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A review of the Status of
the 4VWX, 3NOPs Halibut
Stocks

by

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¹La présente série documente les bases scientifiques des évaluations des ressources halieutiques sur la côte atlantique du Canada. Elle traite des problèmes courants selon les échéanciers dictés. Les documents qu'elle contient ne doivent pas être considérés comme des énoncés définitifs sur les sujets traités, mais plutôt comme des rapports d'étape sur les études en cours.

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Abstract

The precautionary TAC of 3,200 t remained in effect for the 1993 halibut fishery. The FRCC recommended a TAC of 1,500 t for the 1994 fishery. Mandatory landings were introduced, thus eliminating the minimum size regulation. Industry (fixed gear) then requested that halibut be exempted from the mandatory landing regulation and the regulation was subsequently amended to allow halibut <81 cm to be returned to the water. The domestic landings since 1988 have been below the TAC with a 2,084 shortfall in 1993 with all gear sectors below their allocations except the <65' mobile gear fleet. Their quota was reached in June, after that no halibut bycatch was permitted in their groundfish fishery. 3NOPs foreign landings declined significantly in 1992 and preliminary 1993 data also indicate low landings by the foreign fleet. Small longliners account for over 70% of the landings and the commercial catch rates for this fleet on the Scotian Shelf have declined slowly since 1981, while catch rates for the Southern Grand Banks increased to 1988, followed by a decline to 1993. Research surveys indicated an increase between 1983 and 1991 and have declined since. The surveys generally catch smaller halibut than the commercial fishery and may be an indicator of future recruitment rather than fishable biomass. Overall the decrease in landings coupled with the declining commercial and survey catch rates would suggest that the Atlantic halibut stock size is decreasing and the current TAC is too high.

Résumé

Le TPA préventif de 3 200 t est resté en vigueur dans la pêche du flétan en 1993. Le CCRH a recommandé un TPA de 1 500 t pour 1994. Par ailleurs, on a imposé le débarquement obligatoire des prises, éliminant de la sorte la taille minimale réglementaire. L'industrie (flottille de pêche aux engins fixes) a demandé par la suite une dérogation au débarquement obligatoire pour le flétan et on a donc modifié le règlement pour permettre la remise à l'eau du flétan de < 81 cm. Depuis 1988, les débarquements canadiens sont inférieurs au TPA. L'écart était de 2 084 t en 1993, toutes les flottilles n'ayant pas pêché la totalité de leur allocations, exception faite de la flottille de bateaux de pêche aux engins mobiles de < 65 pi; après que cette dernière ait eu atteint son quota, en juin, on ne lui a permis aucune prise accidentelle de flétan dans la pêche du poisson de fond. Les débarquements des navires étrangers dans 3NOPs ont diminué considérablement en 1992 et les données préliminaires de 1993 confirment la tendance. Les petits palangriers ont capturé plus de 70 % des débarquements; les taux de prises commerciales de cette flottille sur la plate-forme néo-écossaise ont diminué lentement depuis 1981, tandis qu'au sud des Grands Bancs de Terre-Neuve, les taux de prises ont augmenté en 1988, pour diminuer ensuite jusqu'à 1993. Les relevés de recherche dénotaient une augmentation de l'abondance entre 1983 et 1991, suivie depuis d'un déclin. Précisons, toutefois, que les flétans généralement capturés dans ces relevés sont plus petits que ceux de la pêche commerciale et qu'ils sont peut être révélateurs du recrutement futur plutôt que de la biomasse exploitable. Dans l'ensemble, la baisse des débarquements ainsi que celles des taux de prises commerciales et de capture dans les relevés de recherche semblent indiquer que le stock de flétan de l'Atlantique diminue et que le TPA actuel est trop élevé.

Introduction

Atlantic halibut (4VWX3NOPs) is the most highly valued groundfish species occurring in the North Atlantic. Prior to 1988, no TAC advice was given. However, with the increasing significance of the fishery both in landings and in value throughout the 1980s, a precautionary TAC of 3,200 t was established based largely on recent catch levels. A declining longline catch rate series was noted as well. After reviewing information presented last year, the FRCC recommended that as a precautionary measure the 1994 TAC should be set at 1,500 t, rather than the previous 3,200 t.

An 1988 Industry working group recommended, and industry then requested, a minimum size limit of 81 cm for Atlantic halibut (Anon. 1987). This size limit was generally not enforced prior to 1990. Difficulties were encountered in determining the actual size of the landed fish, as many were landed without head, and/or tail. Mandatory landing of all groundfish was introduced for the 1993 fishery, thus eliminating the minimum size regulation for halibut. Fixed gear interests then requested that halibut be exempted from the mandatory landing regulation. Regulation 93.3 was subsequently amended to permit the discarding of dogfish, skate and undersized halibut i.e. <81 cm. Licence conditions have since been used to enforce the regulation, making it mandatory to throw back small halibut whether dead or alive and current licence conditions require halibut to be landed complete with head and tail.

Description of the Fishery

Halibut landings declined from 3,274 t in 1961 to 1,059 t in 1976 (Table 1, Fig. 1). However, between 1977 and 1985 landings increased steadily to a high of 4,031 t. Since 1985 total landings have declined to 1,331 t in 1992. Overall figures for 1993 are unavailable due to unreported foreign landings. Foreign landings especially in 3N increased considerably (Table 2, Fig. 2) up to 1991, although 1992 landings dropped to only 10% of the 1991 level. Canadian domestic landings reached a peak in 1985 (3,531 t) and have declined to 1,189 t in 1993. The 1988 precautionary TAC of 3,200 t has never limited the fishery (Fig. 3) except for the mobile <65' fleet. Although in the past 4X accounted for the largest proportion of the landings, in recent years (1989-1992) landings in 4X and 4W have been similar and together accounted for approximately 50% of the landings. For 1993, landings in 4W dropped significantly and are currently at the lowest value since 1978. Table 3 gives halibut landings by quarter and indicates that the Canadian fishery is prosecuted mainly in the spring and summer in 4VWX (Table 3a) and primarily in the spring in 3NOPs (Table 3b). Foreign landings are incidental on the Scotian Shelf taken as bycatch in the silver hake fishery while the EEC prosecute a spring and summer fishery in 3NO. Although not included in the stock area, 5Zc landings for 1993 were 49 t. According to the Management plan landings from 5Zc are counted against the quota.

Small vessels (TC1-3) using longline gear are the dominant fleet in the Scotian Shelf fishery accounting for over 70% of the landings. Landings by the ITQ and generalists fleets in 4X, although low, have increased in recent years while the longline catch has been declining. For the offshore fleet, halibut are a bycatch in the 4VW fishery. Longliners account for most of the Canadian landings in 3NOPs (Table 5, Fig. 4b).

The shortfall in the 1993 Canadian allocations (from quota reports) amounted to 2084 t. Fixed gear caught less than 50% of their allocation, while the mobile gear, bycatch fishery, generally took less than 20% of their allocation. However, the <65' mobile gear fleet exceeded their allocation. Quota allocations, associated catch for 1993 and pertinent licence conditions are presented in Table 6. Landings to April 6, 1994 reached 147 t, while landings to March 31, 1993 were 268 t.

With the introduction of a precautionary TAC in 1988 the halibut fishery has been regulated by quotas on five gear sectors: 1) fixed gear <65'; 2) mobile gear <65'; 3) fixed gear 65-100'; 4) mobile gear 65-100'; and, 5) all gear >100'. Longliners are the only gear type vessels which direct for halibut, with the mobile fleets restricted to bycatch fisheries. Allocations to these various fleet sectors were generally based on a five year catch history. Since 1984 special permits were given to inshore fixed gear vessels from Scotia-Fundy to allow them access to the halibut fishery in 3NO. A special allocation of 3NO cod permits sufficient bycatch to pursue the halibut fishery. Due to weather conditions Scotia-Fundy vessels get a late start in this fishery and often the cod bycatch is limited due to the amount taken by Newfoundland vessels earlier in the season. For the 1993 fishery each region's fleet had its own cod allocation. Under the 1994 Management plan, no directed cod fishery will be allowed in 3NO.

Discussions with industry emphasized the increased effort in the halibut fishery as a result of the lowered or non existent cod quotas. The winter halibut fishery is usually prosecuted by the 45-65' LL fleet and while this is still the case many requests have been made to fisheries offices for <45' boats to go fishing prior to May 31. Presumably these vessels will head out to fish halibut as soon as they receive permits.

Abundance Indices

Commercial Catch Rates

Commercial catch rate series based on halibut directed longline catch and effort (000's hooks) were estimated from ZIF data for 1985 to 1993 for 4VWX, 4VWX & 3NOPs and 3NOPs alone. For the years prior to 1985 data for 4VWX were provided in the 1987 assessment by Neilson *et al.* (1987), using regional data (Table 7, Fig. 5). Catch data from all tonnage classes of longliners for the whole year were used in developing the series. It should be noted that prior to 1988, longline effort was collected as lines fished and since has been reported as 000's of hooks.

For 4VWX the trend remained more or less stable until 1978. The CPUE index then increased appreciably, coincident with a period of increased landings. In 1981 the CPUE began to fall despite still increasing landings and with some variability, notably 1988, has continued to do so until the present. The directed effort trends in recent years appear relatively stable, but industry reports increased directed effort for 1994. The CPUE indices for 3NOPs and the combined area, 1985-1992, show a dramatic increase to 1988 possibly having to do with the introduction of the more efficient circle hook in the mid 1980s and a subsequent decline since.

Anecdotal information from industry indicated no real change in the halibut fishery that would account for the decline except that more boats are entering the fishery since the 4VsW cod fishery has virtually disappeared. Industry comments also reflected the concern that the introduction of the circle hook allowed the removal of much larger fish from the population than were caught previously with the J-hook. Some members of the 4X ITQ fleet, although restricted to a bycatch fishery for halibut indicated no change in their perception of the stock over the last 5 years. Interviews carried out by the Fishermen and Scientists Research Society indicated that 73 percent of the fishermen interviewed thought that the catch rates for halibut were declining. Reasons given for the decline included the closed area (many longliners fished for haddock in the 4W nursery area, and caught halibut as a bycatch), directed for other species, overfishing, smaller fish, cod water and fish not going inshore as in the past.

Very limited commercial sampling (2) (Fig. 6) suggests that the longliners continue to land halibut > 65 cm, slightly smaller than the size landed in previous years (>75 cm) despite the minimum size regulation. Mobile gear on the other hand appears to be landing halibut >55 cm, somewhat larger than in previous years when 25-55 cm halibut were frequent in the sampled landings. This change may be related to the use of dockside monitors for the ITQ fleet and the fact that their quota is limiting. Sampling halibut landings continues to be difficult due to the sporadic nature of the fishery and the habit of removing the head and tail prior to landing. Only two halibut samples were collected for 1993. New regulations requiring the head and tail not be removed may allow better commercial sampling.

IOP length frequencies suggest that the longline fleet catches halibut above the legal size, while the OTB length frequencies indicate that halibut are mostly caught below the legal size of 81 cm. (Fig. 7).

Halibut distributions for the 1992 and 1993 commercial fishery were examined using available log book information. Thus it is limited to the fishery distribution of the large fixed gear vessels i.e. those that kept log books. It does not reflect the bycatch nature of mobile gear catches or the directed fishery by small longliners. The 4X fishery appears to be centered in the Brown Bank area while in 4VW it appears to be a shelf edge and Gully fishery (Fig. 8). Industry reports indicate that many fishermen are protective of halibut fishing locations and so these may not be entirely accurate. Despite this the lat/long data indicated fishing activity where one would expect, given industry information and RV survey distributions.

Research Surveys

RV survey distributions of Atlantic halibut (1970-1992) were examined last year (Annand *et al*). In the spring, halibut in 4VW concentrate along the shelf edge, and in the deeper water in the vicinity of the Gully and along the edge of Western Bank. In 4X, fish appeared to be most concentrated near Baccaro and Browns Banks as well as extending up into the Bay of Fundy. Fall distributions were similar although concentrations in the Bay of Fundy appeared reduced. Summer distributions show reduced concentrations overall, but with a similar pattern. These patterns do not appear to have changed over time and the 1993 distribution is similar except halibut were not caught east of the Gully and along the edge in 4VSc (Fig. 9). Mean numbers per tow by stratum for the summer survey are given in Table 8, indicating that over time highest concentrations of halibut on the Scotian Shelf are found in strata 452 (the Gully), 463 (Emerald Basin) and 480 (Browns Bank)..

The trend in mean numbers per tow 1970-1992 obtained from summer RV surveys on the Scotian Shelf (Table 9 and Fig. 10a) indicated an increase in abundance between 1970 and 1980 and a subsequent decline to 1983. Since that time survey abundance increased slowly to 1991 and has declined since. Spring and fall surveys (Table 9b and Fig. 10b) 4VWX show a declining trend to 1984 while the spring 4VW survey is variable, although the 1994 survey point is the lowest in the time series. Survey results were not available for the Southern Grand Banks.

The survey gear catches a different size distribution of halibut (generally smaller) than those directed for in the longline fishery (Fig. 11). The survey catch rates may prove to be an indicator of future recruitment to the commercial fishery rather than of fishable biomass. The 3NOPs fishery may also be dependent on Scotian Shelf recruitment as areas on the shelf notably Browns Bank (4X) and the Gully (4W) are considered important nursery grounds for immature halibut. Typically the RV surveys catch very few fish making extrapolation of survey results difficult.

Conclusions

A full analytical assessment was not undertaken for Atlantic halibut due to an absence of pertinent data. The assessment results are based on survey and commercial information. Canadian catches have been declining slowly and in 1993 are the lowest since 1978 for the Scotian Shelf and the lowest since 1985 for the Southern Grand Banks. Although overall effort trends have been relatively stable over recent years, increased landings in 4X may indicate more directed effort in that area. Halibut bycatch, especially in 4VW, may decline in 1994 because of reduced trips due to low haddock and pollock quotas and closed cod stocks. Commercial catch rates have been declining slowly over time despite the introduction of the more efficient circle hook in the mid 1980s. Survey catch rates have also been declining. Industry reported increased effort in the directed halibut fishery as well as a lack of large fish compared to earlier years.

Survey results (4VWX only) and commercial catch rates provide our best data sources and in recent years both indicate a decline in abundance. The survey catches generally smaller halibut than those caught in the commercial fishery although industry comments suggest that the really large halibut are becoming more difficult to find.

In the recent past, only the <65 ft. mobile gear fleet has been in any way limited by the quota. Some discarding takes place under the mandatory landing exemption for halibut <81 cm although this has not been quantified. Survival of these undersized halibut is probably variable depending on the gear used and the care taken while releasing them. From the limited commercial sampling it seems that small halibut <81 cm are thrown back when enforcement is high, especially for the mobile gear sector.

Prognosis

The precautionary TAC set in 1988, as well as the reduced 1994 TAC, were set largely as a reflection of current and past catch levels and have never been restrictive. Overall the decrease in landings coupled with the declining commercial and survey catch rates would suggest that even the 1,500 t TAC is too high especially in light of industry reports of increased effort and a lack of large fish. Reductions in effort and a restrictive TAC are required in order to allow an increase in halibut abundance from incoming recruitment, and optimal harvesting of growth potential.

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Table 1. Halibut landings (t round fresh) by country for divs. 4VWX and divs. 3N0 and 3Ps.

Year	4VWX			3NOPs			Total 4VWX + 3NOPs
	Canada	Foreign	Total	Canada	Foreign	Total	
1961	1498	78	1576	1230	468	1698	3274
1962	1660	40	1700	1194	339	1533	3233
1963	1453	80	1533	674	222	896	2429
1964	1461	90	1551	373	583	956	2507
1965	1574	35	1609	167	414	581	2190
1966	1030	146	1176	318	212	530	1706
1967	1236	12	1248	368	568	936	2184
1968	1175	42	1217	415	285	700	1917
1969	1024	57	1081	413	256	669	1750
1970	818	12	830	664	25	689	1519
1971	946	59	1005	481	100	581	1586
1972	825	25	850	402	89	491	1341
1973	765	9	774	452	42	494	1268
1974	641	13	654	345	136	481	1135
1975	638	12	650	332	87	419	1069
1976	708	6	714	269	76	345	1059
1977	705	8	713	576	27	603	1316
1978	1082	10	1092	337	8	345	1437
1979	1224	-	1224	420	3	423	1647
1980	1454	4	1458	255	40	295	1753
1981	1389	6	1395	217	27	244	1639
1982	1720	5	1725	468	54	522	2247
1983	1827	5	1832	253	193	446	2278
1984	1954	40	1994	871	182	1053	3047
1985	1940	28	1968	1591	472	2063	4031
1986	1609	23	1632	1492	221	1713	3345
1987	1161	22	1183	801	589	1390	2573
1988	1263	3	1266	765	277	1042	2308
1989	1156	2	1158	669	115	784	1942
1990	1094	6	1100	702	299	1001	2101
1991*	990	59	1049	429	690	1119	2168
1992*	931	42	973	338	62	400	1373
1993*	867	38	905	322	16	338	1243

* Data from DFO Statistics Branch; provisional data for countries other than Canada. (1993's foreign catch in 3NOPs from January to May only.)

Table 2. Halibut landings by division and year for all countries combined.

Year	4V	4W	4X	Total 4VWX	3N	3O	3Ps	Total 3NOPs	Total
1961	415	544	617	1576	212	840	646	1698	3274
1962	294	621	785	1700	67	1180	286	1533	3233
1963	214	479	840	1533	125	561	210	896	2429
1964	332	358	861	1551	88	335	533	956	2507
1965	486	458	665	1609	66	341	174	581	2190
1966	527	318	331	1176	112	225	193	530	1706
1967	380	322	546	1248	234	372	330	936	2184
1968	250	363	604	1217	118	284	298	700	1917
1969	192	433	456	1081	91	298	280	669	1750
1970	115	349	366	830	133	246	310	689	1519
1971	231	360	414	1005	164	241	176	581	1586
1972	178	216	456	850	104	254	133	491	1341
1973	147	226	401	774	79	228	187	494	1268
1974	123	127	404	654	20	267	194	481	1135
1975	115	159	376	650	93	169	157	419	1069
1976	144	148	422	714	76	182	87	345	1059
1977	88	177	448	713	36	178	389	603	1316
1978	244	283	565	1092	43	137	165	345	1437
1979	230	358	636	1224	49	213	161	423	1647
1980	339	371	748	1458	46	104	145	295	1753
1981	250	379	766	1395	42	64	138	244	1639
1982	342	476	907	1725	63	288	171	522	2247
1983	419	546	867	1832	173	117	156	446	2278
1984	496	572	926	1994	279	463	311	1053	3047
1985	606	620	742	1968	516	1032	515	2063	4031
1986	553	579	500	1632	394	907	412	1713	3345
1987	345	354	484	1183	750	457	183	1390	2573
1988	298	360	608	1266	656	245	141	1042	2308
1989	300	415	443	1158	334	227	223	784	1942
1990	278	369	453	1100	492	325	184	1001	2101
1991*	221	456	372	1049	770	237	112	1119	2168
1992*	199	380	352	973 ¹	164	175	61	400	1373
1993*	192	284	391	905 ¹	61	208	53	338 ¹	1243

* Data from DFO Statistics Branch; provisional data for countries other than Canada.

¹ Includes catch where area not known.

Table 3a. Halibut landings for Canada (Maritimes and Quebec) for divisions 4VWX by quarter of year for 1970 - 1993.

Year	4V					4W					4X					Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	
1970	59	19	23	7	108	122	119	88	18	347	44	134	121	64	363	818
1971	110	44	56	8	218	124	114	61	15	314	49	111	180	74	414	946
1972	58	31	83	6	178	26	77	78	12	193	38	135	220	61	454	825
1973	53	23	57	10	143	56	102	57	10	225	49	128	160	60	397	765
1974	43	27	40	8	118	7	47	67	6	127	21	96	184	95	396	641
1975	45	19	39	5	108	23	66	57	11	157	23	124	162	64	373	638
1976	50	45	44	3	142	8	88	47	4	147	35	113	179	92	419	708
1977	21	15	33	15	84	11	78	64	23	176	69	166	147	63	445	705
1978	35	88	55	66	244	24	139	99	14	276	54	206	224	78	562	1082
1979	47	90	62	31	230	20	253	78	7	358	65	260	206	105	636	1224
1980	83	140	74	40	337	40	209	91	31	371	85	317	196	148	746	1454
1981	75	86	72	13	246	78	197	73	31	379	127	273	242	122	764	1389
1982	44	154	113	31	342	69	199	176	31	475	117	283	335	168	903	1720
1983	48	227	104	39	418	86	277	164	18	545	129	289	340	106	864	1827
1984	103	197	140	18	458	61	199	295	17	572	119	176	442	187	924	1954
1985	143	313	123	14	593	52	252	279	23	606	90	179	374	98	741	1940
1986	107	322	96	12	537	47	252	259	14	572	62	128	248	62	500	1609
1987	71	153	88	16	328	37	176	127	9	349	49	172	211	52	484	1161
1988	84	114	71	26	295	11	155	188	6	360	80	201	263	64	608	1263
1989	99	121	52	26	298	75	133	191	16	415	83	137	174	49	443	1156
1990	116	106	37	16	275	52	108	190	16	366	73	128	192	60	453	1094
1991*	65	98	46	5	214	29	118	233	27	407	70	159	93	47	369	990
1992*	62	69	41	27	199	36	138	176	30	380	54	130	112	56	352	931
1993*	68	79	43	2	192	18	99	153	14	284	84	123	143	41	391	867

Table 3b. Halibut landings for Canada (Maritimes and Quebec) for divisions 3NOPs by quarter of year for 1970 - 1993.

Year	3N					3O					3Ps					Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	
1970	82	32	14	5	133	141	34	21	50	246	162	16	44	63	285	664
1971	34	69	18	7	128	58	25	51	58	192	86	52	15	8	161	481
1972	4	20	12	7	43	56	36	32	104	228	61	20	27	23	131	402
1973	1	4	40	11	56	86	73	34	32	225	87	26	36	22	171	452
1974	5	3	4	3	15	71	63	18	2	154	59	74	27	16	176	345
1975	0	34	21	16	71	36	34	18	17	105	32	88	30	6	156	332
1976	8	47	2	1	58	54	51	18	5	128	16	22	32	13	83	269
1977	4	13	0	4	21	43	36	39	55	173	59	168	30	125	382	576
1978	10	16	6	8	40	25	74	22	12	133	20	67	55	22	164	337
1979	1	23	13	12	49	20	102	41	50	213	55	69	17	17	158	420
1980	10	7	9	20	46	4	25	46	21	96	22	37	30	24	113	255
1981	0	9	13	11	33	27	16	12	9	64	50	47	20	3	120	217
1982	0	2	7	26	35	71	193	8	7	279	21	81	33	19	154	468
1983	3	17	3	2	25	55	33	17	4	109	38	39	31	11	119	253
1984	3	80	131	1	215	63	174	96	85	418	44	78	40	76	238	871
1985	25	94	93	74	286	182	394	167	134	877	120	155	94	59	428	1591
1986	0	57	199	7	263	376	255	180	32	843	149	167	59	11	386	1492
1987	21	142	160	7	330	115	177	41	5	338	46	53	27	7	133	807
1988	72	182	153	30	437	84	100	22	30	236	45	19	19	9	92	765
1989	59	136	77	11	283	69	101	35	7	212	64	75	26	9	174	669
1990	22	116	54	8	200	110	130	65	13	318	79	77	23	5	184	702
1991*	2	46	17	19	84	58	132	25	18	233	55	29	24	4	112	429
1992*	15	35	40	12	102	53	68	37	17	175	11	35	7	8	61	338
1993*	22	24	14	1	61	63	61	34	49	207	26	11	15	2	54	322

* Provisional - 1993 data from IOP.

1 Area not known.

Table 3c. Halibut landings for all Foreign Countries combined for divisions 4VWX by quarter of year for 1970 - 1993.

	4V						4W						4X						Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	1st Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	UK	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	UK	Total	
1970	3	2	2	0		7	-	2	-	-		2	0	2	0	1		3	12
1971	0	0	6	7		13	2	44	0	0		46	-	-	-	-		-	59
1972	-	-	-	-		-	1	1	0	1	20	23	2	0	0	0		2	25
1973	3	1	0	0		4	0	1	0	0		1	2	1	0	1		4	9
1974	0	0	2	3		5	-	-	-	-		-	6	2	0	0		8	13
1975	3	1	3	-		7	0	1	0	0	1	2	1	0	0	0	2	3	12
1976	2	-	-	-		2	0	0	0	0	1	1	1	0	0	0	2	3	6
1977	4	-	-	-		4	-	1	-	-		1	1	0	0	0	2	3	8
1978	-	-	-	-		-	-	-	4	3		7	1	0	0	0	2	3	10
1979	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-	-	-
1980	2	-	-	-		2	-	-	-	-		-	0	0	0	1	1	2	4
1981	3	1	0	0		4	-	-	-	-		-	0	0	1	0	1	2	6
1982	-	-	-	-		-	-	-	1	-		1	0	0	1	0	3	4	5
1983	1	-	-	-		1	-	-	1	-		1	0	0	0	0	3	3	5
1984	32	-	2	4		38	-	-	-	-		-	0	0	0	0	2	2	40
1985	1	6	1	5		13	-	14	-	-		14	0	0	0	0	1	1	28
1986	4	4	5	3		16	0	7	0	0		7	-	-	-	-	-	-	23
1987	1	4	12	0		17	0	5	0	0		5	-	-	-	-	-	-	22
1988	0	1	1	1		3	-	-	-	-		-	-	-	-	-	-	-	3
1989	-	-	1	1		2	-	-	-	-		-	-	-	-	-	-	-	2
1990	-	-	3	-		3	-	3	-	-		3	-	-	-	-	-	-	6
1991*	-	-	-	-	7	7	-	-	-	-	49	49	-	-	-	-	3	3	59
1992*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42 ¹
1993*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38 ¹

Table 3d. Halibut landings for all Foreign Countries combined for divisions 3NOPs by quarter of year for 1970 - 1993.

Year	3N						30						3Ps						USA Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	UK	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	UK	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	UK	Total	
1970	-	-	-	-		-	-	-	-	-		-	17	6	2	0		25	25
1971	-	15	21	0		36	0	48	1	0		49	14	1	0	0		15	100
1972	18	7	2	34		61	0	14	0	12		26	2	0	0	0		2	89
1973	1	3	19	0		23	0	0	3	0		3	2	7	6	1		16	42
1974	0	0	5	0		5	51	17	45	0		113	11	5	0	2		18	136
1975	15	0	7	0		22	5	47	12	0		64	1	-	-	-		1	87
1976	18	-	-	-		18	54	-	-	-		54	-	1	3	-		4	76
1977	-	5	10	-		15	5	-	-	-		5	5	2	-	-		7	27
1978	-	2	-	1		3	-	4	-	-		4	1	-	-	-		1	8
1979	-	-	-	-		-	-	-	-	-		-	2	1	-	-		3	3
1980	-	-	-	-		-	-	2	-	6		8	6	7	8	11		32	40
1981	0	1	6	2		9	-	-	-	-		-	5	4	0	9		18	27
1982	2	19	5	2		28	-	7	2	-		9	6	11	-	-		17	54
1983	17	100	4	27		148	6	2	-	-		8	1	24	9	3		37	193
1984	-	19	11	34		64	-	1	6	38		45	53	15	4	1		73	182
1985	41	85	74	29	1	230	66	25	25	39		155	33	48	6	-		87	472
1986	52	43	26	7	3	131	11	28	15	10		64	9	8	6	3		26	221
1987	66	187	72	94	1	420	37	47	27	8		119	19	22	1	8		50	589
1988	91	83	16	16	13	219	0	5	0	4		9	37	8	1	3		49	277
1989	-	-	-	-	51	51	-	-	-	-	15	15	-	-	-	-	49	49	115
1990	60	84	73	75	-	292	-	1	5	1	-	7	-	-	-	-	-	-	299
1991*	-	-	-	-	686	686	-	-	-	-	4	4	-	-	-	-	-	-	690
1992*	-	-	-	-	62	62	-	-	-	-	-	-	-	-	-	-	-	-	62
1993*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16 ¹

* Provisional - 1993 data from IOP.

¹ Area not known.

Table 4a. Halibut landings for OTB TC 1-3 by quarter of year for 1970 - 1993 for Canada (Maritimes and Quebec).

Year	4V					4W					4X					Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	
1970	-	-	-	-	-	-	1	-	-	1	5	7	1	1	14	15
1971	-	-	-	-	-	-	1	-	-	1	1	8	19	1	29	30
1972	-	-	-	-	-	-	-	-	-	-	0	2	0	0	2	2
1973	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1974	-	-	-	-	-	-	-	-	-	-	0	3	1	0	4	4
1975	-	-	-	-	-	-	1	-	-	1	-	11	6	2	19	20
1976	-	-	-	-	-	-	-	-	-	-	0	2	1	1	4	4
1977	-	-	-	-	-	-	0	0	0	1	1	7	6	2	16	17
1978	-	-	-	-	-	-	-	-	-	-	1	7	6	2	16	16
1979	-	-	-	-	-	-	0	0	2	2	3	35	13	5	56	58
1980	0	1	0	0	1	0	5	0	0	5	4	43	12	8	67	73
1981	-	-	-	-	-	1	3	0	0	4	14	18	19	4	55	59
1982	-	-	-	-	-	3	5	0	0	8	7	28	16	6	57	65
1983	-	-	-	-	-	1	2	0	0	3	15	36	20	4	75	78
1984	-	-	-	-	-	0	2	0	-	2	16	20	19	1	56	58
1985	-	-	-	-	-	0	2	0	0	2	9	15	8	2	34	36
1986	1	0	0	0	1	-	-	-	-	-	10	8	4	1	23	24
1987	-	-	-	-	-	0	2	0	0	2	11	11	4	0	26	28
1988	-	-	-	-	-	0	6	0	0	6	21	34	3	2	60	66
1989	-	-	-	-	-	0	5	0	0	5	28	17	2	1	48	53
1990	4	5	1	0	10	0	0	0	0	0	25	16	16	14	71	81
1991*	0	0	0	0	0	0	1	1	0	2	31	29	10	18	88	90
1992*	0	0	0	0	0	0	0	0	0	0	27	27	14	15	83	83
1993*	-	0	0	0	0	0	-	-	-	0	61	41	5	1	108	108

Table 4b. Halibut landings for OTB TC 4+ by quarter of year for 1970 - 1993 for Canada (Maritimes and Quebec).

Year	4V					4W					4X					Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	
1970	16	7	2	6	31	49	27	16	7	99	18	28	7	19	72	202
1971	31	15	4	0	50	87	40	8	4	139	35	31	5	8	79	268
1972	22	10	2	0	34	16	7	11	9	43	20	15	8	2	45	122
1973	8	2	0	1	11	22	10	3	3	38	36	10	1	3	50	99
1974	12	11	1	3	27	2	0	1	2	5	3	2	5	10	20	52
1975	10	16	6	1	33	3	10	-	3	16	4	9	20	17	50	99
1976	14	12	20	2	48	0	2	1	3	6	16	13	36	26	91	145
1977	7	9	13	14	43	3	5	11	13	32	35	21	2	13	71	146
1978	20	62	23	10	115	12	32	15	8	67	20	22	4	9	55	237
1979	21	26	20	30	97	4	21	16	3	44	24	22	3	41	90	231
1980	30	45	31	35	141	33	35	16	28	112	22	6	3	33	64	317
1981	23	38	19	13	93	45	42	8	8	103	25	11	0	13	49	245
1982	27	65	47	26	165	15	31	8	7	61	18	5	5	10	38	264
1983	16	30	29	30	105	19	29	13	1	62	16	3	3	1	23	190
1984	33	19	8	5	65	6	7	1	0	14	6	2	1	0	9	88
1985	61	55	15	8	139	0	1	1	0	2	3	0	0	0	3	144
1986	19	48	8	4	79	1	0	0	1	2	1	1	0	0	2	83
1987	19	15	8	1	43	-	-	-	-	-	1	0	0	0	1	44
1988	8	6	0	0	14	2	0	1	0	3	-	-	-	-	-	17
1989	4	3	4	1	12	-	-	-	-	-	-	-	-	-	-	12
1990	14	11	0	1	26	0	0	0	0	0	0	0	0	0	0	26
1991*	16	15	5	1	37	0	1	40	6	47	0	1	2	1	4	88
1992*	7	5	0	3	15	2	27	0	0	29	1	1	0	0	2	46
1993*	6	5	-	1	12	0	5	19	0	24	0	1	1	0	2	38

* Data from DFO Statistics Branch.

Table 4c. Halibut landings for LL, LHP TC 1-3 by quarter of year for 1970 - 1993 for Canada (Maritimes and Quebec).

Year	4V					4W					4X					Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	
1970	36	8	21	1	66	64	88	70	11	233	18	88	108	43	257	556
1971	62	19	36	-	117	29	67	51	11	158	12	63	149	65	289	564
1972	21	7	65	0	93	0	53	58	3	114	18	97	198	59	372	579
1973	37	11	49	2	99	32	80	49	7	168	13	116	157	57	343	610
1974	25	7	21	0	53	2	43	57	2	104	18	83	172	83	356	513
1975	28	2	24	-	54	12	47	57	8	124	19	100	134	45	298	476
1976	28	16	24	1	69	7	77	44	1	129	19	91	140	63	313	511
1977	14	6	16	1	37	8	67	47	7	129	32	122	119	44	317	483
1978	14	10	11	0	35	10	91	71	2	174	32	155	196	58	441	650
1979	25	27	32	1	85	16	213	57	4	290	35	167	183	51	436	811
1980	34	39	28	2	103	6	159	55	3	223	57	241	172	106	576	902
1981	17	39	44	0	100	32	149	62	21	264	87	231	210	102	630	994
1982	3	72	53	4	132	49	159	166	24	398	90	242	308	150	790	1320
1983	10	180	75	6	271	62	243	148	13	466	97	242	301	97	737	1474
1984	41	171	132	12	356	48	165	292	17	522	96	153	416	176	841	1719
1985	47	254	103	5	409	51	249	277	22	599	71	155	360	91	677	1685
1986	40	271	88	6	405	42	245	251	13	551	45	111	232	54	442	1398
1987	21	134	78	4	237	37	173	126	8	344	37	146	206	52	441	1022
1988	39	107	71	26	243	8	149	185	4	346	59	167	254	62	542	1131
1989	30	114	43	9	196	75	121	189	16	401	55	120	171	48	394	991
1990	28	89	36	7	160	52	107	189	15	363	45	112	173	46	376	899
1991*	26	78	40	1	145	29	115	189	21	354	38	124	79	27	268	767
1992*	36	62	40	23	161	32	107	172	30	341	25	100	96	41	262	764
1993*	42	72	40	0	154	18	93	133	13	257	22	79	136	39	276	687

Table 4d. Halibut landings for LL, LHP TC 4+ by quarter of year for 1970 - 1993 for Canada (Maritimes and Quebec).

Year	4V					4W					4X					Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	
1970	7	4	-	-	11	9	3	-	-	12	3	1	-	-	4	27
1971	17	10	16	8	51	8	4	1	-	13	1	-	-	-	1	65
1972	15	14	16	6	51	10	9	3	0	22	0	7	0	0	7	80
1973	8	10	8	7	33	1	9	2	0	12	-	-	-	-	-	45
1974	6	8	15	3	32	3	0	1	0	4	0	1	0	0	1	37
1975	7	1	9	4	21	7	6	-	-	13	-	-	-	-	-	34
1976	7	17	0	0	24	1	8	0	-	9	-	-	-	-	-	33
1977	0	0	4	0	4	0	2	-	-	2	0	2	-	-	2	8
1978	1	11	20	2	34	1	2	1	1	5	-	-	-	-	-	39
1979	1	37	10	0	48	0	6	0	0	6	1	1	0	4	6	60
1980	19	55	15	3	92	1	3	18	0	22	2	3	0	0	5	119
1981	35	9	9	0	53	0	1	1	0	2	-	-	-	-	-	55
1982	14	17	13	1	45	2	4	0	0	6	-	-	-	-	-	51
1983	22	17	0	3	42	4	1	0	3	8	-	-	-	-	-	50
1984	29	7	0	1	37	7	21	0	-	28	1	0	0	9	10	75
1985	35	4	5	1	45	1	0	0	0	1	5	0	0	3	8	54
1986	47	2	0	2	51	1	0	0	0	1	-	-	-	-	-	52
1987	31	4	2	11	48	-	-	-	-	-	-	-	-	-	-	48
1988	37	1	0	0	38	-	-	-	-	-	-	-	-	-	-	38
1989	65	4	5	16	90	-	-	-	-	-	-	-	-	-	-	90
1990	70	1	0	8	79	-	0	-	1	1	-	-	-	-	-	80
1991*	23	5	1	2	31	-	0	-	0	0	-	-	-	-	-	31
1992*	19	2	1	1	23	2	1	1	-	4	0	0	-	-	0	27
1993*	20	2	2	1	25	0	0	-	1	1	-	0	-	0	0	26

* Data from DFO Statistics Branch.

Table 4e. Halibut landings for other gear, all tonnage classes combined by quarter of year for 1970 - 1993 for Canada (Maritimes and Quebec).

Year	4V					4W					4X					Canadian Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	
1970	-	-	-	-	-	-	-	2	-	2	-	10	5	1	16	18
1971	-	-	-	-	-	-	2	1	-	3	-	9	7	-	16	19
1972	-	-	-	-	-	0	8	6	0	14	0	14	0	0	28	42
1973	-	-	-	-	-	1	3	3	0	7	0	2	2	0	4	11
1974	0	1	3	2	6	0	4	8	2	14	0	7	6	2	15	35
1975	-	-	-	-	-	1	2	-	-	3	-	4	2	-	6	9
1976	1	0	0	0	1	0	1	2	0	3	0	7	2	2	11	15
1977	-	-	-	-	-	0	4	6	2	12	1	14	20	4	39	51
1978	0	5	1	54	60	1	14	12	3	30	1	22	18	9	50	140
1979	-	-	-	-	-	0	13	3	0	16	2	35	7	4	48	64
1980	-	-	-	-	-	0	7	2	0	9	0	24	9	1	34	43
1981	-	-	-	-	-	0	2	2	2	6	1	13	13	3	30	36
1982	-	-	-	-	-	0	0	2	0	2	2	8	6	2	18	20
1983	-	-	-	-	-	0	2	3	1	6	1	8	16	4	29	30
1984	-	-	-	-	-	0	4	2	0	6	0	1	6	1	8	14
1985	-	-	-	-	-	0	0	1	1	2	2	9	6	2	19	21
1986	0	1	0	0	1	3	7	8	0	18	6	8	12	7	33	51
1987	-	-	-	-	-	0	1	1	1	3	0	15	1	0	16	19
1988	-	-	-	-	-	1	0	2	2	5	0	0	6	0	6	11
1989	-	-	-	-	-	0	7	2	0	9	0	0	1	0	1	10
1990	0	0	0	0	0	0	1	1	0	2	3	0	3	0	6	8
1991*	0	1	0	0	1	0	1	3	0	4	1	5	2	1	9	14
1992*	0	0	0	0	0	-	1	3	0	3	-	2	3	0	4	7
1993*	0	1	0	-	1	-	1	1	0	2	1	1	2	1	5	8

* Data from DFO Statistics Branch.

Table 5a. Halibut landings for LL, LHP TC 4+ by quarter of year for 1970 - 1993 for Canada (Maritimes and Quebec).

Year	3N					3O					3Ps					Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	
1970	7	6	-	-	13	7	-	-	-	7	6	-	-	-	6	26
1971	-	-	-	-	-	14	4	2	1	21	6	21	-	-	27	48
1972	3	18	0	0	21	3	2	3	1	9	6	0	7	1	14	44
1973	0	3	30	0	33	11	40	4	8	63	18	1	2	8	29	125
1974	-	-	-	0	-	14	33	8	1	56	14	5	9	6	34	90
1975	-	27	-	-	28	28	4	2	14	48	5	2	5	2	14	90
1976	0	23	0	0	23	29	1	0	5	35	3	1	1	0	5	63
1977	0	10	0	1	11	17	6	5	13	41	1	1	3	0	5	57
1978	9	9	0	0	18	15	2	0	2	19	0	1	8	0	9	46
1979	-	14	-	-	14	15	0	0	0	15	6	0	0	0	6	35
1980	10	3	5	0	18	0	0	0	11	11	0	0	4	0	4	33
1981	0	8	0	0	8	16	2	1	4	23	2	6	4	1	13	44
1982	0	1	0	0	1	14	9	0	0	23	0	12	9	0	21	45
1983	0	14	0	2	16	10	13	2	1	26	3	6	9	0	18	60
1984	0	0	74	0	74	9	98	36	0	143	26	8	0	14	48	265
1985	2	57	27	39	125	8	59	19	19	105	36	19	7	3	65	295
1986	0	19	24	0	43	36	119	18	23	196	27	11	0	4	42	281
1987	21	50	59	3	133	57	47	15	2	121	15	18	12	4	49	303
1988	72	102	46	27	247	53	42	9	29	133	15	7	2	6	30	410
1989	51	47	21	5	124	46	23	14	5	88	40	8	20	4	72	284
1990	19	39	31	6	95	65	42	33	11	151	48	48	16	5	117	363
1991*	2	37	16	19	74	33	27	19	10	89	19	10	3	3	35	198
1992*	15	28	25	12	80	28	30	7	10	75	10	9	2	6	27	182
1993*	20	3	8	0	31	53	22	18	1	94	13	2	12	1	28	153

Table 5b. Halibut landings for LL, LHP TC 1-3 by quarter of year for 1970 - 1993 for Canada (Maritimes and Quebec).

Year	3N					3O					3Ps					Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	
1970	70	23	-	-	93	79	34	-	-	113	5	7	5	-	17	223
1971	34	69	7	-	110	39	21	38	7	105	16	26	14	-	56	271
1972	1	0	0	0	1	42	20	6	1	69	37	13	7	1	58	128
1973	-	-	-	-	-	7	14	24	11	56	5	14	3	3	25	81
1974	-	-	-	-	-	12	15	6	1	34	10	6	3	2	21	55
1975	-	3	1	-	4	7	12	12	2	33	6	6	10	1	23	60
1976	0	14	1	1	16	13	4	3	0	20	3	2	3	0	8	44
1977	-	-	-	-	-	4	3	2	0	9	4	11	8	0	23	32
1978	-	-	-	-	-	1	3	5	0	9	0	12	4	2	18	27
1979	-	-	-	-	-	0	12	0	1	13	1	3	0	0	4	17
1980	-	-	-	-	-	3	13	0	0	16	2	10	7	3	22	38
1981	-	-	-	-	-	-	-	-	-	-	1	14	1	1	17	27
1982	-	-	-	-	-	-	-	-	-	-	2	12	14	1	29	29
1983	-	-	-	-	-	0	3	15	-	18	6	28	10	0	44	62
1984	0	79	56	0	135	1	74	56	2	133	5	53	9	0	67	335
1985	19	32	64	32	147	0	143	120	47	310	1	87	35	2	125	582
1986	0	32	170	3	205	0	55	146	0	201	41	114	50	3	208	614
1987	0	87	93	3	183	8	31	24	0	63	2	26	6	1	35	281
1988	0	80	105	1	186	6	44	13	1	64	15	5	16	0	36	286
1989	8	87	55	5	155	5	60	19	0	84	14	54	4	0	72	311
1990	3	77	23	2	105	10	52	30	1	93	4	10	7	0	21	219
1991*	-	7	-	-	7	3	28	6	7	44	1	9	19	1	30	81
1992*	-	7	14	-	21	1	22	27	-	50	11	13	3	1	28	99
1993*	1	20	6	1	28	2	29	11	-	42	2	7	0	0	9	79

* Data from DFO Statistics Branch.

Table 5c. Halibut landings for all other gears by quarter of year for 1970 - 1993 for Canada (Maritimes and Quebec).

Year	3N					3O					3Ps					Total
	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	1st Quart.	2nd Quart.	3rd Quart.	4th Quart.	Total	
1970	5	3	14	5	27	55	-	21	50	126	151	9	39	63	262	415
1971	0	0	11	7	18	5	0	11	50	66	64	5	1	8	78	162
1972	0	2	12	7	21	11	14	23	102	150	18	7	13	21	59	230
1973	1	1	10	11	23	68	19	6	13	106	64	11	31	11	117	246
1974	5	3	4	3	15	45	15	4	0	64	35	63	15	8	121	200
1975	0	4	20	15	39	1	18	4	1	24	21	80	15	3	119	182
1976	8	10	1	0	19	12	46	15	0	73	10	19	28	13	70	162
1977	4	3	0	3	10	22	27	32	42	123	54	156	19	125	354	487
1978	1	7	6	8	22	9	69	17	10	105	20	54	43	20	137	264
1979	1	9	13	12	35	5	90	41	49	185	48	66	17	17	148	368
1980	0	4	4	20	28	1	12	46	10	69	20	27	19	21	87	184
1981	0	1	13	11	25	11	14	11	5	41	47	27	15	1	90	156
1982	0	1	7	26	34	57	184	8	7	256	19	57	10	18	104	394
1983	3	3	3	0	9	45	17	0	3	65	29	5	12	11	57	131
1984	3	1	1	1	6	53	2	4	83	142	13	17	31	62	123	271
1985	4	5	2	3	14	174	192	28	68	462	83	49	52	54	238	714
1986	0	6	5	4	15	340	81	16	9	446	81	42	9	4	136	597
1987	0	5	8	1	14	50	99	2	3	154	29	9	9	2	49	217
1988	0	0	2	2	4	25	14	0	0	39	15	7	1	3	26	69
1989	0	2	1	1	4	18	18	2	2	40	10	13	2	5	30	74
1990	0	0	0	0	0	35	36	2	1	74	27	19	1	0	46	120
1991*	0	3	0	0	3	22	77	1	0	100	35	9	2	1	47	150
1992*	0	0	0	0	0	24	16	3	6	49	22	8	1	1	32	81
1993*	0	0	1	0	1	9	10	5	48	72	11	3	3	0	17	90

* Data from DFO Statistics Branch.

Table 6. Management Table for halibut 1993. (Allocation and catch)

Year	Fleet	Quota (t)	Reported catch (t) Quota Reports	Percent taken (%)	Remarks
1993	All Vessels	3200	1166	36	quota not taken since established precautionary TAC
	3NO FG<65'				
	3Ps FG<65'	1945	793	41	
	4VWX FG <65'				
	3Ps MG <65'	10	0	0	bycatch fishery only
	4VWX MG <65'	85	119	140	bycatch fishery only
	3NOPs, 4VWX FG 65-100'	630	153	24	
3NOPs, 4VWX MG 65-100'	10	2	20	bycatch fishery only	
3NOPs, 4VWX All Vessels >100'	520	99	19	bycatch fishery only - 5% up to 4500 kg per trip	

Stock	Gear	Date	Licence Condition	Remarks
Halibut - 4VWX	FG <65'	April 8	Licence Condition	Cod 1,500 kg Haddock 1,500 kg
		June 1	Licence Condition	Cod 1,500 kg Haddock 450 kg
		July 12	Licence Condition	Cod 1,500 kg Haddock 400 kg
		September 2	Variation Order	Cod 0 kg 4VW 1500 kg 4X Haddock 100 kg
		October 1	Licence Condition	CHP each 10% although 4VW actually closed by Variation Order
	Generalist - Mobile <65'	July 7	Variation Order	Fishery Closed
Halibut - 3NO	IQ	July 7	Variation Order	Fishery Closed
	FG <65'	October 1	Licence Condition	Cod 1,500 kg Haddock 1,500 kg

Table 7. Atlantic halibut CPUE 3NOPs for LL all TC where halibut was main species.

Year	Catch	Effort (000' hooks)	CPUE
1985	480	6899	.069
1986	406	3292	.123
1987	233	1647	.141
1988	266	1810	.147
1989	185	1414	.131
1990	173	1782	.097
1991	127	1602	.079
1992	123	1269	.097
1993	111	1259	.089

Atlantic halibut CPUE 4VWX 3NOPs for LL all TC where halibut was main species.

Year	Catch	Effort (000' hooks)	CPUE
1985	1265	17083	.074
1986	1096	14323	.076
1987	536	6385	.083
1988	530	4937	.107
1989	432	5174	.084
1990	356	4463	.080
1991	257	3814	.067
1992	334	4414	.076
1993	280	4527	.062

Atlantic halibut CPUE (4VWX) for LL all TC where halibut was main species.

Year	Catch	Effort (000' hooks)	CPUE
1970	131	2374	.055
1971	146	2277	.064
1972	199	3099	.064
1973	212	3653	.058
1974	172	3198	.054
1975	111	2082	.053
1976	110	1848	.060
1977	82	1477	.056
1978	68	1127	.060
1979	179	1991	.088
1980	176	2004	.092
1981	115	1253	.078
1982	220	2820	.075
1983	606	8040	.077
1984	800	11985	.067
1985	785	10185	.077
1986	691	11031	.061
1987	303	4738	.063
1988	264	3127	.084
1989	247	3760	.066
1990	183	2681	.068
1991	129	2212	.058
1992	210	3145	.067
1993	168	3268	.052

Table 8. Mean number/tow for 4VWX halibut in Canadian summer bottom trawl surveys (Strata 440 - 495)¹.

Stratum	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	All	
440	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.26	0	0	.01	
441	0	0	0	0	0	0	0	0	.28	0	0	0	0	0	0	.21	0	0	0	0	0	0	0	0	.01	
442	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
443	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
445	0	.49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
446	0	0	0	0	0	0	.32	0	.25	0	0	0	0	.32	0	.26	0	0	0	0	0	.32	.34	5.15	0	.29
447	0	0	0	0	0	0	.23	0	0	0	.17	0	0	0	0	0	0	0	0	0	0	0	0	0	.02	
448	0	0	0	.45	0	0	0	0	0	0	.22	0	0	0	.24	0	0	0	0	0	0	0	0	0	.03	
449	0	.49	0	1.75	.39	0	0	0	0	.55	1.97	.49	0	0	.49	0	0	0	0	0	0	0	.51	0	.29	
450	0	0	.31	0	.63	1.54	.34	3.65	.32	1.17	1.48	1.98	2.39	1.72	.32	.34	0	1.03	.34	.69	.34	0	0	0	.81	
451	0	.88	1.17	2.19	0	2.02	3.83	.97	0	1.94	.42	0	.34	0	0	0	1.64	0	3.83	2.09	-	1.49	0	1.0	2.07	
452	0	0	.58	0	0	1.92	1.46	0	1.94	5.51	1.47	0	2.57	1.90	2.70	0	.69	3.80	6.18	2.38	8.00	2.06	6.69	2.07		
453	0	.44	0	.92	0	.29	0	.34	.32	2.92	.45	.36	0	1.09	1.56	0	0	0	.51	0	1.09	.49	0	.45		
454	0	0	1.01	.53	0	.34	1.17	0	.97	0	.31	0	0	1.03	0	2.06	1.03	.51	1.54	.32	0	0	0	.46		
455	0	0	.13	.27	1.06	.15	0	0	.25	.69	0	.61	.26	0	.14	.14	0	.27	.58	.14	0	0	0	.20		
456	0	0	0	.40	.58	.79	.23	.21	.16	.17	.29	.59	0	0	.17	0	.59	1.04	0	.17	0	.15	.14	.11	.24	
457	0	0	0	.51	0	0	.95	.51	0	0	.40	1.49	0	0	0	0	0	.27	0	0	.24	1.03	0	.49	.24	
458	0	0	0	.58	0	0	.61	1.10	.58	0	0	0	0	0	0	.34	0	0	.32	.27	0	0	0	0	.16	
459	0	0	0	0	0	0	.20	0	0	.29	.51	.58	0	0	.26	0	0	0	.22	.21	.22	.32	0	0	.12	
460	0	0	0	0	0	0	0	0	0	0	2.02	0	1.03	0	0	0	0	0	.34	0	0	0	0	.33	.16	
461	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
462	.58	0	0	0	0	0	.55	.19	0	.24	.31	.44	.82	0	0	0	0	0	.76	.19	1.07	.24	.50	0	.24	
463	1.32	.97	1.31	.49	0	3.58	1.46	2.30	2.10	1.26	.38	1.03	0	0	.51	0	1.03	5.15	3.83	0	2.47	.51	1.52	.46	1.32	
464	.80	0	.39	.52	.34	1.29	1.32	.65	.27	.51	.17	.40	.50	0	.62	1.37	1.45	.16	1.20	.61	.12	.59	.42	.14	.58	
465	.31	.58	0	0	0	.29	.96	.39	0	.84	.32	0	.45	.18	.44	.19	1.44	.68	.13	1.17	.49	.53	.60	.30	.42	
466	0	0	.32	0	0	0	0	0	0	.36	0	0	.69	0	0	0	0	0	0	0	0	0	0	0	.08	
470	0	0	0	0	0	0	0	.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.49	0	.05	
471	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
472	0	0	0	0	.49	0	.88	0	0	.32	3.37	2.33	0	.46	1.03	0	0	0	.26	.21	0	0	.24	0	.42	
473	0	0	0	0	.36	.46	0	1.61	.51	0	0	.51	0	0	0	0	0	.51	0	0	0	0	0	0	.17	
474	.51	.49	1.31	1.26	3.28	.92	3.09	4.01	3.09	1.17	1.03	.49	.51	0	0	0	0	1.06	0	0	0	0	0	0	.97	
475	.55	.80	.67	0	2.81	1.02	1.34	1.09	.42	2.16	.92	.46	.51	.98	-	.49	.51	0	1.03	0	1.46	0	.49	.49	.74	
476	0	0	0	0	0	0	0	.27	0	1.03	1.17	0	0	0	0	.51	0	0	0	0	0	0	.49	0	.15	
477	.38	.55	.82	0	.42	0	1.06	0	2.52	0	.31	2.26	.92	0	.51	.49	.51	.64	0	.73	1.03	.97	.57	.76	.65	
478	.49	0	0	0	0	0	0	.22	.58	1.90	.36	.83	.75	.36	1.03	0	.36	0	0	0	0	0	.93	0	.34	
480	1.40	5.35	.77	2.21	1.66	3.65	3.36	18.55	4.62	.24	2.32	1.54	.51	0	0	1.90	1.99	.53	.81	4.97	2.96	.42	0	1.27	2.54	
481	.19	0	.23	.21	.95	0	1.22	0	.59	0	.36	.49	.26	0	1.47	0	0	.51	2.02	.50	.13	.78	.43	.11	.44	
482	0	0	0	0	0	0	0	0	0	0	0	0	.44	0	0	0	0	0	0	0	0	0	0	.34	.03	
483	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.44	0	0	0	0	0	0	0	0	0	.02	
484	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
485	0	0	0	0	0	0	0	0	0	0	0	0	.49	0	0	0	0	0	.63	0	0	.88	.32	0	.10	
490	.51	0	0	0	3.06	1.71	0	.27	.56	1.15	2.16	0	0	0	0	0	.36	0	.26	0	2.33	.73	1.09	.45	.58	
491	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
492	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.32	0	0	0	0	0	0	0	0	.01	
493	0	0	0	0	0	0	0	0	0	.49	0	0	0	0	0	0	0	0	0	0	.31	0	1.03	.32	.09	
494	0	0	0	.63	0	2.18	0	.58	0	0	0	0	.46	0	0	.49	.51	0	0	0	0	0	0	0	.21	
495	0	0	0	2.19	0	0	0	0	0	2.19	.58	0	.49	0	0	0	0	0	.46	.55	0	1.38	0	0	.34	

¹ Survey Vessels 1970-1981 A.T. Cameron
1982 Lady Hammond
1983-1992 Alfred Needler

Table 9a. Halibut (Summer Survey) 1970 - 1993 4VWX

Year	Mean #/Tow	Mean Wgt/Tow	S/E #	S/E Wts
1970	.12	.38	.04	.15
1971	.13	.23	.06	.08
1972	.10	.28	.02	.10
1973	.15	.26	.04	.07
1974	.21	.40	.06	.14
1975	.22	.29	.05	.07
1976	.38	.86	.09	.24
1977	.41	.85	.11	.26
1978	.25	.98	.05	.21
1979	.33	1.21	.06	.30
1980	.39	1.07	.08	.21
1981	.31	1.22	.08	.35
1982	.23	1.06	.06	.29
1983	.07	.77	.02	.52
1984	.20	1.22	.05	.43
1985	.13	.36	.03	.11
1986	.20	.33	.06	.09
1987	.19	.40	.04	.16
1988	.25	.75	.08	.41
1989	.33	.84	.07	.26
1990	.21	.42	.05	.11
1991	.31	.57	.07	.14
1992	.25	1.04	.07	.39
1993	.18	.85	.05	.26

Table 9b. Halibut Spring and Summer Surveys

Year	Mean #/Tow	Mean Wgt/Tow	S/E #	S/E Wts
Halibut Spring Survey 4VW 1986 - 1994				
1986	.25	.09	1.08	.37
1987	.37	.11	2.25	1.35
1988	.63	.24	2.76	1.28
1989	.37	.13	1.40	.53
1990	.23	.05	2.09	1.02
1991	.61	.19	2.24	.83
1992	.31	.14	.88	.43
1993	.30	.07	1.31	.58
1994	.20	.06	1.07	.74
Spring 4VWX 1977 - 1984				
1979	1.04	.16	3.64	.76
1980	.37	.07	2.07	1.03
1981	.62	.10	2.77	.60
1982	.48	.08	2.06	.48
1983	.44	.08	2.35	.53
1984	.26	.07	1.32	.51
Fall 4VWX 1979 - 1984				
1979	.30	.04	.79	.11
1980	.41	.09	1.76	.50
1981	.22	.04	.92	.22
1982	.31	.06	1.75	.38
1983	.09	.03	.33	.13
1984	.10	.04	.54	.29

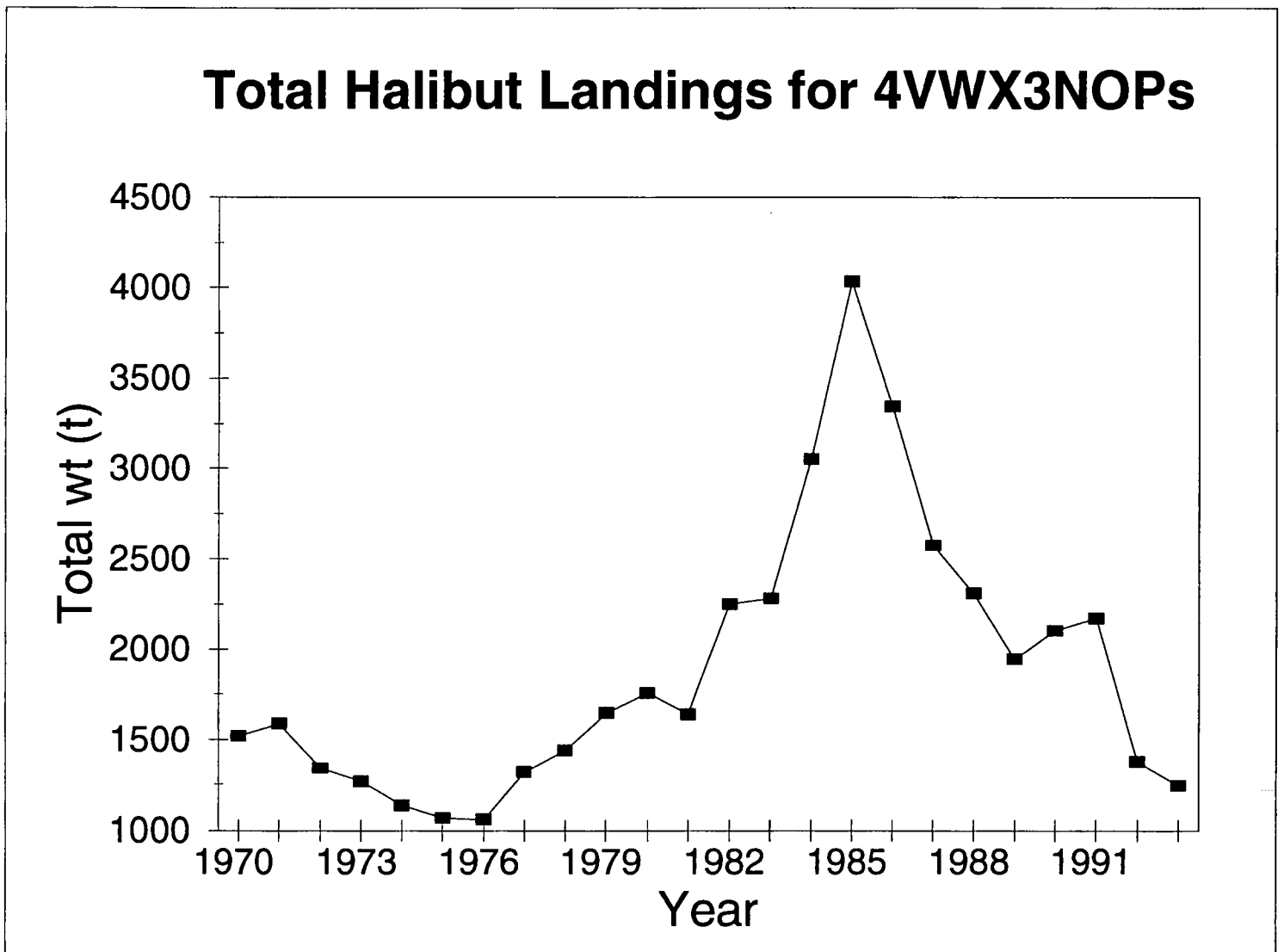


Fig. 1

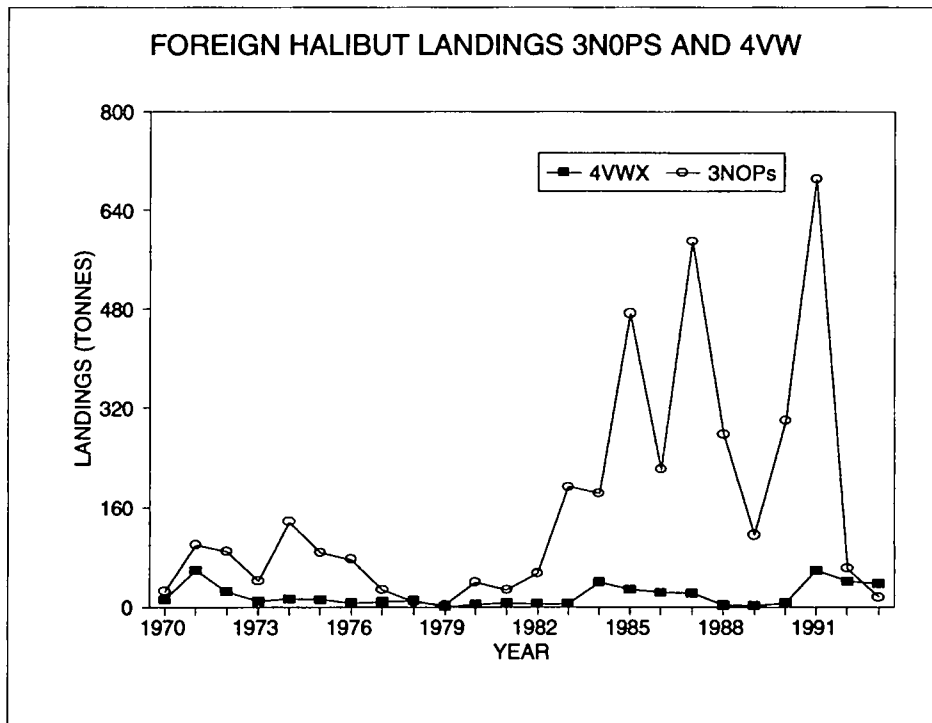
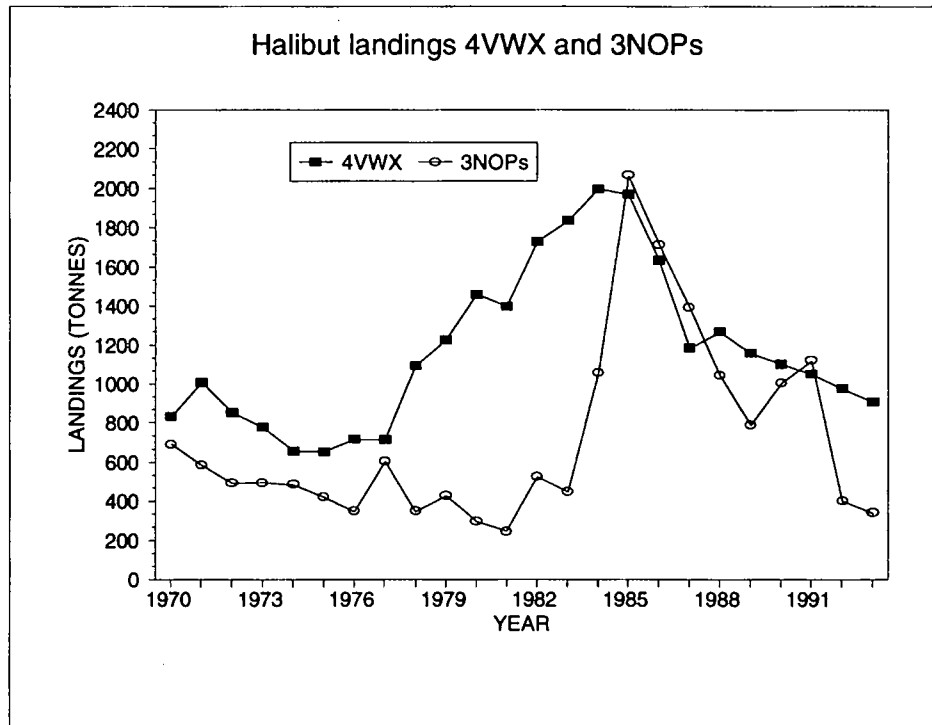


Fig. 2

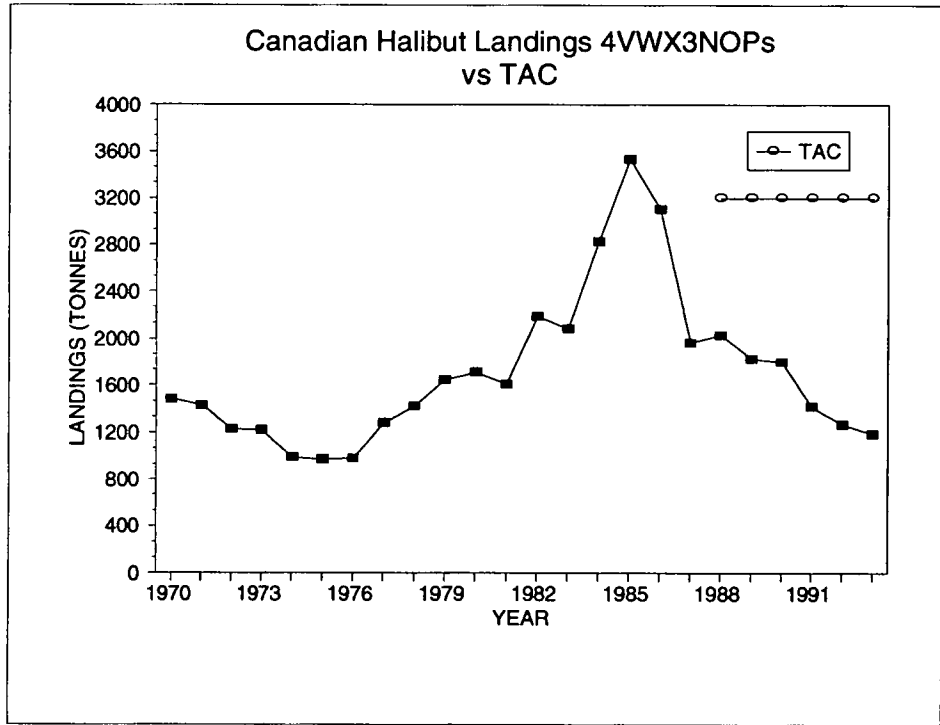
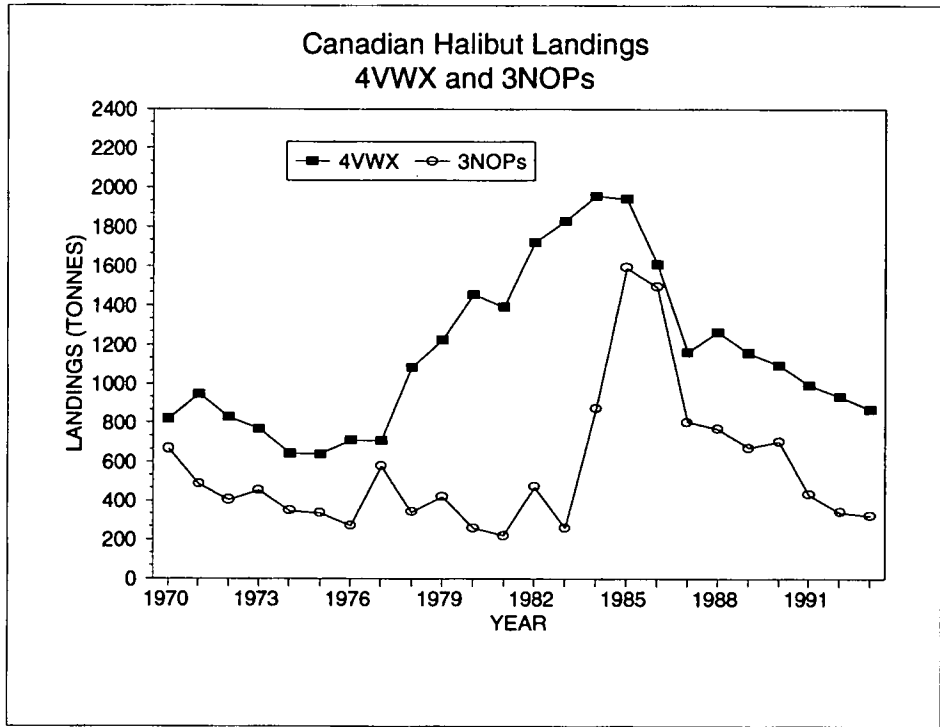


Fig. 3

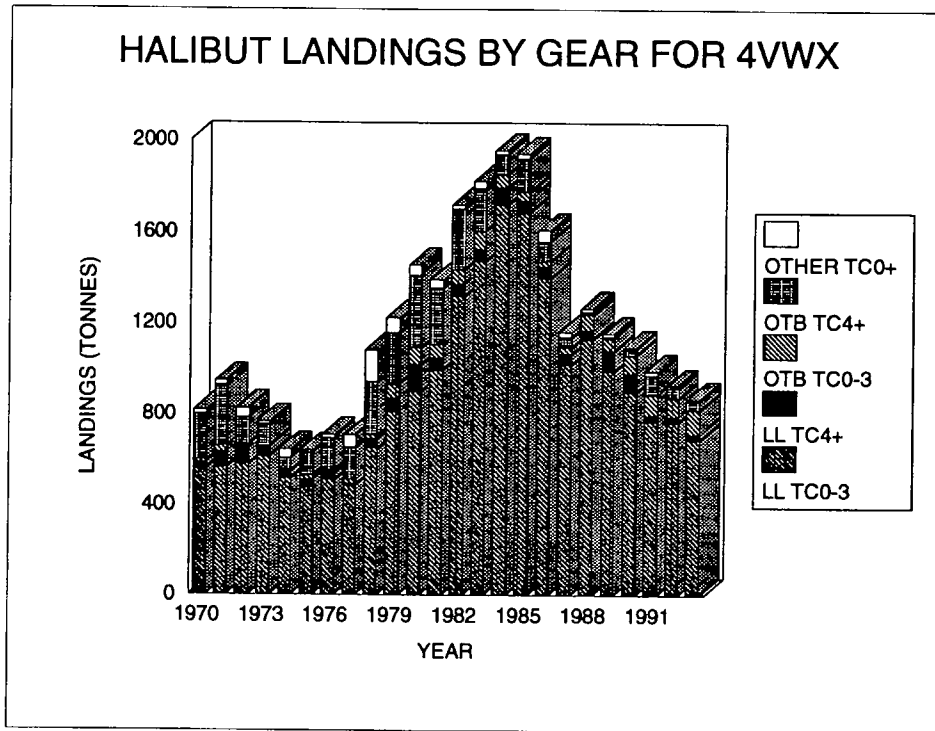


Fig. 4a

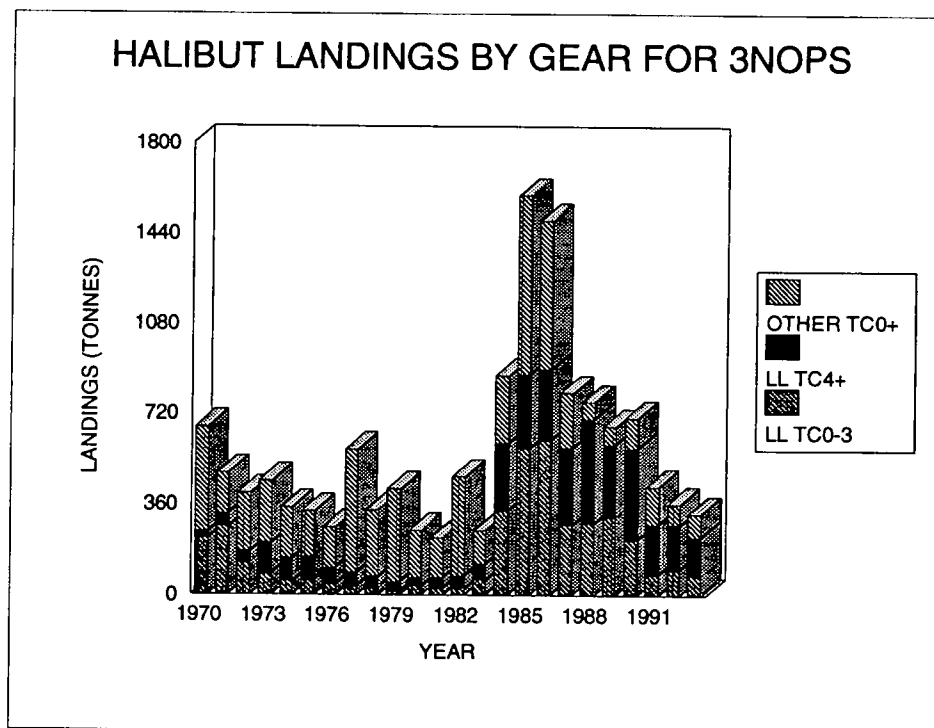


Fig. 4b

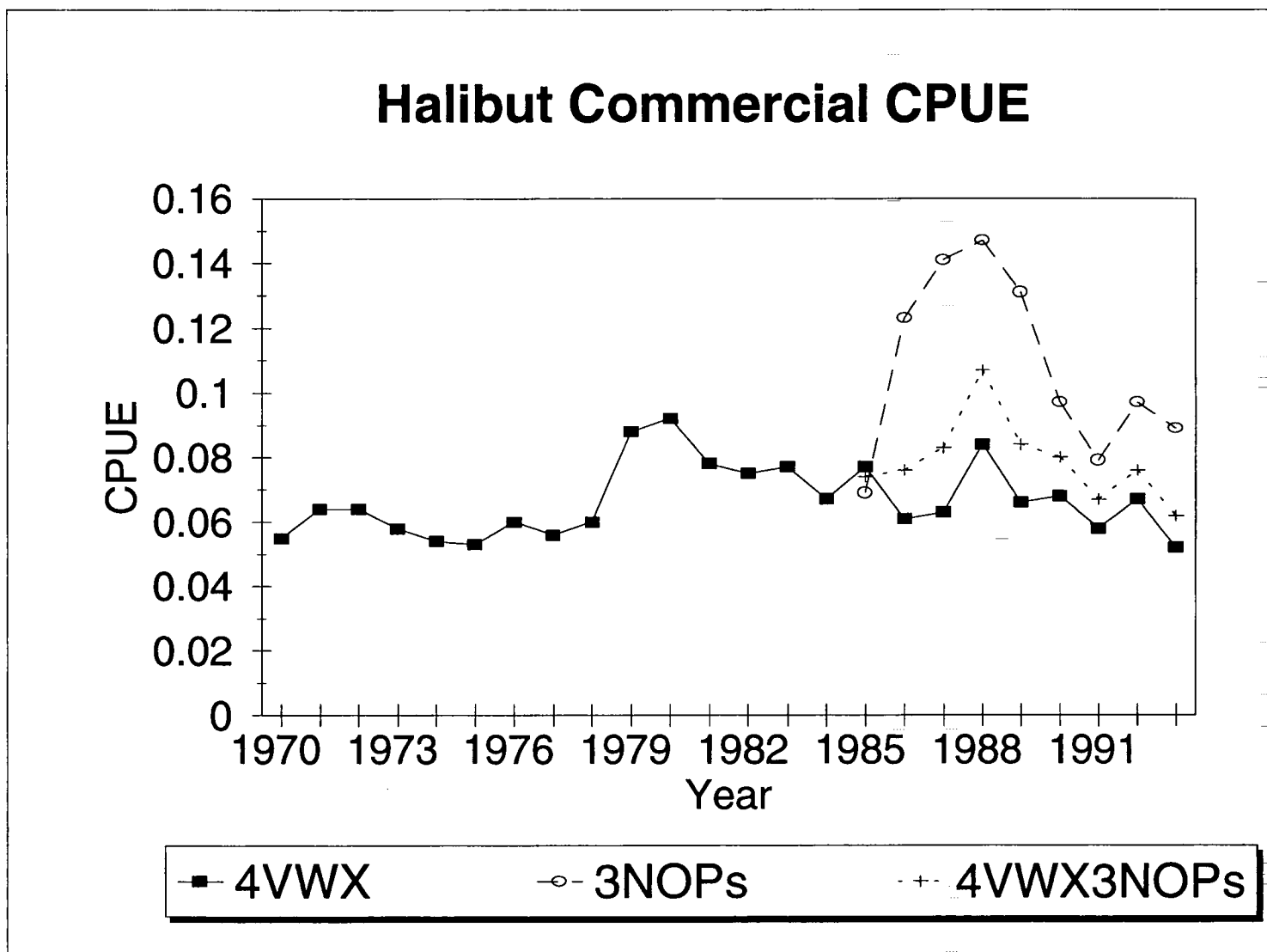


Fig. 5

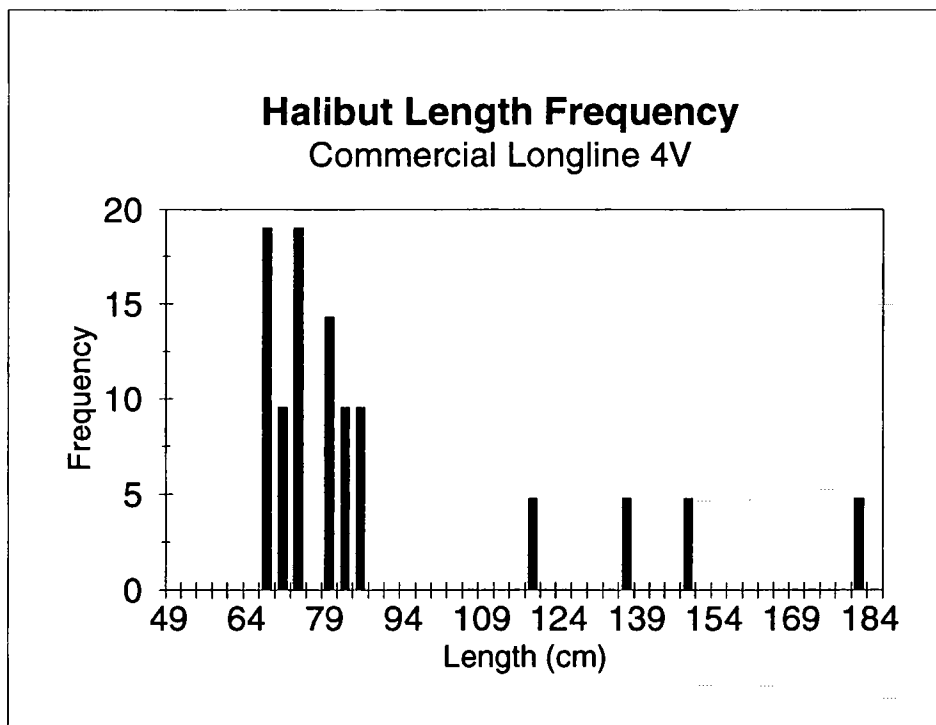
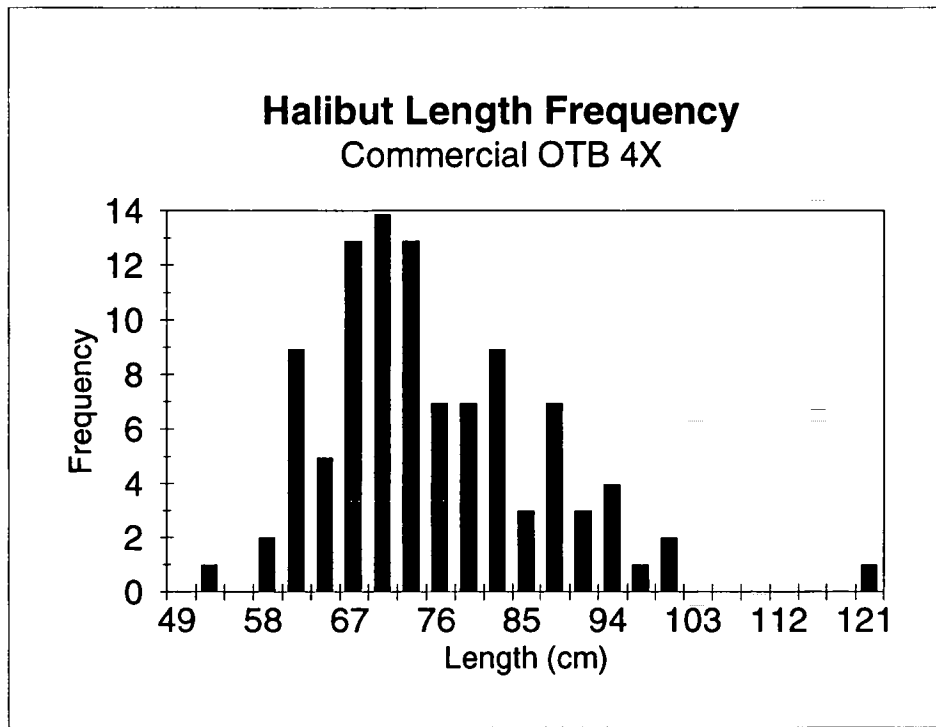


Fig. 6

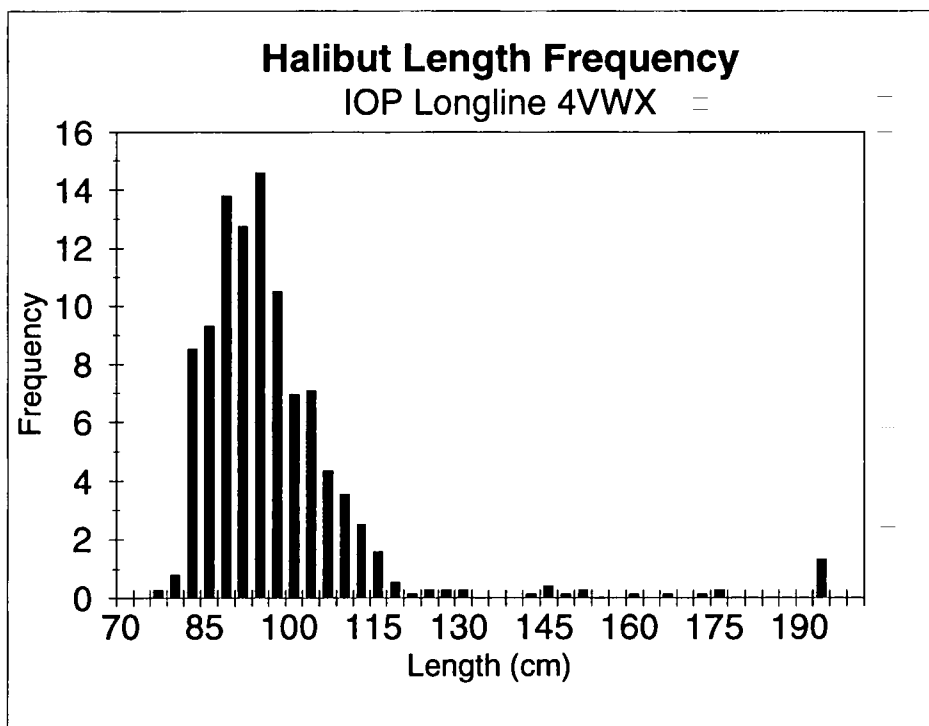
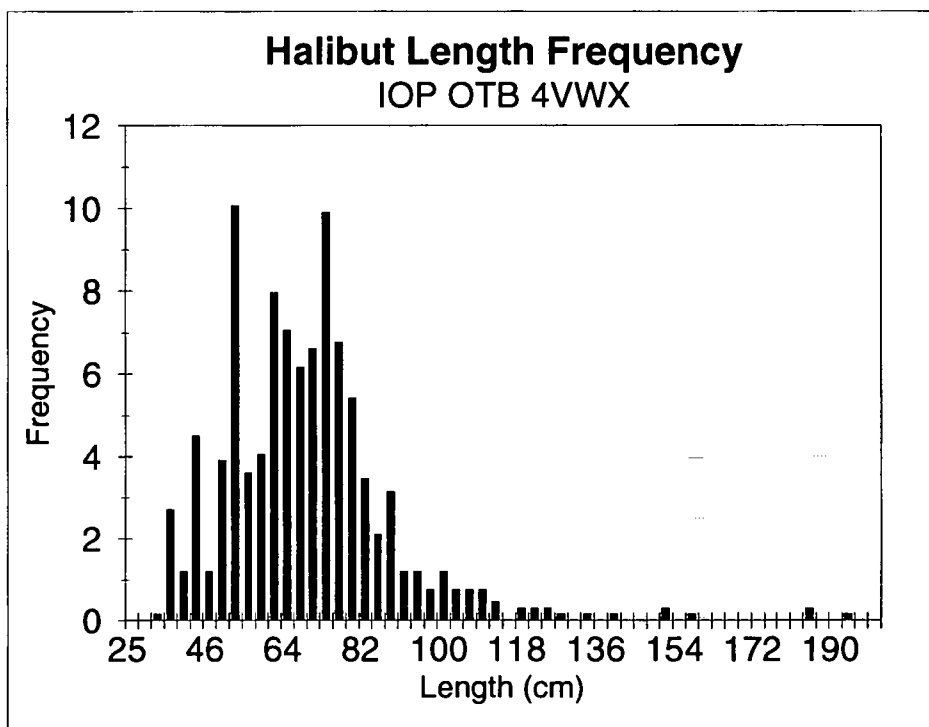
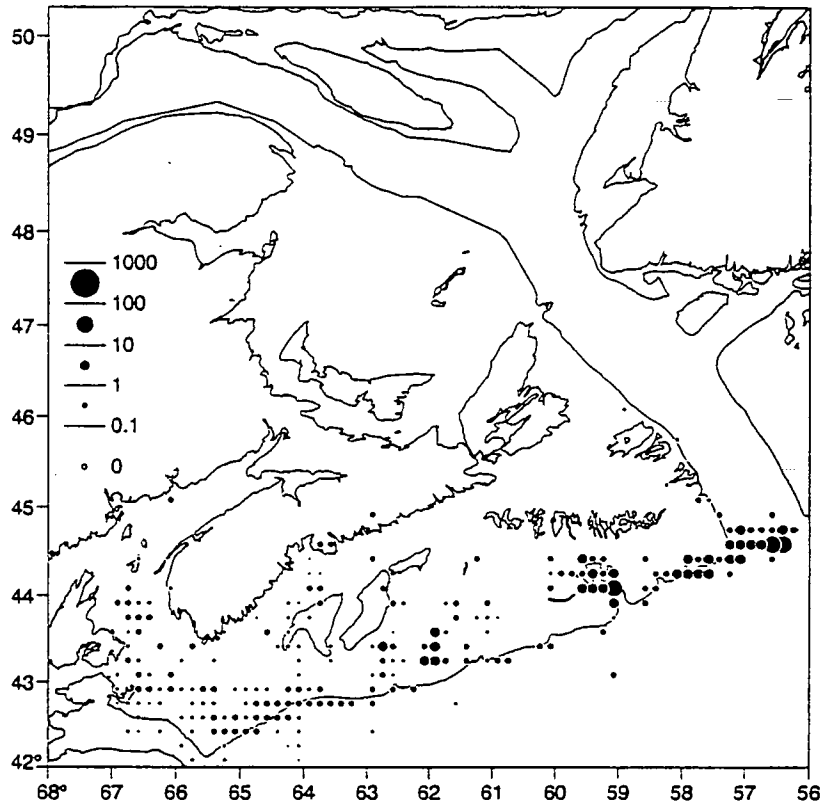


Fig. 7

HALIBUT DISTRIBUTION FROM 1992 COMMERCIAL CATCH



HALIBUT DISTRIBUTION FROM 1993 COMMERCIAL CATCH

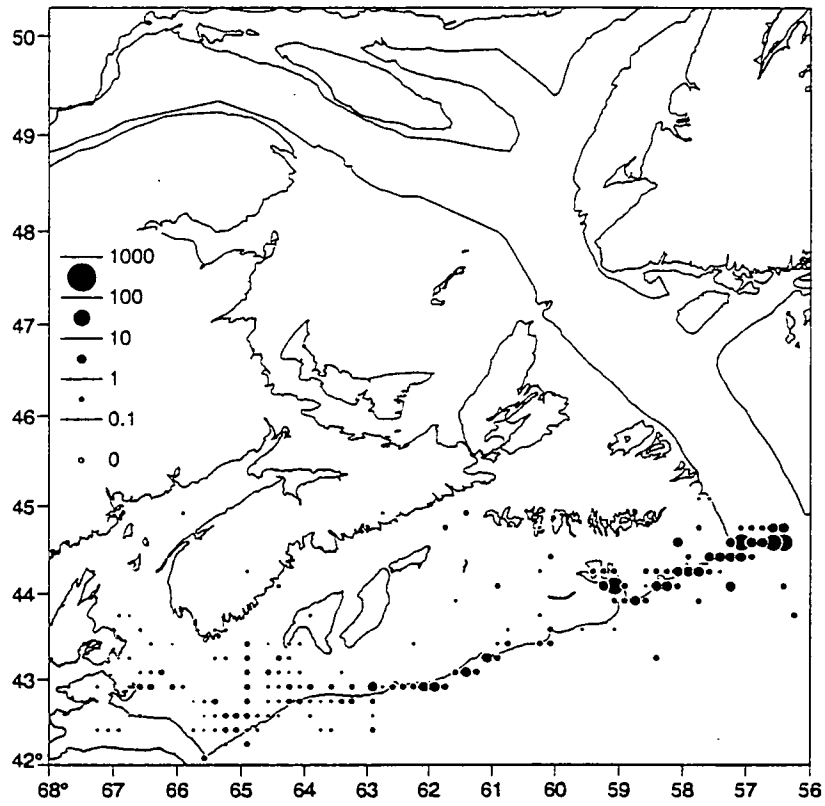


Fig. 8

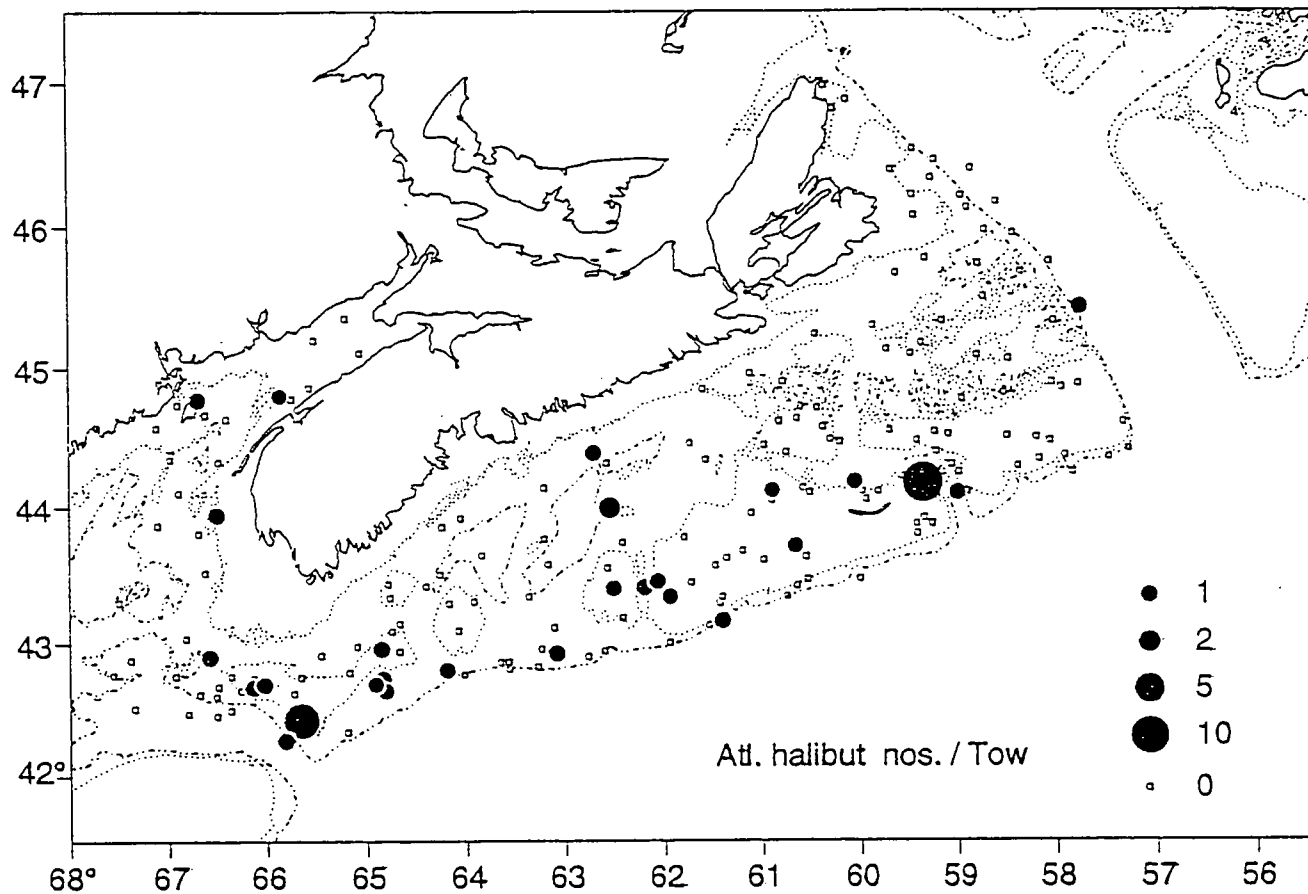


Fig. 9 Halibut numbers per tow from 1993 summer survey.

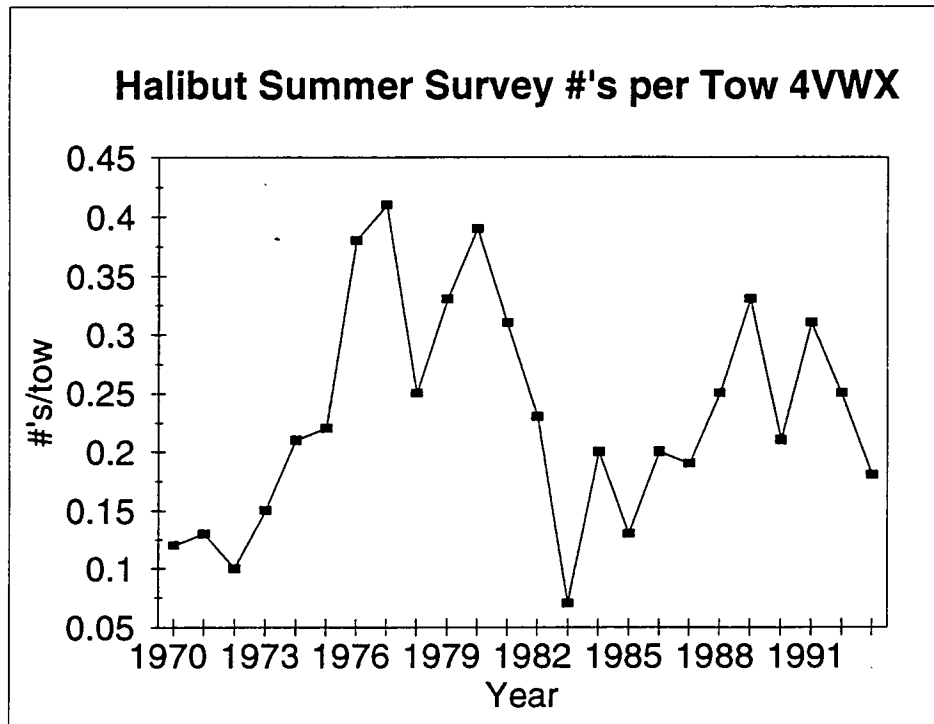


Fig. 10a

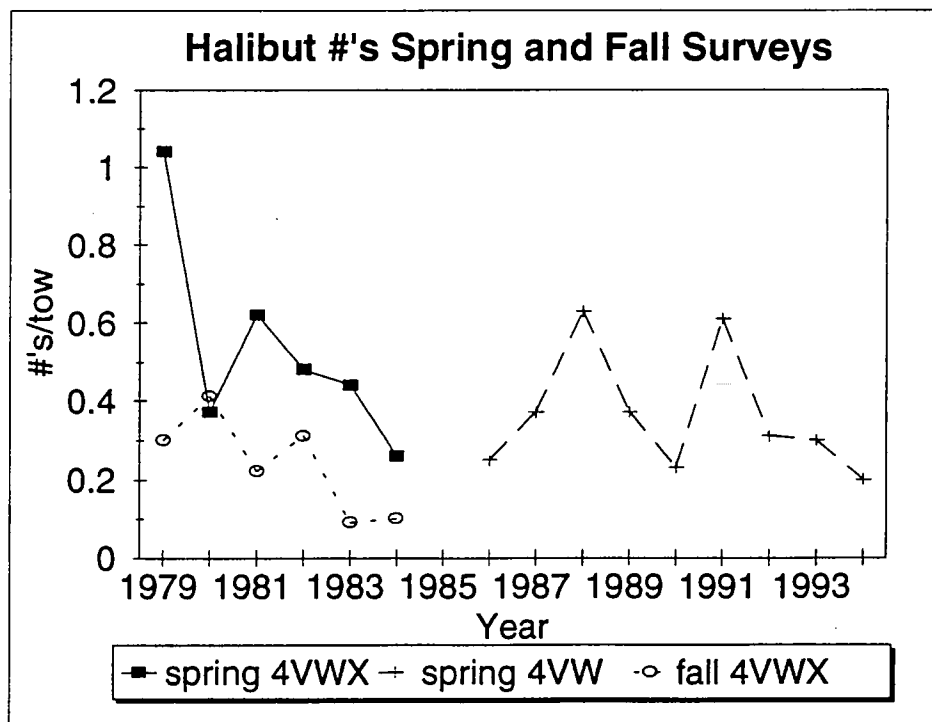


Fig. 10b

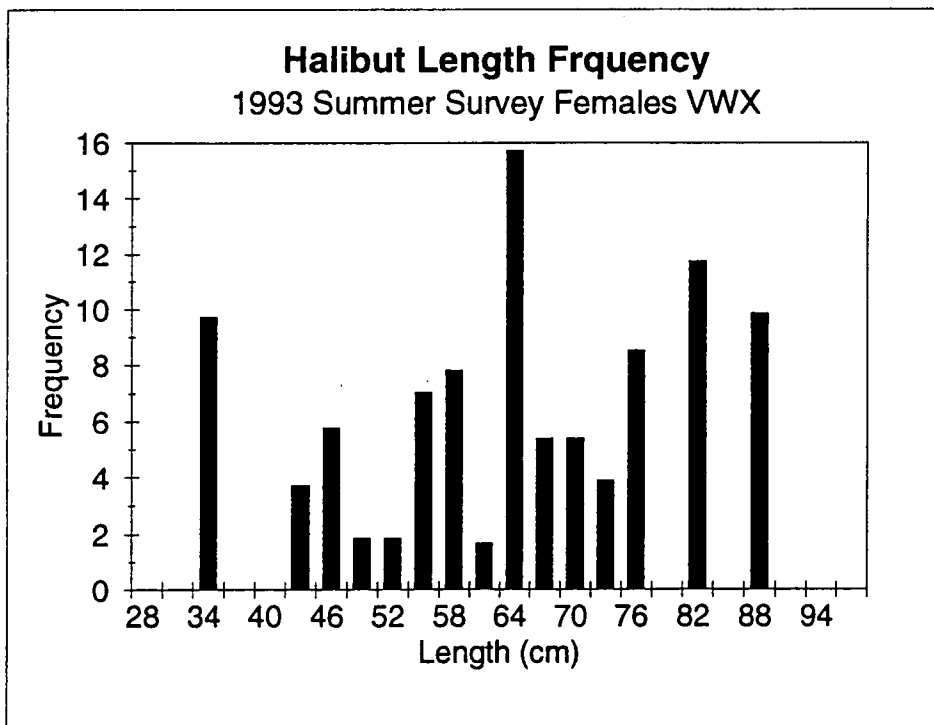
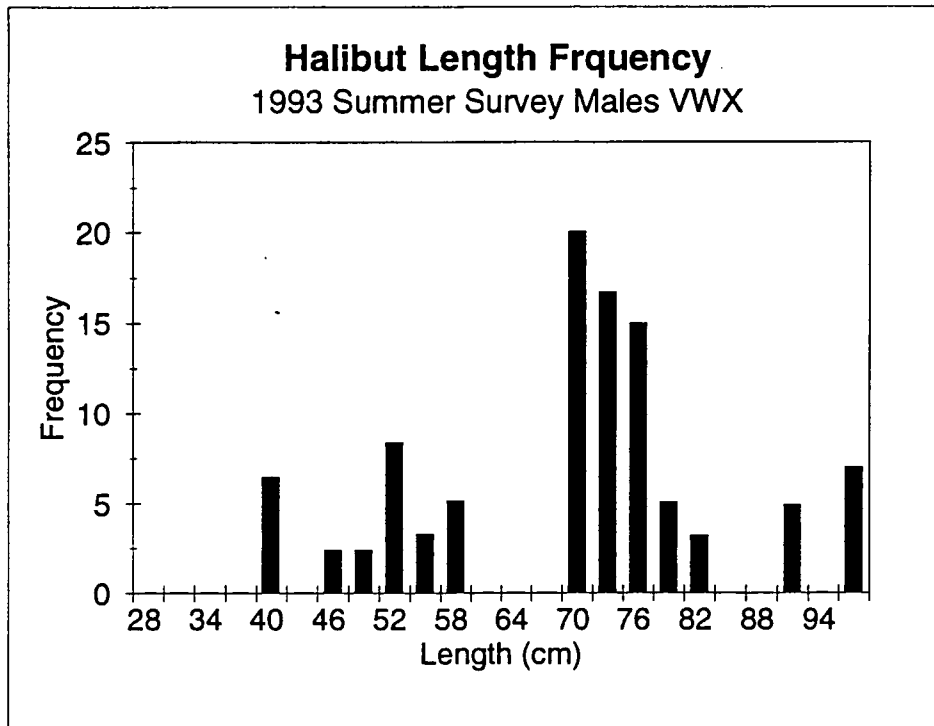


Fig. 11