



## AN ASSESSMENT OF ICELAND SCALLOP IN THE CANADA-FRANCE TRANSBOUNDARY ZONE OF ST. PIERRE BANK

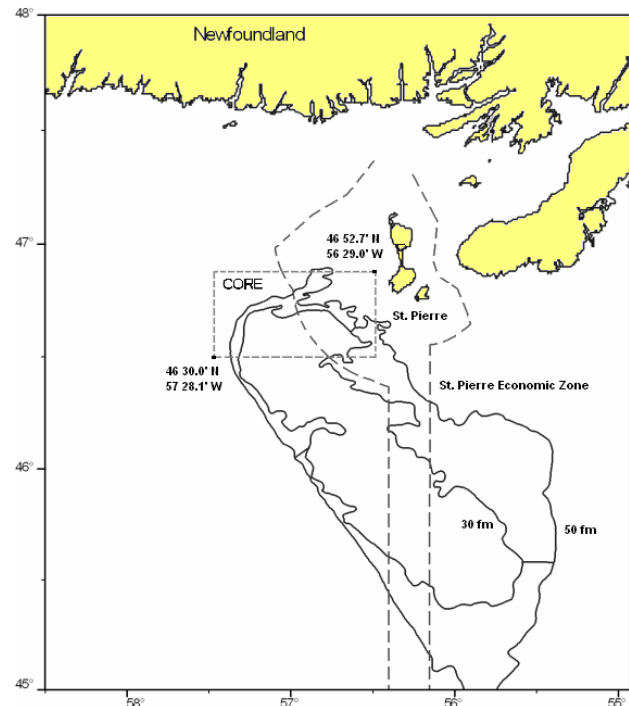


Figure 1: Northern St. Pierre Bank showing the Canada-France Transboundary (CORE) zone.

### Context

The directed fishery for Iceland scallops (*Chlamys islandica*) started on St. Pierre Bank in 1989. Populations off Newfoundland and Labrador are normally found in waters from 30-100 fathoms, usually on hard bottom with variable substrate composition, consisting largely of sand, gravel, shell fragments, and stones.

Prior to 1997 the entire catch was taken by Canada. A decision by an International Court of Arbitration in 1992 resulted in jurisdictional changes over the disputed waters to the south of Newfoundland and St. Pierre and Miquelon. Following that decision, an annual catch level (TAC) has been established for an area called “the Transboundary area” or simply the “CORE” (Fig. 1). Joint TAC’s have been in place for the CORE since 1995. France and Canada are allocated a fixed percentage of the TAC, (70% and 30%) respectively.

A joint Canada – France research survey was completed in September, 2005, the first since 1998. The last full assessment of the status of this stock was in 1992, although updates of survey and fishery data have been provided for 1993, 1996, and 1998. There is no assessment schedule for this stock.

## SUMMARY

- Directed fishing started in 1989 and peaked at 6000 t in 1992. There has been no fishery in the CORE area since 1997 although there has been a TAC of 100 t in 1999 and 2000 and a 400 t TAC since.
- A joint Canada–France research survey was completed in September 2005, the first since 1998. It gave a minimum dredgeable biomass (MDB) estimate of 2200 t.
- The 2005 biomass estimate is similar to the 1996 level, which is only a quarter of the virgin biomass in 1990.
- A meat count of 50/500g is comparable to that originally estimated in 1991.
- Between 1993 and 2005, biomass decreased in the French zone and increased in the Canadian zone. High numbers of starfish, some of which are predators on Iceland scallop, were observed in the French zone during these years.
- The mortality estimate for Iceland scallop in 2005 is 21%, down from a high of 88 % in 1998.

## BACKGROUND

### The Fishery

Directed fishing started in 1989 and peaked at 6000 t in 1992. There has been no fishery in the CORE area since 1997 although there has been a TAC of 100 t in 1999 and 2000 and a 400 t TAC since (Table 1). Prior to 1996 the entire catch was taken by Canada. The decision by an International Court of Arbitration in 1992 resulted in jurisdictional changes over the disputed waters to the south of Newfoundland and St. Pierre and Miquelon. Following the decision, an annual catch level (TAC) has been established for an area called “the Trans-boundary area” or simply the “CORE” (Fig. 1). France and Canada are allocated fixed percentages of the TAC at 70% and 30% respectively. Joint TAC’s were first established for the CORE in 1995 at 2800t, however, less than 10% of the TAC was taken in any one year from 1995 to 1997. Neither Canada nor France has fished the area since 1997.

Table 1: TAC’s and removal (tonnes).

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001-2005
<b>Tac</b>	-	-	-	-	-	-	2800	3250	2100	2100	100	100	400
Canada	36	507	755	5967	0	0	230	158	4	0	0	0	0
France	0	0	0	0	0	0	0	148	118	0	0	0	0
<b>Total</b>	36	507	755	5967	0	0	230	306	122	0	0	0	0

## ASSESSMENT

### Research Surveys

Resource assessment surveys were conducted in 1990 to 1993, 1996 and 1998. The original survey strata were redesigned in 1991 to reflect the concentrations of scallop found in the north. These were redrawn again in 1993 to accommodate the new maritime boundary resulting from the decision by the International Court of Arbitration. All subsequent surveys used this stratification scheme (Fig.2). A joint Canada–France research survey was completed in September, 2005, the first since 1998. It gave a minimum dredgeable biomass (MDB) estimate of 2200 t.

Although biomass estimates were calculated for all strata in the CORE area containing Iceland scallop, only a few of the strata contained the bulk of the scallop biomass.

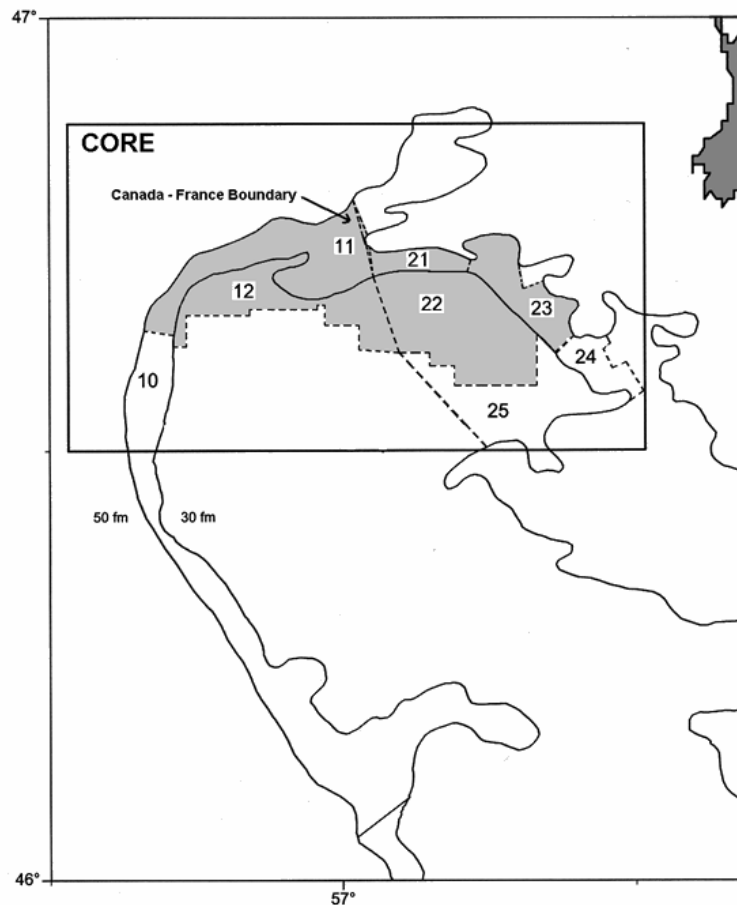


Figure 2: Northern St. Pierre Bank showing the main “commercial” strata (shaded) for Iceland scallop.

It was in these strata that most of the commercial effort was directed in the past. These main “commercial” strata (11, 12, 21, 22 & 23) usually account for 90% or more of the entire Iceland scallop biomass in the CORE area (Table 2). In the main “commercial” strata, the MDB decreased significantly from about 7000 t in the early 1990s to a low of 764 t in 1998. The 2005

biomass estimate is similar to the 1996 level, which is only a quarter of the virgin biomass in 1990.

Table 2: Minimum dredgeable biomass estimates for the overall CORE area and the main "commercial" strata.

Year	Overall CORE		"Commercial" strata		% of Total MDB
	Area (n.mi <sup>2</sup> )	MDB (t, round)	Area (n.mi <sup>2</sup> )	MDB (t, round)	
1990			234.6	8729	
1991	208.3	6811	183.6	6801	100%
1992	266.1	7383	183.6	7184	97%
1993	234.2	5039	187.6	3674	73%
1996	269.1	2246	187.6	2171	97%
1998	269.1	778	187.6	764	98%
2005	269.1	2165	187.6	2073	96%

A meat count of 50/500g is comparable to that originally estimated in 1991.

Between 1993 and 2005, biomass decreased in the French zone and increased in the Canadian zone (Fig 3). The proportion of the MDB in the Canadian zone increased from 0.14 in 1993 to 0.68 in 2005. This change in spatial distribution in biomass could not be explained by fishery removals.

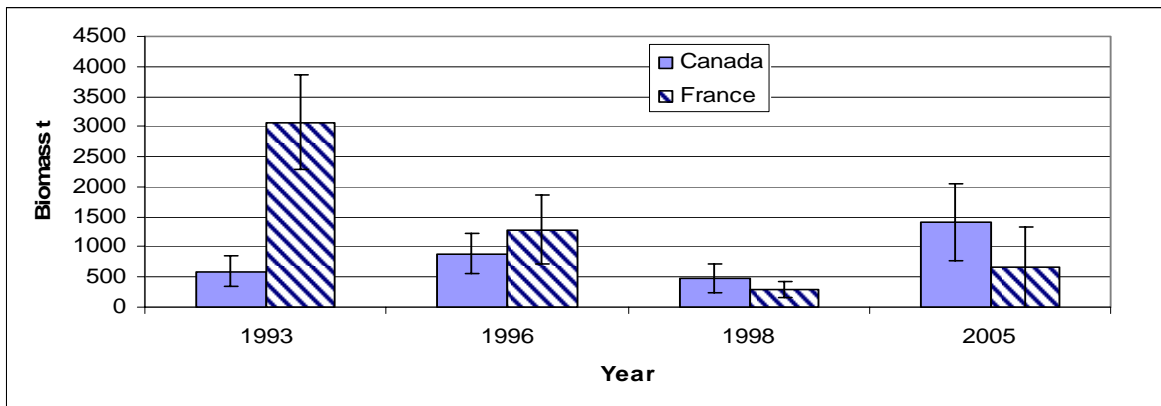


Figure 3: Biomass estimates from "commercial" strata in the Canadian zone (strata 11,12) and the French zone (strata 21,22,23).

### Mortality

Natural mortality rates, computed from the proportion of non-disarticulated valves (cluckers) to live scallop, were relatively low (15%) in the early 1990's and increased throughout that decade. The mortality estimate for Iceland scallop in 2005 is 21%, down from a high of 88 % in 1998.

## **Predation**

In the early to mid-1990s a severe epidemic of predatory starfish contributed to significant mortality in Iceland scallop in the CORE area (Lawrence *et al.*, 1997; Naidu *et al.*, 2001). The change in spatial distribution of the scallop biomass between 1993 and 2005 was associated with a high biomass of starfish within stratum 22 in the French zone during 1996 to 1998. Biomass of all starfish species increased to a high of 1600 t (MDB) in 1998, when Iceland scallop biomass was at its lowest (Table 2). Since the 1996 survey, starfish have been enumerated by species. In the French zone, biomass of Leptasterias polaris and Crossaster papposus, the two main predatory species on St. Pierre Bank, increased between 1996 and 1998 and was down in 2005.

## **CONCLUSIONS AND ADVICE**

The joint Canada–France research survey completed in September 2005, gave a minimum dredgeable biomass estimate of 2200 t. This estimate is similar to the 1996 level, which is only a quarter of the virgin biomass in 1990. There has been a significant change in the distribution of scallops in the CORE area. Between 1993 and 2005, biomass decreased in the French zone and increased in the Canadian zone. The percent of the MDB in the Canadian zone in 2005 was estimated at 68%.

## **SOURCES OF INFORMATION**

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