

RECENT TRENDS IN THE ATLANTIC SEA SCALLOP FISHERY

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Laboratory Reference No. 67-6  
2 November 1967

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### Landings, Fishing Effort, and State of the Stocks

As recently as 10 years ago, this fishery was almost a monopoly of the United States; 1957 landings were about 24 million pounds of meats, 88 per cent of which were landed in U.S. ports by U.S. vessels. By 1962, landings had risen to 38 million pounds but only 63 percent of the landings were made in the U.S.. The rest had been landed in Canada. During 1966, landings were about 34 million pounds and the U.S. share had dropped to 47 percent (Table 1).

The total amount of effort put into this fishery has not changed much over the last 10 years. There were about 15,300 days fished in 1957, 16,000 in 1962, and 17,000 in 1966. What has changed is the relative amount of effort put in by the two countries.. The figures are almost the same as shown for landings above. In 1957, 87 percent of the effort was U.S.; in 1962, 68 percent; and in 1966, 47 percent (Table 1). As Canadian vessels entered the fishery, United States vessels dropped out.

It should be noted here that less than 10 percent of the Canadian catch is consumed in Canada. The rest is sold in the United States.

### The Fishing Grounds

The sea scallop grounds extend from the Gulf of St. Lawrence south to the waters off the Virginia Capes (Fig. 1). United States vessels have never fished north of latitude  $42^{\circ} 30'$  and, until 1965, Canadian vessels had never fished south of latitude  $41^{\circ} 00'$ . These northern (ICNAF Subarea 4) and southern (ICNAF Subarea 6) grounds have a history of providing only a small fraction of the total landings. During the years 1945-1964 about 80 percent of the landings came from Georges Bank (ICNAF Subarea 5).

### Abundance

One should not regard Subarea 4 and Subarea 5 during the years before 1965 as containing large unexploited stocks of sea scallops. Both areas have extremely active otter trawl fisheries and any news of good concentrations of sea scallops noticed by these vessels soon reaches the scallop fishermen. In addition, occasional surveys have been conducted with research vessels in Subarea 4 by Canada and in Subarea 6 by the United States.

These investigations as well as the analysis of the commercial landings from these areas have all shown the same general pattern. Wherever concentrations of sea scallops were found, they were less dense and of smaller area than those found on Georges Bank and they almost invariably were composed of scallops of a single year class. The consensus of opinion has been that these grounds received only occasional spat fall and were of low productivity compared with the Georges Bank grounds.

The average annual landings per day spent on the fishing grounds (L/E) shown in Table 1 is not a very good measure of abundance. It does not take into account the discards, the size composition of those kept, or the amount of time spent actually fishing as compared to that spent shucking. It is, of course, a good measure of the relative success of fishing in one year as compared with another and on different grounds in the same year.

Georges Bank in Subarea 5 has been the most intensively fished, and hence the most intensively studied, sea scallop ground. Up until 1959 these grounds supplied about 19 million pounds of meats per year as a result of about 12,000 days fished. About 10 percent of the effort was Canadian.

In late 1959 there was an extremely large increase in true abundance of sea scallops on Georges Bank caused by the recruitment of the 1955 year class to marketable size. We do not have any precise quantitative idea of even the relative abundance of this year class compared with other year classes but fishermen with over 20 years experience said that they had never seen anything like it.

Scallop catch rates immediately shot up. Boats that had been contentedly reporting landings of about 1700 pounds per day began reporting 3500 and even 4000 pounds. The high catch rates, averaging 2900 pounds per day, continued during 1960 and 1961. It was at this time that the Canadian offshore scallop fleet began to expand (see Table 1) partly as a result of the extremely good fishing but also because of other economic, social, and political factors operating in Canada.

Since 1959 annual recruitment has been at more "normal" levels with perhaps even a few very poor years. Our estimates of pre-recruits are not good; they do not seem to be available to any of the sampling gear we have tried. The research vessel abundance index, number of scallops larger than 70mm taken per 10,000 square feet dredged, declined from 112 in 1960 to 34 in 1965. There was a similar decline in the catch per day figures.

In 1965, there was an, again unprecedented, increase in abundance of sea scallops in Subarea 6. Samples which we obtained from the commercial landings showed them to be almost pure, over 95 percent, catches of the 1961 year class. Both fleets shifted a large part of their effort into Subarea 6 from Subarea 5 (Table 1) and landings went from 2.0 million pounds in 1964 to 23.6 million in 1965. Fishing continued to be good in 1966 both on the 1961 year class as well as the 1962 which showed up in respectable numbers.

#### 1967 and Beyond

Conditions seem to be improving in Subarea 5. The research vessel abundance index which reached a low of 34 in 1965 rose to 48 in 1966 and 63 in 1967. The stocks of Subarea 6 seem to be reverting to the pre-1965 condition. There is no evidence of a large 1963 year class and vessels fishing there seem to be just cleaning up the remnants of the 1962 and 1961 year classes. Catch rates in the first half of 1967 were down to 1700 pounds per day as compared to 2100 in the first half of 1966.

There is very little good data on 1967 available yet but what there is seems to indicate that total landings will be about 22 million pounds, about 10 million landed in the United States, compared with 34 million in 1966. Most of the trips that have been interviewed (86 percent) are still fishing in Subarea 6 but it is likely that they will shift their efforts back to Subarea 5 soon.

The size of the Canadian fleet seems to have stabilized but there is no evidence that it will decline much. It is difficult to predict what will happen in the United States fleet. One of the reasons for its decline has been the high abundance and good prices paid for yellowtail flounder coupled with a reported shortage of men. Flounder fishing only requires 5 or 6 men while scallopers need at least 11. Many boats that converted to flounder fishing might be expected to go back to scalloping since yellowtail flounder abundance has declined. They may not be able to find the extra men, however, or the present low catch rates might discourage them unless ex-vessel prices go to extremely high levels.

Table 1. Landings of sea scallop meats, in millions of pounds; effort, in thousands of days fished; landings per day fished (L/E), in hundreds of pounds; and a research vessel abundance index (RVAI) for Georges Bank. Items marked \* are estimates.

Years	45.59	60	61	62	63	64	65	66
		Subarea 4						
Landings	1.0	0.2	0.4	1.4	3.2	2.8	2.0	1.2
Effort (Can.)	0.6*	0.2*	0.3*	0.5*	1.5*	1.4*	1.2*	0.5*
		Subarea 5						
Landings	14.0	29.4	33.7	34.4	30.6	26.6	13.8	11.1
Effort (US)	8.2	8.0	8.7	9.1	7.7	6.7	2.0	1.1
Effort (Can.)	0.6	2.3	3.1	4.6	5.9	6.7	6.4*	5.4*
L/E	17	29	29	25	22	20	16	17
R.V.A.I.	N.A.	112	92	98	46	40	34	48
		Subarea 6						
Landings	4.3	2.8	2.9	2.2	1.7	2.0	23.6	19.8
Effort (US)	2.8*	1.4*	1.4*	1.8	1.1	1.2	7.6	6.9
Effort (Can.)	0.0	0.0	0.0	0.0	0.0	0.0	3.3*	3.1*
L/E	N.A.	N.A.	N.A.	12	15	17	22	20
		All Areas						
Landings	19.3	34.3	38.0	38.0	35.5	31.4	39.4	34.1
Effort (US)	11.0*	9.4	10.1	10.9	8.8	7.9	9.6	8.0
Effort (Can.)	1.2*	2.5	3.4	5.1	7.4	8.1	10.9	9.0
Tot. Effort	12.2*	11.9	13.5	16.0	16.2	16.0	20.5	17.0
L/E	16	29	28	24	22	20	19	20