

Area 1 Middle Bay of Fundy Scallop

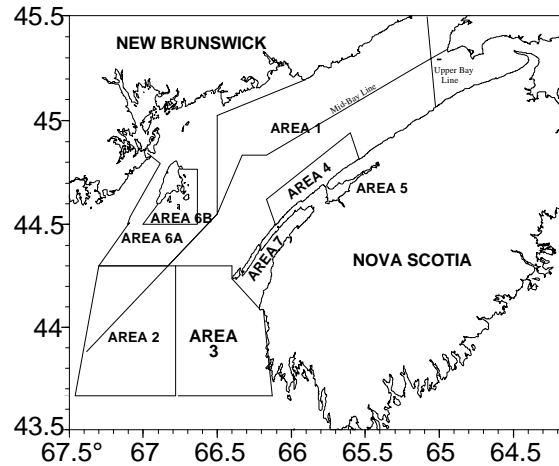
Background

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.

Different portions of Area 1 show different growth rates and recruitment patterns. The beds near Cape Spencer, N.B. are not thought to be self-sustaining, while the beds off Digby have shown stability over time. The Cape Spencer and other beds on the New Brunswick side of Area 1 are believed to receive seed supply from the beds off Digby.

Area 1 is fished by three fleets with limited entry. Harvest restrictions include: gear size, seasonal closures, minimum shell height, and minimum allowable meat count. A quota is applied to the Full Bay fleet.



The Fishery

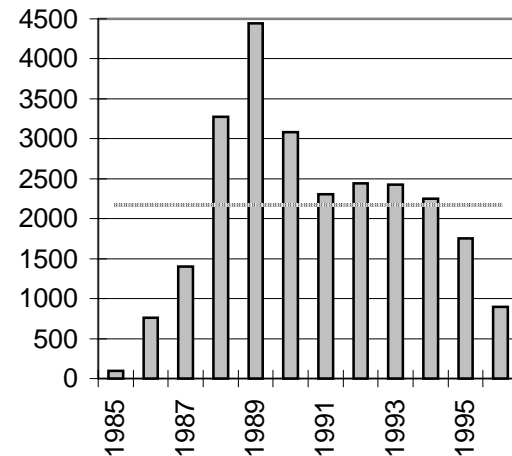
Landings in the whole of the Bay of Fundy by all fleet sectors have declined by 49% in 1996 over 1995, including catches of 76.7 mt from SFA29 outside of the regulation fishing area. The landed value of the catch was approximately \$13.9 million.

Landings (mt)

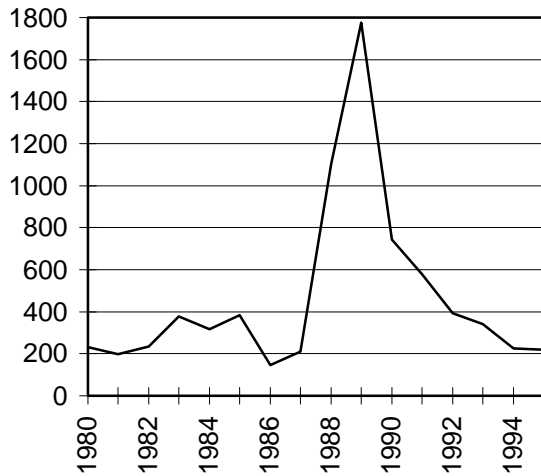
Ave	1991	1992	1993	1994	1995	1996*
85-90	2304	2443	2429	2254	1754	900

*preliminary

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

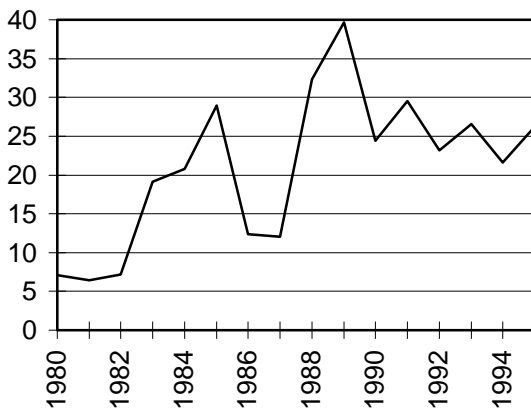


Landings (mt) in the Outside Zone portion of Area 1.



Landings in Area 1 have not been determined, however data are available for a portion of Area 1 from 1980 to 1995. This is the area known as the “Outside Zone” off Digby which extends from 6 to 16 miles (approx. Mid Bay Line) from the Nova Scotia shoreline and “outside” of the Area 4 box from 0 to 16 mile. These landings are reflective of other portions of Area 1 in that the large 1984 and 1985 year-classes dominate the recent fishing history of the area.

Effort (000s hours) for the Outside Zone.



The total **effort** (hours) for the Outside Zone has been calculated from 1980 to 1995. Effort has fluctuated around 25,000 hrs from 1992 to 1995.

The regulation meat count was 55 meats/500g from October 1 to April 30, from 1991 to 1995, and 72 meats/500g during the summer months. In 1995, the meat count was 72 meats/500g from May 1, 1995 to June 30, 1995, and 50 meats/500g from July 1, 1995 to July 1, 1996. On January 1, 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 1 was defined, with a meat count of 45/500g and other restrictions (see below). This new Area 1 encompasses the beds in the former “Outside Zone” off Digby and the beds on the New Brunswick side of the Mid Bay line. Three fleets are eligible to fish in portions of Area 1 according to their licence restrictions, the Full Bay Fleet (99 licences), the Mid Bay Fleet (210 licences), and the Upper Bay Fleet (16 licences). The Mid Bay Fleet is restricted to the New Brunswick side of the Bay to the Mid Bay line, while the Upper Bay Fleet is restricted to the upper reaches of the Bay to the Upper Bay line (see map). Only the Full Bay licences can fish throughout.

1997 Interim Management Plan

TAC: 240 mt

Meat Count: 45/500

Minimum Meat Weight: 10 g (voluntary)

Shell Height Minimum: 95 mm

Season: All year except where restricted by industry overlap fishing agreements or other regulated closed areas or portions of areas

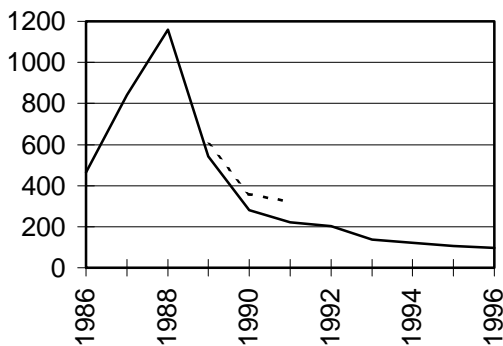
Resource Status

Research surveys were conducted in a limited area near Cape Spencer, N.B., between 1989 and 1991 but discontinued

there after. The research survey conducted during May 1996 covered much the same area, thus the total numbers per standardized tow can be compared. Surveys of the Outside Zone off Digby have been conducted annually since 1978. Comparable surveys have been conducted in June since 1991. In 1996, the survey of the Cape Spencer area extended to the Mid Bay line from the New Brunswick side.

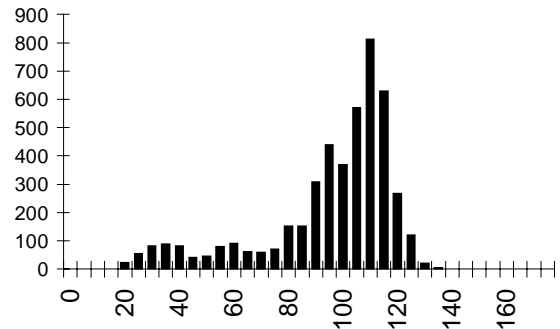
The 1996 average number per standard tow (number per seven-gang drag or 4265 m²) was much lower than those observed in 1989 to 1991 in both survey areas. This confirms that the strong year-classes that supported high landings in 1989-1994 are no longer present in significant numbers in the survey areas. The number of scallops per standard tow were comparable between the Cape Spencer and Outside Zone areas.

Average Number of Scallops per Standard Tow From Research Vessel Surveys for the Digby Outside Zone (solid line) and for Cape Spencer (dashed line).



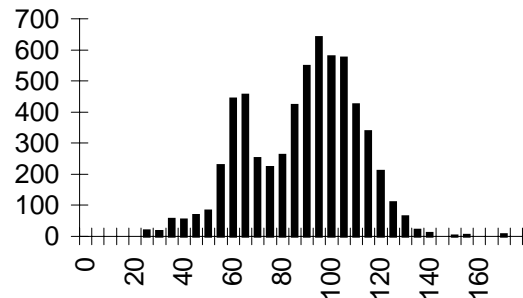
An examination of the standardized length-frequency for the Cape Spencer survey indicates that large numbers of **pre-recruiting** age-groups (scallops < 80 mm shell height) are not evident. This indicates that it would be at least 5-years and possibly longer, before strong recruitment to the fishery would be seen, provided the 1996 year-class was abundant. There is no information available on the abundance of the 1996 year-class.

Shell-height distribution (mean number per standard tow) of sea scallops captured near Cape Spencer, May 1996

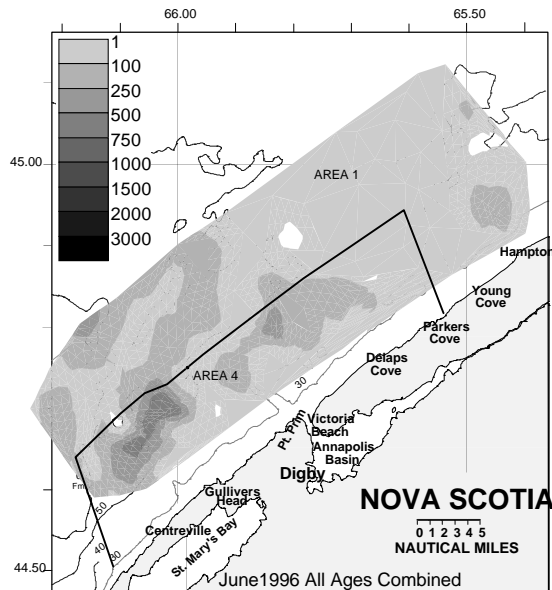


In contrast to the Cape Spencer area, there is evidence of a strong **incoming year-class** in the Outside Zone off Digby from the survey shell height frequency distribution.

Shell-height distribution (total numbers) of sea scallops captured in the Outside Zone off Digby in June 1996



Spatial distribution of scallops (number per standard tow) as determined from the Outside Zone survey.



This incoming year-class (1992) is located primarily from 8 to 16 miles off Digby and along the boundary with Area 4 from Centreville to Delaps Cove. Both the 1992 and 1993 year-classes are relatively strong in the Outside Area.

The incidence of **clappers** (paired empty shells) increased to 8% in the former “Outside Zone” from 5% in 1995. The clappers were concentrated in the larger scallops (95 to 115 mm shell height) off Centreville and Digby. The numbers of clappers are related to natural mortality and incidental fishing mortality.

Outlook

The prognosis for the Cape Spencer area is a further decline in landings in the absence of a strong incoming year class. In the Outside Zone area, the 1992 and 1993 year-classes appear relatively strong, however they are only found in a small portion of the total area. If the TAC is high relative to the

available stock biomass, then it will not be sustainable over the next few years.

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References

Kenchington, E., M.J. Lundy, and S.J. Smith.
1997. Bay of Fundy Scallop Stock
Assessment: Areas 2,3,4,5,7. Canadian
Stock Assessment Secretariat Research
Document 97/63.

This report is available from the:

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