, the harvest of frozen fish samples is carried out (diet analysis of marine mammals, herring and capelin). Fishers are also required to collect water temperature data. These data will yield valuable information on the size, growth, condition and diet of various species, as well as stock abundance and water temperature.

Catches not used for scientific purposes are sold to processing plants and the profits from such sales are used, in part, to finance the Sentinel Survey Program. Fisheries and Oceans has primary responsibility for the administration of the program. The implementation of the program is the responsibility of the Capitaines-Propriétaires de la Gaspésie inc. (ACPG), for mobile gear fisheries in 4S, 4T and the Fish, Food and Allied Workers (FFAW) of Newfoundland in 4R, 3Pn.

The Sentinel Fishery follows a depth-stratified random sampling plan. The Northern Gulf is divided into depth zones because depth can influence the distribution of cod. The following strata have been defined: 20-50 fathoms, 50-100 fathoms, 100-150 fathoms, 150-200 fathoms and over 200 fathoms. Fishers have 2 or more random sampling stations established within these strata. Trawlers perform a 30-minute standard tow at a speed of 2,5 knots for each of their assigned sampling stations. This type of tow is used to evaluate abundance.

Two mobile surveys of approximately two weeks each are carried out annually. These operations are conducted in July and October. In all, nine fishing vessels share 300 tows per survey in 3Pn, 4RS and 4T. Each year, in August, Fisheries and Oceans Canada carries out a similar survey in the northern Gulf of St. Lawrence, aboard research ship the CSS Alfred Needler.

October 2001 Survey

The 16th sentinel survey was conducted in the northern Gulf of St. Lawrence between September 28 and October 10, 2001. A total of 283 sentinel fishing stations were surveyed (Figure 1). Of the 283 standard tows scheduled, 281 tows were successfully carried out, i.e., 26 in 3Pn, 124 in 4R, 111 in 4S and 20 in 4T. The 281 stations represent 93.7% of the sampling target.

- From September 28 to October 10, four Quebec trawlers covering 4ST completed 131 out of a planned 150 stations (Figure 1). On the west coast of Newfoundland (4R 3Pn), from September 28 to October 2, five trawlers performed the 150 stations that were targeted (Figure 1).
- The 20 tows in 4T are conducted to complement the assessment of the redfish of Unit 1 and Greenland halibut (turbot) stocks for the management unit 4RST. **The cod captured in 4T is not used to estimate abundance in area 3Pn, 4RS.**
- The sentinel survey of 3Pn, 4RS was completed in 13 days. This represents one of the shortest duration for the October survey. Since 1995, the October survey were carried out on average of 25 days.
- The total catch of stratified random tows for cod, redfish and Greenland halibut (turbot) for the October 2001 survey is presented in Table 1.

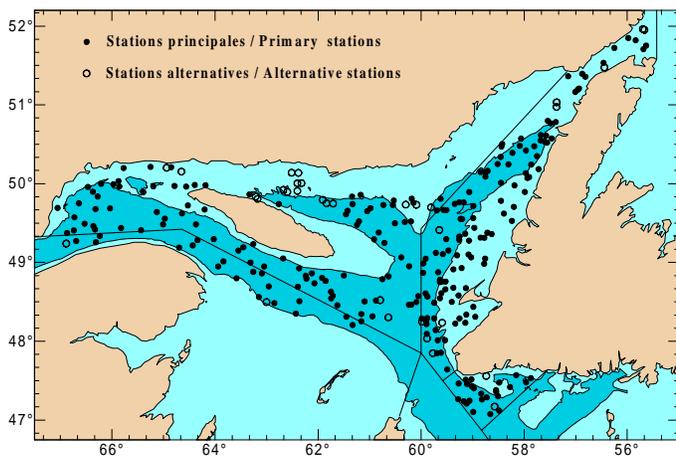


Figure 1: Map showing the distribution of stratified random tows during the October 2001 survey.

Table 1: Total catch of stratified random tows for the October 1995-2001 survey for 3Pn, 4RST.

Year	Number of tows	Catch (kg)		
		Cod	Redfish	Turbot
1995	327	4,211.0	3,562.4	1,763.1
1996	279	6,261.8	2,424.3	1,373.0
1997	290	5,566.6	2,937.8	1,527.2
1998	289	4,824.8	1,449.8	2,277.0
1999	297	5,618.8	2,019.3	1,583.8
2000	298	8,522.9	3,184.5	2,165.7
2001	283	4,899.7	1,551.0	1,799.1

1. Biomass and Distribution of Groundfish.

Cod

The preliminary data show a drop of the trawlable biomass index for area 3Pn, 4RS to reach a total of 35,089 tons (Figure 2). One can observe an annual increase in biomass index a little more of 8% for the period of 1995 to 2001.

In 2001 area 3Pn and 4S recorded a slight increase of the estimated trawlable biomass index compared to 2000. For the 3Pn, the increase is of almost two times greater than the average biomass index for the period of 1997 to 2000. In area 4S, the actual value in 2001 remained among the lowest of the series. In area 4R, the trawlable biomass index recorded a drop for passed from 55,479 tons in Octobre 2000 survey to nearly 31,771 tons in 2001. The trawlable biomass index for area 4R approaches the values of the years 1996 to 1999. As in the past, the cod concentrations remain very low in divisions 4S at more than 150 fathoms (Figure 3). The quantities of cod in 4S have always been very low. The quantities of cod as

determined by the mobile sentinel surveys are much lower in 4S and 3Pn compared to 4R. The catch distribution of cod is located primarily in Division 4R along the west coast of Newfoundland (Figure 3).

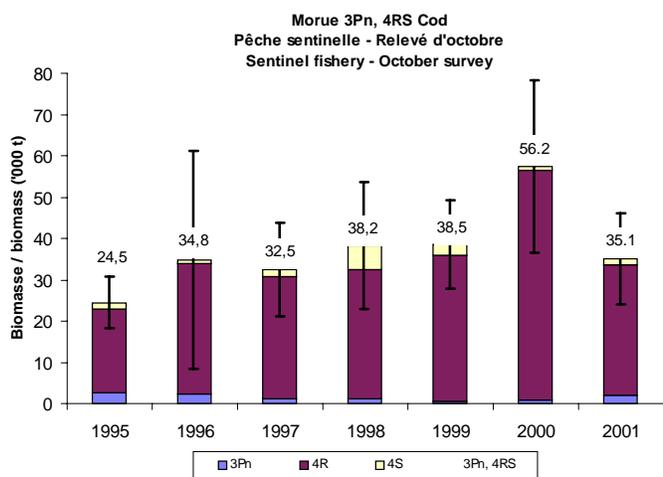


Figure 2: Trawlable biomass index of cod estimated from stratified random tows in area 3Pn, 4RS on sentinel fishery for October (1995-2001) surveys.

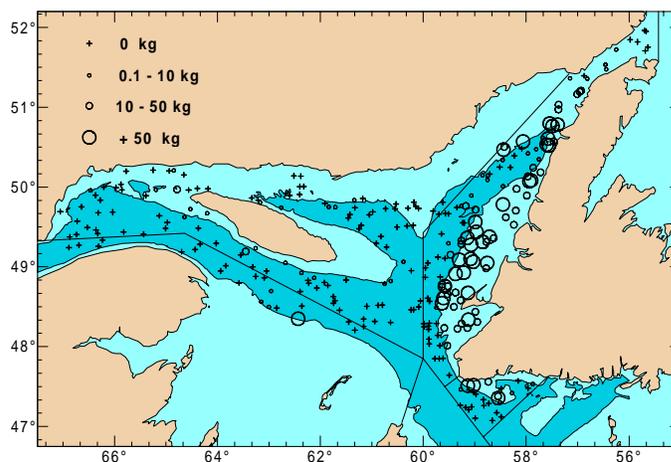


Figure 3: Map showing the observed catch distribution of cod from stratified random tows in area 3Pn, 4RST during the October 2001 survey.

Redfish

The preliminary data show a decrease of the trawlable biomass index of the redfish in area 4RST with 8,836 tons for the October 2001 survey. In the 4T, the redfish was at its lowest level since 1995, whereas for 4S, the redfish reaches a lower estimated level to approach the values of the years 1996, 1998 and 1999. The trawlable biomass index estimated in the area 4R show a stability for the period of 1995 to 2001. The cumulated declines of the trawlable biomass index in area 4S and 4T explains a weaker estimate in 2001 for the redfish.

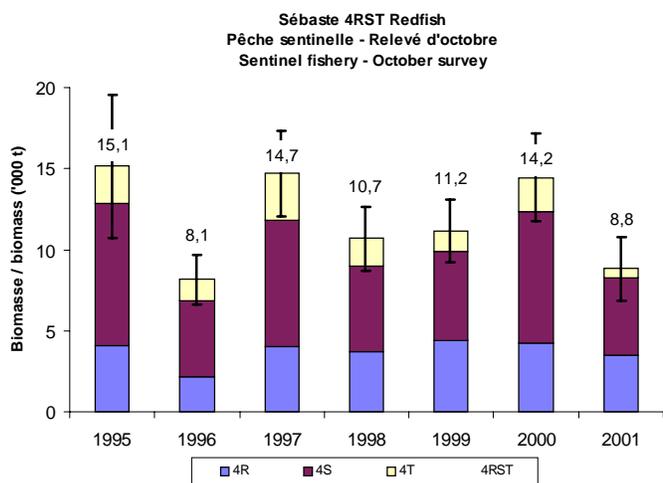


Figure 4: Trawlable biomass index of redfish estimated from stratified random tows in area 4RST on sentinel fishery for October (1995-2001) surveys.

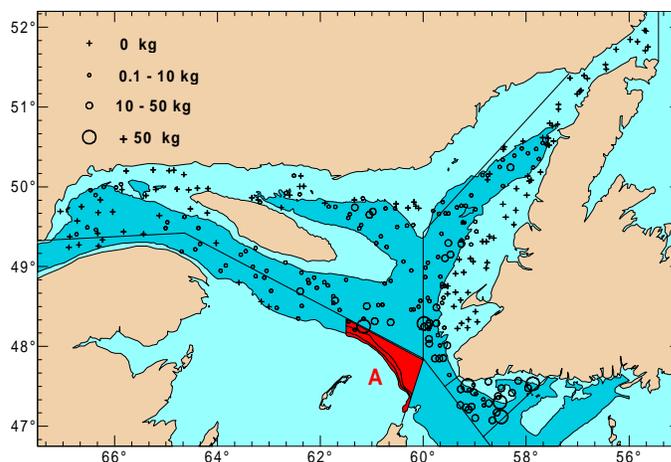


Figure 5: Map showing the observed catch distribution of redfish from stratified random tows in area 3Pn, 4RST during the July 2001 survey.

The reduction in the estimate of the trawlable biomass index of the redfish in 4T could be due to the fact that strata 401, 404 and 407 were not sampled, red area in figure 5. In the past, these stratum were significant for the redfish since contributed for 9,9% to 23,4% of the trawlable biomass index. The

average biomass of these strata was in the order of 2,000 tons. As in earlier years, the redfish was concentrated for the most part in the channels of the Northern region of the Gulf (Figure 5). In October, good concentrations of redfish are found in the area 3Pn, in spite of the fact that this area is not a part of the stock of management Unit 1 of 4RST.

Greenland Halibut (turbot)

The preliminary data shows a drop of the trawlable biomass index of the turbot in 4RST compare to 2000 survey (Figure 6). The biomass index decreased to approach a total of 20,555 tons (figure 6). Despite this, there is an annual increase in biomass index of 12.4% for the period of 1995 to 2001.

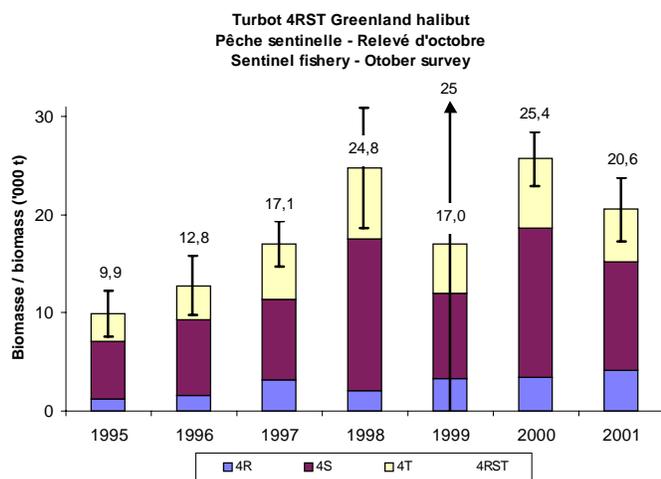


Figure 6: Trawlable biomass index of turbot estimated from stratified random tows in area 4RST on sentinel fishery for October (1995-2001) surveys.

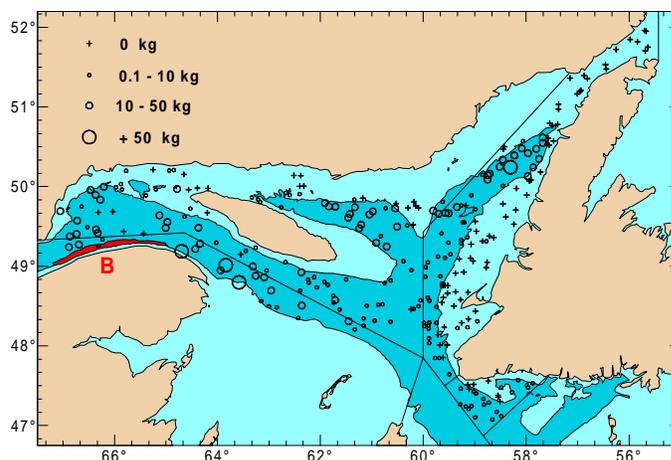


Figure 7: Map showing the observed catch distribution of turbot from stratified random tows in area 3Pn, 4RST during the July 2001 survey.

As for the redfish, a good part of this reduction could be explained by the fact that 10 out of the planned 30 tows were not sampled in 4T. For the same zone which the redfish, zone A which includes stratum 401, 404 and 407 (figure 5), the impact is probably minor because it contributed for 0,9% to 3,6% of the trawlable biomass index for the years 1995 to 2000. On the other hand, the zone B, which corresponds to stratum 409 (figure 7) in 4T, were not used in the biomass index because only one station was carried out there being given the presence of gill nets fishing turbot to the other primary and alternative stations. In the past, this one was a significant stratum for turbot because it contributed for 4,3% to 17,4% of the trawlable biomass index. The turbot was concentrated mostly in the Estuary and in the Laurentian Channel (Figure 7). Turbot concentrations were also observed around Anticosti Island and in the Northern portion of the Esquiman Channel. The distribution of turbot is on the whole similar to those of earlier years. The mobile sentinel survey does not sample the Estuary, where turbot is found to be abundant in DFO's annual scientific survey.

2. Sampling and Analysis

The standard sampling procedures (length, sex and weight) were used for cod, redfish, turbot, witch flounder and Atlantic halibut. The data were recorded on separate forms for each tow.

Tagging

Tagging can be used to estimate the growth rates, migratory patterns and the exploitation rate of various species of fish. A total of 73 cod were tagged in the October 2001 survey, all in area 4R (Table 3). Tagging cod from a 30-minute standard tow by the mobile gear may not be optimal given the survival rate of tagged fish may be poor. No tagging was done in 4S.

Otoliths

Otoliths were taken from 923 cod in area 3Pn, 4RS (Table 3). The age of individual cod specimens will be determined from the otoliths before the next assessment in February, 2002.

Table 3: Inventory of fish sampling from stratified random tows carried out at the time of 2001 October survey.

Boat	Number of fish	
	Otolith	Tagging
Rémy Martin	27	0
Annie Annick	19	0
Sextan	0	0
Chlorydon	75	0
Northern Tip	156	0
885-77	177	0
Catalina Venture	162	0
Sylvia Lyn II	161	0
Nfld Storm	146	73
Total	923	73

Diet analysis of marine mammals

This study will make it possible to identify the prey in the diet of the St. Lawrence estuary belugas. To do this, the composition in fats of beluga and seal blubber along with those in 50 species of their potential prey was examined. Whole specimens of various species of fish (capelin, herring, turbot, monkfish, american plaice, etc...) were collected during the survey. These frozen specimens were delivered to the Maurice Lamontagne Institut for analyses which will be completed by Claude Nozères.

Witch Flounder

Witch flounder are typically found in deeper waters of the North Atlantic. The assessment of the

resource rests on analyses based on length. The length frequencies per sex as well as the weight per length were collected for the 16 consecutive sentinel surveys. This information will be useful for the assessment. Douglas Swain of the Gulf Fisheries Center in Moncton (MPO) is the scientist responsible for the stock assessment on the witch flounder in the Gulf.

Herring and Capelin

The October sentinel survey allowed the harvest of whole specimens of herring and capelin. These frozen samples were brought back to the Maurice-Lamontagne Institut for the teams of François Gregoire.

Acknowledgements

We wish to acknowledge the work of the many fishers, observers and coordinators. Without their contributions, the objectives of the 16th seasonal sentinel fishery could not have been achieved.

Table 6: The following fishers and observer contributed to the October 2001 sentinel survey:

4R, 3Pn			4S		
Skipper	Crew	Observer	Skipper	Crew	Observer
Winsor Hedderson (Northern Tip)	Howard Pittman Dereck Pittman Chad Hedderson Dwayne Decker	Levi Harvey	Jean-Pierre Élément (Rémy Martin)	François Dionne Martin Élément	Paolo Gionet
Gariel Warren (885-77)	Leonard Warren Kayward Warren Jamie Warren Enis Gaulton	A.J. Felix	Albert English (Annie Annick)	Robert Cloutier Dave Jalbert	Mélanie Gaumont
Dereck Coles (Catalina Venture)	Bob Campbell Ashley Coles Gorvin Williams Randy Coles Abe Coles	James Marsden	Marcel Roy (Sextan)	René Plourde Dino Côté	François Dubé
Murray Lavers (Sylvia Lyn II)	Floyd Biggin Warren House Barry Ryan Rod Cornick	Mervin Hancock	Réjean Bernatchez (Chlorydon)	Jean Guy Côté Gilles Côté	Louise Faulkner
Dan Genge (Nfld Storm)	Albert White Kevin Genge Claude Genge	Paul Osmond			

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**This report is available at our
internet site**



ATTENTION !

The Laurentian Region's Sentinel Fisheries Program are pleased to announce the opening of the mobile gear Internet site for the northern Gulf of St. Lawrence sentinel fisheries. The opening of the site is planned for the beginning of December.