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Bay of Fundy Scallop Stocks Assessment, 1985

by

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ABSTRACT

Catches from traditional scallop beds in the Bay of Fundy near Digby, N.S. decline steadily, catch-rates even more so. To maintain high landing patterns the Bay of Fundy fleet converges on newly exploited grounds (e.g. Ile Haute). CPUE from these areas is greater than the average from traditional grounds but decreases quite rapidly, making such newly exploited areas only marginally better than the traditional grounds. Weak recruitment pulses observed in recent stock surveys match diminishing levels of catches. Landings will maintain themselves at low levels until large scale stock replenishment takes place.

RESUME

Les prises provenant des bancs de pétoncles pêchés traditionnellement dans la Baie de Fundy près de Digby, N.-E. diminuent d'une façon régulière, les taux de capture encore davantage. Afin de soutenir des niveaux de débarquements élevés, la flottille de la Baie de Fundy converge sur des bancs peu exploités auparavant (e.g. Ile Haute). Les taux de capture provenant de ces régions sont au-dessus de la moyenne des régions traditionnelles mais baissent rapidement; si bien que les bancs peu exploités ne sont que légèrement supérieurs aux bancs traditionnels. Une série de recrutements faibles observés dans les inventaires de stocks récents vont de pair avec les niveaux décroissants des prises. Les débarquements se maintiendront à de bas niveaux tant qu'un renouvellement du stock de grande envergure n'aura pas lieu.

INTRODUCTION

The traditional fishing grounds of the Bay of Fundy fleet near Digby, Nova Scotia (Fig. 1) are relatively depleted after the latest record high landings in 1981-82. Although Scotian Shelf scallop fishing grounds contributed importantly to these high landings, the Digby grounds also experienced a peak in productivity as determined by catches of the Bay of Fundy fleet. Up to very recently the upper parts of the Bay, upstream from Ile Haute in Minas Basin and Chignecto Bay were not fished for scallops. This trend is changing and supporting data is presented here.

METHODS

Fishing Information

All vessels over 25.5 G.T. are required to maintain logbooks where daily fishing activities are recorded. Catch-rates are computed from 'Class 1' data when information is provided on the catch and its location, and effort in terms of hours fished and width of the gear.

Sampling of the catch was carried out on a seasonal basis with excellent coverage of the outside 6-mile fishing zone.

Survey Procedures

Survey stations are randomly stratified according to the catch distribution. Stations are distributed in 3 to 4-mile bands running perpendicular to the shore. A description of the survey procedures may be found in Robert et al (1984). Because of the extension of the fishery upstream from Parker's Cove, the 1985 stock survey had an extra transect off Hampton to cover the extended grounds. At the analysis stage, survey data is also poststratified according to general fishing areas and fishing zones.

Biological Data

Survey data were analysed using the 1984 growth functions and meat yield results according to depth as previously (Robert et al 1985). Parameters of the two growth functions are as follows:

inside 6-mile $K=0.226$, $t_0=1.605$, $H_\infty=147.121$, 360 observations
outside 6-mile $K=0.275$, $t_0=2.691$, $H_\infty=130.171$, 750 observations
Meat yield results were given in Robert et al (1985).

RESULTS

The Fishery on the Digby Grounds

Ever since 1981 the total number of vessels carrying a Bay of Fundy scallop license has remained virtually constant with

the vast majority of vessels belonging to the largest vessel category (Table 1). After an increase in licensed vessels participating in the scallop fishery in 1983-84, the 1985 estimate of participation is comparable to pre-1983 values (Table 2).

Digby, N.S. is the main port for the Bay of Fundy fleet and Digby landings (statistical district 38) generally reflect the status of the fishery on the traditional grounds. As Tables 3 and 4 indicate, 1985 landings continue to decline and are fairly similar to the 1984 values. It is very difficult to get a reliable estimate of the total catches of the inner Bay of Fundy so only Class 1 catches will be considered here. There is no reason to believe that the effort and catch-rate data associated with the Class 1 catches would not be representative of the overall fishery within the Bay. The preliminary 1985 Class 1 catches (Table 5) are down from 1984 while effort has been maintained at a high level. Catch-rates continue to decline; although the reduction from 1984 to 1985 is small, these are the lowest values on record.

Fishing grounds in the immediate vicinity of Digby, off Digby Gut and Gulliver's Head still provide the mainstay of the fishery. However, the fleet steams considerable distances to maintain its current exploitation pattern (Fig. 1). Grounds off Centreville on Digby Neck are no longer an important contributor. More intensive coverage has lately been given to fishing areas upstream from Digby, i.e. Parker's Cove, Hampton, Ile Haute. Scallop beds to the west of Ile Haute were first exploited in 1984 with a superior catch-rate (6.65 kg/hm). Class 1 catches have already decreased, from 16,600 kg in 1984 to 12,100 kg in 1985 and the 1985 Ile Haute catch-rate is down to 3.83 kg/hm. This CPUE is greater than the average for the traditional grounds (Table 5) but its decline has been fairly rapid, making such newly exploited areas only marginally better than the traditional grounds.

The Saint Mary's Bay Scallop Fishery

In early 1985, a few (5-10) vessels exploited scallop beds in the vicinity of ledges on the Long Island side of Saint Mary's Bay and near the tip of Digby Neck in depths of 27 to 66 m. Catches are approximately 7,000 kg with a mean catch-rate for the area of 2.98 kg/hm (range 1.78-6.62). No biological information is available for those scallop beds.

The Upper Parts of the Bay of Fundy

Historically speaking, Minas Basin and Chignecto Bay at the upper end of the Bay of Fundy are not scallop-producing areas. Landings of less than 10 t per year have been recorded. Local fishermen have become interested in the scallop fishery in recent years. To participate in the fishery, vessels, all under 14 m L.O.A., are issued a "Cumberland" or 3-mile license. There has been 14 such licenses (Table 6) issued annually with only one vessel over 25.5 G.T. All but one (Albert Co., N.B.) of these licenses are in Colchester and Cumberland Co., N.S. In all

likelihood these small vessels land their catches at home ports in Cumberland Co. (statistical districts 24 and 44) and Albert Co. (79). Landings from these districts reflect the productivity of the upper parts of the Bay. Over the past 3 years, landings have gradually increased (Table 7), fishing taking place mainly from April to October. If all licensed vessels involve themselves in the fishery, less than 2 t per vessel are landed annually on average. Scallop fishing may only be considered as an accessory activity in a multi-fishery system. Since these vessels are under 25.5 G.T. except one they are not required to provide effort information by logbooks; hence there is little fishery information available at this time.

Catch Sampling

Good seasonal coverage of catch sampling was again given in 1985 to the outside 6-mile fishing zone (Table 8). Average monthly meat weight has slightly risen from 1984 to 1985 due to extension in grounds exploited. Such newly exploited grounds still retained relatively larger scallops. The catch-at-age data for the outside 6-mile fishing zone was transformed in a frequency distribution (Table 9) to estimate mortality (Z) rates (Table 10). Age 8 scallops make up the major age class fished on a consistent basis. Nearly 60 % of the 1985 catches come from 3 age classes (7 to 9) with fewer younger animals than the previous year's catches. As for other fishery characteristics (Table 5) there is little change in the mortality rate (Table 10) from 1984 to 1985, likely resulting in similar fishing mortality values.

Stock Surveys of the Traditional Grounds

Survey results up to 1985 are presented in Tables 11 to 16. Survey locations for 1985 are plotted in Figure 2; the area surveyed gives a fair representation of the areas fished. Figure 1 maps the 1985 fishing locations when given as Loran bearings in log records. Whether one looks at a detailed distribution-at-age (Table 13) or simply at abundance of prerecruits and recruits (Tables 14-16) there is no outstanding modal group to indicate any improvement in the stock profile. Even in the newly exploited areas the fishery relies on older recruits which are declining substantially.

DISCUSSION AND CONCLUSION

Catch-rates within the Bay of Fundy are still declining although at a lower pace. They represent the lowest values on record. Catches maintain themselves somewhat. In addition to the traditional fishing areas in the vicinity of Digby the Bay of Fundy fleet has extended its exploited grounds considerable distances to sustain high landing patterns. It is only very recently (1985) that some Bay of Fundy licensed vessels have elected not to actively participate in the scallop fishery.

There is limited incentive to gear for other fisheries for dual-license vessel owners due to quota restrictions in the groundfish fishery. With the last peak in landings in 1981-82, it will take a few years for the cycle (Caddy 1979) to repeat itself and bring another strong pulse of recruits to the fishery. Stock survey results concur with the observations of the fishery performance and there is no indication of stock replenishment whichever stratification design one looks at.

Small gains could be had by delaying age at first capture by 2 to 3 years (Robert et al 1985). However, stock abundance has been so drastically reduced by high levels of fishing effort, even non-traditional areas do not sustain the fishery for any length of time, and it will take an exceptional recruitment pulse to bring the fishery back.

REFERENCES

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Table 1.- Number of vessels carrying a Bay of Fundy scallop license from 1979 to 1985. A Bay of Fundy license entitles the holder to drag for scallops in the Bay of Fundy and other areas of NAFO SA 4X and, under special trip permit, in Subdivision 5Ze. Source: Licensing Unit, Fisheries and Oceans, Halifax. Number of vessels based in Nova Scotia + number of vessels based in New Brunswick.

Year	under 25.5G.T.		over 25.5G.T.		Total
	under 14m	14-19.8m	under 14m	14-19.8m	
1979	9 + 13	2 + 0	1 + 0	41 + 7	73
1980	5 + 13	1 + 0	2 + 0	52 + 7	80
1981	8 + 14	1 + 0	3 + 0	64 + 6	96
1982	8 + 8	1 + 0	4 + 4	65 + 4	94
1983	3 + 7	1 + 0	7 + 5	67 + 5	95
1984	2 + 7	0 + 0	7 + 5	70 + 5	96
1985	2 + 7	0 + 0	7 + 4	71 + 3	94

Table 2.- Number of (1) Bay of Fundy licensed vessels (Source: Licensing Unit, Fisheries and Oceans, Halifax), (2) active fishing licenses for vessels over 25.5 G.T. supposed to follow log procedures, and (3) vessels complying with log procedures.

Year	(1)	(2)	(3)
1981	96	68	65
1982	94	66	63
1983	95	77	74
1984	96	82	76
1985	94	70	67

Table 3.- Annual landings (t of scallop meats) by statistical district (Digby Neck, Digby and Annapolis); by vessel tonnage, (1): <25.5 G.T., (2): >25.5 G.T. Prior to 1967, landings were not segregated by vessel tonnage. Source: Statistics Div., Fisheries and Oceans, Halifax.

District	37		38		39	
Tonnage(1)	(2)	(1)	(2)	(1)	(2)	
1960	102.17		157.23		0.84	
1961	80.60		303.49		1.93	
1962	-		355.42		8.43	
1963	17.47		512.29		0.48	
1964	90.48		530.48		2.89	
1965	-		476.99		19.16	
1966	-		234.94		7.23	
1967	0.96	5.42	39.04	115.66	-	4.94
1968	-	5.42	53.49	329.28	-	5.42
1969	4.10	56.27	33.13	176.87	-	6.75
1970	2.29	74.82	18.55	161.93	0.48	1.81
1971	4.94	69.88	10.00	104.34	3.61	3.61
1972	17.23	24.94	16.75	222.77	-	4.10
1973	0.96	10.00	16.39	130.24	-	7.23
1974	-	0.60	11.69	54.22	-	3.13
1975	-	-	22.29	96.99	-	6.27
1976	-	21.81	24.46	479.76	-	21.33
1977	10.00	96.75	35.66	766.99	1.08	24.22
1978	-	120.00	33.49	570.24	1.45	20.96
1979	2.29	54.94	22.53	685.42	6.27	15.90
1980	10.60	49.40	18.31	696.02	4.34	5.90
1981	28.55	147.35	3.98	1080.24	0.48	1.69
1982	28.31	106.51	21.20	915.42	-	7.95
1983	12.05	43.61	19.28	722.53	0.72	26.99
1984	5.90	53.98	7.59	564.22	0.24	29.88
1985	-	28.67	8.18	554.34	0.48	18.31

Table 4.- Annual landings (t of scallop meats) by vessel category for Digby Neck (statistical district 37), Digby (38), and Annapolis (39). Inshore landings originate from vessels <25.5 G.T. while offshore landings refer to vessels >25.5 G.T. Source: Statistics Div., Fisheries and Oceans, Halifax.

Year	37		38		39				
	IN	OFF	IN	OFF	IN	OFF			
	<14m	>14m	<14m	>14m	<14m	>14m			
1979	2.29	-	54.82	22.53	10.60	647.71	6.27	-	15.90
1980	10.48	6.02	36.63	18.19	8.67	668.80	4.34	-	5.90
1981	28.31	30.84	110.60	4.10	12.77	1046.39	0.48	-	1.81
1982	28.43	19.28	87.11	21.08	15.90	888.43	-	0.36	7.59
1983	12.05	20.00	21.93	19.28	24.10	698.31	0.72	2.89	23.98
1984	5.90	29.64	24.34	7.59	20.48	543.74	0.24	0.48	29.40
1985	-	20.12	8.55	8.18	50.72	503.62	0.48	-	18.31

Table 5.- Class 1 catches, effort levels and CPUE values for scallop fishing grounds inside the Bay of Fundy.

Year	Catch t	Effort hm	CPUE kg/hm
1979	333.72	63871	5.22
1980	456.46	75636	6.03
1981	479.04	81163	5.90
1982	558.30	95654	5.84
1983	568.88	159646	3.56
1984	545.68	186774	2.92
1985	488.27	201612	2.42

Table 6.- Vessels licensed for scallop fishing in the upper parts of the Bay of Fundy, "Cumberland" or 3-mile license. All vessels are less than 14 m long.

Year	under 25.5 G.T.	over 25.5 G.T.	total
1983	14	0	14
1984	13	1	14
1985	13	1	14

Table 7.- Landings in t of scallop meats by statistical districts in the upper parts of the Bay of Fundy. Districts 24 and 44 are in Cumberland Co., Nova Scotia; district 79 is in Albert Co., New Brunswick. Source: Statistics Div., Fisheries and Oceans.

Year	District	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1983	24	-	-	-	0.24	-	-	-	-	-	-	-	-
	44	-	-	-	0.60	0.12	1.57	2.17	0.84	0.36	0.48	0.48	-
	79	-	-	-	2.77	0.24	0.72	0.84	4.22	2.89	0.60	-	0.24
		-	-	-	3.61	0.36	2.29	3.01	5.06	3.25	1.08	0.48	0.24
total for year:		19.38											
1984	24	-	-	-	-	-	-	-	0.12	-	-	-	-
	44	0.12	0.24	0.84	-	-	-	-	-	-	-	-	-
	79	0.12	-	0.84	1.69	4.10	5.18	1.93	3.86	3.25	2.65	0.84	0.36
		0.24	0.24	1.68	1.69	4.10	5.18	1.93	3.98	3.25	2.65	0.84	0.36
total for year:		26.14											
1985	24	-	-	-	-	-	-	-	-	-	-	-	-
	44	-	-	-	-	-	-	-	0.48	0.48	0.36	-	-
	79	-	-	-	4.46	4.94	3.01	3.37	6.14	4.10	0.72	-	-
		-	-	-	4.46	4.94	3.01	3.37	6.62	4.58	1.08	-	-
total for year:		28.06											

Table 8.- Average monthly meat weight (g) on an annual basis for the outside 6-mile fishing zone. N: sample size.

Year	Month	N	Mean	Min.	Max.	S.E.
1979	May	2527	13.52	2.56	35.00	0.06
	June	2111	11.76	1.16	52.75	0.05
	July	4286	12.13	2.97	73.73	0.04
	Aug	2351	14.49	1.78	38.57	0.06
	Sept	440	16.71	5.27	47.12	0.19
		11715				
1980	May	648	16.83	5.76	40.27	0.16
	June	3646	16.45	3.37	43.65	0.07
	July	4475	14.52	2.43	41.00	0.06
	Aug	3607	15.45	2.52	79.43	0.07
	Sept	1788	18.01	1.65	83.74	0.12
		14164				
1981	May	2067	14.92	2.57	39.16	0.09
	June	2703	16.82	4.59	43.33	0.09
	July	3228	17.03	3.51	50.27	0.08
	Aug	2193	16.38	4.05	42.00	0.09
	Sept	1489	17.00	3.91	45.40	0.12
		11680				
1982	May	0	-	-	-	-
	June	3870	14.30	3.05	41.87	0.07
	July	3500	13.20	3.32	37.59	0.05
	Aug	3754	14.12	2.62	48.27	0.06
	Sept	0	-	-	-	-
		11124				
1983	May	3294	12.09	2.54	36.89	0.06
	June	2184	12.60	2.44	32.34	0.07
	July	1998	13.84	3.66	50.27	0.07
	Aug	2880	14.23	3.77	31.68	0.05
	Sept	0	-	-	-	-
		10356				
1984	May	5878	13.78	2.42	38.54	0.04
	June	3350	12.38	2.24	32.80	0.06
	July	5439	12.53	2.20	42.43	0.05
	Aug	4104	10.92	2.22	46.59	0.07
	Sept	2277	12.53	2.74	48.22	0.09
		21048				

Table 8 .- continued

Year	Month	N	Mean	Min.	Max.	S.E.
1985	May	3829	14.37	3.37	39.34	0.06
	June	2211	12.95	2.68	30.26	0.06
	July	4886	12.84	2.59	36.65	0.05
	Aug	3160	14.30	3.36	82.51	0.09
	Sept	3617	13.08	2.51	39.31	0.06
		<u>17703</u>				

Table 9.- On a percentage basis, number of scallops at age from the catch of the outside 6-mile fishing zone.

Year	Age (years)											
	6	7	8	9	10	11	12	13	14	15	16	17
1979	16.0	37.8	27.3	11.5	3.8	1.2	0.4	0.2				
1980	13.0	21.5	22.7	19.2	10.7	5.5	2.6	1.4	0.7	0.4	0.2	0.1
1981	11.6	19.6	21.9	19.9	12.3	6.3	3.2	1.5	1.0	0.5	0.3	0.2
1982	18.7	28.9	20.4	15.0	8.5	2.6	1.5	0.6	0.3	0.2	0.1	0.1
1983	5.4	16.0	24.0	22.8	16.1	8.3	3.7	1.6	0.7	0.4	0.2	0.1
1984	11.4	18.5	21.5	18.4	12.7	6.9	3.8	2.0	1.0	0.7	0.4	0.2
1985	6.0	19.4	22.2	17.7	14.1	8.4	5.0	2.6	1.3	0.9	0.5	0.4

Table 10.- Annual instantaneous mortality rate (Z) estimated from catch at age on a percentage basis for the outside 6-mile fishing zone.

Year	Z	s.e.	95% confidence interval
1979	0.963	0.1537	0.655 - 1.270
1980	0.544	0.0696	0.405 - 0.683
1981	0.503	0.0624	0.378 - 0.628
1982	0.553	0.0639	0.426 - 0.681
1983	0.630	0.0882	0.454 - 0.807
1984	0.478	0.0591	0.360 - 0.597
1985	0.450	0.0534	0.343 - 0.557

Table 11.- Number of survey stations in the Digby area by year and by stratum types.

	1981	1982	1983	1984	1985
Catch stratum:					
low (0-1%)	15	29	40	40	48
medium (1-3%)*	17	20	20	20	28
high (>3%)*	38	22	15	15	14
exploratory	-	30	25	25	30
total	70	101	100	100	120
Area stratum:					
Centreville	3	19	20	20	21
Gulliver's Head	22	20	28	23	29
Digby Gut	41	49	35	40	30
Delaps Cove	4	9	14	12	18
Parker's Cove	-	4	3	5	14
Hampton	-	-	-	-	8
Zone stratum:					
inside 6-mile	27	50	40	49	58
outside 6-mile	43	51	60	51	62

* 2% in 1981.

Table 12.- 1984 stock survey. Average number of scallops at age caught in a seven-gang Digby drag projected from an end, unlined bucket for recruits (age >3 years) and from a centre, lined bucket for prerecruits (age ≤3 years). (u): unlined, (l): lined.

	Age (years)										Mean	s.d.
	1	2	3	4	5	6	7	8	9	10+		
Catch stratum:												
low (u)	0	1	4	7	17	34	29	17	13	13	149	95
(l)	0	2	8	8	12	16	16	10	6	10	106	62
medium (u)	0	0	6	13	29	38	42	31	15	18	202	131
(l)	0	3	21	13	13	17	17	19	9	7	148	93
high (u)	0	0	3	11	12	18	20	14	14	23	143	72
(l)	0	1	6	7	10	11	12	8	6	7	73	44
exploratory (u)	0	0	3	7	26	38	35	19	11	24	194	126
(l)	0	1	12	7	9	22	14	8	10	12	99	80
Area stratum:												
Centreville (u)	0	0	2	4	14	32	25	15	15	14	135	91
(l)	0	4	18	9	9	20	14	10	7	11	114	79
Gulliver's Head (u)	0	0	8	17	40	49	58	34	16	21	253	123
(l)	0	2	18	13	13	21	21	16	10	9	158	95
Digby Gut (u)	0	1	3	8	18	30	27	18	14	17	159	80
(l)	0	2	7	8	12	16	16	12	8	8	90	53
Delaps Cove (u)	0	0	3	5	13	24	20	14	7	29	139	123
(l)	0	1	7	4	13	11	6	4	8	16	83	54
Parker's Cove (u)	0	0	2	3	6	21	3	2	1	1	47	39
(l)	0	0	0	0	3	4	1	0	0	0	20	19
Zone stratum:												
inside 6-mile (u)	0	0	4	7	15	21	22	17	12	28	151	99
(l)	0	3	14	9	10	10	11	11	7	14	99	70
outside 6-mile (u)	0	1	4	10	26	45	41	22	14	9	187	118
(l)	0	1	8	8	12	23	19	11	8	5	114	77

Table 13.- 1985 stock survey. Average number of scallops at age caught in a seven-gang Digby drag projected from an end, unlined bucket for recruits (age >3 years) and from a centre, lined bucket for prerecruits (age <3 years). (u):unlined, (l): lined.

	Age (years)										Mean	s.d.
	1	2	3	4	5	6	7	8	9	10+		
Catch stratum:												
low (u)	0	0	1	5	15	28	29	27	21	30	221	116
(l)	0	1	2	5	9	11	11	10	6	9	138	79
medium (u)	0	1	2	11	19	17	18	16	12	25	153	65
(l)	0	1	4	11	14	11	11	10	7	15	112	57
high (u)	0	0	1	4	10	4	10	9	8	28	102	40
(l)	0	2	4	4	10	5	9	7	5	15	96	69
exploratory (u)	0	0	2	8	23	24	28	21	11	27	187	80
(l)	0	1	6	13	17	14	13	11	6	14	123	78
Area stratum:												
Centreville (u)	0	0	0	12	27	23	32	28	18	31	200	76
(l)	0	2	6	18	21	13	18	14	10	15	153	82
Gulliver's Head (u)	0	1	1	6	23	30	26	22	10	27	179	92
(l)	0	1	3	9	19	17	17	14	7	11	142	91
Digby Gut (u)	0	0	2	6	12	18	23	21	16	27	162	95
(l)	0	2	5	7	8	9	10	9	6	15	94	46
Delaps Cove (u)	0	1	5	10	17	18	20	15	15	41	150	91
(l)	0	0	3	6	7	7	6	7	4	15	91	44
Parker's Cove (u)	0	0	1	2	10	18	17	12	8	13	290	63
(l)	0	0	0	3	7	8	4	4	2	5	111	25
Hampton (u)	0	0	0	3	4	15	20	25	27	15	290	188
(l)	0	0	0	0	4	3	1	4	4	8	193	00
Zone stratum:												
inside 6-mile (u)	0	1	1	6	13	10	11	11	9	27	135	73
(l)	0	1	2	6	11	7	5	5	4	13	96	64
outside 6-mile (u)	0	0	2	8	21	33	37	30	20	27	217	98
(l)	0	1	4	10	14	15	17	15	8	12	140	72

Table 14.- Summary of average number of scallops at age caught for prerecruits and recruits by catch stratum.

	Age (years)		
	1-3	4-7	8 +
<u>1981</u>			
low	14	153	123
medium	43	281	81
high	56	192	89
<u>1982</u>			
low	2	176	102
medium	4	125	105
high	7	224	81
exploratory	12	184	85
<u>1983</u>			
low	11	152	84
medium	14	140	75
high	23	77	59
exploratory	16	148	79
<u>1984</u>			
low	10	87	43
medium	24	122	64
high	7	61	51
exploratory	13	106	54
<u>1985</u>			
low	2	78	77
medium	5	65	52
high	6	28	44
exploratory	7	83	58

Table 15.- Summary of average number of scallops at age caught for prerecruits and recruits by area stratum.

	Age (years)		
	1-3	4-7	8 +
<u>1981</u>			
Centreville	18	222	174
Gulliver's Head	93	277	85
Digby Gut	23	182	94
Delaps Cove	7	38	172
<u>1982</u>			
Centreville	15	255	129
Gulliver's Head	9	211	123
Digby Gut	4	160	74
Delaps Cove	0	120	90
Parker's Cove	0	4	29
<u>1983</u>			
Centreville	16	114	73
Gulliver's Head	20	176	75
Digby Gut	14	128	81
Delaps Cove	8	150	96
Parker's Cove	0	3	0
<u>1984</u>			
Centreville	22	75	44
Gulliver's Head	20	164	71
Digby Gut	9	83	49
Delaps Cove	8	62	50
Parker's Cove	0	33	4
<u>1985</u>			
Centreville	8	95	77
Gulliver's Head	4	86	60
Digby Gut	7	59	64
Delaps Cove	3	65	71
Parker's Cove	0	48	33
Hampton	0	42	67

Table 16.- Summary of average number of scallops at age caught for prerecruits and recruits by zone stratum.

	Age (years)		
	1-3	4-7	8 +
<u>1981</u>			
inside 6-mile	20	163	103
outside 6-mile	59	231	97
<u>1982</u>			
inside 6-mile	7	131	90
outside 6-mile	6	226	98
<u>1983</u>			
inside 6-mile	19	73	67
outside 6-mile	11	180	184
<u>1984</u>			
inside 6-mile	17	65	57
outside 6-mile	9	122	45
<u>1985</u>			
inside 6-mile	3	40	47
outside 6-mile	6	99	77

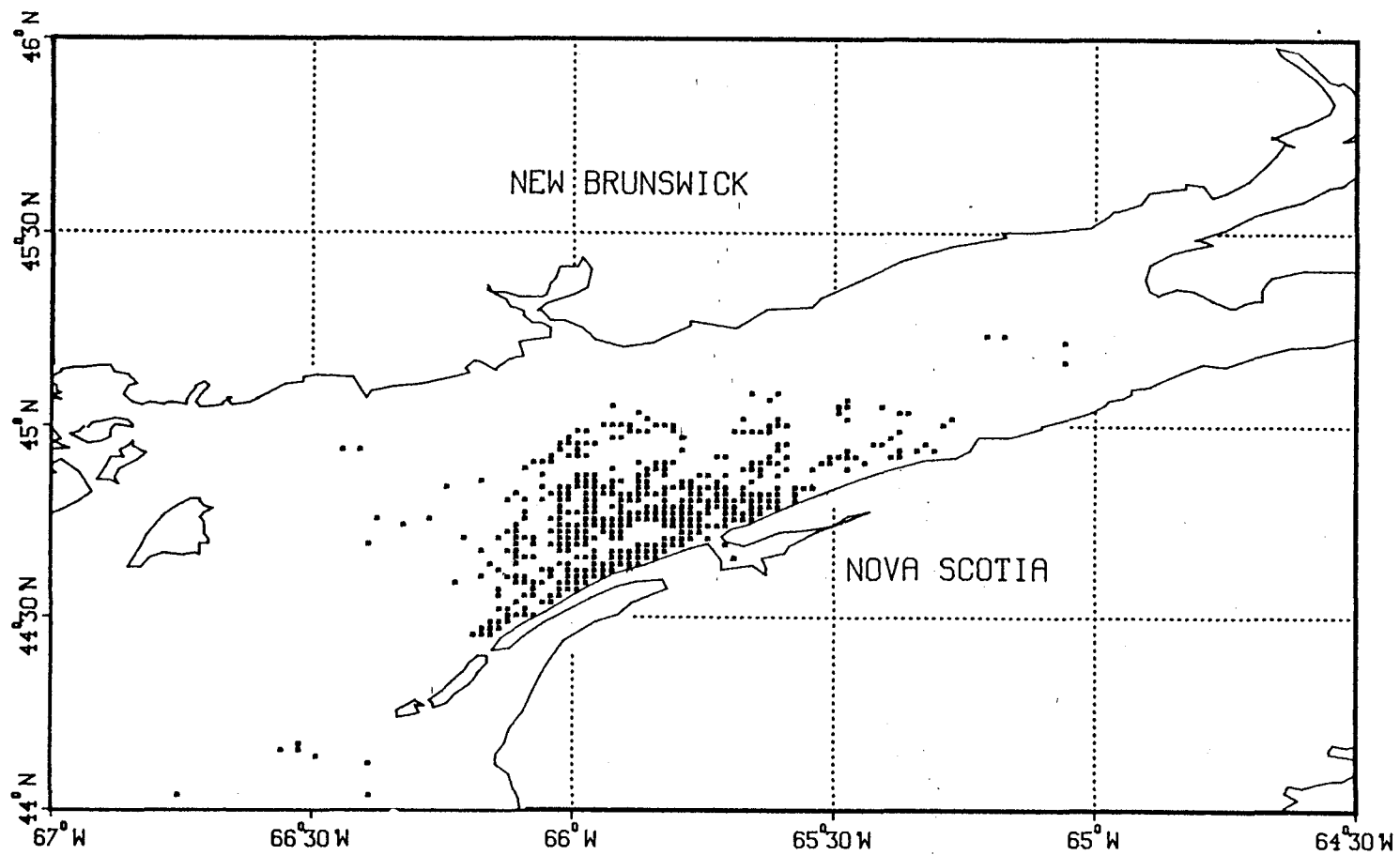


Figure 1.- Fishing locations representative of the areas fished by the Bay of Fundy fleet in 1985, within the Bay according to log information.

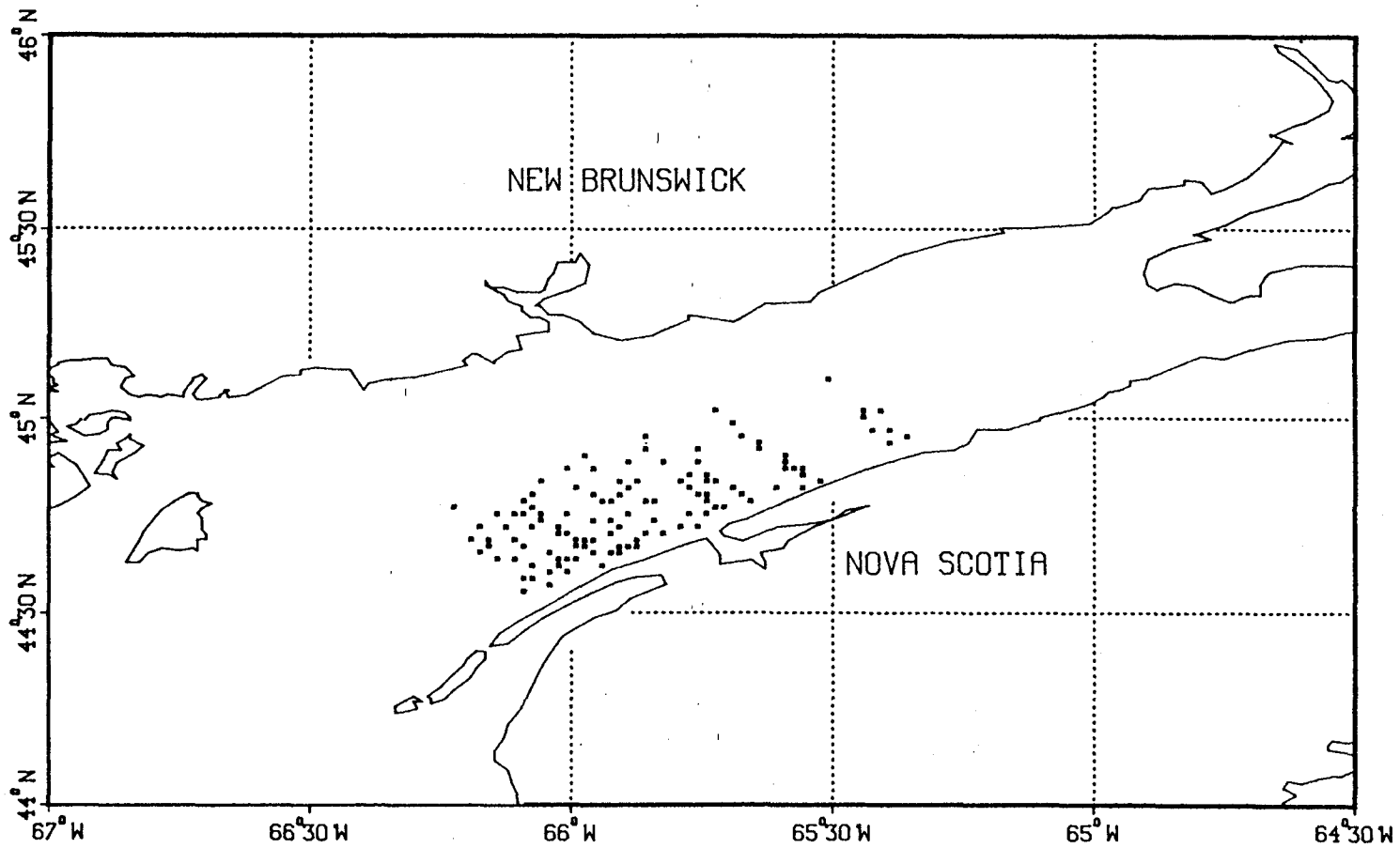


Figure 2.- Locations of the 1985 scallop stock survey on the traditional fishing grounds in the Bay of Fundy.