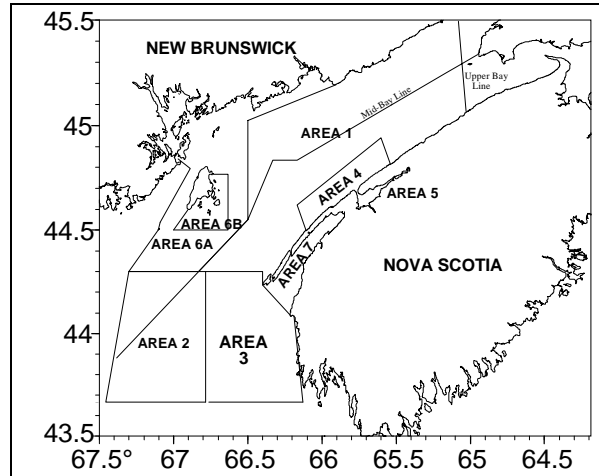


### Areas 2, 5, 7 Bay of Fundy Scallop



#### Background

The sea scallop *Placopecten magellanicus* occurs only in the northwest Atlantic Ocean from Virginia north to Labrador. Within this area, scallops are concentrated in persistent, geographically discrete aggregates or "beds", many of which support valuable commercial fisheries. The larger beds are found offshore and in the Bay of Fundy along the Nova Scotian coast. Scallops in different beds, and in different areas of large beds, show different growth rates and meat yields.

Unlike many commercial scallop species, the sea scallop has separate sexes. Male scallops develop a white gonad in the summer months, while female gonads are bright red. Eggs and sperm are released into the water and fertilization takes place in the sea. Spawning begins in late August to early September, and the larvae drift in the water for almost a month before settling to the bottom in October.

99 Full Bay license holders are licensed to fish in Areas 5 and 7. These vessels are between 45' and 65' long, and tow 7 to 9 drags off the starboard side. Both the Full Bay and Mid Bay license holders are eligible to fish in Area 2.

This industry became a quota fishery in 1997, with limited entry, TAC, gear size, seasonal closures, minimum shell height and meat count restrictions.

#### The Fishery

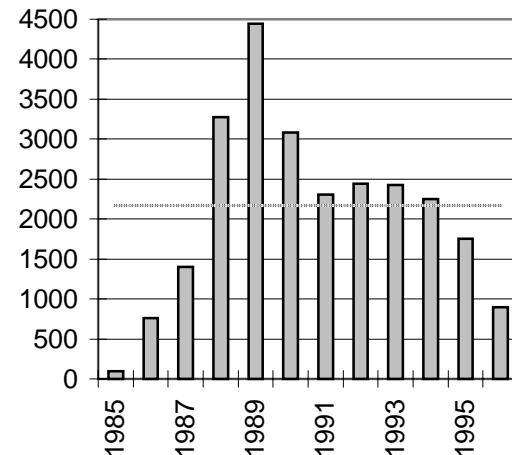
Landings in the whole of the Bay of Fundy by all fleet sectors have declined from 1995 by 49% in 1996, including catches of 76.7 mt from SFA29 outside of the regulation fishing area. The landed value of the catch was approximately \$13.9 million.

#### Landings (mt)

Ave	1991	1992	1993	1994	1995	1996*
85-90	2319	2304	2443	2429	2254	1754
	900					

\*preliminary

Bay of Fundy Scallop Landings (mt) (dash line: average over time series)



On 1 January 1997, an Interim Management Plan was implemented dividing the Bay into seven fishing areas with each area managed by a non-biologically-based total allowable catch, a meat count, shell height and in some cases, seasonal restrictions.

**Area 2. Southwest Bank.** Recently the scallop beds in Area 2 have not been heavily exploited (annual log book landings less than 1 mt from 1991 to 1994, and 3 t in 1995). Complete logbook records from 1976 to 1991 do not show any fishing activity in this area. From 1992 to 1995 there are 19 such log reports for Area 2, with the greatest activity seen in 1995 with 8 log reports. In 1995 fishing was spread out through the area with two reports from Northeast Bank, three reports from south of Southwest Bank, and three reports from the southwest portion of Area 2 near the deep water Area 3 beds. Two fleets fish this area. The portion of Area 2 within the Mid Bay Line is open to fishing by the Mid Bay fleet (210 licences). The entire area is open to fishing by the Full Bay Fleet (99 licences).

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#### 1997 Interim Management Plan

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TAC: 150 mt

Meat Count: 45/500 g

Minimum Meat Weight: 10 g (voluntary)

Shell Height Minimum: 95 mm

Season: All year except where restricted by industry overlap fishing agreements

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**Area 5. Annapolis Basin.** Scallops were harvested from the Annapolis Basin as early as 1600 and in the 1800's the existence of extensive beds of scallops were known. The commercial fishery, as we know it today, began in 1920. The importance of this fishery lies in the timing of the harvesting rather than the total landed catch. The timing of the

harvest allows for the maintenance of markets and winter employment. As of June 11, 1975, scallop harvesting could only occur in the Annapolis Basin from December 1 to April 30, and due to a conflict with the lobster fishery a restraining order further closed the Basin to scallop fishing during December when lobster traps are in place. While the total landed catch from this Area has not been large when compared to the total catch from all areas (less than 25 mt recently), during January and February landings from the Basin may represent 40% of the total scallop landings for those months. In 1997 a limited fishery (9 days) was conducted in Area 5.

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#### 1997 Interim Management Plan

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TAC: 25 mt

Meat Count: 30/500 g (subsequently changed to 40/500 g)

Minimum Meat Weight: 15 g (voluntary)

Shell Height Minimum: 104 mm

Season: Closed February 1, 1997 to December 31, 1997

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**Area 7. St. Mary's Bay.** The St. Mary's Bay scallop stocks are closely associated with Area 3 and most likely dependent on Area 3 for recruitment. The fishing history of this area is similar to that of Area 5 (Annapolis Basin) and annual landings from complete *log data* in 1994 and 1995 were less than 100 mt, however there was an increase in landings from 1994 (61 mt) to 1995 (94.5 mt).

## 1997 Interim Management Plan

TAC: 100 mt

Meat Count: 30/500 g

Minimum Meat Weight: 15 g (voluntary)

Shell Height Minimum: 104 mm

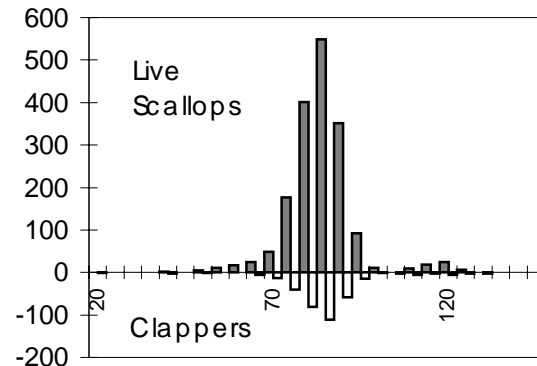
Season: Open June 1, 1997 to July 15, 1997

**Resource Status**

**Area 2. Southwest Bank.** A stock survey of a portion of Southwest Bank was conducted for the first time during the last two weeks of August, 1996 using the research vessel "J.L. Hart". Data from this research vessel survey were used to develop ageing and growth models for this stock.

Eleven tows were randomly sampled on Southwest Bank. The number of scallops per tow ranged from 0 to 627 resulting in the average number per standard tow of 249 (standard error = 267). The animals are concentrated in the 4, 5, and 6 age groups which together account for 87% of the abundance. The presence of one dominant size class on the bank is reflected in the shell height frequency distribution. This population would appear to have resulted from good recruitment from the 1989, 1990, and 1991 year-classes, with poor recruitment prior and subsequent to those years. The number of **clappers** (paired empty shells) is relatively high at approximately 17% with the greatest numbers appearing in the most abundant size frequencies. The numbers of clappers are related to natural mortality and incidental fishing mortality.

Area 2. Southwest Bank. Number of Scallops at Shell Height Intervals (mm) for Live Animals and Clappers



**Area 5. Annapolis Basin.** A depth stratified stock survey of the Annapolis Basin was conducted in 1993. This survey showed that most of the scallops were found in the 13.6-38.6 m (60-125 ft) depth stratum. The shell height frequency distribution showed that several year-classes were present. There were also a number of smaller, pre-recruit scallops 25-40 mm in shell height, and of older animals. The oldest recorded scallops in the survey were 11 years and these were found in the shallowest depth stratum. The age distribution of the population suggested that the population is self-sustaining and that regular recruitment has occurred at least over the past decade.

Most of the scallops are concentrated south and southeast of Victoria Beach in the areas reported by the fishermen to be the most lucrative grounds. There does not appear to be a separate area favouring juvenile scallops. Some tows did not catch any scallops, particularly those toward the more easterly reaches of the Basin. The bottom type in the area favoured by the scallops is predominantly rock and gravel.

In 1997, this area was fished under a dockside monitoring protocol. A total of

4.918 mt were removed. A strong **prerecruit** year-class was reported by fishermen in the 1997 fishing season.

Preliminary analysis of the log data from the dockside monitoring program shows **catch per unit effort** (CPUE) was  $6.37 \pm 2.5$  kg/hour with a minimum of 2.5 kg/h and a maximum of 14.0 kg/h. The log records totaled 100 "days" fished. The log catch was 7694 lb or 3490 kg. The total number of days fished was 125 over a 9 calendar day period.

**Area 7. St. Mary's Bay.** There has been no **stock survey** of St. Mary's Bay, although 4 stations were sampled there in 1994 as part of the Area 3 survey. Historical fishery data for this area has not been analyzed.

### **Outlook**

The scallops in Area 2 exhibit very poor growth and meat yield. The scallop population on Southwest Bank does not appear to be self-sustaining. There is very little sign of recruitment to the Southwest Bank and the population consists largely (85%) of three year-classes 1989, 1990, 1991. Should the rest of Area 2 show similar growth and year-class strength, landings from this Area will not be sustainable in the longer term.

Areas 5 and 7 appear to be self-sustaining stocks, with Area 7 sometimes receiving recruitment from Area 3. Growth is very good in these areas and the meat yield from the scallops is high for a given size. The prerecruit year-classes in Area 5 appear to be strong. Landings in Area 5 are expected to increase in 1998 and 1999 as these large incoming year-classes enter the fishery.

More information on Area 7 is required in order to predict landing trends.

### **Management Considerations**

**Area 2. Southwest Bank.** The blended meat count outlined in the plan for this area is 45/500 g, and the voluntary minimum meat weight is 10 g. The shell height minimum is 95 mm (about 3.75"). The research vessel data shows that the minimum meat weight rarely reaches 10 g in the survey area on Southwest Bank. A minimum meat size of 5 g (age 6) with a corresponding shell height of 80 mm and a meat count of greater than 100 would better reflect the poor growth in this area. However, the meat yield in other portions of Area 2 is unknown, and blending opportunities may be present which would allow mixing of the small scallops on Southwest Bank with larger animals from elsewhere.

**Area 5. Annapolis Basin.** The blended meat count outlined in the plan was 30/500 g, and the voluntary minimum meat weight is 15 g. The shell height minimum is 104 mm (about 4"). Yield per recruit models indicate that the optimum age-at-first-capture for this area is age 8 to 10+. To fish at the optimum yield target would mean fishing at less than 15/500g count. Fishing at the 30/500g count results in a 30 to 40% loss of potential long term yield.

**Area 7. St. Mary's Bay.** Data are not available from this area to determine optimum meat weight/shell height targets, however the growth rate is expected to be very similar to Area 5 and the same targets are likely to apply to Area 7.

***For more Information***

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***References***

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stock Assessment Research Document  
97/63.

This report is available from the:

Maritimes Regional Advisory Process  
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