

**Gulf of Maine Research Institute  
Responsibly Harvested Seafood from the Gulf of Maine Region  
Report on  
Atlantic Sea Scallops (Inshore Canada)**

- ☒ The fishery is managed by a competent authority and has a management plan in place that incorporates a science-based approach to ensure sustainability.
  - *The inshore Canadian scallop fishery in the Gulf of Maine is managed by the Canadian Department of Fisheries and Oceans (DFO).*
  - *Individual scallop fishery management plans (FMPs), originally established under the Atlantic Fisheries Regulations of 1985, are utilized and each plan is based on fishing areas and fleet characteristics.*
- ☒ If stock sizes are below management target levels, whether due to natural or man-made causes, management plans are established that enable rebuilding within a specified timeframe.
  - *Stock assessments utilize median biomass estimates from historical periods of abundance to establish a baseline when determining recommended harvest levels. Each scallop fishing area (SFA) and scallop production area (SPA) is assessed to determine the current status of biomass and abundance, as well as future projections. This information is then used to determine the Total Allowable Catch that will ensure long-term use of the resource, for each fishing area.*
- ☒ Sufficient data exists to determine harvest levels.
  - *Fishery dependent and independent data are utilized by DFO scientists in the stock assessment process to determine acceptable harvest levels.*
- ☒ Monitoring and compliance measures are in place to ensure acceptable harvest levels.
  - *The harvest of scallops in the Bay of Fundy is managed through a combination of dockside monitoring and landings submissions, vessel monitoring systems (VMS), at-sea monitoring, as well as 100% hail in and hail out requirements.*
- ☒ Enforcement exists to ensure that harvesters follow regulations, and to prevent illegal practices and unreported harvest.
  - *DFO is responsible for enforcing the Fisheries Act and other regulations and legislation. Enforcement activities are carried out by Fishery Officers across Canada who conduct regular patrols on the land, on the sea, and in the air.*

## I. Definition of Atlantic Sea Scallops (Inshore Canada)

Atlantic sea scallops (*Placopecten magellanicus*) are distributed in the Northwest Atlantic Ocean from Newfoundland to North Carolina. The inshore fishery in the Canadian portion of the Gulf of Maine region includes the Bay of Fundy and Scallop Fishing Area 29 west of 65° 30' (Fig. 1). The 43° 40' North Latitude line demarcates the offshore scallop fishery from the inshore fishery in the Bay of Fundy. A larger offshore fishery exists beyond Scallop Fishing Area 29 West, and the offshore fishery has achieved Marine Stewardship Council (MSC) certification in March of 2010 (MSC 2010). This report focuses on the management of the inshore scallop fishery, as the offshore fishery automatically qualifies for the Gulf of Maine Responsibly Harvested verification upon MSC certification.

Vessels in the inshore scallop fleet typically range from 30' – 65', with Digby and New Bedford style dredges being the primary gear types.

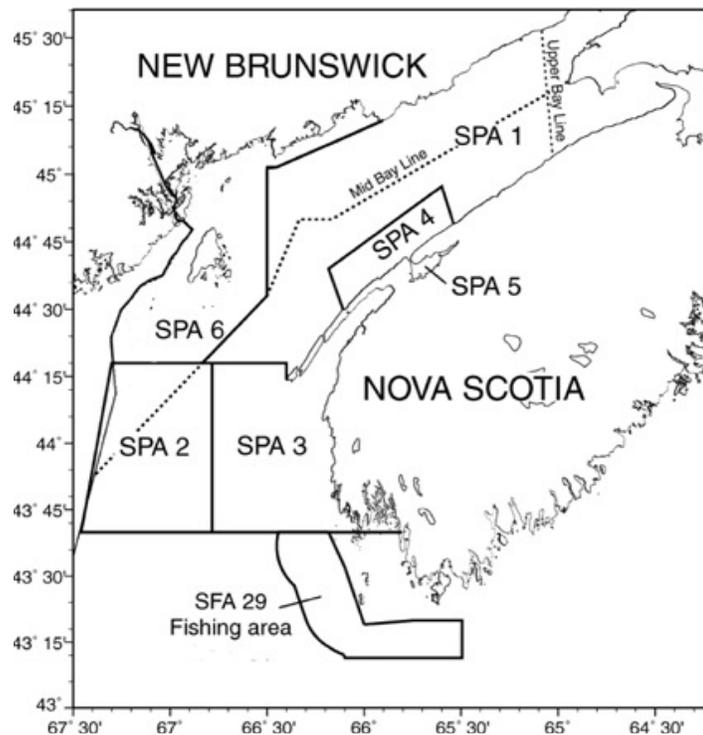


Figure 1. Statistical areas used to define the Scallop Production Areas in the Bay of Fundy (DFO 2010).

## II. Description of the Management Authority and Regulatory Process

Responsibility of Atlantic sea scallop management lies within Canada's Department of Fisheries and Oceans (DFO). Regulations are made under the authority of the federal Fisheries Act (1985), which provides the authority and mechanisms to manage fisheries and implement measures. DFO is the main authority for implementing regulations under the Fisheries Act, the Coastal Fisheries Protection Act (1985), and

other fisheries-related legislation. In addition to federal laws and regulations, there are also Maritime Provinces Fishery Regulations<sup>1</sup>, which govern fishing in the in the Provinces of Nova Scotia, New Brunswick and Prince Edward Island and in adjacent tidal waters.

### **III. Atlantic Sea Scallop Data**

#### *Scallop Production Areas*

In 2002, it was determined that biomass and landings data of scallops in the Bay of Fundy were to be assessed annually in Scallop Production Areas (SPA) 1-6. The most recent available assessment was conducted as part of the Regional Science Advisory Process in November, 2009 (DFO 2010). Biomass data applied in the peer reviewed assessments is collected from DFO and industry surveys, at-sea monitoring, and landings information. Based on the assessment, DFO determines a total allowable catch (TAC) for each SPA.

#### *SPA 1 Inner/Upper Bay of Fundy, Southwest Bay of Fundy*

Since 2002, SPA 1 has been managed as two separate areas, SPA 1A and SPA 1B. According to the most recent assessment in 2009, catch rates in SPA1A have declined from 2001 to 2006 (median catch = 14.5 kg/h, meats), before increasing slightly in 2007/2008 (16.73 kg/h, meats). In 2009, total biomass was determined to be 1,299 t (meats) based on population modeling utilizing survey data. This was similar to the median total biomass 1,295 t (1997 to 2008). Despite 2009 total biomass being similar to the median, biomass of commercial size scallops decreased in 2009 from 2008 (DFO 2010).

Commercial catch rates for SPA1B remained stable from 2008 to 2009, except in subarea Scallop Fishing Area (SFA) 28D, where catch rates declined. Biomass data collected from all areas in 2008 indicated declines of commercial scallop size biomass in all areas. Population modeling estimates total biomass to be 1,703t in 2009, which is a decrease from 2008 (1,818t), but is above the median total biomass (1997-2008) of 1,672t (DFO 2010).

#### *SPA 2 Northern/Upper Bay of Fundy*

Scallop Production Area 2 is considered poor habitat for scallops and is not assessed annually (DFO 2010).

#### *SPA 3 Brier Island, Lurcher Shoal, and St. Mary's Bay*

Commercial catch rates in SPA 3 have been stable since 2007, and landings have declined annually since 2005. DFO surveys conducted in the area have shown a decline in commercial size scallops since 2004, and a decline in total biomass since 2007 in both targeted and non-targeted scallop beds, despite an annual decrease in fishing effort (DFO 2010). DFO has stated that further assessment and research is needed to better understand biomass trends in this area.

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<sup>1</sup> Department of Justice Canada. Maritime Provinces Fishery Regulations (SOR/93-55). <http://laws.justice.gc.ca/en/F-14/SOR-93-55/index.html>

#### *SPA 4 Digby*

Commercial catch rates in SPA 4 have remained relatively stable since 2005, and the median 2008/2009 catch rate (18.8 kg/h, meats) was equal to the median catch rate from 1976/1977 to 2007/2008 (DFO 2010). In addition to stable catch rates, survey data indicates that biomass has been stable since 2006, but with low recruitment and commercial size scallops declining in 2009.

The 2009 assessment utilized the delay-difference model (Smith and Lundy 2002) to determine population of SPA 4 scallops, and total biomass was estimated to be 722 t. While this is below the long-term median total biomass of 787 t for the area, it was an increase from the 2008 estimate of 680 t (DFO 2010).

#### *SPA 5 Annapolis Basin*

Commercial catch rates from 2009 (16.6 kg/h, meats) in SPA 5 were below 2008 levels and below the 1977-2008 median level of 18.9 kg/h, meats. Landings in 2009 (5.7 t, meats) were below the 2010 TAC of 10 t. The annual survey of SPA 5 was discontinued in 2009 at the request of industry, and survey efforts have been allocated to other areas of the region. Despite this, according to the most recent stock assessment, the average catch of 9 t from 1997 to 2008 has not resulted in an unstable catch per unit of effort (CPUE), and suggests a stable biomass (DFO 2010).

#### *SPA 6 Grand Manan and Southwest New Brunswick*

Catch rates and landings for SPA 6 have remained stable since 2002 and have remained well below the TAC since 2001. Due to funding limitations, the number of surveys in SPA 6 were reduced in 2009. Of the data collected, pre-recruits with a shell size of 40-64 mm were found in high densities in select areas, while high concentrations of recruits (65-70 mm) correlated with historical survey data (DFO 2010). Mean catch rates of commercial scallops increased in all areas of SPA 6 in 2009.

Catch data indicates that biomass of commercial sized scallops have remained stable, while survey data indicates an increase in total biomass in 2009. Harvest levels of scallops in SPA 6 appear not to be impacting population biomass levels (DFO 2010).

#### *Scallop Fishing Area 29 West*

Scallop Fishing Area 29 West (SFA 29) is the southernmost scallop fishing area in the Bay of Fundy, and SFA 29 is divided into subareas A, B, C, D, and E. SFA 29 is managed and assessed separately from the other areas in the Bay of Fundy. Under the SFA 29 Fishing Plan, a full stock assessment of SFA 29 is conducted every two to three years. During years when a full assessment is not conducted, survey indices from catch data and DFO surveys are used to assess the stock and provide management advice.

In 2010, SFA 29 was not fully assessed, but updated stock information was provided by DFO, with the exception of subarea E. According to the 2010 report, abundance and biomass has not changed significantly since 2006 and remains relatively low in

subareas A and C, while subarea B experienced small increases in biomass and abundance since 2008 (DFO 2011d). Subarea D experienced little change in abundance or biomass. Commercial catch rates have declined in all SFA 29 subareas since 2009, with the exception of the East of Baccaro fleet in subarea A. This increase may be a reflection of a very low 2009 catch.

#### *Scallop Data Uncertainty*

The delay-difference model is used in the assessment to determine impacts of the fishery on the scallop population. It should be noted that scallop biomass for recent years tend to be lower than the estimate derived from the previous year's model, resulting in differences between annual biomass estimates. According to the most recent stock assessment report:

Successive revisions of the estimated biomass in a decreasing direction imply that the model is having difficulty balancing the decrease in survey biomass estimates from one year to the next with removals from the population through fishing and natural mortality (DFO 2010).

As a result, further exploration of data and modeling has been recommended before the next scallop assessment.

#### **IV. Atlantic Sea Scallop Fishery Management Plan**

Management plans for the inshore fishery are developed by DFO, and include consultation with the fishing industry (DFO 2004). The inshore scallop fishery in the Bay of Fundy is managed under three separate plans that each seek to “pursue its own conservation and fleet rationalization plans (DFO 2011a).” These plans are the Bay of Fundy Full Bay Scallop Management Plan, Bay of Fundy Upper Bay Scallop Fleet Fishing Plan, the Bay of Fundy Mid Bay Scallop Fleet Fishing Plan, and the Scallop Fishing Area 29 West Scallop Fishing Plan. Application of the each plan is dependent characteristics such as vessel size and fishing area.

##### ***Bay of Fundy Scallop Fleet Fishing Plan***

The 2010/2011 Full Bay Scallop Plan applies to vessels from 45' to 65', and participants have operated under an Individual Transferable Quota (ITQ) system since 1996. Under the 2007 initiative, *Preserving the Independence of the Inshore Fleet in Canada's Atlantic Fishery*, Full Bay Scallop Fleet licenses were granted transferability rights (DFO 2011a). As a result, licenses are now allowed to be transferred between individuals or corporations, and a singular entity could possess more than one license. As of 2005, the Full Bay Fleet consisted of 100 licenses.

As of 2011, there are 16 licenses regulated under the Upper Bay Scallop Fleet Plan, and these vessels range from 30' to 45' and are managed under a competitive quota regime, as opposed to ITQs utilized in the Full Bay Plan (DFO 2011b). Participants in the Upper Bay Scallop Fleet Plan are typically multi-purpose license holders and target species other than scallops throughout the year.

Similar to the Upper Bay plan, the Mid Bay Scallop Fleet Fishing Plan applies to vessels ranging from 30' to 45' that are managed under a competitive quota. As of 2011, the Mid Bay fleet consisted of 209 licenses, with the majority of vessels fishing out of New Brunswick ports (DFO 2011b).

The SFA 29 West Scallop Fishing Plan uses transferable quotas, seasonal restrictions, subarea TACs and an area TAC to manage the SFA 29 area. The SFA 29 fleet consists of 99 Full Bay licenses and 64 Inshore East of Baccaro scallop licenses, with the Full Bay fleet receiving 65% of the TAC and the Baccaro fleet receiving 35%. Scallop fishing in SFA 29 may be conducted from June 20<sup>th</sup> to August 31<sup>st</sup>, unless the area's TAC is met, which would result in a shortened season (DFO 2011e).

*Scallop Fleet Fishing Plans and Quotas*

Scallop Production Areas 3, 4 and 5 are fished exclusively by the Full Bay Fleet, while quota for SPAs 1 and 6 are divided across the Full, Upper, and Mid Bay Fleets (Table 1). Minimal scallop production occurs in SPA 2 and the area is not managed under a TAC.

Scallop Production Area	Total Quota	Allocation of Quota to Fishing Plan
SPA 1A	300t	Full Bay (100%)
SPA 1B	40 t	Full Bay (50.75%), Mid Bay (35.72%), Upper Bay (13.53%)
SPA 2	N/A	No quota set, marginal fishing area
SPA 3	60t	Full Bay (100%)
SPA 4	120t	Full Bay (100%)
SPA 5	10t	Full Bay 100%
SPA 6	140t	Mid Bay (85%), Full Bay (15%)
SFA 29	200t	Full Bay (65%), East of Baccaro (35%)

*Table 1. Distribution of inshore scallop allocations.*

*SPA 1*

In 2010, the 2009/2010 TAC for SPA 1A was set at 300t. While the 2009 assessment suggested that catch levels below 350t would result in an increase in biomass, concerns that the model may overestimate abundance resulted in a conservative TAC for the sub-area (DFO 2010). Landings for the 2009/2010 season for SPA 1A were below the TAC at 297t (DFO 2011a).

The 2009/2010 TAC for the Full Bay Fleet for SPA 1B was set at 203t and landings were below the TAC at 153.8t. The SPA 1B TAC allocated to the Mid Bay fleet was 144.7t, while landings were 138.7t. Landings for the Upper Bay fleet were also below their TAC of 54.8t at 53.9t (DFO 2011a).

*SPA 3*

The 2009/2010 TAC for SPA 3 was set at 60t for the Full Bay Fleet, and total landings were below the TAC at 55.8t (DFO 2011a).

#### *SPA 4*

In addition to a TAC, management of SPA 4 is regulated under a fishing season that extends from October 1<sup>st</sup> to April 30<sup>th</sup>. The 2009/2010 TAC was set at 120t and landings during that year were 114.3t (DFO 2011a).

#### *SPA 5*

The Full Bay Fleet has exclusive fishing access to SPA 5, and in the 2009/2010 a TAC of 10t was set. Landings for the same year were below the TAC at 8t (DFO 2011a).

#### *SPA 6*

The 2009/2010 TAC for the Full Bay Fleet was 21t with a total of 1.38t landed during the year (DFO Stock Report). The Full Bay Fleet's landings have not met the TAC for the last 6 years, as fishing effort has been redistributed to other areas. The Mid Bay Fleet landed a total of 89.5t against a TAC of 119t in 2009/2010 (DFO 2010).

#### *SFA 29*

The 2010 TAC for SFA 29 was set at 200t and total landings for the year were 198t (DFO 2011d). Based on the most recent stock update, the 2011 TAC was set at 200t.

## **V. Monitoring**

Industry is notified when fleets reach 80% of their quota during a fishing year. In the event license holders exceed their ITQ, they have 30 days from the closing of the scallop season to increase their quota through transfers. Otherwise, the amount that was exceeded will be deducted from the quota from following fishing year.

All vessels participating in the inshore scallop fishery must have a DFO approved Vessel Monitoring System (VMS), which is tracked by a Vessel Monitoring Station. In addition to the VMS program, vessels must participate in the Dockside Monitoring Program (DMP) that is overseen by the Conservation & Protection Division under DFO. The primary objective of the DMP is to provide accurate independent third party verification of landings (2010b). The industry funded DMP program for the inshore scallop fishery requires 100% hail in and hail out, 100% weigh out, including submission of landings data on required DMP documents.

## **VI. Enforcement**

DFO is responsible for enforcing the regulations and legislation pertaining to the scallop fishery. Enforcement activities are carried out by Fishery Officers across Canada who conduct regular patrols on the land, on the sea, and in the air (DFO 2010c). The monitoring mechanisms described in Section V are conducted in

coordination with the monitoring and enforcement activities conducted Fishery Officers.

## VII. References

- Department of Fisheries and Oceans (DFO). 2010. Assessment of scallops (*placopecten magellanicus*) in scallop production areas 1 to 6 in the Bay of Fundy. Canadian Science Advisory Secretariat. Science Advisory Report 2010/017.
- DFO. 2010b. Fisheries and Aquaculture Management. [http://www.dfo-mpo.gc.ca/communic/fish\\_man/ardmp/ardmp-pvqra\\_e.htm](http://www.dfo-mpo.gc.ca/communic/fish_man/ardmp/ardmp-pvqra_e.htm)
- DFO. 2010c. Monitoring Program Overview. <http://www.qc.dfo-mpo.gc.ca/peches-fisheries/surveillance/ensemble-overview-eng.asp>
- DFO. 2011a. 2011/10 Bay of Fundy full Bay scallop fleet fishing plan. Received through personal communications with DFO, 6/2011.
- DFO. 2011b. 2011/10 Bay of Fundy upper bay scallop fleet fishing plan. Received through personal communications with DFO, 6/2011.
- DFO. 2011c. 2011/10 Bay of Fundy mid bay scallop fleet fishing plan. Received through personal communications with DFO, 6/2011.
- DFO. 2011e. 2011 Scallop Fishing Area (SFA) 29 West Scallop Fishing Plan. Received through personal communications with DFO, 9/2011.
- DFO. 2011d. Update of information on SFA 29 West scallop fishery for 2011. Bedford Institute of Oceanography. April 7, 2011. Dartmouth, NS
- DFO. 2004. Inshore scallop management fact sheet: Maritimes Region. <http://www2.mar.dfompo.gc.ca/communications/maritimes/factsheets04e/InshoreScallopE.html>
- Marine Stewardship Council. 2010. Eastern Canada offshore scallop fishery. <http://www.msc.org/track-a-fishery/certified/north-west-atlantic/Eastern-Canada-offshore-scallop-fishery>