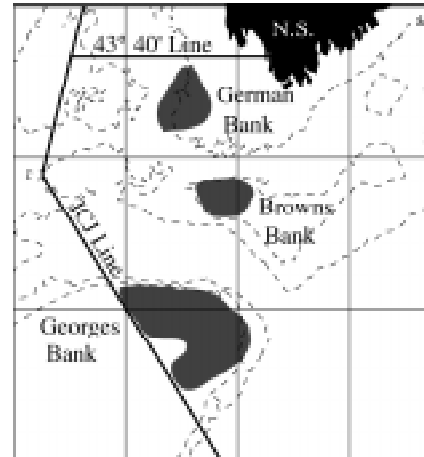


## Browns Bank Scallop



### Background

The sea scallop, *Placopecten magellanicus*, is found only in the Northwest Atlantic, from Cape Hatteras to Labrador. Scallops are aggregated in patches and harvestable concentrations are called beds. Major areas of offshore fishing activity are Georges Bank, the Scotian Shelf (Middle Grounds, Sable Island Bank, Western Bank, Browns Bank, and German Bank), and St. Pierre Bank. Scallops prefer a sandy, gravel bottom and occur in depths of 35 to 120 m.

Scallops have separate sexes. They mature at age 2. The female gonad is red in colour and the male gonad colour is creamy white. The major spawning period is August to October. The fertilized eggs develop in the water column until settlement on the bottom within 30 to 60 days.

Growth is estimated from the position of annual rings on the shell. The growth rate varies from one area to another and is influenced by season, depth, and temperature.

Offshore scallop vessels range from 27 to 46 m length overall. The offshore fleet uses a New Bedford offshore scallop rake or drag, 4 to 4.9 m in width. Two drags are fished simultaneously, one on each side of the vessel.

### Summary

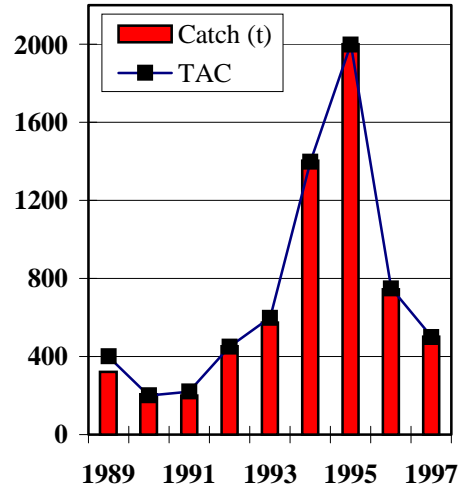
- The 1996 and 1997 landings have declined to early 1990's levels.
- The 1997 catch-rates were similar to 1996.
- The 1992 year class is supporting the fishery. The 1993 and 1994 year classes are weak. The 1995 year class appears strong.
- There has been a small biomass increase from 1996 to 1997.
- The 1998 TAC could remain at the 1997 level.

*The Fishery*

Landings (tonnes)

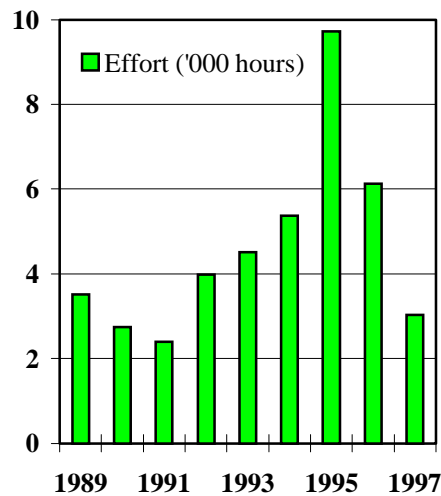
Year	89-92 Avg.	1993	1994	1995	1996	1997
TAC	318	600	1400	2000	750	500
Catch	295	575	1403	2002	743	500
Area fished (km <sup>2</sup> )	350	560	765	901	1005	730

During the 1970's and early 1980's, a scallop fishery took place on the southern part of Browns Bank and along the edge of the Bank at depths over 100m. **Landings** ranged between 4 and 270 t with moderate catch-rates. The 'recent' fishery started in 1989 on the northern part of Browns Bank in areas not previously fished. The area under exploitation continued to expand until 1996. Catches were rising as new grounds were exploited and good year-classes were recruiting to the fishery. The Browns Bank north fishing grounds are no longer expanding. Since 1989, the Browns Bank fishery has been managed with a catch limit and a meat count set at 55 meats per 500 g. The meat count was reduced to 40 in 1994. An industry monitoring programme was implemented in 1995 to discourage the presence of meats under 10 g in the catch. Catches in 1995 were the highest recorded since the fishery resumed but commercial and survey catch-rates were declining. 1996 and 1997 catches have declined to levels comparable to the early 1990's. About 70% of the TAC is caught during the first quarter of the year. The area fished in 1997 was 25% smaller than in 1996. **Effort** is on a downward trend since 1995 and dropped 50% from 1996 to 1997.



Percentage of annual catches on a quarterly basis is tabled below for the last 4 years. The fishery was not pursued on a year round basis prior to 1994.

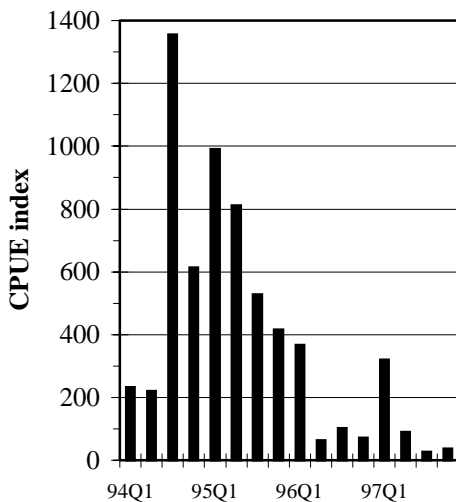
Year	Q1	Q2	Q3	Q4
1994	11	13	53	23
1995	30	28	20	22
1996	69	13	12	6
1997	67	14	10	9



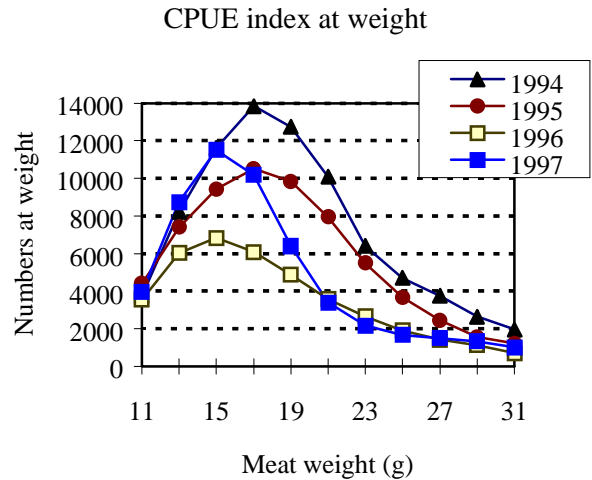
**Resource Status**

Logbooks provide catch and effort data from which catch-rates are estimated. Landings are monitored at dockside. The catch is sampled for size distribution. Research surveys have followed the fishery distribution and provided information on sizes and recruitment to the stock. Stock status is based on commercial catch-rates, size of meats in the catch, and research survey indices.

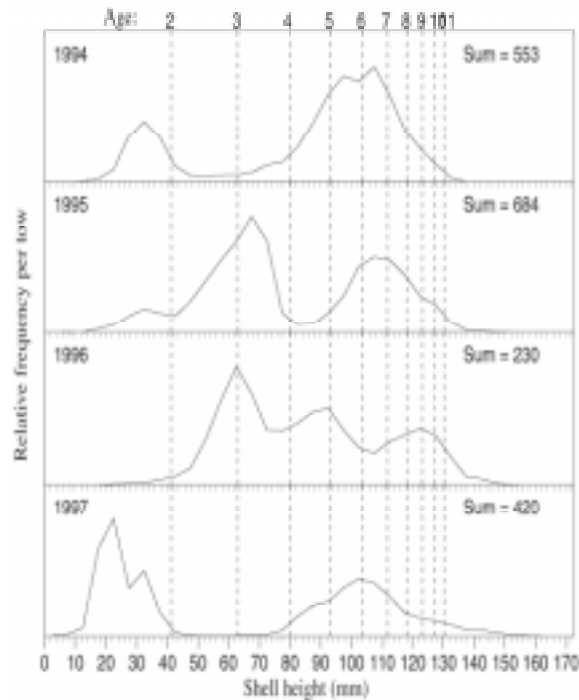
The area fished, as indicated in the landings table, has expanded until 1996. This complicates the interpretation of **commercial catch-rates**. Since 1994, catch-rates are somewhat comparable since they cover the same fishing area. A CPUE index of commercial catch-rates, weighted by catch, shows a declining trend since the third quarter of 1994. The CPUE index in 1997 is very similar to 1996. Areas where high CPUE's occurred have decreased 40% from 1996.



The 1997 CPUE index at weight increased from 1996 for small size scallops but remained low for large scallops.



The 1997 **research survey** results showed a high degree of patchiness. Also there is a large gap between the 1992 year class at age 5 and the 1995 year class at age 2. The 1993 and 1994 year classes are extremely weak. The 1997 survey identified an above average 1995 year class. However, this year class settled in only two specific areas. The relative biomass index for scallops over 100 mm shell height for 1997 has risen from 1996 and reached a moderate value compared to previous years.



### Outlook

Catches have been on a downward trend since the record levels of 1995. Although the 1997 nominal catch-rates improved from 1996 to 1997, CPUE's weighted by catch were the same. The composition of the catch also remained relatively similar. The latest survey results have indicated that the main targets of the 1997 fishery, the 1990 and 1991 year classes had a patchy distribution. Once the incoming recruitment mode (100 - 115 mm shell height) is fished out, recruited stocks will hit low values. The 1993 and 1994 year classes (shell height under 80 mm) appear very weak.

Given the extreme patchiness and low overall abundance of incoming recruitment to the fishery, it is highly unlikely that present TAC levels could be maintained after 1998. However, given the moderate recruited biomass index from the 1997 survey, estimated after the bulk of the fishery, and the high similarity of fishery performance

indices (CPUE, size in catch) between 1996 and 1997, the 1998 TAC could remain at the 1997 level. Notwithstanding this, there is a possibility that the patchiness of commercial size aggregations leads to overexploitation in specific areas. The fishery should be monitored especially during the latter part of the year if a large portion of the TAC is still to be caught.

### For more Information:

Contact: Ginette Robert  
 Invertebrate Fisheries Division  
 Bedford Institute of Oceanography  
 P.O. Box 1006  
 Dartmouth, NS B2Y 4A2

Tel: (902) 426-2616

Fax: (902) 426-1862

E-Mail: RobertG@mar.dfo-  
 mpo.gc.ca

### References

Robert, G. and M.A.E. Butler. 1998. Browns Bank north scallop stock assessment - 1997. DFO Can. Stock Assess. Sec. Res. Doc. 98/70.

This report is available from the:

Maritimes Regional Advisory Process  
Department of Fisheries and Oceans  
P.O. Box 1006, Stn. B105  
Dartmouth, Nova Scotia  
Canada B2Y 4A2  
Phone number: 902-426-7070  
e-mail address: myrav@mar.dfo-mpo.gc.ca

Internet address: [www.dfo-mpo.gc.ca/csas](http://www.dfo-mpo.gc.ca/csas)  
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