

Status of the Georges Bank, Mid-Atlantic and Gulf of Maine  
Atlantic Sea Scallop Resources - 1983

by

Fredric M. Serchuk and Robert S. Rak

<input checked="" type="checkbox"/> APPROVED FOR DISTRIBUTION
 (APPROVING OFFICIAL)
9 Feb 1983 (DATE)

National Marine Fisheries Service  
Northeast Fisheries Center  
Woods Hole Laboratory  
Woods Hole, Massachusetts 02543

i

## SUMMARY

The Atlantic sea scallop fishery off the Northeast Coast of the United States (Subareas 5 and 6) is one of the most important commercial fisheries in the nation. Estimated 1982 USA landings from the Georges Bank, Mid-Atlantic, and Gulf of Maine resources were 8,000 metric tons (meats), 32% less than in 1981. Estimated 1982 Canadian scallop landings from Georges Bank were 4,307 metric tons, a 46% decline from 1981. In 1981 (latest data available) USA sea scallop landings generated a record 111.2 million dollars in ex-vessel revenues, the fifth highest in the nation. Analyses of both commercial and research survey data, however, indicate that resource abundance has declined in almost all fishery areas. This report reviews current resource and fishery conditions within principal sea scallop fishery regions and provides an evaluation of these conditions relative to historical patterns and probable future events.

### Georges Bank

Total estimated international (USA and Canada) commercial landings in 1982 were 10,307 tons, a decrease of 6,127 tons (-37%) from 1981, and the lowest annual yield since 1976. The USA and Canada accounted for 58% (6,000 tons) and 42% (4,307 tons) of the 1982 catch, respectively. Both countries landed significantly less scallops in 1982 than in 1981 (USA: 6,000 vs. 8,421 tons; Canada: 4,307 vs. 8,013 tons). About 63% of the combined 1982 catch was derived from the Northern Edge and Peak region of Georges Bank. USA 1982 landings from this region were 2,107 tons, a 56% decline from 1981, and accounted for 36% of the USA Georges Bank catch. As in 1981, all of the 1982 Canadian Georges Bank landings were derived from the Northern Edge and Peak.

Shell height frequency distributions from 1982 USA commercial sea scallop samples indicated that the 1977 and 1978 year-classes were the most important in contributing to fishery yield. However, both cohorts have experienced a significant decline in abundance due to high exploitation rates. The mean size of scallops in the 1982 USA commercial samples from each principal fishing region on Georges Bank (South Channel, Southeast Port, Southern Edge and Peak) was larger than in 1981; concomitantly, average meat counts in the 1982 landings were lower than in 1981. The implementation of the USA Fishery Management Plan for Atlantic Sea Scallops on May 15, 1982, established a maximum average meat count of 40 meats per pound prompting an apparent increase in the cull size in the commercial fishery.

Total effort in the 1982 Georges Bank fishery declined from the record-high 1981 level. Preliminary analyses of commercial catch per unit of effort (CPUE) indicate a reduction in average vessel performance between 1982 and 1981. Due to declines in resource abundance, particularly in the Northern Edge and Peak region, the USA fleet shifted effort from the Northern Edge and Peak to the South Channel area during 1982.

Catch per tow indices in the 1982 USA Georges Bank sea scallop survey indicated marked declines in abundance and biomass from 1981 in both the Northern Edge and Peak and Southeast Part regions of the Bank. The 1982 survey values for each of these regions were the lowest obtained in the 1975-1982 time series and were about 50% lower than the previously lowest values observed. On the Northern Edge and Peak, both USA and Canadian 1982 survey size composition data indicated that the formerly abundant 1977 and 1978 year-classes have been greatly reduced. USA 1982 survey indices for the South Channel region were significantly higher than in 1981; the pre-recruit (< 70 mm shell height) and total number per tow values were the highest observed in the survey series. The survey data indicated that the 1979 year-class is outstanding in abundance in the South Channel and should provide exceptional recruitment to the fishery in this region in late 1983 and during 1984. To the extent, however, that scallops from this cohort are "mixed" together with larger-sized scallops in the spring and summer 1983 fishery landings, potential yield from this year-class will be diminished.

Analyses of the size distribution of the Georges Bank scallop resource derived from the USA 1982 survey indicated that about 53% of the harvestable biomass (scallops  $\geq$  70 mm shell height) is at or below 30 count (i.e., 30, 25, etc.). This distribution pattern will likely prevail until recruitment of the 1979 year-class in the South Channel occurs in late 1983 and during 1984. When this transpires, it is expected that greater than 50% of the harvestable biomass on Georges Bank will be at sizes greater than 30 count.

Given the current disparity in scallop abundance among the three principal fishery regions on Georges Bank, it is probable that the South Channel region will become increasingly more important to the USA fleet in the near future. On the Northern Edge and Peak, the absence of significant recruitment and reduced population abundance levels should result in much lower near-term annual yields from this region than those obtained during 1977-1981.

### Mid-Atlantic

Total estimated 1982 commercial landings (exclusively USA) were 1,325 tons, 565 tons less than in 1981, and the lowest annual catch since 1973. Since 1978 both commercial landings and commercial CPUE have sequentially declined annually. In 1981, commercial CPUE was 20% lower than in 1980, 71% lower than the peak 1977 index, and the lowest value in the 1965-1981 USA catch rate time series. CPUE in 1982 (data for full year not presently available) is expected to be as low or lower than the 1981 value.

In response to declines in catch and CPUE, effort in the Mid-Atlantic area successively declined in 1981 and 1982. Many Mid-Atlantic vessels have transferred fishing operations to the Georges Bank grounds or left the sea scallop fishery completely.

Commercial 1982 size frequency sampling data indicate a continued dependence in the fishery on larger-sized scallops (> 100 mm shell height). Since historically meat counts for the Mid-Atlantic area have rarely exceeded 40 count, the 1982 commercial size frequency data reflect the lack of significant recent recruitment in the fishery rather than implementation of the 40 meat count provision of the Fishery Management Plan.

USA research survey catch per tow indices in 1982 indicated that scallop abundance in all Mid-Atlantic regions (New York Bight, Delmarva, and Virginia-North Carolina) continues to remain relatively low with little improvement from 1981 conditions. No evidence of above average recruitment was observed in survey results from any region.

Size distribution analyses of the Mid-Atlantic resource derived from the 1982 research vessel survey indicated that nearly 65% of the harvestable biomass ( $\geq 70$  mm shell height) is at or below 30 count. Given the virtual absence of significant incoming recruitment, this pattern (i.e., greater than 50% of the harvestable biomass at or below 30 count) should pertain during 1983 and 1984.

### Gulf of Maine

Estimated 1982 commercial Gulf of Maine landings (exclusively USA) were 475 tons, 830 tons less (-64%) than in 1981, and the lowest annual catch since 1979. Gulf of Maine landings accounted for 6% of the total 1982 USA sea scallop catch, about half of the proportional representation in the 1980 and 1981 landings (i.e., 13% and 11%, respectively). As in the two previous years, most of the 1982 catch ( $> 50\%$ ) was derived from offshore waters in the Fishery Conservation Zone (FCZ). However, the 1982 FCZ landings were largely derived from beds much further northeastward (Jonesport, Machias, Grand Manan waters) than those exploited in 1980 (Jeffreys Basin, Cashes Ledge, Fipennies Ledge). Reliance of the Gulf of Maine fishery on offshore populations is a recent phenomenon. During 1970-1979, inshore territorial water landings accounted for 84% of the total Gulf of Maine sea scallop catch.

Total effort in the Gulf of Maine fishery in 1981 declined slightly from the record 1980 level. Effort in 1982 was estimated to be less than in 1981, although most of this reduction was due to decreased vessel activity by larger vessels ( $> 50$  GRT).

During August 1982, NMFS conducted a sea scallop research vessel dredge survey in the Gulf of Maine to obtain biological data on growth and shell size-meat weight relationships of scallops, particularly those populations supporting the Jonesport FCZ fishery. Survey size frequency data indicated that the Jonesport beds were primarily comprised of scallops larger than 85 mm shell height (3.3 in.); 94% of the 2,700 scallops obtained in the Jonesport sampling (42 tows) were larger than 85 mm shell height. The average shell height in the Jonesport beds was 101 mm (4.0 in.); average meat size was 11.3 grams, equivalent to a meat count of 40 per pound. Scallops as large as 137 mm shell height (5.5 in.) and meats as great as 33.3 grams (14 count) occurred in the Jonesport samples. Most female scallops greater than 80 mm (3.1 in.) were sexually mature.

Apart from the Jonesport beds, most other Gulf of Maine areas sampled (56 stations) in the 1982 survey yielded few scallops with two exceptions: on Jeffreys Ledge, one tow caught 2,900 scallops (mean shell height = 64 mm; average meat count = 96) and on Fipennies Ledge, two tows caught a total of 1,700 scallops (mean shell height = 33 mm; average meat count = 368).

Survey size frequency distributions of the Gulf of Maine populations sampled indicated that 21% of the harvestable biomass ( $\geq 70$  mm shell height) in the Jonesport beds was at or below 30 count. On Jeffreys Ledge, 66% of the harvestable biomass was at or below 30 count, while on Fipennies Ledge, 35% of the harvestable biomass was at or below 30 count. For all other offshore Gulf of Maine areas combined, 46% of the harvestable biomass was 30 count or less. The observed patterns of biomass distribution derived from the 1982 Gulf of Maine survey, however, must be considered equivocal since the survey was not specifically performed to synoptically evaluate relative distribution and abundance of the aggregate Gulf of Maine sea scallop resources.

Sustained high yields from the offshore Gulf of Maine beds currently being fished appear improbable since exploitation has generated high fishing mortality rates effecting rapid declines in abundance. Unless additional high density beds of harvestable sized scallops are located, scallop landings from the Gulf of Maine fishery during 1983 and 1984 are not likely to exceed 300-500 tons annually.