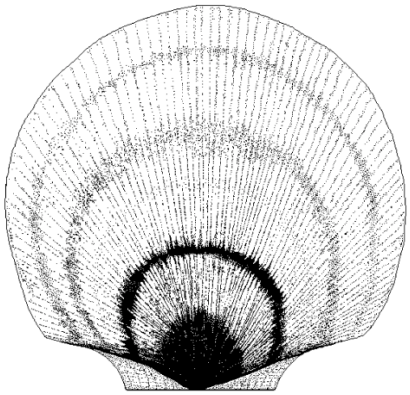
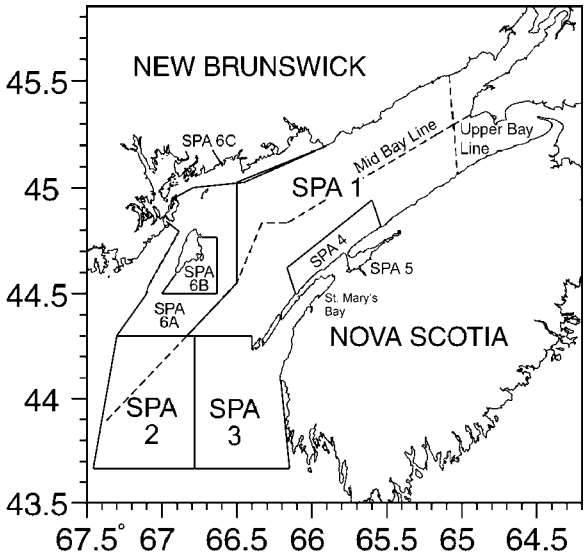
Fisheries and Oceans Pêches et Océans

**Maritimes Region**

**DFO Science**
**Stock Status Report C3-63(2000)**






# Update on Selected Scallop Production Areas (SPA's) in the Bay of Fundy



January 2001

Canada

# Update on Selected Scallop Production Areas (SPA's) in the Bay of Fundy

***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. 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.*

*The Bay of Fundy area is fished by the Full Bay and the Mid-Bay licensed fleets. Full Bay vessels are 45' to 65' and Mid-Bay vessels are generally between 30' to 45'. Full Bay licensed vessels are permitted to fish all the Bay of Fundy. The Mid-Bay license holders have access to the New Brunswick side and portions of the Nova Scotia side of the Bay of Fundy to the Mid-bay line and a portion of SPA 2. There are also 16 Upper Bay Licences restricted to the upper reaches of the bay. The fishery has been managed using limited entry, gear size limits, seasonal closures, minimum shell height, meat count and individual meat weight restrictions. The gear width limit is 5.5 m with ring size of not less than 82 mm inside diameter. This industry became a quota fishery in 1997. Total allowable catches (TACs) are set and landings are reported in terms of meat weights (adductor muscles).*

The most resent assessments of the status of the Bay of Fundy scallop stocks were conducted in November 1999 for Scallop Production Areas (SPA) 1, 2, 3, 5, and 6, and in September 2000 for SPA 4. These assessments are summarized in Stock Status Reports C3-56(1999) and C3-22(2000), respectively.

This report provides a brief update on fishery and survey data for SPA 1, 2, 3, 5, and 6 for 2000.

## *Summary*

| SPA | |
|---|---|
| **All** | • Large numbers of the 1998 year-class were observed in portions of SPA 1 (8–16 mile zone), SPA 3 and SPA 4. In order to preserve recruitment, the impact of fishing practices on juvenile mortality needs to be investigated.<br>• Increased dockside monitoring and more extensive meat weight sampling by the industry have been implemented in 2000 as recommended. In addition, electronic monitoring of position has been implemented for the Full Bay fleet starting in the fall 2000. These measures should improve the evaluation of stock status in the years to come. |
| **1** | • Landings to 14 November were 315 t against an extended TAC of 320 t.<br>• Catch rates have increased since 1997, but are still below the median level for 1980 to present.<br>• The surveys show an above average 1998 year-class in the area 8–16 miles off Nova Scotia, but this year-class was not evident in surveys of the remaining portions of the area.<br>• The 2001 TAC should remain at the 2000 level of 290 t. |

- Improvements should be made to the timely receipt of reporting documents from non-ITQ fleets to avoid quota overruns.

**2**

- Landings in 2000 were 12.8 t which is more in line with recent levels in this area.
- There is no new information on SPA 2 and no surveys are planned for 2001. Fishing in this area has been opportunistic due to sporadic recruitment.
- No TAC is required for this area.

**3**

- Landings for SPA 3 in 2000 during the regular fishing season were 225 t against a TAC of 200 t. A further 18.9 t (as of 14 November) was landed against a limit of 50 t in a limited re-opening in the fall.
- The 2000 survey indicates a slight decline in the numbers of commercial-size scallops from 1999.
- Two potentially above average year-classes (1997 and 1998) will be recruiting to the areas west of 66º 30´ W starting in 2001.
- Measures are needed to protect the 1998 year-class from increased incidental fishing mortality until at least 2002.
- The 2001 TAC should remain at the 2000 level of 200 t.

**5**

- Landings in 2000 were 16.5 t against a TAC of 17 t.
- The decline in the survey index for commercial size scallops in 2000 along with the lower indices for recruits and pre-recruits warrants adjusting the TAC back to 10 t in 2001.

**6**

- Landings were 143 t against a TAC of 140 t. Mid Bay fleet landed 131 t and Full Bay fleet landed 12 t.
- Commercial catch rates decreased in all areas for the Full Bay fleet. Mid Bay fleet catch rates increased for all areas.
- Survey indicates a decrease in commercial-size scallops for SPA 6A. While there was an increase in the survey for SPA 6B, this increase was limited to the Duck Island Sound area.
- Positive signs of recruitment were observed in Duck Island Sound only.
- The 2001 TAC should remain at the same level of 130 t, recommended for the 2000 fishery.
- It is also recommended that separate limits should be set for SPA 6A, 6B and 6C for 2001.
- Improvements should be made to the timely receipt of reporting documents from non-ITQ fleets to avoid quota overruns.

# SPA 1 – Inner/Upper Bay of Fundy

## *The Fishery*

**Landings** in SPA 1 reached a peak in 1989, with the large recruitment pulse seen throughout the Bay, and then declined to their lowest levels since 1980, in 1997. Although landings have increased since 1997, they are still at low levels.

The Mid-Bay vessels were not required to keep logbooks until 1996 and their earlier catches cannot be broken down by fishing area. Landings by Statistical District for Districts 24, 40, 43, 44, 48 and 79, (coast of Bay of Fundy from Saint John, N.B. to Mordon, Nova Scotia) were used to estimate Mid-Bay landings from Area 1 prior to 1997.

Landings (tonnes of meats)

| Year | Avg. 1992–96 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|
| TAC | - | 290 | 310 | 290 | 320[1] |
| Total | 565.2 | 142 | 231 | 274 | 315[2] |

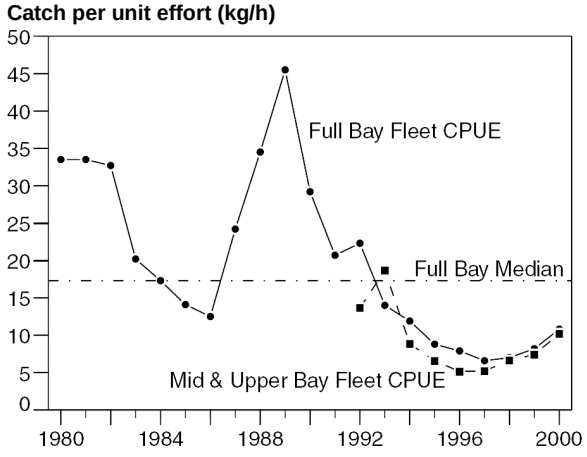
1. 290 t plus 30 t added in-season (see text).
2. preliminary to 14 November 2000.

The 2000 quota for Full Bay licence holders was kept at 240 t, the same as in 1999. The Mid and Upper Bay fishers had originally had a quota of 50 t, the same as in 1999. In consultation with fishers, and with a commitment from the Mid and Upper Bay fleets to provide increased sampling, more timely reporting, and additional survey work, the quota was increased in two increments to 80 t.

The 2000 landings to 14 November, were 15% over 1999 levels, and more than double that seen in 1997, which was the lowest during 1980–2000. The 2000 landings to date were 229 t for the Full Bay licence holders, 62 t for the Mid Bay and 24 t for the Upper Bay fishers. The Full Bay was at 96 percent of their quota by this date and were still fishing. The Mid and Upper Bay fleets had exceeded their allowable catches. These quota overruns were a result of late submissions of reporting documents by fishers.

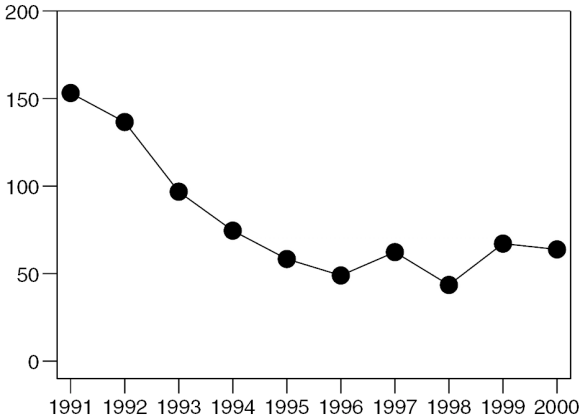
## *Resource Status*

**Catch per unit effort** (CPUE) for the Full Bay fleet has declined from the highs of the late 1980's to a low in 1996–1997. CPUE has improved since then but is still below the median level for this period. The CPUE for the combined Mid and Upper Bay fleets can only be calculated from 1992 when logbooks logbook data became available. The CPUE for these fleets exhibits a similar trend to that of the Full Bay Fleet.



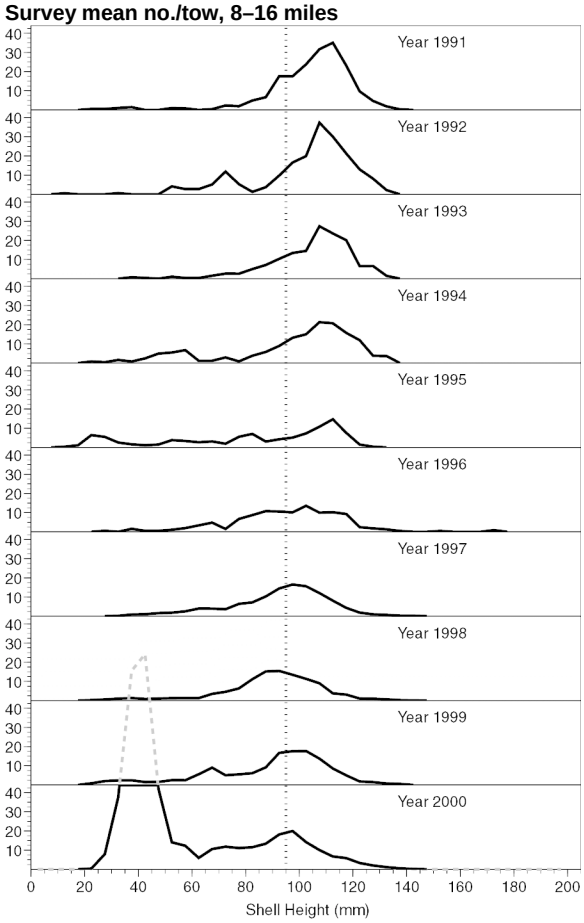

**Resource surveys** have been conducted annually since 1978 in the 8 to 16 mile area off Nova Scotia from Centerville to Hampton. Since 1991, surveys in the zone from 8–16 miles offshore showed a decline in mean number of commercial-size scallops (shell height ≥95 mm) to a low in 1996. The mean has remained near this low level since then.

**Survey mean no./tow (shell height ≥95 mm), 8–16 miles**



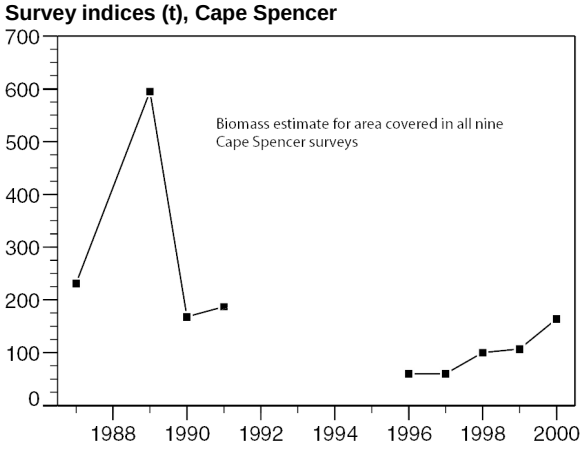

The **size frequency distribution** from the surveys shows a decline in the number of larger scallops, and the large pulse of pre-recruits observed in this year's survey. This large 1998 year-class will begin to recruit to the fishery in 2002.

**Survey mean no./tow, 8–16 miles**



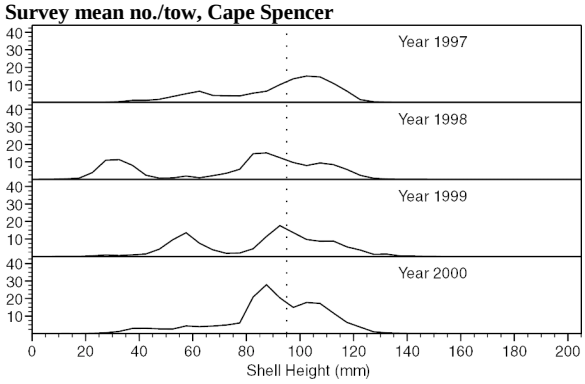

The general pattern of a decline from the 1989 peak to the low around 1996 seen in the 8–16 mile survey was also observed in the Cape Spencer surveys (area from Mid-Bay line towards Saint John Harbour south of Cape Spencer). Since 1996, the **biomass** as measured by the Cape Spencer survey has increased. While the 2000 index in Cape Spencer was double that observed in 1996, it was still quite low compared to the earlier years in the series.

**Survey indices (t), Cape Spencer**




The 1997 year-class is recruiting to the fishery in the Cape Spencer area and should sustain catch rates in 2001, but there are no signs of good **recruitment** following it. The large pulse of pre-recruits observed in the 8–16 mile grounds was not seen in the Cape Spencer area.

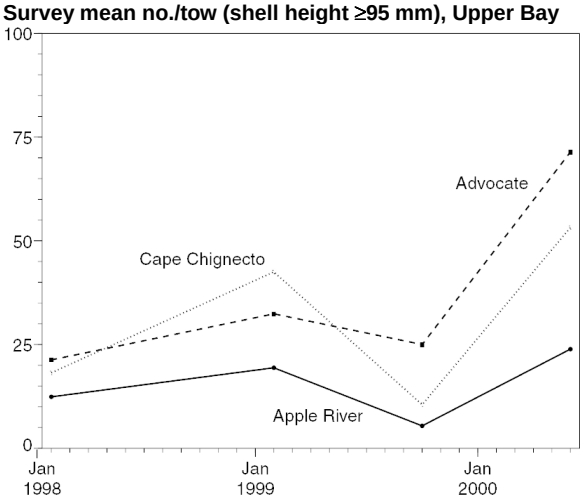
**Survey mean no./tow, Cape Spencer**




Survey information in the Upper Bay area is limited to surveys in 1998 to 2000. The

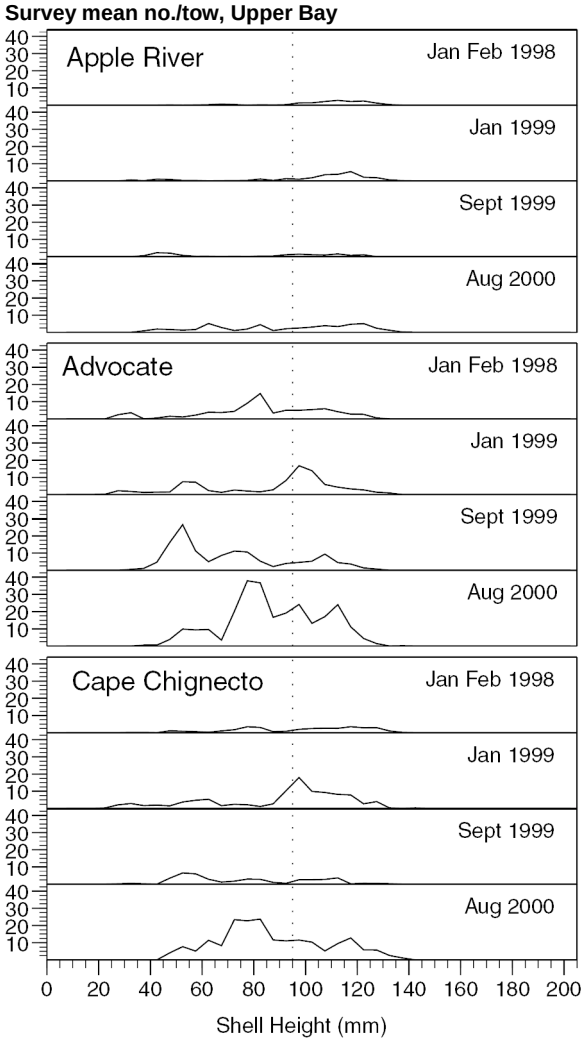
density of pre-recruit scallops is highest in Advocate Harbour. The 2000 abundance of commercial-size scallops in Advocate Harbour (71.4 no./tow) is similar to that seen for the 8–16 mile grounds (63.8 no./tow).

**Survey mean no./tow (shell height ≥95 mm), Upper Bay**




The shell height frequencies show pre-recruits that will enter the fishery over the next year in the Advocate Harbour and Cape Chignecto areas, but there is little evidence of pre-recruits in the Apple River area. The 1998 year-class is weak in this area compared to that of 1997. It does show up in the Advocate and Cape Chignecto beds, so the fishery should be able to sustain present catch rates for the next 2 years.

**Survey mean no./tow, Upper Bay**




## *Outlook*

The present level of removals from this stock appear to be less than recruitment and growth of the biomass, allowing for an increase in the number of commercial-size scallops. In particular, the number of commercial-size scallops has increased in the Cape Spencer and Upper Bay areas. In addition the larger than average 1998 year-class was observed in the 8–16 mile grounds. The fishery appears to be stable at the moment, but the possibility of increased incidental fishing mortality on the 1998 year-class before it recruits to the fishery is of concern. There should be no increase in

the TAC over the 290 t recommended for 2000.

### *Management Considerations*

Measures should be taken to protect the 1998 year-class in the 8–16 mile areas from increased incidental fishing in 2001.

Improvements should be made to the timely receipt of reporting documents from non-ITQ fleets to avoid quota overruns.

Enhanced meat weight sampling programs have been implemented and will continue to be developed to provide the information needed to evaluate stock status.

## SPA 2 – Southwest Bank

### *The Fishery*

Prior to 1997, the scallop beds in SPA 2 had not been heavily fished. A TAC of 20 t was set for 1997. No catch limits were set for 1998 or 1999 but special licence conditions were applied. Due to poor growth and yield, there were no size controls in this fishery in 1998. In 1999, vessels could fish under special license with an at-sea observer required if fishing without restrictions on meat count or with no observer if fishing under a 45/500 g meat count. **Landings** in 1999 were much larger than expected for this area. Based on historical fishing patterns and the magnitude of past removals in SPA 2, it was concluded that most of the catch recorded as being from SPA 2 in 1999 came from somewhere else. In 2000, the fishing season opened 1 April with a 45/500 g meat count and the same requirements with respect to hails, dockside monitoring and meat weight sampling as for the other SPA's. There was also increased surveillance by DFO in this area in 2000.

A portion of this area north of the Mid-Bay Line is open to fishing by the Mid-Bay fleet. The entire area is open to fishing by the Full Bay Fleet.

Landings (tonnes of meats)

| Year | Avg. 1992–96 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|
| TAC | – | 20 | – | – | – |
| Total | <2 | 29.7 | 15.3 | 111.6 | 12.8[1] |

1. Preliminary to 14 November, 2000.
2. See text.

The **landings** in 2000 were more in line with the recent history of this area with the Full Bay fleet landing 7.6 t and Mid-Bay fleet 5.2 t.

### *Resource Status*

There were no new surveys for this area. Results from the 1996 survey of SPA 2 indicated that the scallops exhibit very poor growth and yield in this area.

### *Sources of Uncertainty*

There are no fishery-independent surveys to monitor stock status for this SPA.

### *Outlook*

There is no new information on SPA 2 and no surveys are planned for 2001. Fishing in this area has been opportunistic due to sporadic recruitment.

No TAC is required for this area.

### *Management Considerations*

Enhanced meat weight sampling programs have been implemented and will continue to be developed to provide the information needed to evaluate stock status. In addition, at-sea monitoring should continue to be

improved to ensure that landings from this area are accurately reported.

# SPA 3 – Brier Island/Lurcher Shoal, St. Mary's Bay

## *The Fishery*

There are two main beds in this area, those around Lurcher Shoal and those below Brier Island, although scallops can be found throughout most of the area. In 1999, SPA 7 (St. Mary's Bay) was combined with SPA 3 for management purposes with a single TAC. The lobster fishery influences the scallop-fishing season throughout this area.

**Landings** in SPA 3 increased each year from 1991 to 1994 to a high of 1382 t. Landings declined from 1995 until 1998. From 1999 onwards, the landings represent SPA 3 and 7 combined. In 1999, there were serious doubts raised about whether all of the landings reported to the new SPA 3 in 1999 actually came from this area. There was a limited re-opening in the deepwater part of the SPA with a limit of 15 t under special licence conditions.

Landings (tonnes of meats)

| Area | Year | Avg. 1992–96 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|
| SPA 3 | TAC | – | 237 | 150 | – | – |
| | Total | 833 | 190 | 162 | – | – |
| SPA 7 | TAC | – | 50 | 50 | – | – |
| | Total | … | 36 | 58 | – | – |
| SPA 3 + 7 | TAC | – | – | – | 200+ 15 | 200+ 50 |
| | Total | – | – | – | 222[1] | 244[2] |

1. Includes 5.8 t from 15 t re-opening in Sept./Oct. 1999.
2. Preliminary as of November 14th. Includes 18.9 t from 50 t re-opening in Oct./Nov. 2000.

The fishery closed on 27 July 2000. Landings (224.5 t) exceeded the quota of 200 t. There did not appear to be any reason to suspect that landings reported to SPA 3 in 2000 were from other areas.

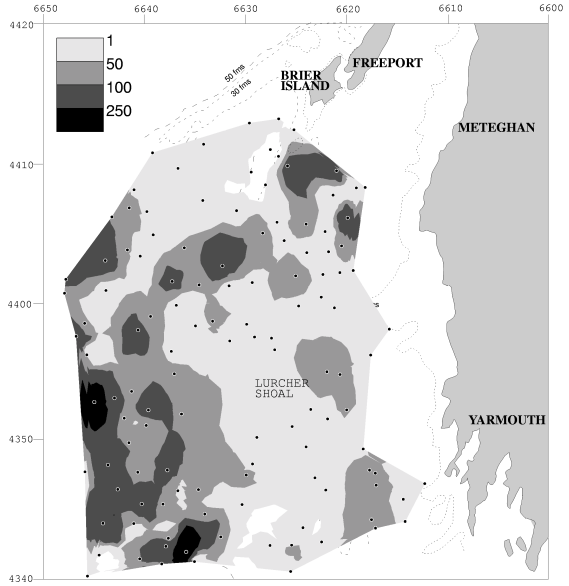
A limited re-opening was initiated from 1 October to 15 November 2000 in the areas east of 66º 33´ W and outside of St. Mary's Bay. A total of 18.9 t out of the 50 t allocated was landed. The positions of the vessel participating in this re-opening were monitored by DFO using electronic surveillance (black boxes).

## *Resource Status*

Annual **research vessel surveys** have been conducted in August since 1991. In terms of coverage and design, only the results from the 1995 to 2000 surveys are comparable. In 1999 and 2000, surveys of St. Mary's Bay were completed but more surveys are required before the data can be used for stock assessment.

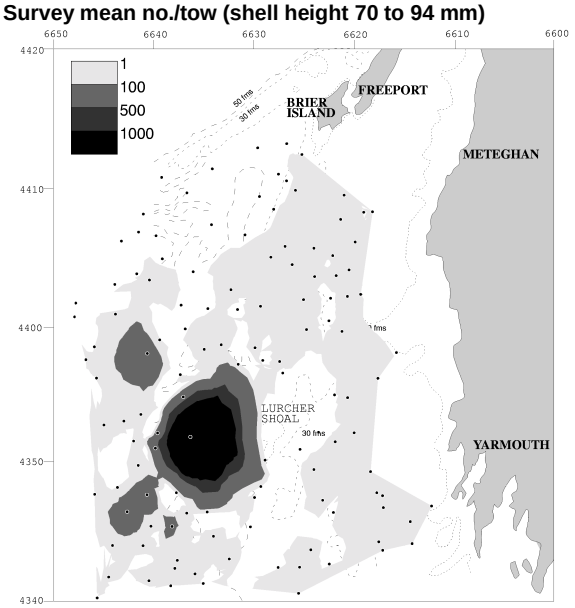
The highest densities of commercial-size scallops (shell height ≥95 mm) continue to be mainly in the southwest area of Lurcher Shoal. The scallops in this area usually have smaller meats-at-shell height than those caught elsewhere in SPA 3.

**Survey mean no./tow (shell height ≥95+mm)**




Large numbers of **recruits** (shell heights 70–94 mm) were observed in the Lurcher Shoal area. These catches confirm the strength of the 1997 year-class observed in these areas in the 1999 survey and indicate above average recruitment to the 2001 fishery.

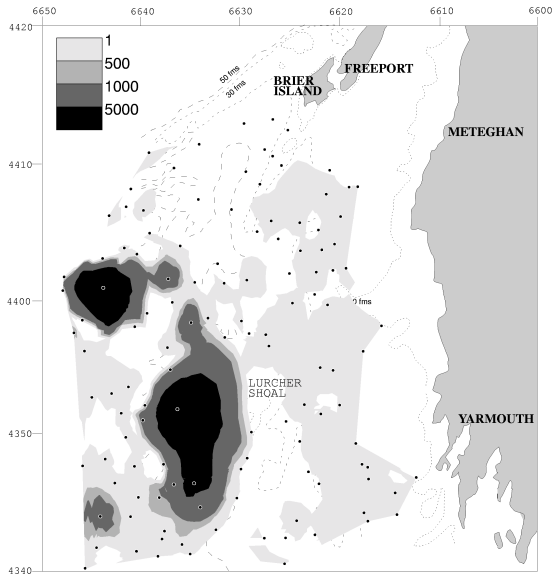
**Survey mean no./tow (shell height 70 to 94 mm)**



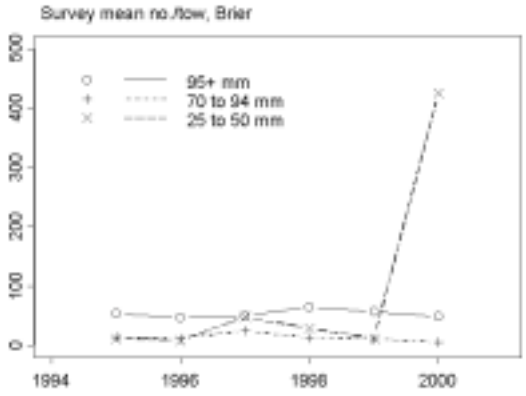

Pre-recruits (shell height 25–50 mm) in the 2000 survey were distributed more widely and caught in even larger numbers than those of the same size class in the 1999 survey. However, these scallops were mainly observed in the areas west of 66º 30´ W, where scallops traditionally have lower yields. Scallops in this size range are probably two years old (1998 year-class).

There are also commercial-sized scallops located in the same areas and measures should be taken to protect these pre-recruits from incidental fishing mortality.

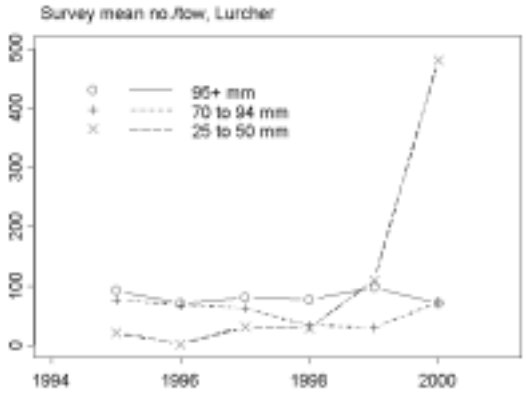
**Survey mean no./tow (shell height 25 to 50 mm)**




**Mean numbers per tow** from the survey indicate slight declines in 2000 compared to 1999 for commercial-size animals in both the Brier Island and Lurcher areas. The mean numbers of recruits also declined in the Brier Island area. On the other hand, the mean number of pre-recruits was at the highest level in the short time series.




The mean number of recruits in the Lurcher area observed in the 2000 survey increased over that of the previous year due to the stronger than average 1997 year-class. However, the 1998 year-class now appears to be the strongest yet observed in this short time series.




## *Sources of Uncertainty*

The survey estimates of the abundance of the pre-recruits are tentative and the 2001 survey should confirm the strength of this potential recruitment.

## *Outlook*

The survey in SPA 3 indicates that while the mean number per tow of commercial-size animals has declined slightly from 1999, two potentially above average year-classes could be recruiting to this area starting in 2001. However, this recruitment appears to be mainly in the lower yield areas of both Brier Island and Lurcher Shoal.

The 2001 TAC should remain at the 2000 level of 200 t.

## *Management Considerations*

Measures should be taken to protect the 1998 year-class in both Brier Island and Lurcher Shoal areas from increased incidental fishing in 2001. Implementation of such measures will be especially problematic in the Lurcher area where the 1998 year-class co-occurs with the 1997 year-class that will recruit to the fishery in 2001.

Enhanced meat weight sampling programs have been implemented and will continue to be developed to provide the information needed to evaluate stock status.

# SPA 5 – Annapolis Basin

## *The Fishery*

The 2000 fishery opened on 1 February and closed 15 February when the quota had been caught.

Landings (tonnes of meats)

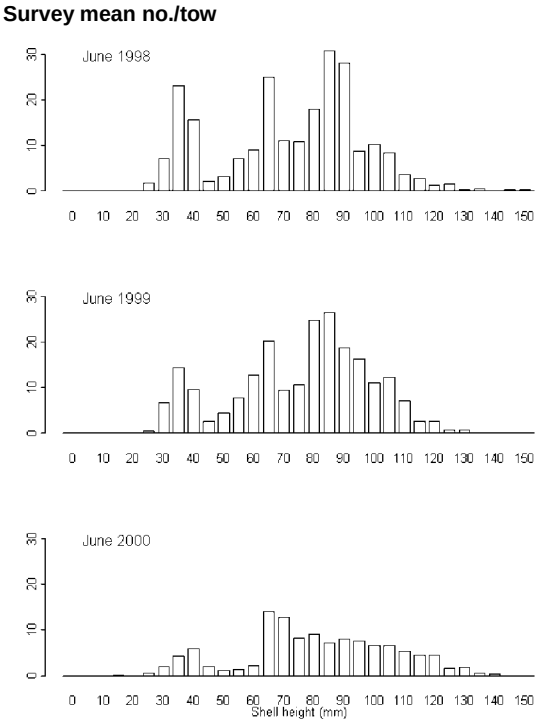
| Year | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| TAC | 25 | 10 | 10 | 17 |
| Total | 5.0 | 11.4 | 11.9 | 16.5[1] |

1. Preliminary as of 14 November.

## *Resource Status*

**Research vessel surveys** have been conducted on a regular basis in the basin since 1998. The number of commercial-size

scallops (shell heights ≥95 mm) declined from 1999 to 2000.




The **mean number per tow** in 2000 for commercial-size scallops was 34 percent lower than that observed for 1999. The mean numbers per tow for recruits (70–94 mm) and pre-recruits (25–50 mm) in 2000 were also lower than those observed in the previous two years.

Survey mean no./tow

| | Shell heights (mm) | | |
|---|---|---|---|
| Year | ≥95 | 70–94 | 25–50 |
| 1998 | 66.1 | 70.7 | 53.0 |
| 1999 | 71.7 | 71.1 | 38.2 |
| 2000 | 46.8 | 37.1 | 15.9 |

## *Sources of Uncertainty*

Survey estimates of pre-recruit scallops in 2000 are tentative and estimates from the 2001 survey will be needed to confirm the strength of the 1998 year-class.

## *Outlook*

The decline in the survey index for commercial size scallops in 2000 along with the lower indices for recruits and pre-recruits warrants adjusting the TAC back to 10 t in 2001.

## *Management Considerations*

Enhanced meat weight sampling programs have been implemented and will continue to be developed to provide the information needed to evaluate stock status.

# SPA 6 – Grand Manan and Southeast New Brunswick

## *The Fishery*

The areas around Grand Manan and off southwest New Brunswick are designated SPA 6. This area is further divided into the outside zone (SPA 6A), the Grand Manan Island inside zone (SPA 6B), and the New Brunswick inside zone including the Wolves (SPA 6C). The 2000 fishery for the Full Bay fleet was still open at the time of this evaluation.

One TAC has been set for the whole area and a maximum portion of this TAC was allocated to come from the inside zones SPA 6B+6C. The **landings** from the individual subareas (6A, 6B or 6C) are available for 1999 and 2000 only.

Following consultation with industry, the area known as the Duck Island Sound Box was closed to protect the large numbers of juvenile scallops found during the 1999 survey. This closure came into effect the second week of the 2000 fishing season.

Landings (tonnes of meats)[1]

| Year | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| TAC | 170 | 130 | 160 | 140 |
| Total | 128 | 179 | 149 | 143[2] |

1. landings not available by SPA prior to 1997.
2. preliminary to 14 November 2000

The 2000 SPA 6 quota for the Full Bay fleet was 50 t with a maximum of 30 t from the inside zones (SPA 6B+6C). Preliminary Full Bay fleet landings for SPA 6 in 2000 were 12 t, a 50 percent decrease from 1999. Landings by subarea were 6 t from SPA 6A, 3 t from SPA 6B, and 3 t from SPA 6C.

The final quota for 2000 for the Mid Bay Fleet was 90 t, with a maximum of 60 t from both inside zones (SPA 6B+6C). Preliminary landings for the Mid-Bay fleet for SPA 6 were 131 t with 37 t coming from SPA 6A, 54 t from SPA 6B, and 40 t from SPA 6C. The Mid-Bay Fleet exceeded the quota in 2000 by 41 t. This quota overrun was partly due to late submissions of reporting documents by fishers. Approximately 30 t was due to extra quota provided following fisheries management discussions with the Mid-Bay fleet in SPA 6B.

The **meat weight sampling** program provided information on catch composition from all areas and was used to monitor the presence of scallops in the catch less than 11 g during 2000. Only samples with complete information were included in the analysis. The 2000 mean meat weight for SPA 6A increased from 1999. The percentage by number of scallop meats less than 11 g increased slightly from 1999. Note the increase in the number of samples for 2000.

SPA 6A Meat weight sampling

| Year | Mean Meat weight | Percent <11g meats | Number scallop meats | Number. samples |
|---|---|---|---|---|
| 1999 | 15.5 | 14.9 | 5,889 | 174 |
| 2000 | 18.1 | 15.7 | 5,472 | 196 |

The fishing season for SPA 6B and 6C was from January to March. The mean meat weight in 2000 increased from 1999. The percentage of scallops less than 11 g in 2000 decreased from 1999. Note that there were fewer samples collected in 2000.

SPA 6B Meat weight sampling

| Year | Mean Meat weight | Percent <11g meats | Number scallop meats | Number of samples |
|---|---|---|---|---|
| 1999 | 15.4 | 25.7 | 3,946 | 118 |
| 2000 | 19.6 | 8.3 | 1,346 | 48 |

The mean meat weight from SPA 6C meat weight samples was increased from 1999. In 2000, the percentage of meats less than 11 g decreased from that observed in 1999. There was a substantial increase in the number of samples in 2000.

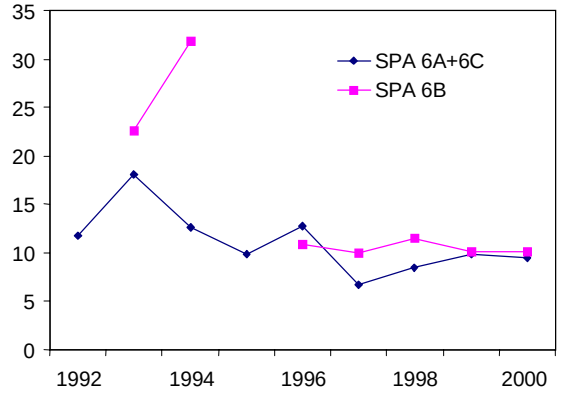
SPA 6C Meat weight sampling

| Year | Mean Meat weight | Percent <11g meats | Number scallop meats | Number of samples |
|---|---|---|---|---|
| 1999 | 25.4 | 12.9 | 1,184 | 48 |
| 2000 | 27.4 | 1.0 | 3,366 | 180 |

## *Resource Status*

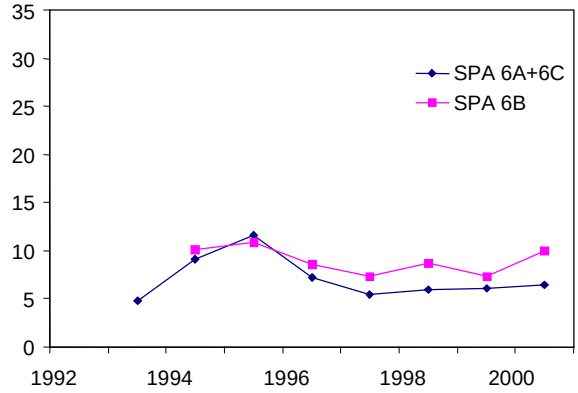
**Commercial catch rates** for the Full Bay fleet decreased marginally for SPA 6A+6C and 6B in 2000 over those observed in 1999.

**Full Bay Fleet catch rates (kg/h)**




Catch rates for the Mid-Bay fleet increased slightly in SPA 6A+6C and by 35 percent in SPA 6B in 2000 from 1999 despite the closure of the Duck Island Sound box.

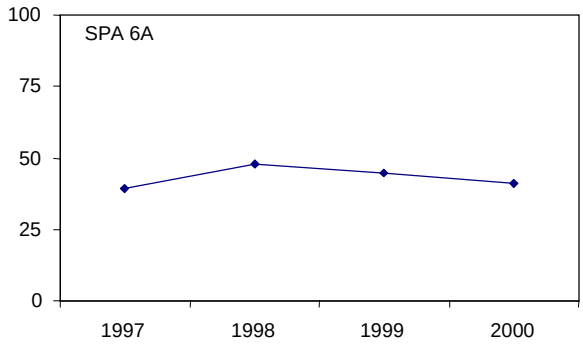
**Mid-Bay Fleet catch rates (kg/h)**




**Research vessel surveys** were conducted annually from 1979 to 1991. A new survey series with a different design was initiated in 1996. In 2000, portions of SPA 6C were included in the area surveyed.

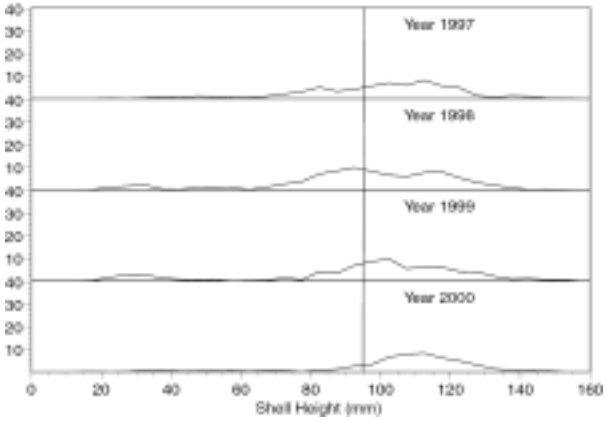
In SPA 6A, the mean number of commercial-size scallops (shell height ≥95 mm) in the survey in 2000 was 8 percent lower then that observed in 1999.

**Survey mean no./tow (shell height ≥95 mm), SPA 6A**



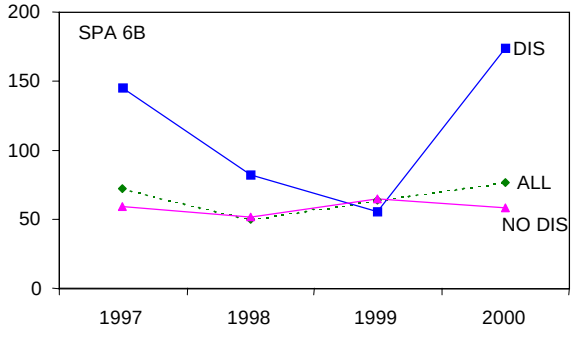

The mean number of recruits and pre-recruits (shell height <95 mm) also declined from 1999 to 2000 in SPA 6A.

**Survey mean/tow, SPA 6A**




The 2000 survey indicated an increase of 20 percent in the mean number of commercial-size scallops in SPA 6B from 1999. This increase was mainly due to survey tows in Duck Island Sound (DIS) box.

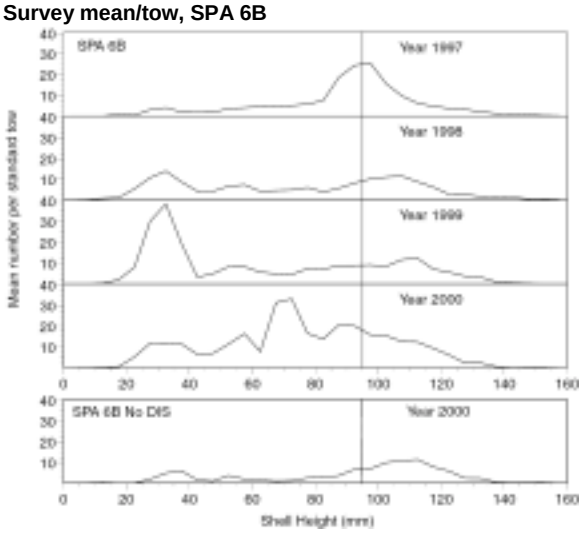
**Survey mean /no. tow (shell height ≥95 mm), SPA 6B**




In 2000, the mean number **of recruits and pre-recruits**, especially those in the 60 to 75

mm shell height range increased over the numbers observed in 1999. The majority of these scallops, especially in the 60 to 90 mm shell height range, were from the Duck Island Sound closed box. When the Duck Island Sound box contribution is not included in SPA 6B there is a decrease in the mean numbers per tow for all sizes from 1999.

**Survey mean/tow, SPA 6B**




The survey of portions of SPA 6C in 2000 was the first survey of this area and more surveys will be required before these data can be used for stock assessment.

## *Outlook*

The 2000 survey mean numbers of commercial sized animals have increased in SPA 6B due to the contribution from Duck Island Sound box. When the Duck Island Sound Box contribution is not included, there was a decrease in the mean numbers per tow for all sizes from 1999. There was also a decrease in the mean number of commercial scallops from SPA 6A.

The juveniles in the Duck Island Sound Box are located in an area heavily fished for a short period of time and may suffer high incidental fishing mortality.

The 2001 TAC should remain at the same level of 130 t, recommended for the 2000 fishery. It is also recommended that separate limits should be set for SPA 6A, 6B and 6C for 2001.

## *Management Considerations*

Recruitment observed in Duck Island Sound needs to be protected from increased incidental fishing mortality. Effort controls may be useful in reducing fishing mortality on the smaller scallops.

Improvements should be made to the timely receipt of reporting documents from non-ITQ fleets to avoid quota overruns.

Enhanced meat weight sampling programs have been implemented and will continue to be developed to provide the information needed to evaluate stock status.

## *For more Information*

Contact:

Dale Roddick (SPA 1)
Stephen Smith and Mark Lundy (SPA 2,3,4 & 5)
Maureen Butler (SPA 6)
Invertebrate Fisheries Division
Department of Fisheries and Oceans
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4A2

Tel: (902) 426-3317/3733
426-6643/5342
Fax: (902) 426-1862
E-Mail:
roddickd@mar.dfo-mpo.gc.ca
smithsj@mar.dfo-mpo.gc.ca
lundym@mar.dfo-mpo.gc.ca
butlerm@mar.dfo-mpo.gc.ca

## *References*

Butler, M.A.E., M.J. Lundy and D. Roddick. 1999. Scallop stock update for the Grand Manan and Southwest New Brunswick, SPA 6 - 1999. *DFO Can. Stock Assessment Sec. Res. Doc.* 99/174.

DFO, 2000. Scallop Production Area 4 in the Bay of Fundy. DFO Science Stock Status Report C3-22(2000).

Roddick, D., R. Claytor, M.J. Lundy, M.A.E. Butler and S.J. Smith. 1999. Assessment of the scallop stock in scallop production area 1, Bay of Fundy for the fall of 1999. *DFO Can. Stock Assessment Sec. Res. Doc.* 99/173.

Smith, S.J., M.J. Lundy and R. Claytor. 1999. Scallop production areas 2, 3, and 7 in the Bay of Fundy: Stock status update for 1999. *DFO Can. Stock Assessment Sec. Res. Doc.* 99/171.

This report is available from the:

Maritimes Provinces
Regional Advisory Process
Department of Fisheries and Oceans
P.O. Box 1006, Stn. B203
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
ISSN: 1480-4913

*La version française est disponible à l'adresse ci-dessus.*

## *Correct citation for this publication:*

DFO, 2000. Updates on Selected Scallop Production Areas (SPA's) in the Bay of Fundy. DFO Sci. Stock Status Report C3-63 (2000).