

Not to be cited without
permission of the authors¹

Canadian Atlantic Fisheries
Scientific Advisory Committee

CAFSAC Research Document 85/99

Ne pas citer sans
autorisation des auteurs¹

Comité scientifique consultatif des
pêches canadiennes dans l'Atlantique

CSCPCA Document de recherche 85/99

**The Exploitation and Biological Status of Pollock
in Divisions 4VWX and Subarea 5**

by

J. McGlade, M.C. Annand, and D. Beanlands

Marine Fish Division
Bedford Institute of Oceanography
P.O. Box 1006, Dartmouth
Nova Scotia B2Y 4A2

¹This series documents the scientific basis for fisheries management advice in Atlantic Canada. As such, it addresses the issues of the day in the time frames required and the Research Documents it contains are not intended as definitive statements on the subjects addressed but rather as progress reports on ongoing investigations.

Research Documents are produced in the official language in which they are provided to the Secretariat by the author.

¹Cette série documente les bases scientifiques des conseils de gestion des pêches sur la côte atlantique du Canada. Comme telle, elle couvre les problèmes actuels selon les échéanciers voulus et les Documents de recherche qu'elle contient ne doivent pas être considérés comme des énoncés finals sur les sujets traités mais plutôt comme des rapports d'étape sur les études en cours.

Les Documents de recherche sont publiés dans la langue officielle utilisée par les auteurs dans le manuscrit envoyé au secrétariat.

Abstract

The nominal catch of pollock in Divisions 4VWX and Subarea 5 in 1984 was 51,000 t, within the 53,000 t TAC. The distribution of landings amongst areas was 11% in Division 4V, 11% in Division 4W, 38% in Division 4X, 25% in Division 5Y, and 15% in Division 5Z, with 65% taken by Canada, 34% by the U.S.A., and 1% by other countries. The largest proportion of the catch was made up of the 1979 and 1980 year-classes. Catch rates from the commercial fishery and research survey indicate a slight decline from 1983: age-specific catch rates from the R.V. survey however suggest that the prospects for the 1981 and 1982 year-classes are poor. Based on a calibration between exploitable biomass and the commercial catch rate index of abundance (Jun-Aug OTB-1,2 TC 5), the cohort analyses indicated a fishing mortality in 1984 of 0.35, a level between $F_{0.1}$ (0.29) and F_{max} (0.63). Catch projections for 1986 are somewhat lower than in previous years because of the poor prospects for incoming year-classes. A revised catch-at-age matrix is also presented, extending from 1970 to 1984, plus new information concerning variability in catch rates by set and trip.

Résumé

Les prises nominales de goberge dans les divisions 4VWX et la sous-zone 5 en 1984 ont été de 51 000 t, soit inférieures au TPA de 53 000 t. La distribution des débarquements dans les zones a été la suivante : 11 % dans la division 4V, 11 % dans la division 4W, 38 % dans la division 4X, 25 % dans la division 5Y et 15 % dans la division 5Z, avec 65 % des prises capturées par le Canada, 34 % par les E.-U. et 1 % par d'autres pays. La plus forte proportion des prises était composée des classes d'âge de 1979 et de 1980. Les taux de capture de la pêche commerciale et du navire de recherche révèlent une légère diminution par rapport à 1983 : les taux de capture par âge d'après le recensement de navire de recherche indiquent toutefois que les perspectives pour les classes d'âge de 1981 et 1982 sont sombres. Basées sur une corrélation entre la biomasse exploitabile et l'indice d'abondance selon le taux de capture commerciale (juin-août chalutiers de pêche de côté et de pêche arrière - CJ5), les analyses par cohortes ont révélé une mortalité par pêche en 1984 de 0,35, niveau compris entre $F_{0.1}$ (0,29) et F_{max} (0,63). Les projections des prises pour 1986 sont quelque peu inférieures à celles pour les années précédentes à cause des sombres perspectives pour les classes d'âge à venir. Une matrice révisée des prises par âge est aussi présentée; elle contient des données de 1970 à 1984 et de nouvelles données concernant la variabilité des taux de capture par engin tendu et par sortie.

Introduction

The first part of this document contains the assessment of pollock stocks in NAFO Divisions 4VWX and Subarea 5, which was used to generate the CAFSAC advice for 1986. During the CAFSAC Groundfish Subcommittee meeting it was noted that the addition of sampling data from the U.S.A. (National Marine Fisheries Service, Woods Hole) made a significant difference to the catch-at-age of pollock in 1983 (CAFSAC Advisory Doc. 84/14), and it was anticipated that there would be a similar effect in 1984. Thus the Subcommittee re-examined the analysis in September 1985, subsequent to the release of the 1984 U.S.A. sampling data (pers. comm. R. Mayo, N.M.F.S., Woods Hole), but having found no significant differences, the analyses presented at the May Subcommittee meeting were retained (see Appendix 1). However, in previous assessments the length of time series was considered relatively short to support an analysis such as VPA, thus at the September meeting an extended and revised catch matrix, plus ancillary data about year-class strengths and effects were also presented. These new data are given in the second part of this document.

PART I: MANAGEMENT BACKGROUND AND CONSIDERATIONS OF THE FISHERY

The pollock fishery in the northwestern Atlantic is primarily a Canadian and U.S.A. concern. Commercial landings for Canada rose from an average of 5,100 t from 1920-1942 to an average of 29,300 t from 1960-1964. Total commercial landings subsequently declined during the 1960s from 40,000 t in 1960 to 22,000 t in 1968 (Table 1, Figure 1), but then increased again substantially during the 1970s and early 1980s. The highest reported catch occurred in 1981 (59,000 t), but since then the catches have declined. The major portion of the catches were taken by Canada and the U.S.A., although in several years foreign nations, particularly the U.S.S.R., reported up to one third of the total landings. Unfortunately no information prior to 1960 is available for other nations, as pollock catches by these fleets were reported as "mixed" groundfish. Since 1978 however, the landings by distant-water fleets have declined by 90%, and are now negligible.

Management of this stock has been in effect since 1973 when a pre-emptive TAC was set. Recent catches, TACs and the Canadian catch ('000 t) have been as follows:

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
TAC	55	55	55	30	30	30	40	54	55	52	53	53
Nominal Catch	38	39	38	38	45	47	55	59	53	47	51	-
Canadian Catch	25	27	24	25	27	30	36	40	38	32	33	-

The annual TAC from 1974-1976 was 55,000 t, but evidence of increased fishing mortality and reduced recruitment led ICNAF to advise on a decrease to 30,000 t. The U.S.A. withdrew from ICNAF on December 31, 1976, and since then the U.S.A. fishery has been unregulated. The nominal catch of pollock exceeded the TAC during the late 1970s and early 1980s, but since 1981 there has been a close relationship between the TAC and the catch. The Canadian portion of the catch also exceeded the TAC allocation until 1981, whereupon it has continued to fall, whilst U.S.A. catches have increased. Nevertheless, the pollock fishery is still centred on the Scotian Shelf with approximately 66% of the landings coming from Divs. 4VWX (Table 2).

Seasonal and Spatial Trends

The Canadian fishery has evolved over the past decade from one in which pollock was taken as part of a mixed groundfish product, to a directed fishery that is largely prosecuted by offshore vessels (OTB-1,2, TC 4+) in Divisions 4VW and 5Ze, and an inshore fishery prosecuted by smaller vessels (OTB-1,2, GN, LL, and fixed gears, TC 1, 2, and 3) in Divisions 4X, 5Z, and 5Y. To reflect these growing differences in the fishery plus stock structure the data have been recompiled, and aggregated by gear and month for Divisions 4VW, and Division 4X and Subarea 5 for Canadian vessels of TC 1, 2, and 3, and vessels of TC 4 and over (Tables 3-6) (1983 preliminary NAFO data; 1984 and 1985 data from DFO Statistics Branch; 1985 data is for January to June). The U.S.A. statistics have been compiled for Divisions 4W, 4X, 5Y, and 5Zw, for Unit areas 5Zeg, 5Zeh, 5Zej, 5Zem, 5Zen, 5Zeo, and for Subareas 3, 6, and Division 4V by gear and TC (Tables 7-17).

Seasonal trends in commercial landings indicate that the Canadian fishery generally occurs during the summer and early fall, whilst the U.S.A. fishery predominantly occurs during the fall and winter months; in certain years, however, for example 1981, large monthly landings were reported throughout the year by both countries (Table 18a,b). The Canadian catch has primarily been taken on the western end of the Scotian Shelf in Div. 4X and on the Northeast Peak of Georges Bank (70%). The U.S.A. catch was more evenly distributed between Georges Bank, the Gulf of Maine, and the Scotian Shelf during 1960-1971, but since then it has been taken largely in the western Gulf of Maine. This trend reflects an increase in directed effort and gillnetting in the Gulf of Maine, for which the latter has risen from 7% in 1970 to 44% in 1981 (Mayo and Clark, 1984).

Information from the International Observer Program on Canadian vessel distribution shows several areas where pollock are consistently found in the fishery (Figures 2a and 2b) throughout the year. The spatial patterns show that vessels move across the whole Scotian Shelf to obtain pollock, but that the highest concentration of catches are made in Div. 4X during January to June and Divs. 4VW from July to December.

In addition to the commercial fishery in Canada and the U.S.A., there is a substantial recreational fishery in New England and the mid-Atlantic states. Data on these catches have been collected in a series of surveys

for 1960, 1965, 1970, 1974, and 1980 (Table 19). The 1980 data were derived from a telephone survey followed by a real census, and are therefore incompatible with previous results which were felt to be overestimates. Nevertheless, the 1980 survey indicated a total catch of 2,100 t reportedly released or harvested. The mean weight of the fish in these catches would suggest that they are in the main "harbour" or juvenile pollock (Mayo and Clark, 1984).

Age Composition of the Landings

As in previous analyses, the age composition of the landings were derived through (i) parameterization of the length-weight data from the seasonal R.V. surveys, (ii) application of the parameters to the age-length keys for commercial samples (Table 20a,b) aggregated by gear, area and quarter of the year (as shown in Table 18b), and (iii) proration of the keys according to the aggregated catches. Catches without age-length keys were combined with the most appropriate category based on information about selectivity ogives and the spatial distribution of the gears. The catch and percentage of catch-at-age is given (Tables 21a,b).

The commercial weight at age was based on the aggregated data used to calculate the catch-at-age, and prorated accordingly (Table 22). The biomass-at-age is simply the catch-at-age multiplied by the average commercial weight-at-age; it is given together with the percent biomass at age (Table 23a,b).

From these data it is quite clear that the 1979 year-class still dominates the fishery, and is being followed by another strong year-class from 1980. Together these two year-classes will probably support the pollock fishery in much the same way as the 1975 and 1976 year-classes did.

Abundance Indices

Research Survey Vessel

The Canadian summer RV survey series is carried out throughout the Scotian Shelf and Bay of Fundy (Figure 3a) (Halliday and Koeller 1981). In 1981, the 12 year A.T. Cameron series terminated, and in 1982 the survey was carried out by the Lady Hammond: from comparative fishing experiments a conversion factor of 1.0 between these vessels was derived for pollock. In 1983 the Alfred Needler was used, but difficulties in deriving a conversion factor for these latter two vessels has meant ipso facto that 1.0 will be used for pollock. The estimates provided are thus unconverted for intra-vessel comparisons (Tables 24, 25, and 26). Results from the full series of surveys carried out by the Lady Hammond since 1979 are also included (Table 24).

The U.S.A. have carried out offshore surveys (Figure 3b) in the spring, summer and autumn, although in certain years the spring and summer surveys were not undertaken, or contained no catches of pollock (Tables 27

and 28). Inshore surveys (Figure 3c) have also been conducted in the spring and summer since 1977 and 1978, respectively (Table 29).

All the research vessel catch rates, in numbers-at-age per standard tow (viz. Tables 24-29) indicate that the 1979 year-class is exceptionally strong. The 1971 year-class has until now been the strongest and most persistent in the U.S.A. spring and autumn surveys, although in more recent years the 1974, 1975, 1976 and the 1980 year-classes have also appeared to be very strong.

Trends in overall catch rates (number per standard tow) for Canadian and U.S.A. research vessel surveys show parallel movements within the time series, with a decrease in 1983 from 1982, but with a subsequent increase in the Canadian survey in 1984 (Table 30).

Detailed information from the Canadian surveys by strata show the persistent spatial patterns described above with high rates consistently occurring throughout the period in Strata 49-52, 60-66, 70-72, 75-78, 81-85, and in the summer in Strata 90-95 (Table 31, Figures 4 and 5). Despite the temporal increase in abundance, however, data on the maturity ogives within a year and by year-class show that the age of 100% and 50% maturity has decreased from 5 and 4 in the early 1970s (year-classes 1965-71) to 4 and 3 by the late 1970s and has persisted into the 1980s (Tables 32 and 33), although such changes may be a reflection of the numbers-at-age in the population of a large year-class when individuals first become mature. The length at maturity for males and females is much harder to interpret, and it cannot be easily identified as to whether the critical length-at-maturity has altered (Table 34). The sex ratios for spring, summer, and fall by age show that from ages 1-5 there are consistently more males than females, but there appears to be no obvious intra-annual pattern (Tables 35-37).

In summary, the RV catch rates suggest that within the spatial zones where pollock are traditionally found, the 1980 year-class is very good, but the prospects for the 1981 and 1982 year-classes appear to be poor.

Commercial Indices

Commercial catch rates, which have traditionally been used to calibrate the results of the virtual population analyses for pollock, however, do not give such a clear picture. In this assessment we give the time series of indices used in this and previous analyses, but present evidence of the variance associated with these types of indicators of abundance (Tables 38-40). Clearly the CPUE (the sum of the catches/sum of the effort) cannot be described as a robust statistic when the variance or standard deviation varies so considerably. We also present data from the International Observer Program (I.O.P.) for 1980-1985 which shows the difference between set-by-set catch rates for sets directed for pollock, and those obtained on a trip-by-trip basis (Table 41). Invariably the set-by-set rates are higher, but the relationship between these and the more aggregated data is entirely arbitrary. Moreover, the existence of

trip limits for most offshore and some inshore vessels for pollock, means that the trip-by-trip data may become severely biased.

However, a full analysis of the importance of such variability in calibrating the results of a VPA is yet to be completed. Thus in this document, we shall present the results as obtained in the Groundfish Subcommittee meeting, and defer a fuller discussion of the implications of the "noise" in catch rates until such time as work has been completed.

Estimation of Stock Size

Cohort Analysis

Cohort analyses were run on the catch-at-age matrix (Table 21a), with natural mortality set at 0.2, and the age of full recruitment at 6. The weighted fishing mortality for ages 6-9 was used to calculate a partial recruitment matrix. Although there was considerable variation from year to year, the Subcommittee based its final estimate of a partial recruitment vector for ages 2-5 on the average from 1974-1983 (excluding 1975 and 1981 in which fish were fully recruited at age 4). Ages 6-11 were thus considered fully recruited, and a "flat-topped" vector was used. Cohort runs were conducted for a range of terminal Fs from 0.15-0.45 at intervals of 0.05.

Calibration of the Sequential Population Analyses

The results of the cohort runs were calibrated to two catch rate series (Canadian OTB-1,2 TC 5, Jan-Jun and Jun-Aug with pollock as the main species from Divisions 4VWX and SA5). The catch rates were compared to the exploitable biomass, calculated by multiplying the mid-year SPA population biomass ($POP \times e^{-(F+M) \times .5} \times \text{mean weight}$) by the average partial recruitment obtained above. Consideration of the correlation coefficient and residuals from a linear least squares regression between the Jun-Aug catch rate and exploitable biomass led the Subcommittee to agree upon a population size given by a terminal F in 1984 of 0.35 (Table 42, Figure 6).

Prognoses

Catch projections based on the population derived from the cohort run given above (Table 43) showed the importance of the 1979 and 1980 year-classes in maintaining this fishery. The prognoses for incoming year-classes (viz. 1981 and 1982) looked poor, thus the reduction as suggested in this section of the document in the $F_{0.1}$ level, is clearly warranted.

PART II: REVISIONS TO THE CURRENT ANALYSIS

The length of the current time series was felt to be too short to really justify the analyses made in this and previous documents. Thus data were compiled and re-examined to produce a revised catch-at-age matrix for 1970-1984. Prior to 1970 pollock were either reported as "other groundfish", or no otoliths were aged. However the extension and revisions produced a number of changes and uncovered and resolved some internal discrepancies in the existing matrix.

Revision of the Age Composition of the Landings

The catches and weights-at-age by gear, area, and country were calculated from commercial samples using the length-weight parameters from Canadian R.V. surveys (Table 44), and are presented by gear and TC for Divisions 4VW and Divisions 4X and SA 5 and indicated in Tables 45 to 49. In the case of missing information as a result of incomplete or limited sampling, catches were prorated as shown:

CANADA:

- Table 45a (i) OTB-1,2 (TC 4+) Div. 4X and SA5 -- 1970-1985 (data available for complete series)
- Table 46a (ii) OTB-1,2 (TC 4+) Divs. 4VW -- 1971, 1972 based on proportions in (i)
- Table 47a(iii) OTB-1,2 (TC 1-3) Divs. 4VWX + SA 5 -- 1970-1978 based on proportions in (i) and (ii)
- Table 48a (iv) GN, etc. (all TC) Divs. 4VWX + SA 5 -- 1970-1974 based on proportions in (i)
- Table 49a (v) Canadian catch at age

U.S.A.:

- Table 49b (i) Total catch at age for OTB-1,2 -- 1970-1972 based on proportions from Canadian (v)
- (ii) All other information from N.M.F.S. (R. Mayo, pers. comm.)

FOREIGN NATIONS EXCEPT USSR:

- Table 49c (i) Total catch at age for OTB-1,2 and other gears in Divs. 4VWX -- 1970-1984 based on proportions from Canadian (i) and (ii); no data for 1985

USSR:

Table 49d (i) Total catch at age based on small mesh gears -- 1970-1984 based on proportions in RV surveys (Table 24); no data for 1985

The total catch and weight at age are given in Table 50.

Conclusions

From this revision and the new data presented in this document we hope to be able to look at the following problems in the near future:

- (i) the implications of spatial and temporal heterogeneity in the data sets as a result of combining more than one stock; and
- (ii) the impact of spatial and temporal discontinuities in the commercial catch rate indices as a result of localized and global changes in abundance, and management restrictions.

Acknowledgements

We wish to thank V. Myra for typing this document.

References

- Halliday, R. and P. Koeller. 1981. A History of Canadian Groundfish Trawling Surveys and Data Usage in ICNAF Divisions 4TVWX. In: Doubleday, W.G. and D. Rivard [eds.]. 1981. Bottom trawl surveys. Can. Spec. Publ. Fish. Aquat. Sci. 58: 273 p.
- Mayo, R. and S. Clark. 1984. An Assessment of the Pollock (*Pollachius virens* L.) Stock in the Scotian Shelf, Gulf of Maine, and Georges Bank Region, 1984. Woods Hole Laboratory Reference Document No. 84-13.
- McGlade, J.M., M.C. Annand, and D. Beanlands. 1983. Stock Status of Pollock in NAFO Division 4VWX and Subarea 5. CAFSAC Research Document 83/84.

Appendix 1

Age	1983 [Total Catch At Age]		1984 [U.S. Component of Total Catch]	
	Original*	Revised**	Original*	Revised**
2	18	35	89	42
3	1351	917	477	510
4	9996	9218	2270	1859
5	1350	2441	2859	2962
6	238	484	423	641
7	584	1354	61	115
8	863	1378	95	161
9	333	621	93	125
10	147	403	23	105
11	38	126	3	42

* Proportions based on Canadian commercial samples.

** After release of data from N.M.F.S., Woods Hole.

Table 1 . Pollock Landings (t round fresh) by Country for Divisions 4VWX and Subareas 5 and 6, 1960 - 1984.

Year	Canada	Fed. Rep. Germany	German Dem. Rep.	Japan	Spain	USSR	United Kingdom	U.S.A.	Other	Total
1960	29470	-	-	-	783	-	-	10132	1	40386
1961	26323	-	-	-	982	-	-	10265	1	37571
1962	31721	-	-	-	-	-	-	7391	-	39112
1963	28999	126	-	-	-	906	28	6653	-	36712
1964	30007	208	-	-	-	4603	374	6006	55	41253
1965	27316	71	-	-	1361	2667	11	5303	-	36729
1966	18271	-	-	-	2384	9865	12	3791	-	34323
1967	17567	-	9	-	1779	644	1	3312	-	23312
1968	18062	-	-	-	1128	372	-	3280	7	22849
1969	15968	1188	2195	-	1515	227	-	3943	7	25043
1970	10753	3233	4710	40	532	527	-	3976	-	23771
1971	11757	633	6849	15	912	2216	-	4890	3	27275
1972	18022	475	4816	8	616	3495	4	5729	54	33219
1973	26990	1124	948	1570	3113	3092	-	6303	36	43176
1974	24975	149	2	40	1500	2348	48	8726	14	37802
1975	26548	236	96	-	709	2004	-	9318	124	39035
1976	23568	994	24	-	303	1466	-	10863	390	37608
1977	24654	368	-	1	2	268	-	13056	53	38402
1978	26801	-	-	110	-	502	-	17714	174	45301
1979	29967	7	-	19	-	1025	-	15541	72	46631
1980	35986	-	-	81	-	950	-	18280	131	55428
1981	40270	-	-	15	-	358	-	18171	90	58904
1982	38029	-	-	3	-	297	-	14361	128	52818
1983*	32535	-	-	6	-	226	-	13835	283	46885
1984*	33238	-	-	1	-	118	-	17613	123	51093

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

Table 2. Pollock landings (t, round fresh) for Divisions 4VWX, Subarea 5, and Statistical Area 6, 1960-84.

Year	4V	4W	4X	Total*			Total*			Total		
				4VWX	5Y	5Ze	5Zw	5Z	5NK	SA 5	SA 6	Total*
1960	1503	8354	20132	29988	6545	-	-	3834	18	10397	-	40386
1961	1864	13167	14321	29352	5017	-	-	3177	25	8219	-	37571
1962	1292	12045	19624	32961	2560	-	-	3576	15	6151	-	39112
1963	674	9152	20645	30471	2168	-	-	3947	10	6125	116	36712
1964	474	12488	19283	32245	1754	-	-	7250	-	9004	4	41253
1965	1205	13134	13390	27729	1933	-	-	7065	-	8998	2	36729
1966	788	11040	12648	24476	953	-	-	8846	-	9799	48	34323
1967	657	5836	8290	14783	1728	-	-	6790	14	8532	2	23319
1968	1013	5954	10656	17623	1416	3724	82	3806	-	5222	4	22849
1969	300	3938	10983	15221	4635	5025	162	5187	-	9822	-	25043
1970	649	2952	8194	11795	6281	5157	123	5280	-	11561	415	23771
1971	531	1802	9739	12072	7016	7096	142	7238	58	14312	891	27275
1972	597	3419	16190	20206	6419	6519	51	6570	-	12989	24	33219
1973	1004	5871	23225	30100	5202	6235	1618	7853	-	13055	21	43176
1974	307	4740	20362	25409	6106	6233	5	6238	-	12344	49	37802
1975	799	5697	18668	25164	6015	7848	3	7851	-	13866	5	39035
1976	1102	3424	19700	24226	6441	6915	11	6926	12	13379	3	37608
1977	1347	6082	14700	22129	8278	7846	79	7925	36	16239	34	38402
1978	2931	4910	15161	23002	12238	9943	17	9960	91	22289	16	45307
1979	4877	4963	18340	28180	9856	8356	11	8367	221	18444	7	46631
1980	3893	7511	20485	31889	11388	11883	20	11900	245	23536	3	55428
1981	2316	15678	18842	36836	12475	9298	21	9319	247	22041	27	58904
1982	2939	9373	21036	33348	9416	9903	15	9918	129	19463	3	52818
1983**	5463	5741	17997	29233	8448	5913	16	9204	-	17652	-	46885
1984**	5397	5784	19352	30775	12529	6578	23	7789	-	19130	-	51093

* Includes NK

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

Table 3a. Nominal catches of pollock in NAFO Division 4VW for Canadian (Maritimes and Quebec) OTB-1, 2 (otter trawls), TC (tonnage class) 4 and over combined.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	412	419	159	351	3584	1367	47	151	110	59	549	3107	10315
65	535	1034	505	571	2439	1320	34	2	10	1144	3052	927	11573
66	146	130	355	548	1385	474	0	29	355	223	610	673	4928
67	281	103	386	271	316	19	211	1075	255	930	91	529	4467
68	224	284	928	625	1017	960	34	62	39	87	551	492	5303
69	486	280	320	172	384	62	73	14	1	22	51	302	2167
1970	584	230	384	323	127	12	71	1	23	56	15	44	1870
71	116	87	218	195	22	16	9	16	50	33	40	85	887
72	53	31	138	187	16	57	1	15	63	138	105	239	1043
73	124	131	197	254	226	42	0	8	29	159	1228	757	3155
74	118	41	454	75	73	571	143	323	244	51	53	280	2426
75	193	112	43	874	359	82	408	45	106	402	660	607	3891
76	16	39	55	305	218	250	187	80	178	402	279	221	2230
77	81	87	345	397	175	362	192	627	1051	322	655	2500	6794
78	1758	193	773	758	797	431	605	211	36	144	74	119	5899
79	121	282	421	507	702	1419	1204	1683	38	483	523	666	8049
1980	584	636	615	480	371	1191	1924	363	243	1027	1100	865	9399
81	1971	252	927	753	439	442	343	118	703	546	1973	5195	13662
82	1902	76	388	293	402	543	860	1238	172	241	762	2858	9735
83	468	18	197	1167	2340	1606	934	1134	547	225	195	62	8893
84	112	115	689	1164	612	1086	797	596	649	1179	408	1314	8721
85	1072	474	35	106	69	85	-	-	-	-	-	-	1841

Table 3b. Nominal catches of pollock in NAFO Division 4X and Subarea 5 for Canadian (Maritimes and Quebec) OTB-1, 2 (otter trawls), TC (tonnage class) 4 and over combined.

Table 4a. Nominal catches of pollock in NAFO Division 4VW for Canadian (Maritimes and Quebec) OTB-1, 2 (otter trawls), TC (tonnage classes) 1, 2, and 3 combined.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	0	0	0	23	382	38	10	0	0	14	0	0	467
65	4	6	24	45	92	67	1	0	0	31	0	0	270
66	0	0	11	90	175	44	0	2	41	33	5	0	401
67	2	0	2	0	0	1	0	0	0	0	0	0	5
68	0	1	0	0	0	0	0	0	0	0	0	0	1
1970	1	2	5	0	0	0	0	0	0	0	0	0	8
71	0	0	1	3	0	0	0	0	0	0	0	0	4
72	0	0	0	0	1	0	0	8	1	0	0	0	10
73	0	0	0	0	0	0	0	0	0	0	2	0	2
74	0	0	0	0	12	9	14	4	17	3	20	0	79
77	0	0	0	0	2	0	0	0	0	0	0	0	2
78	0	1	0	8	11	12	0	0	2	0	0	0	34
79	0	0	0	0	2	2	0	4	0	0	0	2	10
1980	0	1	1	0	39	58	30	16	2	17	0	0	164
81	8	3	3	18	67	125	87	41	27	19	3	1	402
82	0	0	31	27	32	47	55	86	33	48	10	2	371
83	0	17	9	58	46	56	24	44	14	4	6	1	279
84	0	2	19	95	31	345	136	75	111	55	26	59	954
85	0	46	35	106	69	11	-	-	-	-	-	-	267

Table 4b. Nominal catches of pollock in NAFO Division 4X and Subarea 5 for Canadian (Maritimes and Quebec) OTB-1, 2 (otter trawls), TC (tonnage classes) 1, 2, and 3 combined.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	9	42	126	357	392	641	572	339	403	190	448	8	3527
65	24	365	233	668	755	417	449	363	513	445	80	6	4318
66	6	56	201	743	283	438	742	538	329	75	24	8	3443
67	24	46	132	563	148	314	461	464	262	176	13	14	2617
68	6	26	252	361	419	747	985	611	495	365	72	41	4380
69	11	57	69	106	392	634	1434	428	223	228	36	3	3621
1970	19	37	149	171	312	575	889	369	256	167	52	9	3005
71	1	13	16	215	268	483	727	232	249	391	54	24	2673
72	8	3	18	511	160	448	1077	364	370	372	159	1	3491
73	51	204	409	1258	1056	2385	1907	1414	391	143	83	1	9302
74	19	22	17	504	587	872	1251	688	371	154	33	33	4551
75	7	22	71	645	765	401	559	885	439	358	38	1	4191
76	0	14	88	937	506	890	790	658	354	290	62	9	4598
77	1	43	503	349	220	687	762	555	411	193	202	2	3928
78	6	207	65	677	710	424	632	421	685	230	43	3	4103
79	2	87	291	489	1072	973	1146	852	666	317	182	5	6082
1980	23	136	533	848	1029	1106	1370	633	212	546	55	30	6521
81	60	281	319	316	399	944	963	1008	511	651	238	176	5866
82	15	218	293	204	1330	964	1697	870	1119	503	76	53	7349
83	236	297	147	755	1958	2705	1794	454	523	195	80	69	9213
84	158	212	198	1223	1903	2550	3061	931	898	1243	722	131	13230
85	180	888	1317	2993	817	178	-	-	-	-	-	-	6373

Table 5a. Nominal catches of pollock in NAFO Division 4VW for Canadian (Maritimes and Quebec) gillnets, longlines, and other gears, TC (tonnage classes) 1, 2, and 3 combined.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	5	6	25	78	49	89	331	220	159	60	39	25	1086
65	0	1	0	0	0	25	172	93	46	26	4	1	368
66	0	0	0	0	1	62	96	54	35	19	0	0	267
67	0	0	0	0	1	28	108	65	33	49	13	0	297
68	0	0	0	0	0	41	70	202	179	52	18	1	563
69	0	0	0	0	1	50	158	167	374	229	38	2	1019
1970	0	0	0	0	2	12	9	23	99	87	38	0	270
71	0	0	0	0	5	23	35	55	30	24	18	0	190
72	0	0	0	0	1	24	41	71	98	64	8	0	307
73	0	0	0	1	2	9	35	55	61	66	5	7	241
74	0	0	0	0	1	33	24	47	87	32	16	4	244
75	0	0	0	0	1	2	10	66	28	19	15	16	157
76	0	0	0	1	0	19	46	34	50	49	6	0	205
77	0	0	1	1	14	9	32	12	94	53	37	1	254
78	1	4	1	0	16	219	72	28	95	24	6	0	466
79	0	3	4	9	61	44	52	117	61	59	63	26	499
1980	21	17	1	4	17	10	23	159	26	136	24	16	454
81	33	9	1	0	11	36	155	533	1690	107	21	169	2765
82	15	2	30	6	60	122	245	349	290	190	75	1	1385
83	2	11	33	20	38	100	284	363	373	133	80	1	1438
84	2	8	-	3	32	41	156	484	242	102	51	1	1121
85	2	5	8	18	20	1	-	-	-	-	-	-	54

Table 5b. Nominal catches of pollock in NAFO Division 4X and Subarea 5 for Canadian (Maritimes and Quebec) gillnets, longlines, and other gears, TC (tonnage classes) 1, 2, and 3 combined.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	20	41	54	281	590	1384	1476	1013	839	457	184	50	6389
65	53	1	44	113	204	419	903	442	284	206	60	1	2730
66	2	3	2	8	95	534	801	386	151	80	15	2	2079
67	3	2	2	52	37	308	401	283	222	135	66	0	1511
68	0	1	1	6	158	526	506	355	347	276	36	2	2214
69	1	0	3	6	126	620	544	390	277	226	176	19	2388
1970	1	1	2	6	41	250	329	170	190	250	196	23	1459
71	0	1	2	2	27	344	318	288	206	167	123	47	1525
72	1	2	2	0	28	275	378	232	211	250	344	40	1763
73	3	1	1	4	59	689	614	834	705	282	84	264	3540
74	4	12	3	5	74	700	781	435	350	254	266	1392	4276
75	5	1	24	19	92	342	489	634	592	525	476	2974	6173
76	35	14	49	64	287	1343	1420	850	828	522	114	1937	7463
77	1	7	75	173	322	635	609	560	648	351	209	958	4548
78	23	40	49	48	279	411	636	492	405	207	181	2217	4988
79	15	28	48	111	363	638	876	682	869	520	535	2478	7163
1980	100	58	65	269	1710	1180	1121	1630	1350	669	287	458	8897
81	133	68	241	94	155	589	1103	1451	611	1071	968	578	7062
82	25	8	306	399	561	1111	2084	2130	1926	503	265	269	9587
83	30	24	239	261	390	779	1813	1667	941	493	138	51	6826
84	33	102	52	83	256	940	1293	1254	1043	416	180	255	5907
85	70	77	112	239	373	53	-	-	-	-	-	-	924

Table 6a. Nominal catches of pollock in NAFO Division 4VW for Canadian (Maritimes and Quebec) gillnets, longlines, and other gears, TC (tonnage class) 4 and over combined.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	0	1	0	0	0	0	0	0	0	0	0	0	1
1973	0	2	0	0	0	0	0	0	0	0	0	0	2
74	0	2	1	0	0	0	0	0	0	0	0	0	3
75	0	0	0	1	0	0	0	0	0	0	0	0	1
76	0	0	0	0	8	0	1	0	0	0	0	0	9
77	0	0	14	3	1	0	0	0	4	14	0	0	36
78	214	16	0	72	91	38	102	0	0	0	0	6	539
79	22	0	0	0	0	0	0	1	0	0	0	0	23
1981	0	0	0	1	0	0	0	0	1	0	0	0	2
82	0	0	0	0	0	0	0	2	2	0	0	0	4
84	0	0	0	0	0	0	0	0	0	0	0	0	0
85	0	0	0	0	0	0	-	-	-	-	-	-	0

Table 6b. Nominal catches of pollock in NAFO Division 4X and Subarea 5 for Canadian (Maritimes and Quebec) gillnets, longlines, and other gears, TC (tonnage class) 4 and over combined.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	3	0	3	74	113	130	111	98	75	66	67	13	751
65	0	0	0	0	0	0	0	1	0	0	0	0	1
1970	0	0	0	0	0	0	0	0	0	3	0	0	3
76	0	0	0	0	2	0	6	0	2	0	0	0	10
77	5	1	3	3	0	3	5	0	0	22	0	0	42
78	0	15	9	20	56	20	20	0	0	0	19	0	159
1982	0	0	0	0	0	0	0	0	4	0	0	0	4
83	0	0	0	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	-	-	-	-	-	-	0

Table 7. US pollock catches for Subareas 3 & 6, and Division 4V.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1966	-	-	-	41	-	-	-	-	-	-	-	-	41
69	-	-	-	-	1	1	-	-	-	-	-	-	2
1971	-	-	-	-	-	1	-	-	-	-	1	-	2
72	-	-	-	-	1	-	-	-	-	-	1	-	1
73	-	-	-	-	-	-	-	-	-	2	-	-	2
77	-	-	-	-	-	-	-	-	-	-	-	-	1
1982	-	-	1	-	-	-	-	-	-	-	-	-	1
84	-	-	-	-	-	-	3	-	-	-	-	-	3

(b) OTB (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	2	1	-	1	-	-	-	-	-	-	-	-	4
66	-	-	-	-	-	-	4	-	-	-	155	-	159
68	-	149	-	-	-	-	-	-	-	-	-	-	149
69	-	-	-	-	-	-	-	-	6	-	133	26	165
1970	-	-	-	-	-	-	-	-	-	-	-	1	1
71	6	-	-	-	-	-	-	-	-	-	-	-	6
72	-	-	-	2	-	-	-	-	-	-	-	-	2
73	-	-	-	-	-	-	-	10	-	-	-	-	10
74	-	-	-	3	-	-	-	-	1	-	-	-	4
75	-	1	-	-	-	-	-	-	-	-	3	-	4
1981	-	5	-	1	-	-	-	-	-	-	-	-	6

(c) GN (TC 2,3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1981	-	-	-	-	20	-	-	-	-	-	-	-	20

(d) GN (TC 4+) -- no catches

(e) LL (TC 2, 3) -- no catches

(f) LL (TC 4+) -- no catches

(g) Other - (TC 2, 3) -- no catches

(h) Other - (TC 4+) -- no catches

Table 8. US pollock catches for Division 4W.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	-	-	-	-	-	1	1	-	-	-	-	-	2
65	-	-	-	-	13	-	-	1	2	10	-	-	26
66	-	-	-	-	-	-	1	-	-	-	-	-	1
67	-	-	-	-	-	-	1	-	-	-	-	-	1
70	-	-	-	1	-	-	1	-	-	-	-	-	1
71	-	-	2	-	-	-	-	-	-	-	-	-	2
72	-	-	1	-	-	-	-	-	-	-	-	-	1
73	-	-	2	-	-	-	-	-	-	-	-	-	2

(b) OTB (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	19	5	8	33	66	4	-	-	1	-	1	0	137
65	0	-	-	1	0	9	-	-	-	-	-	-	10
66	-	-	-	-	-	0	0	-	-	-	-	1	1
67	0	1	1	-	-	-	-	-	-	-	-	0	2
1970	-	-	1	12	26	-	-	-	-	-	-	-	39
71	-	-	17	3	-	-	-	-	-	-	0	0	20
72	-	-	16	12	2	-	-	1	-	7	4	4	46
73	0	0	4	1	-	-	8	0	4	23	2	8	50
74	0	4	-	-	5	6	16	3	2	2	0	4	42
75	1	8	-	4	2	1	-	1	6	1	6	16	46
76	0	-	32	44	-	1	2	-	1	1	-	0	81
77	-	-	1	1	-	1	-	-	2	-	-	1	6
78	-	-	4	1	-	-	-	-	-	-	0	0	5

(c) LL (TC 2, 3) -- no catches

(d) LL (TC 4+) -- no catches

(e) Other - (TC 2, 3) -- no catches

(f) Other - (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1973	-	-	-	-	-	-	-	-	-	8	-	-	8

(g) GN (TC 2, 3) -- no catches

(h) GN (TC 4+) -- no catches

Table 9. US pollock catches for Division 4X.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	17	1	15	69	25	19	129	125	41	21	12	0	474
65	-	-	3	13	42	41	20	39	21	9	9	-	197
66	-	-	1	1	8	1	25	220	30	0	1	1	288
67	0	3	4	12	43	20	114	80	14	8	6	-	304
68	-	4	1	8	4	14	2	10	8	4	2	-	57
69	11	15	4	9	3	0	13	47	8	3	-	-	113
1970	0	6	3	11	17	1	-	4	-	1	48	23	114
71	-	7	1	-	1	2	0	2	2	5	14	-	34
72	-	-	-	-	-	1	1	12	30	21	3	-	68
73	14	3	-	-	6	10	5	10	-	-	-	-	48
74	5	1	9	21	-	-	-	0	27	7	18	-	88
75	17	6	7	2	9	12	-	14	26	-	26	0	119
76	0	0	2	8	3	4	37	23	-	-	-	-	77
77	-	2	-	-	6	12	1	2	12	42	-	-	77
78	6	3	-	-	0	-	-	-	5	-	-	-	14
79	-	-	-	-	-	-	3	-	-	-	-	-	3
1980	-	-	-	-	-	-	0	-	-	-	-	-	0
81	-	-	-	-	-	-	2	5	5	-	3	-	15
82	-	16	5	6	-	-	-	28	2	1	2	-	60
83	5	2	5	24	45	7	13	6	9	7	0	0	123
84	0	4	13	18	27	11	5	16	10	10	0	11	125

(b) OTB (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	194	52	117	157	15	1	43	32	4	5	8	1	629
65	3	3	16	53	40	1	7	11	13	6	1	1	155
66	0	-	-	54	0	3	7	252	9	-	1	1	327
67	2	1	3	36	67	8	70	16	5	5	5	1	219
68	-	12	4	15	5	17	6	14	6	5	1	1	86
69	-	12	25	13	0	105	85	81	2	0	1	-	324
1970	-	2	22	54	11	4	5	1	1	24	73	35	232
71	1	16	1	50	4	1	0	2	5	-	19	3	102
72	15	10	20	67	21	7	177	12	24	10	12	1	376
73	15	31	81	229	49	5	4	-	5	18	11	3	451
74	11	4	86	237	154	2	4	3	13	19	8	3	544
75	148	88	143	50	50	4	2	19	5	3	29	31	572
76	17	33	72	42	60	39	69	39	34	19	32	4	460
77	18	16	23	22	17	11	8	21	33	51	13	3	236
78	21	45	11	10	23	8	4	21	2	4	1	-	150
79	8	0	27	7	15	1	4	3	9	10	26	5	115
1980	16	13	43	42	29	5	5	6	1	4	157	60	381
81	21	15	5	3	0	2	8	6	5	7	61	5	138
82	12	58	17	15	15	2	12	11	5	8	17	34	206
83	39	21	37	101	75	55	8	1	25	16	6	22	406
84	41	1	15	32	184	62	20	27	48	2	1	-	433

(c) GN (TC 2, 3) -- no catches

Table 9. Continued.

- (d) GN (TC 4+) -- no catches
- (e) LL (TC 2, 3) -- no catches
- (f) LL (TC 4+) -- no catches
- (g) Other (TC 2, 3) -- no catches
- (h) Other (TC 4+) -- no catches

Table 10. US pollock catches for Division 5Y.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	350	25	15	24	28	67	22	68	42	103	163	244	1151
65	36	22	20	23	25	16	13	133	47	146	174	754	1409
66	32	18	20	22	18	37	19	67	13	38	164	84	532
67	40	31	17	26	48	42	23	20	25	101	67	132	572
68	100	24	4	9	31	20	56	9	7	48	146	156	610
69	83	20	6	12	15	40	23	37	39	83	139	137	634
1970	88	71	40	27	26	23	43	15	27	58	103	122	643
71	142	56	27	42	26	36	17	16	24	47	171	277	881
72	125	18	53	30	29	44	24	23	66	50	512	1042	2016
73	104	63	51	40	52	96	61	105	52	42	447	804	1917
74	405	144	44	39	42	93	134	56	60	172	561	704	2454
75	240	136	92	94	57	105	52	63	57	78	318	394	1686
76	122	100	41	75	149	167	140	125	202	145	202	509	1975
77	342	77	35	34	137	160	140	114	129	124	347	436	2075
78	248	360	134	222	160	206	76	91	32	100	561	645	2835
79	149	83	93	87	183	117	74	114	108	245	209	136	1598
1980	193	240	117	206	158	216	209	242	330	233	231	480	2855
81	562	214	91	114	129	105	124	181	247	252	278	832	3129
82	139	71	212	161	266	170	212	136	262	239	356	380	2604
83	166	84	129	48	299	381	176	219	228	212	303	257	2502
84	446	255	236	143	424	177	147	114	186	279	446	824	3677

(b) OTB (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	11	5	9	3	2	10	0	1	3	9	1	45	99
65	5	3	4	2	1	1	0	4	1	8	12	29	70
66	16	1	-	0	0	-	-	0	8	1	13	5	44
67	3	10	12	1	5	3	-	0	5	8	6	33	86
68	43	19	16	8	2	-	2	1	1	2	4	26	124
69	49	45	54	3	1	2	21	10	4	32	42	121	384
1970	77	43	48	32	17	6	1	1	8	15	43	63	354
71	105	48	57	13	7	4	1	4	2	15	37	53	346
72	31	11	19	12	10	131	13	2	11	24	18	105	387
73	69	32	12	34	29	16	20	4	3	37	97	120	473
74	96	92	17	33	35	3	12	37	39	18	65	200	647
75	62	96	63	154	38	21	7	12	16	21	32	48	570
76	39	22	19	33	61	41	50	25	41	45	58	82	516
77	79	33	31	48	54	40	31	34	34	43	86	70	583
78	55	73	176	180	102	65	54	45	53	58	110	111	1082
79	47	33	71	99	107	128	51	125	112	124	80	44	1021
1980	40	342	87	137	167	76	72	81	99	146	90	96	1433
81	86	37	42	67	229	95	31	63	85	178	161	118	1192
82	95	36	58	140	242	206	193	184	145	160	204	166	1829
83	82	116	153	51	319	277	109	167	119	135	197	243	1968
84	108	151	238	294	194	103	45	32	28	118	298	867	2476

Table 10. Continued.

(c) GN (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	1	0	1	2	2	15	13	28	41	46	84	-	233
65	-	-	0	2	11	3	8	38	20	103	18	0	203
66	0	-	0	1	8	12	10	29	53	177	16	-	306
67	-	-	0	0	1	35	22	20	82	230	39	1	430
68	0	-	0	5	32	61	37	22	53	242	42	0	494
69	0	0	0	2	16	18	2	19	29	36	27	2	151
1970	-	0	2	2	13	5	4	26	34	77	110	12	285
71	-	-	1	1	5	2	1	33	18	52	162	78	353
72	4	0	6	8	22	47	23	30	18	174	317	48	697
73	1	1	5	9	64	72	26	30	23	151	246	346	974
74	187	59	120	60	119	98	180	156	130	154	303	299	1865
75	159	123	50	88	202	350	235	123	314	164	468	337	2613
76	290	127	28	96	269	487	384	304	266	139	260	527	3177
77	443	304	121	154	177	311	611	435	326	270	437	918	4507
78	424	274	289	421	482	311	491	749	358	518	1351	1498	7166
79	717	95	143	111	249	403	658	720	509	279	810	1075	5769
1980	344	64	59	152	188	372	617	497	298	404	909	1294	5198
81	592	117	348	404	367	320	418	332	235	734	1673	1168	6708
82	199	61	90	48	26	159	486	398	375	411	991	779	4023
83	86	9	41	50	88	277	458	437	157	260	541	502	2906
84	316	81	94	104	90	149	329	376	247	523	816	1172	4297

(d) GN (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1972	-	-	-	-	-	-	-	-	1	-	-	-	1
78	-	-	-	-	-	10	-	-	-	-	-	-	10
79	-	-	-	-	9	4	7	6	13	2	2	14	57
1980	8	1	-	-	-	-	-	-	-	-	-	-	9

(e) LL (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	0	0	0	6	9	17	1	6	8	8	52	16	123
65	5	0	-	0	20	17	4	1	0	4	2	-	53
66	0	0	-	0	3	8	13	4	5	6	1	2	42
67	0	0	0	-	0	7	8	1	2	6	0	0	24
68	0	-	-	-	1	20	19	5	6	2	1	0	54
69	1	0	0	0	10	34	24	2	3	2	12	0	88
1970	2	0	0	0	0	17	2	2	5	5	12	3	48
71	1	0	0	2	2	5	1	12	6	5	35	1	70
72	3	0	1	0	3	4	4	6	5	8	2	3	39
73	9	1	1	2	7	18	37	19	11	45	4	3	157
74	5	7	3	8	3	7	20	12	15	11	3	15	109
75	5	3	2	5	16	111	91	68	10	9	3	19	342
76	2	10	3	6	10	12	7	20	5	1	4	3	83
77	3	1	6	8	28	17	66	20	7	1	8	24	189

Table 10. Continued.

(e) LL (TC 2, 3) (continued)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1978	8	5	1	4	21	2	46	27	0	1	0	2	117
79	0	0	5	25	6	26	15	14	-	0	0	0	91
1980	4	3	1	8	6	4	1	4	22	22	97	100	272
81	49	8	2	13	11	3	3	26	18	5	26	36	200
82	5	0	2	3	2	3	3	1	0	-	3	1	23
83	1	1	1	0	0	0	0	0	0	0	-	-	3
84	0	0	0	0	0	0	0	0	0	0	-	-	0

(f) LL (TC 4+) -- no catches

(g) Other (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	-	-	-	1	0	6	1	-	-	-	-	9	17
65	-	-	-	-	8	18	-	-	-	2	0	1	29
66	-	-	-	-	13	12	0	-	-	-	-	0	25
67	-	-	-	-	13	21	0	-	-	0	4	-	38
68	-	-	-	2	2	29	-	-	-	-	0	-	33
69	-	-	-	-	8	1	0	-	-	-	0	-	9
1970	-	-	-	-	17	7	-	3	0	0	0	-	27
71	-	-	-	-	12	9	0	8	-	9	-	-	38
72	-	-	-	7	16	0	0	-	-	-	-	-	23
73	-	-	-	-	8	0	0	0	0	0	0	-	8
74	-	-	-	-	2	2	-	-	-	-	0	0	4
75	-	-	-	-	1	-	-	-	-	-	-	0	1
76	-	-	-	-	-	-	0	-	-	1	0	-	1
77	-	-	-	-	-	0	-	0	-	-	0	-	0
78	-	-	-	-	0	0	0	-	-	0	0	2	2
79	-	-	-	0	3	0	0	0	-	0	0	0	3
1980	-	-	-	0	0	0	1	-	0	-	0	-	1
81	-	-	-	-	-	0	-	-	-	-	-	-	0
82	-	0	0	0	1	1	-	-	-	-	0	3	5
83	0	0	0	0	0	1	0	0	0	0	0	0	1
84	0	0	0	0	-	1	0	0	0	0	0	0	1

(h) Other (TC 4+)

Table 11. US catches for Unit Area 5Zeg.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	102	118	35	20	5	12	15	26	37	52	63	72	557
65	130	87	19	12	4	20	12	10	24	29	74	128	549
66	65	23	15	5	4	25	8	27	20	30	40	18	280
67	36	13	36	11	14	5	13	19	42	39	56	168	452
68	139	44	30	3	4	3	22	8	49	39	75	28	444
69	51	19	6	19	6	15	17	18	80	64	133	165	593
1970	24	44	1	7	20	13	43	14	43	60	66	173	508
71	89	38	4	11	7	5	35	28	50	67	124	151	609
72	123	55	14	14	51	23	14	43	60	86	42	68	593
73	127	85	41	45	26	24	25	32	96	169	120	140	930
74	81	19	127	68	15	76	88	145	84	134	72	56	965
75	43	91	38	33	18	103	113	116	185	166	76	76	1058
76	44	82	34	71	98	80	157	160	351	182	157	114	1530
77	43	106	27	192	274	223	202	167	198	230	65	88	1815
78	36	82	14	99	80	272	113	166	132	217	196	155	1562
79	134	81	47	24	131	283	115	129	155	141	127	85	1452
1980	125	112	143	76	382	288	294	205	177	168	119	36	2125
81	112	64	47	167	149	199	211	117	56	113	113	55	1403
82	93	98	37	108	102	100	173	135	322	178	241	138	1725
83	156	117	49	40	52	171	308	155	152	72	67	166	1505
84	222	327	116	26	26	119	168	126	97	57	39	167	1490

(b) OTB (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	24	41	8	2	0	0	1	5	29	7	5	20	142
65	11	8	5	2	1	0	1	1	5	13	15	32	94
66	7	11	13	2	3	10	2	10	10	6	16	9	99
67	18	13	38	9	3	1	3	6	74	22	12	26	225
68	47	24	16	1	1	-	1	5	83	25	183	62	448
69	96	3	8	9	-	10	27	14	103	31	76	116	493
1970	122	38	-	-	1	2	5	10	39	20	84	451	772
71	387	8	12	-	6	6	3	14	88	62	81	205	872
72	33	11	0	6	3	15	11	17	51	52	15	20	234
73	29	17	15	13	1	3	6	15	39	53	90	60	341
74	25	1	21	2	1	7	53	49	51	83	31	63	387
75	7	9	21	30	1	30	59	168	91	86	40	61	603
76	16	11	32	33	50	54	76	70	179	74	62	37	694
77	16	14	4	77	136	109	116	113	8	47	68	46	754
78	26	4	34	35	14	61	29	126	115	94	76	41	655
79	47	44	12	44	39	46	45	41	87	80	59	57	601
1980	34	8	19	31	59	63	87	141	117	99	54	40	752
81	23	55	49	66	60	47	6	7	38	27	14	38	430
82	43	90	12	15	15	15	41	48	45	46	89	95	554
83	84	30	14	37	20	59	12	85	67	24	44	10	486
84	55	26	20	8	1	66	53	62	9	28	28	102	458

Table 11. Continued.

(c) GN (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	-	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-	-
1970	-	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	38	-	-	38
75	-	-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	1	1	-	-	-	-	-	2	-	-	4
77	-	-	-	6	2	-	-	4	-	36	-	-	48
78	-	-	-	15	7	-	-	22	7	-	-	-	51
79	-	-	-	2	21	12	47	51	49	120	169	1	472
1980	87	14	40	30	106	112	125	64	76	28	26	37	745
81	46	25	20	86	123	223	53	29	16	20	24	11	676
82	2	19	16	5	80	44	50	22	22	25	13	6	304
83	9	-	2	1	15	69	36	31	13	7	8	11	202
84	31	9	0	1	23	37	34	60	41	84	55	44	419

(d) GN (TC 4+) -- no catches

(e) LL (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	4	1	1	1	8	15	6	5	4	7	2	0	54
65	1	1	1	0	9	6	6	11	7	12	4	2	60
66	3	1	0	1	9	34	12	4	2	3	5	1	75
67	1	0	0	2	17	11	6	3	8	3	2	1	54
68	1	0	0	2	17	11	6	3	8	3	2	1	54
69	2	1	0	4	19	5	4	10	9	4	2	1	61
1970	1	0	0	1	17	2	7	10	7	8	1	0	54
71	1	1	0	3	12	20	11	14	7	5	1	0	75
72	1	1	0	1	12	3	8	9	4	5	1	0	45
73	0	0	0	5	12	15	11	18	11	5	4	2	83
74	4	1	1	12	9	13	20	13	9	6	2	7	97
75	0	1	5	5	14	9	7	8	6	12	7	1	75
76	0	2	2	35	15	2	5	7	3	1	1	0	73
77	0	0	5	30	0	12	17	6	0	-	2	1	73
78	0	0	1	30	26	52	19	57	27	19	36	16	283
79	3	0	9	35	69	63	78	65	33	25	22	5	407
1980	27	20	25	10	54	9	19	1	0	0	-	0	165
81	0	0	5	3	11	27	10	7	3	2	3	3	74
82	0	1	10	3	8	4	13	3	1	4	4	5	56
83	1	0	2	4	9	21	11	12	2	2	12	0	76
84	9	8	2	1	4	10	2	6	1	2	0	1	46

(f) LL (TC 4+) -- no catches

Table 11. Continued.

(g) Other (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	-	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	1	-	-	-	-	-	-	1
66	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-	-
1970	-	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	0	-	-	-	-	-	0	0
73	0	-	-	0	0	-	-	-	-	-	-	-	0
74	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-	-	-
77	-	0	-	-	-	-	-	1	0	0	0	0	1
78	0	-	-	0	1	1	1	1	0	1	0	-	3
79	0	-	0	1	1	1	1	0	0	0	0	0	4
1980	0	0	0	15	17	6	0	0	0	0	0	0	38
81	0	0	0	0	0	0	1	0	1	0	0	0	2
82	-	0	0	1	0	0	0	0	0	0	-	0	1
83	0	0	0	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	1	0	-	0	-	-	1

(h) Other (TC 4+) -- no catches

Table 12. US catches for Unit Area 5Zeh.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	125	39	11	17	27	23	5	13	19	46	372	74	771
65	88	56	49	21	20	20	15	7	11	29	151	282	749
66	69	20	5	9	13	17	13	3	4	58	200	35	446
67	26	8	5	0	3	9	17	5	9	16	12	20	130
68	17	9	6	1	17	10	18	5	2	3	7	46	141
69	33	8	5	5	10	11	6	6	4	0	28	22	138
1970	44	41	18	40	12	6	12	10	13	3	9	19	227
71	27	19	17	55	46	16	6	5	16	18	82	183	490
72	33	45	41	41	18	14	21	5	17	12	28	16	291
73	7	9	42	20	32	21	5	6	0	5	16	2	165
74	5	11	15	79	58	39	26	12	11	5	11	11	283
75	9	4	17	60	33	60	51	53	2	2	40	17	348
76	19	6	64	104	126	45	25	2	13	13	19	4	440
77	4	1	47	60	79	63	97	155	117	28	115	61	827
78	4	79	151	138	86	193	91	200	87	117	200	49	1395
79	21	27	35	80	280	138	100	231	141	124	188	10	1375
1980	6	26	31	50	138	117	86	154	124	59	92	31	914
81	84	45	108	43	109	100	46	59	52	48	55	26	775
82	32	111	151	94	23	16	72	26	51	53	47	60	736
83	62	59	29	56	39	72	64	30	20	16	14	20	481
84	44	51	29	38	52	162	36	59	25	25	20	23	564

(b) OTB (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	59	7	5	2	6	3	-	5	4	33	156	124	404
65	52	39	10	4	2	7	7	4	5	13	325	162	630
66	278	31	4	1	9	7	14	11	2	30	111	81	579
67	12	10	8	1	5	3	4	3	6	5	32	48	137
68	56	7	5	0	3	2	5	1	1	1	3	74	158
69	27	5	3	1	3	6	0	8	1	5	7	288	354
1970	161	87	32	20	6	9	5	3	7	3	4	3	340
71	13	32	9	21	9	2	2	2	1	4	28	57	180
72	35	23	26	19	4	5	1	0	2	3	14	48	180
73	1	6	14	2	10	2	1	0	1	1	9	13	60
74	8	4	17	38	11	9	4	17	1	3	3	4	119
75	23	10	10	39	15	14	8	4	-	44	36	14	217
76	38	15	60	39	37	10	4	11	29	49	14	24	330
77	13	6	13	41	31	13	32	47	35	30	27	39	327
78	3	42	99	55	17	82	44	73	60	23	54	86	638
79	48	27	9	102	96	47	23	117	83	122	63	62	799
1980	4	16	35	53	82	38	39	109	134	113	159	88	870
81	119	52	70	113	87	37	35	20	21	67	67	92	780
82	70	49	49	54	27	34	26	53	28	47	56	88	581
83	187	79	98	102	25	42	96	50	39	36	104	25	883
84	104	59	87	61	37	100	44	20	35	48	59	38	692

Table 12. Continued.

(c) GN (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	-	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-	-
1970	-	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	1	-	1
78	-	-	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	94	-	-	-	94
81	-	-	-	-	-	-	-	-	-	-	-	-	-
82	-	-	-	-	3	-	6	-	-	-	-	-	9
83	-	-	-	-	-	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	9	-	-	-	-	9

(d) GN (TC 4+) -- no catches

(e) LL (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1980	-	12	-	-	-	-	-	-	-	-	-	-	12

(f) LL (TC 4+) -- no catches

(g) Other (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1978	-	-	-	4	-	-	-	-	-	-	-	-	4
1979	-	-	-	-	-	-	-	-	-	-	1	-	1

(h) Other (TC 4+) -- no catches

Table 13. US catches for Unit Area 5Zej.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	-	-	8	20	14	22	3	3	2	4	5	2	83
65	3	14	10	17	6	4	2	0	3	0	9	30	98
66	0	2	10	15	4	1	2	0	0	3	5	20	62
67	17	11	4	7	3	0	0	1	0	3	11	1	58
68	10	9	1	3	4	-	0	1	2	7	8	0	45
69	4	13	-	2	2	4	0	3	1	3	7	-	39
1970	-	2	1	1	-	0	4	3	3	5	2	3	24
71	1	14	2	5	2	0	5	2	1	3	13	28	76
72	13	4	9	1	-	15	1	8	1	6	37	7	102
73	1	1	1	0	3	22	35	15	-	-	-	-	78
74	0	1	3	4	3	2	1	18	-	-	-	-	32
75	3	0	0	1	3	3	6	24	-	-	1	2	43
76	2	22	8	6	6	17	1	-	-	1	0	0	63
77	0	1	16	12	7	17	6	3	1	1	6	4	74
78	0	13	9	16	34	18	1	8	6	28	25	3	161
79	0	0	10	57	7	29	19	21	35	47	15	37	277
1980	55	47	11	32	20	12	12	5	10	3	0	-	207
81	12	34	11	4	4	24	34	56	8	6	28	4	225
82	13	64	35	11	13	20	41	23	7	4	17	14	262
83	35	32	5	6	9	21	22	5	1	0	1	1	138
84	10	6	12	3	19	76	22	22	2	19	0	0	191

(b) OTB (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	109	87	133	150	23	32	55	28	44	58	208	7	934
65	140	139	144	78	7	3	2	5	26	9	52	60	665
66	34	12	74	54	32	2	1	43	8	31	29	70	390
67	73	85	121	6	4	1	-	17	2	39	26	1	375
68	25	52	38	19	1	3	5	31	18	3	7	-	202
69	31	141	196	33	1	1	14	2	4	4	5	-	432
1970	75	89	42	-	2	-	10	18	4	5	2	1	248
71	48	213	59	4	93	60	7	13	2	0	15	1	515
72	29	129	9	8	3	60	28	112	18	14	72	17	499
73	38	59	37	-	6	83	94	36	19	-	-	14	386
74	99	195	6	4	4	24	83	49	40	2	19	15	540
75	8	112	4	4	1	56	50	71	47	15	23	43	434
76	101	201	47	4	4	49	5	2	1	0	0	2	416
77	36	61	31	9	12	20	11	9	27	11	6	6	239
78	32	35	38	18	16	13	4	0	29	66	25	-	276
79	8	8	6	46	11	23	11	49	25	22	27	1	237
1980	44	120	18	28	16	46	17	8	12	5	25	4	343
81	68	271	37	20	26	50	88	97	25	165	93	34	974
82	104	68	151	74	5	92	102	27	44	177	96	36	976
83	105	150	50	102	81	346	169	106	45	245	261	229	1889
84	168	156	83	115	85	0	371	228	343	331	557	32	2469

Table 13. Continued.

(c) GN (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	-	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-	-
1970	-	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	60	-	60
73	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	2	-	-	2
78	-	-	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	9	-	-	-	-	9
1980	-	-	-	-	-	1	-	-	-	-	-	-	1
81	-	-	-	-	-	-	-	1	-	-	-	-	1
82	-	-	-	-	-	-	-	-	-	-	-	-	-
83	-	-	-	-	-	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-	-	-	-	-	-

(d) GN (TC 4+) -- no catches

(e) LL (TC 2, 3) -- no catches

(f) LL (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1982	-	-	-	-	1	-	-	-	-	-	-	-	1

(g) Other (TC 2, 3) -- no catches

(h) Other (TC 4+) -- no catches

Table 14. US pollock catches for Unit Area 5Zem.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	0	1	-	5	5	2	-	-	0	-	0	9	22
65	0	2	1	9	10	0	0	-	-	0	0	-	22
66	0	0	1	2	3	0	-	-	-	0	0	0	6
67	0	0	0	2	4	0	-	-	-	-	0	4	10
68	0	-	1	4	2	-	0	2	-	-	0	0	9
69	14	-	4	8	2	0	-	-	0	-	8	3	39
1970	3	1	4	5	7	1	0	0	-	-	0	0	21
71	2	6	24	11	7	2	1	-	1	-	0	1	55
72	4	9	5	3	2	2	2	0	1	8	1	3	40
73	0	2	1	3	1	3	0	0	0	-	-	0	10
74	10	5	13	8	6	2	1	0	0	1	0	0	46
75	3	9	5	12	7	38	5	1	0	0	1	2	83
76	4	6	16	28	17	3	1	1	0	0	0	1	77
77	6	14	21	40	38	12	6	15	7	4	4	6	173
78	6	19	29	57	28	10	5	5	3	3	19	7	191
79	4	5	22	5	10	6	4	5	3	2	3	3	72
1980	5	13	6	10	17	16	5	4	3	2	4	2	87
81	24	43	13	10	14	10	5	3	3	9	1	9	144
82	6	13	18	10	12	7	4	5	1	13	9	4	102
83	7	14	3	2	5	25	7	2	1	-	0	1	67
84	4	14	3	6	6	14	1	2	1	0	1	2	54

(b) OTB (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	7	22	10	17	38	2	1	-	1	4	2	17	121
65	44	27	19	47	43	3	0	1	-	1	2	3	190
66	15	27	45	16	20	2	11	0	0	1	5	9	151
67	0	26	3	4	13	9	2	4	0	-	1	16	78
68	3	0	14	7	13	1	1	2	-	1	2	13	57
69	15	0	17	18	4	1	-	-	-	-	-	-	55
1970	2	0	2	1	8	-	-	1	-	-	0	-	14
71	5	13	5	13	15	10	4	1	-	-	4	-	70
72	5	2	1	0	-	12	-	19	-	3	0	8	50
73	1	3	1	3	0	1	1	1	-	2	0	3	16
74	2	3	1	4	4	8	0	3	-	0	1	5	31
75	8	1	1	4	7	6	1	-	-	-	1	0	29
76	7	14	3	4	3	10	0	1	2	-	0	-	44
77	1	3	6	18	9	1	0	1	0	-	1	0	40
78	7	6	10	39	20	8	6	1	14	1	5	0	117
79	4	18	3	1	14	3	3	3	-	9	0	0	58
1980	8	26	25	5	6	10	2	3	5	1	0	9	100
81	24	73	20	19	8	5	10	5	2	2	17	1	186
82	6	5	25	4	8	3	1	5	2	0	2	0	61
83	5	24	54	2	5	16	3	2	0	-	-	2	113
84	18	26	12	9	9	3	22	0	3	0	1	2	105

(c) GN (TC 2, 3) -- no catches

Table 14. Continued.

(d) GN (TC 4+) -- no catches

(e) LL (TC 2, 3) -- no catches

(f) LL (TC 4+) -- no catches

(g) Other (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1981	-	-	-	1	-	-	-	-	-	-	-	-	1

(h) Other (TC 4+) -- no catches

Table 15. US pollock catches for Unit Area 5Zen.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	0	-	-	1	1	4	0	-	-	-	0	1	7
65	1	2	1	2	2	0	0	-	4	-	1	3	16
66	5	0	1	1	2	0	1	0	1	-	0	0	11
67	2	1	3	0	-	1	0	2	-	-	1	2	12
68	0	-	1	4	2	-	0	2	-	-	0	0	9
69	-	0	1	0	0	0	-	-	-	-	3	3	4
1970	2	0	0	2	0	0	-	-	-	0	-	0	4
71	-	1	4	1	4	1	0	0	-	-	-	0	11
72	1	1	5	1	2	6	-	0	-	-	1	0	17
73	2	1	-	2	2	0	0	0	-	0	3	1	11
74	0	4	19	19	5	-	1	2	-	-	0	0	50
75	5	13	24	9	3	3	1	0	-	-	-	1	59
76	2	8	22	13	2	4	0	-	-	0	0	1	52
77	3	11	29	30	19	6	2	2	1	2	0	0	105
78	4	9	23	15	20	20	0	0	-	-	1	0	92
79	1	1	6	17	16	4	0	4	1	0	-	1	51
1980	3	9	16	24	39	3	5	3	-	0	0	0	102
81	12	8	21	20	14	4	1	1	0	0	1	2	84
82	2	4	8	10	3	3	0	2	0	-	0	6	38
83	1	1	3	6	5	1	0	0	0	0	0	1	18
84	4	3	6	9	5	12	0	0	0	-	-	-	39

(b) OTB (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	0	-	-	1	0	1	-	-	-	-	1	3	6
65	3	0	1	1	0	0	0	-	1	0	12	28	46
66	7	0	0	0	3	1	0	0	-	-	0	1	12
67	11	1	0	0	2	1	0	-	-	-	-	1	16
68	8	0	-	0	2	0	0	0	-	0	1	-	11
69	4	-	0	0	0	0	0	-	-	-	-	-	4
1970	1	-	0	0	0	0	-	-	-	0	-	1	2
71	53	1	7	2	9	0	-	-	-	-	-	3	75
72	-	0	-	0	0	1	0	0	-	-	3	4	8
73	1	0	-	0	0	0	-	-	-	-	-	-	1
74	-	2	3	3	1	-	-	-	-	0	0	-	9
75	0	4	2	2	1	1	-	-	-	-	2	-	12
76	0	1	1	-	1	-	-	-	-	-	0	0	3
77	2	2	-	0	-	0	-	0	-	-	-	3	7
78	1	-	1	3	1	0	-	-	-	-	-	-	6
79	-	2	1	0	2	1	0	-	-	-	-	1	7
1980	0	0	2	3	15	22	0	1	1	-	-	0	44
81	5	2	6	11	3	7	0	-	-	-	1	1	36
82	1	1	3	3	4	0	-	-	11	-	0	0	23
83	2	1	1	4	5	0	0	0	-	-	-	0	13
84	1	2	3	4	2	2	-	-	-	-	0	0	14

(c) GN (TC 2, 3) -- no catches

Table 15. Continued.

- (d) GN (TC 4+) -- no catches
- (e) LL (TC 2, 3) -- no catches
- (f) LL (TC 4+) -- no catches
- (g) Other (TC 2, 3) -- no catches
- (h) Other (TC 4+) -- no catches

Table 16. US pollock catches for Unit Area 5Zeo.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	1	0	0	0	0	1	1	0	0	0	0	0	3
65	0	0	0	0	1	-	0	0	1	2	1	0	5
66	1	2	0	1	33	1	3	2	1	3	1	3	51
67	2	0	0	1	0	1	1	1	1	0	0	-	7
68	0	0	0	0	0	-	1	2	0	-	-	1	4
69	0	1	-	0	1	0	0	0	-	-	0	0	2
1970	1	1	-	0	0	0	0	1	-	0	0	0	3
71	0	0	0	1	3	0	0	2	2	0	0	2	10
72	0	0	2	0	1	0	1	1	0	2	1	3	11
73	0	1	4	1	2	0	1	0	9	2	2	0	22
74	0	2	6	8	3	1	0	-	0	3	0	2	25
75	2	2	6	2	1	2	-	-	1	0	1	1	18
76	1	2	14	18	19	10	17	12	-	-	5	1	99
77	3	5	30	28	31	5	7	2	4	0	0	1	116
78	1	10	8	27	9	12	7	2	0	0	1	6	83
79	3	1	4	10	16	2	1	2	1	0	3	4	47
1980	2	6	22	50	23	4	1	9	0	0	0	3	120
81	4	3	19	22	13	18	1	3	0	1	1	1	86
82	0	2	10	4	8	10	1	1	1	0	0	1	38
83	2	1	3	11	9	1	0	0	0	0	1	-	28
84	4	1	5	6	7	0	0	1	1	0	0	0	25

(b) OTB (TC 4+)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1964	-	-	0	-	-	-	-	-	-	-	-	-	-
65	2	-	0	-	0	-	0	0	-	0	0	2	4
66	1	-	-	0	0	0	0	-	-	0	-	0	1
67	1	-	-	0	0	0	0	-	-	0	-	0	1
68	0	0	-	-	-	-	1	1	-	-	-	2	4
69	-	-	-	-	-	0	0	-	4	1	-	1	6
1970	-	-	-	-	-	-	0	-	0	1	-	-	1
71	-	-	-	-	0	0	0	-	-	-	1	-	1
72	-	-	-	1	1	-	1	-	-	1	1	-	5
73	-	-	-	1	2	1	-	-	-	1	-	0	5
74	1	1	-	-	2	2	3	-	-	6	0	0	15
75	-	-	-	-	-	-	-	-	-	-	2	2	2
76	1	-	-	4	7	2	-	-	-	0	-	0	14
77	0	4	14	1	-	-	-	-	-	-	1	1	21
78	6	0	1	-	1	1	-	-	-	-	1	0	10
79	0	9	0	0	18	-	-	0	1	-	0	1	29
1980	0	2	8	9	11	19	5	-	-	0	-	0	54
81	0	3	4	1	8	-	0	1	-	0	-	0	17
82	-	0	0	0	1	1	0	-	0	-	0	0	2
83	1	0	0	2	1	1	0	-	0	-	0	0	5
84	0	0	1	1	0	-	0	-	-	0	-	0	2

Table 16. Continued.

(c) GN (TC 2, 3)

(d) GN (TC 4+) -- no catches

(e) LL (TC 2, 3) -- no catches

(f) LL (TC 4+) — no catches

(g) Other (TC 2, 3) -- no catches

(h) Other (TC 4+)

Table 17. US pollock catches for Subdivision 5Zw.

(a) OTB (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1968	0	0	0	0	0	1	0	0	-	0	0	0	1
69	0	0	0	0	4	1	0	0	-	0	0	0	5
1970	0	0	0	0	2	1	0	0	-	0	0	0	3
71	0	0	0	0	0	0	0	-	0	0	0	0	0
72	0	0	0	0	1	0	0	-	-	0	0	0	1
73	0	0	0	0	0	-	-	-	-	0	0	1	1
74	0	0	0	1	0	0	0	0	0	0	0	0	1
75	0	0	0	0	0	0	0	-	0	0	1	0	1
76	0	0	0	1	0	0	-	-	-	-	1	-	2
77	0	0	0	5	3	1	0	1	0	0	-	0	10
78	0	4	5	2	1	0	0	-	0	0	0	0	12
79	0	0	1	2	1	0	1	0	-	0	0	0	5
1980	1	1	2	6	4	0	1	0	-	-	0	-	15
81	0	1	3	2	1	0	1	0	-	-	0	1	9
82	0	2	4	1	1	1	0	0	-	1	-	0	10
83	1	3	1	1	1	0	1	0	-	0	0	0	8
84	1	1	2	1	2	0	1	0	0	0	2	1	11

(b) OTB (TC 4+)

(c) GN (TC 2,3)

(d) GN (TC 4+)

Table 17. Continued.

(e) LL (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1972	-	-	-	-	-	2	-	-	-	-	-	-	2
74	2	-	-	-	-	-	-	-	-	-	-	-	2

(f) LL (TC 4+) -- no catches

(g) Other (TC 2, 3)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1968	-	-	-	-	1	-	-	-	-	-	-	-	1
83	-	-	-	-	-	1	-	-	-	-	-	-	1
84	-	-	-	-	1	-	-	-	-	-	-	-	1

(h) Other (TC 4+) -- no catches

Table 18a. Pollock landings (+ round fresh) by month and country for NAFO Divisions 4VWX - 5 - 6.

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. (plus NK)	Total
<u>CANADA (Maritimes and Newfoundland)</u>													
1972	204	993	296	930	1004	3084	3718	1192	1755	2188	2191	467	18022
1973	498	981	1521	2922	2135	4785	3239	3403	2331	2181	1955	1039	26990
1974	288	187	869	1012	1986	3730	5073	2206	2202	1634	2461	3327	24975
1975	333	230	475	2021	1524	2920	2736	3691	2312	2833	2993	4480	26548
1976	297	263	445	1498	2604	4270	3814	2327	2347	1669	1413	2621	23568
1977	1062	1748	2271	1859	1006	2202	2097	2003	2304	1333	2309	4459	24653
1978	2511	3265	1864	2070	3425	2772	2755	1228	1262	839	706	4101	26801
1979	935	1536	1523	1970	2597	4664	4850	3389	1866	1645	1486	3506	29967
1980	1465	3037	2441	1903	3511	5501	5382	3095	2220	3617	2014	1800	35986
1981	2562	1811	3421	2054	1193	2363	2671	3380	4632	2462	4831	8890	40270
1982	2745	1010	1296	1075	2480	5298	5620	5348	3926	3122	2389	3720	38029
1983*	1824	1249	1435	2339	5041	6603	5531	4039	2541	1117	536	248	32535
1984*	370	524	1523	2646	3069	6162	5806	3483	2998	3108	1585	1964	33238
<u>U.S.A.</u>													
1972	455	318	228	229	200	394	329	294	314	488	1082	1397	5729
1973	419	313	311	406	331	418	335	302	262	573	1111	1519	6303
1974	946	558	508	650	479	388	644	570	480	661	1097	1385	8726
1975	740	721	486	594	477	924	684	743	765	598	1108	1061	9318
1976	706	658	501	665	936	1035	985	800	1125	669	813	1305	10861
1977	1017	661	460	817	1061	1038	1350	1149	933	924	1188	1709	13056
1978	884	1065	1035	1394	1150	1347	988	1593	925	1251	2665	2620	17714
1979	1196	434	505	753	1298	1332	1252	1706	1392	1352	1876	1605	15541
1980	1001	1093	705	977	1534	1437	1603	1536	1501	1285	1961	2276	18280
1981	1851	1093	946	1230	1444	1300	1127	1044	820	1645	2661	2738	18171
1982	818	762	909	768	864	889	1433	1102	1314	1365	2147	1798	14361
1983**	1045	747	681	651	1107	1844	1493	1308	878	1032	1559	1490	13835
1984**	1589	1183	980	883	1198	1104	1305	1160	1077	1526	2323	3285	17613
<u>OTHERS</u>													
1972	599	481	440	686	538	627	867	270	183	47	385	4278	9468
1973	513	1808	442	966	48	812	117	367	700	407	1996	1689	9883
1974	42	567	165	132	751	235	612	463	412	228	176	268	4101
1975	154	382	311	129	645	339	234	51	195	156	327	245	3169
1976	33	129	273	312	228	265	257	275	659	543	113	89	3177
1977	-	2	84	43	398	96	11	17	5	8	2	-	692
1978	16	14	1	9	110	208	190	135	7	92	2	2	786
1979	-	19	3	10	705	226	101	4	48	3	4	-	1123
1980	5	53	12	153	549	264	47	14	9	27	29	-	1162
1981	26	38	24	49	114	108	80	14	8	2	-	-	463
1982	10	9	5	-	205	122	75	1	1	-	-	-	428
1983*	-	-	-	16	352	107	12	6	-	-	-	-	515
1984*	-	-	-	41	85	100	13	2	-	-	-	1	242

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

** From NMFS data tapes

Table 18b.

	Jan - Mar			Apr - June			July - Sept			Oct - Dec			Total for Area		
	1982	1983	1984	1982	1983	1984	1982	1983	1984	1982	1983	1984	1982	1983	1984
4VW OTB-1,2 TC 4+	2372	675	919	1234	5100	2862	2270	2609	2041	3864	478	2901			
TC 1,2,3	31	26	21	107	155	471	173	78	322	58	9	140			
LL	2	-	2	10	6	5	29	88	170	27	10	5			
GN	45	43	8	178	144	70	855	868	679	240	188	130			
Other	-	3	-	-	-	1	-	53	31	-	4	19	11495	10537	10797
4X OTB-1,2 TC 4+	683	1774	476	2115	857	910	879	484	431	1060	169	511			
TC 1,2,3	521	657	539	2450	4797	4665	3154	2178	3775	449	221	1983			
LL	30	-	1	522	38	91	1813	309	310	368	62	97			
GN	309	280	185	1481	870	643	4033	2890	2212	648	444	657			
Other	-	-	-	-	419	401	-	878	746	-	109	91	20515	17436	18724
5Y OTB-1,2 TC 4	-	-	-	-	14	-	-	10	-	2	-	-			
TC 1,2,3	-	7	28	10	111	690	438	452	897	168	106	105			
LL	-	-	-	5	-	-	20	2	-	8	-	-			
GN				51	69	109	219	242	242	6	43	4			
Other	-	-	-	-	1	-	-	11	3	-	-	-	927	1068	2078
5Z OTB-1,2 TC 4+	874	1001	226	255	753	276	845	782	26	2225	51	-			
TC 1,2,3	-	-	-	33	490	321	116	102	217	10	-	10			
LL	1	-	-	5	13	11	59	20	68	7	4	2			
GN	-	-	-	-	10	21	-	47	9	-	-	-			
Other	-	-	-	-	-	1	-	2	-	-	-	-	4430	3275	1188

Table 19. Numbers, total weight, and estimated mean weight (kg) of pollock taken by USA recreational fishermen by area, 1960-1980 (source Mayo and Clark 1984).

Year	Area				Totals		
	ME	NH	MA	RI-VA	Number (000's)	Weight (tons)	Mean Weight (kg)
1960	-	-	-	-	4335	9834	2.27
1965	-	-	-	-	3756	4240	1.13
1970	-	-	-	-	2451	2533	1.03
1974	146	81	211	43	481	496	1.03
1980	80	631	3619	102	4432	2127 ²	0.48
	(36) ¹	(284)	(1630)	(46)	(1996)	(958)	

¹ Numbers in parentheses exclude data for pollock caught and released alive.² Calculated by multiplying numbers caught by mean weight of pollock available for identification in intercept (creel) survey work.

Table 20a J983/1984 Canadian commercial samples for pollock Divisions 4VWX and Subarea 5. Number of fish measured (fish aged). OTB-1 = side trawl; OTB-2 = stern trawl; GN = gillnet; LIP = handlines, LL = longlines.

Area	Gear	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
4V	OTB-1	-/(29) 160	-	-	-	-	-/(16) 252	-/(27) 182	(15)/- 336	-	-	-	-
	OTB-2	-	-	(32)/(66) 240/432	-/(37) 373	(79)/(29) 931/226	(108)/(134) 1079/1279	(41)/(22) 506/236	(70)/(69) 777/633	(31)/- 200	-/(145) 1201	-/(25) 150	-/(25) 226
4W	OTB-1	-	-	-	-	-	(37)/- 151	-	-	-	-	-	-/(33) 274
	OTB-2	(91)/(39) 566/341	-	(24)/(33) 159/208	(154)/(107) 1003/1256	(32)/- 474	-	-	-	-/(28) 204	-/(46) 350	(27)/(65) 460/370	-/(29) 168
GN	-	-	-	-	-	-	-	(25)/- 178	-/(37) 362	(24)/- 99	-	-	-
	LL	-	-	-	-	-	-	-/(27) 221	-/(63) 395	-	-	-	-
4X	OTB-1	-	-	-	-	(38)/(35) 210/241	-	-	-	(41)/- 321	-	-	(43)/- 356
	OTB-2	(42)/(39) 135/250	(164)/(32) 1068/169	(76)/(229) 663/1744	(125)/(118) 908/870	(257)/(169) 2125/1431	(132)/(34) 1190/304	(50)/(102) 325/666	(96)/- 752	(27)/(49) 184/182	(39)/(172) 215/1232	-/(23) 162	(21)/(26) 201/183
LIP	-	-	-	-	-	-	-/(56) 400	(42)/(29) 243/213	(37)/(19) 230/228	-	-	-	-
	LL	-	-	-	-	-	-	-	-	-	-	-	-
5Z	OTB-1	-	-	-	-	-	(23)/- 258	-	-	-	-	-	-
	OTB-2	(78)/- 588	-	-	-	-	(93)/(41) 775/320	-	(87)/- 941	-	-	-	-

Table 20b. 1984/1985* Canadian commercial samples for pollock Divisions 4W/X and Subarea 5. Number of fish measured (fish aged). OTB-1 = side trawl; OTB-2 = stern trawl; GN = gillnet; LHP = handlines, LL = longlines.

Area	Gear	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
4Y	OTB-1	(29)/-	-	-	-	-	(16)/-	(27)/-	-	-	-	-	-
	OTB-2	-/(96) 663	-	(66)/(28) 432/264	(37)/(16) 33/129	(29)/(80) 226/906	(134)/-	(221)/-	(69)/-	-	(145)/-	(25)/-	-
4W	OTB-1	-	-	-	-	-	-	-	-	-	-	-	(33)/-
	OTB-2	(39)/-	-	(33)/-	(107)/-	-	-	-	-	(28)/-	(46)/	(65)/-	(28)/-
	GN	-	-	-	-	-	-	-	(37)/-	-	-	-	-
	LL	-	-	-	-	-	-	(27)/-	(63)/-	-	-	-	-
4X	OTB-1	-	-	-	(35)/-	-	-	-	-	-	-	-	-
	OTB-2	(39)/(62) 250/566	(32)/(166) 169/1214	(229)/(50) 174/313	(118)/(59) 870/526	(169)/(98) 1431/797	(34)/(30) 304/213	(102)/-	-	(49)/-	(172)/-	(23)/-	(26)/-
	GN	-	-	-	-/(41) 387	-/(18) 206	-	-	(61)/-	(55)/-	-	-	-
	LHP	-	-	-	-	-/(37) 160	(56)/	(29)/-	(19)/-	-	-	-	-
5Z	OTB-1	-	-	-	-	-	-	-	-	-	-	-	-
	OTB-2	-	-	-	-	-	(41)/-	-	-	-	-	-	-

* Samples from January - June only

Table 21a. Total catch at age for pollock (No. $\times 10^{-3}$).

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	561	372	514	185	196	234	368	2180	302	35	268
3	6626	3346	2952	2753	3023	3628	1694	2419	5984	917	1511
4	2629	8434	3583	4329	4686	6349	4971	2975	2566	9218	5829
5	3299	1890	4452	2650	3665	3922	6370	6424	711	2441	9384
6	1208	1655	1233	3201	1824	2323	3495	3422	2428	484	1005
7	466	555	961	1200	2071	717	1203	1437	2200	1354	161
8	377	133	259	664	660	448	356	517	1286	1378	332
9	102	55	29	190	366	191	259	359	726	621	321
10	113	70	32	90	152	74	99	196	306	403	149
11	94	47	34	48	111	38	47	52	203	126	18

Table 21b. Percentage of catch at age by numbers for pollock.

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	4	2	4	1	1	1	2	11	2	0	1
3	43	20	21	18	18	20	9	12	36	5	8
4	17	51	26	28	28	35	26	15	15	54	31
5	21	11	32	17	22	22	34	32	4	14	49
6	8	10	9	21	11	13	19	17	15	3	5
7	3	3	7	8	12	4	6	7	13	8	1
8	2	1	2	4	4	2	2	3	8	8	2
9	1	0	0	1	2	1	1	2	4	4	2
10	1	0	0	1	1	0	1	1	2	2	1
11	1	0	0	0	1	0	0	0	1	1	0

Table 22. Average commercial weight at age for pollock.

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	0.81	0.89	0.81	0.93	0.86	0.91	1.22	1.03	0.91	0.57	1.19
3	1.44	1.47	1.55	1.10	1.07	1.39	1.87	1.77	1.60	1.17	1.47
4	2.18	2.10	2.20	1.55	1.57	1.95	2.27	2.53	2.50	1.73	2.20
5	3.07	2.97	2.97	2.45	2.64	2.86	3.07	2.87	3.30	3.03	2.80
6	4.10	3.95	3.76	3.35	3.65	3.72	3.34	3.50	3.84	4.12	3.66
7	5.10	5.00	4.51	4.34	4.86	4.46	4.14	4.31	4.10	4.51	4.95
8	6.11	6.24	5.18	5.63	5.44	6.33	5.92	5.51	5.10	4.96	5.55
9	6.68	7.07	6.14	6.38	6.52	6.00	6.24	6.51	6.10	5.38	6.10
10	7.27	7.29	7.64	7.22	7.08	7.34	7.87	7.78	7.13	6.46	6.41
11	8.01	7.83	7.66	8.32	9.97	8.04	8.48	8.21	7.72	7.95	7.56

Table 23a. Total biomass at age for pollock ($t \times 10^{-3}$).

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	455	331	416	172	169	213	449	2245	275	20	319
3	9541	4919	4576	3029	3235	5043	3168	4282	9574	1072	2221
4	5731	17711	7883	6711	7357	12381	11284	7527	6415	15946	12824
5	10127	5613	13222	6492	9676	11217	19556	18437	2346	7395	26275
6	4951	6537	4636	10724	6658	8642	11673	11977	9324	1993	3678
7	2376	2775	4334	5208	10065	3198	4980	6193	9020	6109	797
8	2302	861	1342	3737	3590	2836	2108	2849	6559	6837	1843
9	681	389	178	1210	2386	1146	1616	2337	4429	3341	1958
10	820	510	244	653	1076	543	779	1525	2182	2607	955
11	751	368	260	399	1107	306	399	427	1567	1002	136

Table 23b. Percentage of biomass by age for pollock.

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	1	1	1	0	0	0	1	4	1	0	1
3	25	13	12	8	7	11	6	7	18	2	4
4	15	45	21	17	16	27	20	13	12	34	25
5	27	14	35	17	21	24	35	31	4	16	51
6	13	17	12	28	15	19	21	20	18	4	7
7	6	7	12	14	22	7	9	11	17	13	2
8	6	2	4	10	8	6	4	5	12	15	4
9	2	1	0	3	5	2	3	4	8	7	4
10	2	1	1	2	2	1	1	3	4	6	2
11	2	1	1	1	2	1	1	1	3	2	0

Table 24. Stratified mean numbers-per-standard-tow for pollock in Canadian summer and fall bottom trawl surveys (Strata 43-95).

Year	AGES																
	1	2	3	4	5	6	7	8	9	10	11	12	12+	UK	4+	5+	6+
A.T. CAMERON (summer)																	
1970	0.008	1.916	0.471	0.287	0.210	0.205	0.171	0.103	0.040	0.000	0.046	0.012	0.000	0.008	1.082	0.795	0.585
1971	0.000	0.775	0.578	0.177	0.043	0.020	0.034	0.012	0.008	0.024	0.000	0.000	0.000	0.000	0.318	0.141	0.098
1972	0.012	0.103	0.203	1.335	0.397	0.123	0.036	0.064	0.055	0.028	0.012	0.008	0.020	0.012	2.090	0.755	0.358
1973	0.000	0.428	0.399	1.237	0.433	0.060	0.024	0.044	0.055	0.004	0.028	0.012	0.000	0.000	1.897	0.660	0.227
1974	0.008	0.044	1.010	0.253	0.332	0.180	0.204	0.118	0.090	0.056	0.134	0.048	0.000	0.000	1.415	1.162	0.830
1975	0.000	0.008	0.019	0.351	0.299	0.393	0.066	0.098	0.031	0.004	0.008	0.000	0.000	0.000	1.250	0.899	0.600
1976	0.000	0.035	0.214	0.612	1.077	0.260	0.428	0.155	0.044	0.048	0.020	0.020	0.028	0.008	2.900	2.088	1.011
1977	0.000	0.278	0.836	1.056	2.176	1.528	0.216	0.383	0.129	0.068	0.036	0.016	0.000	0.004	5.612	4.556	2.380
1978	0.000	0.004	0.184	0.673	0.990	0.365	0.333	0.104	0.046	0.002	0.000	0.016	0.120	0.041	2.690	2.017	1.027
1979	0.000	0.000	0.118	0.709	0.819	0.608	0.250	0.163	0.012	0.040	0.000	0.000	0.000	0.046	2.647	1.938	1.119
1980	0.011	0.610	0.723	2.056	3.648	1.266	0.764	0.289	0.111	0.066	0.000	0.000	0.000	0.006	8.206	6.150	2.502
1981	0.007	0.167	0.188	0.062	0.587	0.413	0.270	0.234	0.075	0.075	0.027	0.000	0.001	0.043	1.785	1.723	1.136
LADY HAMMOND (summer)																	
1982	0.000	0.258	2.919	0.285	0.119	0.362	0.319	0.160	0.128	0.076	0.022	0.030	0.018	0.038	1.557	1.272	1.153
1983	0.138	0.178	0.097	0.397	0.192	0.030	0.123	0.467	0.152	0.051	0.065	0.013	0.021	0.190	1.701	1.304	1.112
ALFRED NEEDLER (summer)																	
1983	0.111	0.125	1.067	1.644	0.174	0.075	0.103	0.321	0.134	0.059	0.053	0.019	0.032	0.009	2.623	0.979	0.805
1984	0.057	0.402	0.235	0.765	2.109	0.276	0.239	0.591	0.794	0.370	0.076	0.119	0.098	0.223	5.660	4.895	2.786
LADY HAMMOND (fall)																	
1979	0.000	0.000	0.146	3.612	5.395	1.511	0.357	0.332	0.112	0.160	0.031	0.000	0.009	0.119	11.638	8.026	2.631
1980	0.000	0.003	0.007	0.151	1.668	1.566	0.898	0.213	0.181	0.000	0.013	0.000	0.000	0.044	4.734	4.583	2.915
1981	0.000	1.253	0.236	0.262	1.269	1.763	0.858	0.443	0.095	0.036	0.000	0.068	0.000	0.011	4.805	4.543	3.274

Table 25. Estimated total population numbers ($\times 10^{-3}$) from the Canadian summer bottom trawl surveys, strata 43 - 95.

Age	A.T. CAMERON											ALFRED NEEDLER				
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	LADY HAMMOND	1982	1983	1983	1984
2	8879	3579	479	1929	203	37	161	1290	19	0	2826	774	1023	706	496	612
3	2181	2666	939	1849	4677	89	989	3743	852	47	3350	871	11574	385	4231	375
4	1330	822	6187	5731	1171	1541	2825	4873	3118	3285	9525	287	1130	1574	6518	1213
5	972	199	1838	2007	1537	1386	4992	10081	4587	3794	16901	2720	472	761	690	3318
6	951	92	570	276	832	1822	1202	7080	1691	2817	5865	1913	1435	119	297	428
7	792	147	165	110	943	305	1983	1001	1543	1158	3540	1251	1265	488	408	384
8	479	55	294	202	547	452	718	1775	482	755	1339	1084	634	1852	1273	994
9	184	36	254	252	418	142	202	598	213	56	514	347	508	603	531	1306
10	159	110	129	18	260	18	220	313	9	185	304	338	301	202	234	610
11	214	187	55	129	621	36	92	166	0	0	0	125	87	258	210	127
12	56	0	37	56	222	0	93	74	74	0	0	0	119	52	75	200

Table 26. Percent of the estimated population numbers by age in the Canadian summer bottom trawl survey series (%).

Age	A.T. CAMERON											ALFRED NEEDLER				
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	LADY HAMMOND	1982	1983	1983	1984
2	55	45	4	15	2	1	1	4	0	0	6	8	6	10	3	6
3	13	34	9	15	41	2	7	12	7	0	8	9	62	5	28	4
4	8	10	57	46	10	26	21	16	25	27	22	3	6	22	43	13
5	6	3	17	16	13	24	37	33	36	31	38	28	3	11	5	35
6	6	1	5	2	7	31	9	23	13	23	13	20	8	2	2	4
7	5	2	2	1	8	5	15	3	12	10	8	13	7	7	3	4
8	3	1	3	2	5	8	5	6	4	6	3	11	3	26	9	10
9	1	0	2	2	4	2	1	2	2	0	1	4	3	9	4	14
10	1	1	1	0	2	0	2	1	0	2	1	3	2	3	2	6
11	1	2	1	1	5	1	1	1	0	0	0	1	0	4	1	1
12	0	0	0	0	2	0	1	0	1	0	0	0	1	1	0	2

Table 27. Stratified mean catch-per-tow in weight (kg) and numbers for Scotian Shelf, Gulf of Maine, and Georges Bank pollock in NEFC¹ offshore spring², summer³, and autumn⁴,¹ bottom trawl surveys, 1963-1983.

Year	SPRING ⁴		SUMMER		AUTUMN	
	Weight	Numbers	Weight	Numbers	Weight	Numbers
1963	-	-	10.28	2.31	5.79	1.46
1964	-	-	5.27	2.06	4.40	1.64
1965	-	-	2.56	1.72	2.74	0.83
1966	-	-	-	-	2.35	0.97
1967	-	-	-	-	1.80	0.52
1968	4.47	1.09	-	-	3.17	0.69
1969	2.66	1.12	1.75	0.70	6.58	1.31
1970	4.91	1.67	-	-	2.59	0.64
1971	4.39	1.18	-	-	3.96	1.09
1972	5.67	4.43	-	-	4.37	1.41
1973	4.82	4.00	-	-	4.71	1.64
1974	4.10	1.39	-	-	3.17	0.90
1975	5.90	1.67	-	-	2.04	0.70
1976	6.84	1.59	-	-	16.66	3.69
1977	3.44	1.63	9.98	2.07	8.78	2.14
1978	6.56	2.48	4.05	1.29	5.83	0.98
1979	4.75	1.06	17.57	2.96	5.81	1.28
1980	4.40	1.52	9.83	12.21	4.63	0.83
1981	6.30	2.00	-	-	7.75	5.24
1982	6.62	3.98	-	-	3.14	1.40
1983	1.83	0.92	-	-	3.03	0.98
1984*	2.87	1.00	-	-	0.99	0.41

¹ NEFC = Northeastern Fisheries Centre

² Strata 13-40.

³ Strata 21-28 and 37-40.

⁴ The "36 Yankee" trawl was used from 1968-1972, and the "41 Yankee" trawl was used from 1973-1983. No gear conversion factors are available to adjust for differences in fishing power.

* Provisional

Table 28. U.S.A. Research Survey catch rates at age (Nos. per standard tow).

Age	SPRING												SUMMER				AUTUMN																	
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1977	1978	1979	1980	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	
0	0.01	0.01																		0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
1	0.52	0.15	1.20	0.01	0.01	0.01	0.08	0.14	0.00	0.10	0.15	0.01	0.13	0.57	0.15	0.05	0.00	0.05	10.67	0.13	0.11	0.38	0.03	0.00	0.22	0.03	0.06	0.03	0.01	0.13	0.07	0.07	0.49	
2	0.05	0.13	1.49	2.80	0.10	0.33	0.11	0.38	0.22	0.05	0.15	0.72	1.63	0.06	0.15	0.23	0.57	0.00	0.11	0.08	0.38	0.27	0.71	0.08	0.06	0.03	0.17	0.19	0.02	0.01	3.59	0.44	0.03	
3	0.17	0.13	0.90	0.51	0.53	0.20	0.14	0.23	0.42	0.07	0.09	0.13	0.84	0.02	0.09	0.09	0.17	0.38	0.06	0.01	0.16	0.20	0.12	0.28	0.03	0.15	0.24	0.04	0.26	0.01	0.98	0.40	0.05	
4	0.20	0.09	0.20	0.15	0.14	0.34	0.15	0.06	0.65	0.08	0.28	0.12	0.55	0.02	0.10	0.26	0.09	0.26	0.29	0.09	0.02	0.08	0.17	0.20	0.11	0.55	0.29	0.04	0.33	0.05	0.14	0.29	0.04	
5	0.05	0.07	0.05	0.14	0.08	0.08	0.24	0.16	0.63	0.15	0.25	0.18	0.11	0.01	0.14	0.29	0.08	0.36	0.25	0.08	0.06	0.07	0.11	0.11	0.07	1.63	0.42	0.09	0.19	0.11	0.20	0.01	0.07	
6	0.07	0.08	0.05	0.04	0.16	0.09	0.13	0.32	0.15	0.14	0.20	0.26	0.33	0.00	0.07	0.32	0.08	0.55	0.30	0.08	0.09	0.08	0.11	0.08	0.04	0.50	0.38	0.09	0.13	0.06	0.13	0.05	0.01	
7	0.09	0.04	0.07	0.03	0.07	0.10	0.10	0.15	0.13	0.11	0.08	0.23	0.08	0.11	0.05	0.04	0.15	0.05	0.36	0.22	0.04	0.04	0.07	0.09	0.09	0.09	0.31	0.22	0.15	0.08	0.07	0.04	0.06	
8	0.12	0.09	0.12	0.10	0.03	0.08	0.17	0.11	0.08	0.16	0.08	0.07	0.14	0.04	0.04	0.23	0.09	0.49	0.03	0.02	0.08	0.05	0.07	0.01	0.01	0.14	0.11	0.08	0.08	0.09	0.13	0.00	0.02	0.08
9	0.08	0.06	0.04	0.04	0.00	0.05	0.11	0.02	0.07	0.08	0.04	0.05	0.05	0.01	0.05	0.07	0.03	0.06	0.02	0.01	0.03	0.04	0.00	0.02	0.01	0.05	0.09	0.06	0.05	0.08	0.00	0.02	0.03	
10	0.04	0.07	0.07	0.09	0.01	0.06	0.03	0.02	0.05	0.03	0.02	0.09	0.01	0.02	0.03	0.08	0.01	0.21	0.07	0.02	0.01	0.03	0.12	0.00	0.01	0.01	0.02	0.04	0.04	0.06	0.01	0.00	0.02	
11	0.04	0.07	0.04	0.02	0.10	0.02	0.04	0.01	0.04	0.03	0.00	0.06	0.02	0.02	0.04	0.07	0.05	0.00	0.05	0.01	0.01	0.03	0.02	0.02	0.01	0.01	0.00	0.03	0.01	0.04	0.00	0.02	0.02	
12+	0.23	0.20	0.17	0.09	0.16	0.29	0.24	0.04	0.07	0.08	0.05	0.20	0.07	0.10	0.07	0.23	0.08	0.23	0.13	0.07	0.09	0.10	0.10	0.02	0.03	0.29	0.14	0.12	0.06	0.07	0.08	0.04	0.06	
Totals																																		
1+	1.66	1.18	4.40	4.02	1.39	1.65	1.59	1.62	2.49	1.05	1.54	1.97	3.99	0.92	1.00	2.07	1.30	2.95	12.20	0.64	1.08	1.40	1.65	0.91	0.69	3.70	2.14	0.96	1.27	0.82	5.24	1.40	0.98	
2+	1.14	1.03	3.20	4.01	1.38	1.64	1.51	1.48	2.49	0.95	1.39	1.96	3.86	0.35	0.85	2.02	1.30	2.90	1.53	0.51	0.97	1.02	1.62	0.91	0.47	3.67	2.08	0.93	1.26	0.69	5.17	1.33	0.49	
3+	1.09	0.90	1.71	1.21	1.28	1.31	1.40	1.10	2.27	0.90	1.24	1.24	2.23	0.29	0.70	1.79	0.73	2.90	1.42	0.43	0.59	0.75	0.91	0.83	0.41	3.64	1.91	0.74	1.24	0.68	1.58	0.89	0.46	
4+	0.92	0.77	0.81	0.70	0.75	1.11	1.26	0.87	1.85	0.83	1.15	1.11	1.39	0.27	0.61	1.70	0.56	2.52	1.36	0.42	0.43	0.55	0.79	0.55	0.38	3.49	1.67	0.70	0.98	0.67	0.60	0.49	0.41	
5+	0.72	0.68	0.61	0.55	0.61	0.77	1.11	0.81	1.20	0.75	0.87	0.99	0.84	0.25	0.51	1.44	0.47	2.26	1.07	0.33	0.41	0.47	0.62	0.35	0.27	2.94	1.38	0.66	0.65	0.62	0.46	0.20	0.37	

Table 29. Stratified mean catch-per-tow in numbers and weight, (kg) for pollock in the Massachusetts inshore spring surveys¹ and NEFC inshore summer surveys², 1977-1983.

Year	Stratified Mean Catch-Per-Tow in Numbers A G E				Total	Stratified Mean Catch-Per-Tow in Weight (kg)
	0	1	2	3		
NEFC (Summer)						
1977	0.00	1.11	0.82	0.00	1.93	0.61
1978	0.00	0.00	0.00	0.00	0.00	0.00
1979	1.17	0.35	0.00	0.00	1.52	0.18
1980	0.17	0.33	0.00	0.00	0.50	0.06
Massachusetts (Spring)						
1978	2.07	0.01	0.13	0.06	2.27	0.11
1979	4.34	0.04	0.01	0.06	4.45	0.07
1980	0.30	8.37	0.20	0.02	8.89	0.72
1981	1.52	1.42	1.40	0.00	4.34	0.54
1982	1.79	0.00	0.06	0.00	1.85	0.03
1983	0.03	6.45	0.27	0.04	6.79	0.68
1984	0.04	0.00	0.02	0.00	0.06	0.01

¹ Regions 1-5 (STRATA 11-21 and 25-36).

² Inshore STRATA 52, 55, 56, 58-61, 63-66, 72, 74, and 75.

Table 30. Research vessel survey catch rates (nos. per standard tow) for pollock in NAFO Divs. 4VWX, SA 5, and 6.

Research Cruises	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
U.S.A. autumn bottom trawl survey (No tow ⁻¹)	0.90	0.70	3.69	2.14	0.98	1.27	0.82	5.24	1.40	0.98	0.41
U.S.A. spring bottom trawl survey (No tow ⁻¹)	1.39	1.65	1.59	1.63	2.47	1.06	1.51	1.97	3.99	0.90	1.00
U.S.A. summer bottom trawl survey (No tow ⁻¹)	-	-	-	2.07	1.30	2.95	12.20	-	-	-	-
Canada summer bottom trawl survey (No Tow ⁻¹)											
A.T. CAMERON	2.48	1.27	2.95	6.72	2.88	2.77	9.55	2.15	-	-	-
LADY HAMMOND	-	-	-	-	-	-	-	-	4.73	2.11	-
ALFRED NEEDLER	-	-	-	-	-	-	-	-	-	3.93	6.35
Canada fall bottom trawl survey (No tow ⁻¹)											
LADY HAMMOND	-	-	-	-	-	11.78	4.74	6.29	-	-	-

Table 31. Spring (1978-84), summer (1970-84), and fall (1978-83) research vessel survey. Catch rates for all years by strata.

Strata	Spring	Summer	Fall
40	1.1323	0	0.2334
41	0.4048	0.1907	0.1771
42	0.8499	0	1.3776
43	0	0.0169	0.2047
44	0.7586	0.0117	0.1313
45	0.5725	0	0.0886
46	1.8164	0.1703	0.3607
47	0	0.0599	0
48	0.1703	0	0.1188
49	1.0373	0.1977	0
50	1.0527	0.1440	0.0827
51	3.8492	0.8100	1.7479
52	2.2456	0.7712	0.8364
53	0.3106	0.0169	0.1188
54	0.6735	0.0273	0.2261
55	0.0326	0.0326	0.1703
56	0.0670	0.1313	0.1250
57	0.2483	0.0886	0.0827
58	0.1977	0.0220	0
59	0.1703	0.2261	1.7479
60	6.8155	5.2546	3.3190
61	9.6757	0.6503	1.2507
62	1.3040	0.9191	7.4248
63	0.2334	0.7586	1.5544
64	0.1907	0.2788	0.5513
65	1.3589	0.5513	2.0345
66	3.4354	0	0
70	4.6552	8.6157	1.0841
71	3.8492	0.9477	0.5408
72	5.6719	2.3577	1.7034
73	0.3270	0.0655	0.1065
74	0	0.0488	0.1126
75	1.7933	0.0655	0.3869
76	2.7544	3.8060	2.3864
77	5.9883	0.1703	0.2047
78	37.5918	0.4231	0
80	0.6853	0.4512	0.9191
81	8.1711	0.7337	0.8364
82	15.9446	1.5138	2.6899
83	2.5344	0.5202	0
84	3.3962	3.0609	1.6383
85	3.7631	7.4248	2.9556
90	0.1188	1.3589	0
91	0.2334	2.7220	3.2810
92	0.4900	1.9351	1.2160
93	0.1771	0.8634	0
94	0	0.2261	0
95	0	0.4608	0.0945

Table 32a. Maturity ogives for males and females from the summer RV surveys in Divisions 4VWX.

Age	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.03	0.00	0.00	0.75	0.00	0.50	0.00	0.20	0.00	0.00	0.00	0.26
3	0.07	0.37	0.08	0.59	0.08	0.50	0.84	0.22	0.81	0.07	0.64	0.56	0.34	0.44	0.47
4	0.50	0.95	0.83	0.95	0.53	0.74	1.00	0.62	0.93	0.51	1.00	1.00	1.00	0.67	1.00
5	1.00	1.00	1.00	0.97	0.92	0.96	1.00	0.91	0.98	0.90	1.00	1.00	1.00	1.00	1.00
6	1.00	1.00	1.00	0.90	1.00	0.97	1.00	0.97	1.00	0.95	1.00	1.00	1.00	1.00	1.00
7	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
8	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
9	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
11	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
11+	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Total	251	167	177	203	166	121	228	292	211	308	208	194	205	223	237

52

Table 32b. Maturity ogives by year-class for males and females from summer RV surveys in Divisions 4VWX.

Age	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2					0.00	0.00	0.00	0.03	0.00	0.00	0.75	0.00	0.50	0.00	0.20	0.00	0.00	
3					0.07	0.37	0.08	0.59	0.08	0.50	0.84	0.22	0.81	0.07	0.64	0.56	0.34	
4					0.50	0.95	0.83	0.95	0.53	0.74	1.00	0.62	0.93	0.51	1.00	1.00	0.67	
5	1.00	1.00	1.00	0.97	0.92	0.96	1.00	0.91	0.98	0.90	1.00	1.00	1.00	1.00	1.00	1.00	?	
6	1.00	1.00	0.90	1.00	0.97	1.00	0.97	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00			
7	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
8	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
9	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
11	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
11+	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								

Table 33a. Maturity ogives for males and females from spring RV surveys from Divisions 4VWX.

Age	1979	1980	1981	1982	1983	1984
1	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.04	0.02	0.06	0.00
3	0.33	0.50	0.33	0.05	0.29	0.30
4	0.75	0.50	0.50	0.79	0.39	0.89
5	0.62	0.84	1.00	1.00	0.00	1.00
6	0.98	0.95	1.00	1.00	1.00	1.00
7	1.00	0.98	1.00	1.00	1.00	1.00
8	1.00	1.00	1.00	1.00	1.00	1.00
9	1.00	1.00	1.00	1.00	1.00	1.00
10	1.00	1.00	1.00	1.00	1.00	1.00
11	1.00	1.00	1.00	1.00	1.00	1.00
11+	1.00	1.00	1.00	1.00	1.00	1.00
Total	174	437	219	518	142	280

Table 33b. Maturity ogives by year-class for males and females from spring RV surveys from Divisions 4VWX.

Table 34. Percent mature by length for males in Division 4VW from the summer RV surveys.

Year	26	29	31	34	37	40	43	46	49	52	55	58	61	64	67	70	73	76	79	82	85	88	91	94	97	100	103	106	(N)	
1970				0				0								100			100										5	
1971	0	0	25	11	50	80	67									100	100		100									44		
1972																100												3		
1973	0	0			0	100																					6			
1974					0	0	0	15	40	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
1975							33	100	50	100	75	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	52	
1976		100								100		100				100			100										43	
1977		0	33		0	0	100	100	0	100		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	10	
1978			75	75	100	100		0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	22	
1979				0	33	75	72	60	63	82	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70		
1980			0	50		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	41		
1981	0	0	0	0	0	0					100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	38	
1982	0	0	0	14	50	0	50	66	100	100	100	100				100			100										33	
1983	0	0	0	0	0	0	38	40	33	75	100					100	100	100	100	100	100	100	100	100	100	100	100	100	100	52
1984	0	0	0	0	0	0			100	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	83		

Table 35. Sex ratios of males to females from spring RV cruises (1979-84).

Age	1979	1980	1981	1982	1983	1984
1	2	2.7	1	2.6	-	1.5
2	1	1.7	1.6	1.5	-	1.1
3	0.5	1	2	1.5	1.5	0.7
4	1.4	0.7	1	1.1	1.4	1.3
5	1.1	1.3	3	0.5	1	1.1
6	1.2	1.1	0.7	0.7	1	0.8
7	1.1	0.7	1.2	0.8	1	2
8	0.75	1.1	1.1	0.6	1.7	0.5
9	1	1	1	0.8	0.3	0.8
10	3	0.2	0.3	0.7	0.5	0.3
11	2	1	-	1	-	0.6
12	-	-	-	0.7	1	1

Table 36. Sex ratios (males to females) from RV cruises - Summer 1970-1984.

Table 37. Sex ratios (males to females) from RV cruises - Fall 1978-1983.

	1978	1979	1980	1981	1982	1983
1	-	-	4/0	.50	5.0	1.94
2	1.67	-	1/0	1.14	10.0	1.12
3	2.75	.33	0/1	1.43	1.45	.96
4	1.80	1.61	2.0	1.0	1.0	1.95
5	2.0	.75	1.31	.40	1/0	1.5
6	.67	.59	.85	.45	-	-
7	.40	.75	1.21	.71	.75	1.75
8	.50	.38	1.0	.40	0/2	.92
9	0/2	0/3	.86	5.0	1	.75
10	1	1.5	-	0/3	0/1	0/3
11	-	1/0	0/1	-	-	1/0
12	-	-	-	-/2	-	-/1
13	-	-	-	-	-	-
14	-	-	-	-	-	-
15	-	-/1	-	-	-	-

Table 38. Commercial catch rates (t/hr) for pollock in Divs. 4VWX and SA 5 (POK = pollock; MSP = main species).

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Canadian OTB-1,2 (TC5) CPUE (t/hr⁻¹)*											
January - June (all catches 50% of total)	0.77	0.74	0.65	0.86	1.20	1.28	1.22	1.45	1.55	1.54	1.46
(McGiade et al. 1983)											
June-August (POK = MSP)	0.58	0.61	0.52	0.69	0.84	1.16	0.97	0.89	1.58	0.87	1.28
U.S.A. OTB-1,2 CPUE (t/day fished⁻¹)¹											
January-December (TC2)	8.76	5.25	4.67	6.87	7.19	4.69	4.36	6.03	7.39	7.61	6.83
January-December	7.61	6.27	6.56	8.15	7.28	6.36	7.59	7.43	6.23	7.03	6.26

* Calculated based on trip data for side and stern otter trawlers of 0-50 GT and 51-500 GT, respectively, for which 50% or more of the catch consisted of pollock.

Table 39. Commercial catch rates (t/hr) from Canadian vessels (Maritimes and Quebec) showing mean, weighted mean, and standard deviation.

		1977	1978	1979	1980	1981	1982	1983	1984
4VW TC 2, 3 (all catches 50% of total)									
January - June	CPUE	-	.44	.22	.34	.54	.36	.39	1.00
	Mean (SD)	-	.45 (.19)	.22 (.33)	.38 (.19)	.60 (.44)	.36 (.20)	.53 (.60)	1.06 (.40)
July - December	CPUE	-	-	-	.65	.53	.43	.34	.80
	Mean (SD)	-	-	-	.73 (.25)	.53 (.31)	.64 (.88)	.45 (.20)	1.11 (.98)
June - August	CPUE	-	.36	-	.42	.50	.47	.28	.93
	Mean (SD)	-	.36 (0)	0	.37 (.17)	.53 (.39)	.46 (.15)	.37 (.22)	1.07 (.45)
4VW TC 4+ (all catches 50% of total)									
January - June	CPUE	.85	1.24	1.07	.90	1.24	1.93	1.36	1.54
	Mean (SD)	.76 (.63)	.93 (.93)	1.14 (1.47)	.98 (1.03)	1.27 (.166)	1.23 (1.12)	1.75 (1.72)	1.33 (.95)
July - December	CPUE	1.11	.90	1.13	1.04	1.71	1.62	.80	1.34
	Mean (SD)	.94 (.80)	1.29 (2.37)	1.11 (.95)	1.00 (.72)	1.20 (1.07)	1.28 (1.19)	1.55 (1.98)	1.43 (1.20)
June - August	CPUE	.69	.77	1.04	.83	.65	1.38	.89	1.01
	Mean (SD)	.86 (.72)	.61 (.38)	1.02 (1.02)	.86 (.51)	.67 (.64)	1.56 (1.47)	1.34 (1.39)	1.19 (.93)
4X5 TC 2, 3 (all catches 50% of total)									
January - June	CPUE	.81	.89	.77	.68	.68	.50	.54	.71
	Mean (SD)	1.13 (1.59)	2.04 (3.19)	.70 (.71)	.78 (1.27)	.89 (1.10)	.63 (1.11)	.47 (.25)	.71 (.40)
July - December	CPUE	.63	.62	.53	.56	.49	.40	.41	.61
	Mean (SD)	.96 (1.08)	.75 (.56)	.57 (.55)	.63 (.47)	.69 (.86)	.40 (.24)	.52 (.71)	.66 (.48)
June - August	CPUE	.69	.66	.62	.57	.49	.42	.47	.61
	Mean (SD)	.92 (.82)	.95 (.81)	.54 (.34)	.55 (.36)	.79 (1.08)	.42 (.21)	.48 (.66)	.68 (.46)

Table 39. Continued.

		1977	1978	1979	1980	1981	1982	1983	1984
4X+5 TC 4+									
(all catches 50% of total)									
January - June	CPUE	.75	1.01	.88	1.07	1.13	1.27	1.40	1.19
	Mean (SD)	.71 (.67)	.79 (.61)	1.32 (1.32)	1.17 (1.59)	1.00 (.78)	.85 (.54)	1.24 (1.01)	1.04 (1.22)
July - December	CPUE	1.05	1.28	1.57	.69	1.28	1.01	.67	1.65
	Mean (SD)	.89 (.80)	.95 (.72)	1.37 (1.37)	.94 (1.30)	1.20 (1.49)	.98 (.78)	.69 (.33)	1.95 (2.13)
June - August	CPUE	.56	.67	1.96	.97	-	1.33	.83	1.43
	Mean (SD)	.82 (.87)	.59 (.31)	1.98 (1.04)	.95 (.86)	-	1.02 (.84)	.86 (.96)	2.47 (2.67)
4VWX+5 TC 2, 3									
(all catches 50% of total)									
January - June	CPUE	.81	.88	.76	.67	.67	.50	.53	.78
	Mean (SD)	1.13 (1.59)	1.91 (3.09)	.67 (.90)	.76 (1.24)	.84 (1.03)	.59 (1.03)	.48 (.30)	.76 (.42)
July - December	CPUE	.63	.60	.94	.56	.50	.40	.41	.62
	Mean (SD)	.96 (1.08)	.75 (.56)	1.24 (1.38)	.63 (.46)	.66 (.79)	.45 (.45)	.51 (.67)	.73 (.60)
June - August	CPUE	.69	.66	.62	.57	.49	.42	.47	.61
	Mean (SD)	.92 (.82)	.95 (.81)	.54 (.34)	.55 (.36)	.79 (1.08)	.42 (.21)	.48 (.66)	.68 (.46)
4VWX+5 TC 4+									
(all catches 50% of total)									
January - June	CPUE	.77	1.09	.94	1.01	1.18	1.50	1.38	1.37
	Mean (SD)	.73 (.65)	.86 (.78)	1.24 (1.38)	1.07 (1.31)	1.17 (1.41)	1.06 (.92)	1.54 (1.48)	1.24 (1.03)
July - December	CPUE	.43	1.14	1.23	.93	1.53	1.31	.74	1.40
	Mean (SD)	.91 (.79)	1.15 (1.85)	1.20 (1.11)	.98 (.98)	1.20 (1.24)	1.14 (1.02)	1.19 (1.57)	1.59 (1.54)
June - August	CPUE	.68	.71	1.30	.88	.65	1.36	.86	1.23
	Mean (SD)	.95 (.76)	.60 (.35)	1.31 (1.11)	.90 (.69)	.67 (.64)	1.30 (1.23)	1.08 (1.19)	1.60 (1.74)

Table 39. Continued.

	1977	1978	1979	1980	1981	1982	1983	1984
4VWX+5 TC 5+								
(all catches 50% of total)								
June - August	CPUE	.7414	.8578	1.6639	.9887	.9489	1.5939	1.0232
	Mean (SD)	1.04 (.80)	.78 (.33)	2.01 (1.12)	1.15 (.66)	.96 (.69)	1.78 (1.30)	1.49 (1.46)
								1.87 (1.98)

Table 40. Statistics for commercial catch rates Canada (M+Q) OTB-1, 2 vessels for 4VWX + 5. CPUE = the average catch rate, MEAN = the sum of the catch/sum of the effort, SD = the standard deviation, VAR = the variance, SKEW = skewness, KURT = kurtosis, and N = number in sample.

TC 5+ June-Aug

YEAR	CPUE	MEAN	SD	VAR.	SKEW	KURT	N
1977	.74	1.04	.80	.6400	1.55	1.31	22
1978	.86	.78	.33	.1089	.12	-.70	21
1979	1.66	2.01	1.12	1.2544	1.05	1.04	24
1980	.99	1.15	.66	.4356	1.09	1.71	29
1981	.95	.96	.69	.4761	1.37	2.18	9
1982	1.59	1.78	1.30	1.6900	1.19	1.47	25
1983	1.02	1.49	1.46	2.1316	2.66	6.98	25
1984	1.36	1.87	1.98	3.9204	2.71	9.12	25

4X+5 TC 2,3 Jan-June

1977	.81	1.13	1.59	2.5281	4.22	27.61	37
1978	.89	2.04	3.19	10.1761	3.15	9.98	35
1979	.77	.70	.71	.5041	2.45	7.08	45
1980	.68	.78	1.27	1.6129	5.89	38.61	50
1981	.68	.89	1.10	1.2100	2.90	9.05	45
1982	.50	.63	1.11	1.2321	6.06	38.21	42
1983	.54	.47	.25	.0625	.65	-.44	50
1984	.71	.71	.40	.1600	.65	-.30	48

4X+5 TC 2,3 July-Dec

1977	.63	.96	1.08	1.1664	2.42	5.36	33
1978	.62	.75	.56	.3136	1.43	1.63	34
1979	.53	.57	.55	.3025	2.55	7.50	41
1980	.56	.63	.47	.2209	1.67	3.25	43
1981	.49	.69	.86	.7396	3.83	17.87	49
1982	.40	.40	.24	.0576	1.15	1.44	45
1983	.41	.52	.71	.5041	4.47	23.74	42
1984	.61	.66	.48	.2304	1.14	.96	68

4VW TC 2,3 June-Aug

1977	-						
1978	.36	.36	0	0	0	0	1
1979	-						-
1980	.42	.37	.17	.0289	.52	.11	3
1981	.50	.53	.39	.1521	.66	-.46	13
1982	.47	.46	.15	.0225	-.19	-1.66	9
1983	.28	.37	.22	.0484	-.03	-1.61	8
1984	.93	1.07	.45	.2025	.97	-.77	10

Table 40. Continued.

4VW TC 4+ June-Aug

YEAR	CPUE	MEAN	SD	VAR.	SKEW	KURT	N
1977	.69	.86	.72	.5184	1.74	2.16	20
1978	.77	.61	.38	.1444	.96	-.20	19
1979	1.04	1.02	1.02	1.0404	2.34	7.10	35
1980	.83	.86	.51	.2601	.98	.81	30
1981	.65	.67	.64	.4096	1.78	3.49	15
1982	1.38	1.56	1.47	2.1609	1.25	.98	25
1983	.89	1.34	1.39	1.9321	3.11	11.02	21
1984	1.01	1.19	.93	.8649	1.57	2.00	24

4VW TC 4+ Jan-June

1977	.85	.76	.63	.3969	1.86	3.66	40
1978	1.24	.93	.93	.8649	2.19	5.23	46
1979	1.07	1.14	1.47	2.1609	3.35	13.72	39
1980	.90	.98	1.03	1.0609	3.13	14.15	51
1981	1.24	1.27	1.66	2.7556	2.96	10.50	56
1982	1.93	1.23	1.12	1.2544	1.49	2.36	26
1983	1.36	1.75	1.72	2.9584	1.82	2.78	40
1984	1.54	1.33	.95	.9025	.76	-.44	32

4VW TC 4+ July-Dec

1977	1.11	.94	.80	.6400	2.09	4.18	39
1978	.90	1.29	2.37	5.6169	3.95	16.73	21
1979	1.13	1.11	.95	.9025	2.03	6.08	46
1980	1.04	1.00	.72	.5184	1.91	6.18	43
1981	1.71	1.20	1.07	1.1449	1.29	.79	46
1982	1.62	1.28	1.19	1.4161	1.74	3.13	42
1983	.80	1.55	1.98	3.9204	2.57	6.80	27
1984	1.34	1.43	1.20	1.4400	1.96	5.41	39

4VWX + 5 TC 2,3 June-Aug

1977	.69	.92	.82	.6724	1.76	4.21	31
1978	.66	.95	.81	.6561	1.49	1.08	33
1979	.62	.54	.34	.1156	1.24	2.17	37
1980	.57	.55	.36	.1296	1.08	1.09	51
1981	.49	.79	1.08	1.1664	3.14	10.52	51
1982	.42	.42	.21	.0441	.73	.53	47
1983	.47	.48	.66	.4356	5.41	32.88	44
1984	.61	.68	.46	.2116	1.12	.78	62

Table 40. Continued.

4VWX + 5 TC 4+ June-Aug

YEAR	CPUE	MEAN	SD	VAR.	SKEW	KURT	N
1977	.68	.85	.76	.5776	1.86	2.69	30
1978	.71	.60	.35	.1225	.70	-.51	39
1979	1.30	1.31	1.11	1.2321	1.30	1.76	50
1980	.88	.90	.69	.4761	1.43	2.42	55
1981	.65	.67	.64	.4096	1.78	3.49	15
1982	1.36	1.30	1.23	1.5129	1.52	2.29	42
1983	.86	1.08	1.19	1.4161	3.45	13.03	45
1984	1.23	1.60	1.74	3.0276	3.17	12.59	35

4VWX + 5 TC 2,3 July-Dec

1977	.63	.96	1.08	1.1664	2.42	5.36	33
1978	.60	.75	.56	.3136	1.43	1.63	34
1979	.94	1.24	1.38	1.9044	2.68	9.31	85
1980	.56	.63	.46	.2116	1.65	3.33	45
1981	.50	.66	.79	.6241	4.11	21.19	60
1982	.40	.45	.45	.2025	4.96	31.12	57
1983	.41	.51	.67	.4489	4.71	26.75	48
1984	.62	.73	.60	.3600	2.48	10.48	81

4VWX + 5 TC 4+ July-Dec

1977	.43	.91	.79	.6241	1.83	3.08	65
1978	1.14	1.15	1.85	3.4225	4.73	25.33	36
1979	1.23	1.20	1.11	1.2321	2.00	5.05	70
1980	.93	.98	.98	.9604	3.90	21.32	71
1981	1.53	1.20	1.24	1.5376	2.91	12.76	75
1982	1.31	1.14	1.02	1.0404	1.75	3.86	82
1983	.74	1.19	1.57	2.4649	3.49	13.42	47
1984	1.40	1.59	1.54	2.3716	3.11	13.22	56

4VWX + 5 TC 2,3 Jan-June

1977	.81	1.13	1.59	2.5281	4.22	21.61	37
1978	.88	1.91	3.09	9.5481	3.29	11.00	38
1979	.76	.67	.70	.4900	2.48	7.39	48
1980	.67	.76	1.24	1.5376	6.05	40.77	53
1981	.67	.84	1.03	1.0609	3.08	10.62	53
1982	.50	.59	1.03	1.0609	6.55	44.93	50
1983	.53	.48	.30	.0900	1.43	3.30	56
1984	.78	.76	.42	.1764	.64	-.09	56

Table 40. Continued.

4VWX + 5 TC 4+ Jan-June

YEAR	CPUE	MEAN	SD	VAR.	SKEW	KURT	N
1977	.77	.73	.65	.4225	1.80	2.93	102
1978	1.0929	.86	.78	.8832	2.52	7.82	96
1979	.94	1.24	1.38	1.9044	2.68	9.31	85
1980	1.011	1.07	1.31	1.7161	4.21	24.17	94
1981	1.18	1.17	1.41	1.9881	3.31	14.22	88
1982	1.50	1.06	.92	.8464	1.89	4.53	47
1983	1.38	1.54	1.48	2.1904	2.12	4.54	68
1984	1.37	1.24	1.03	1.0609	1.46	2.25	47

4VW TC 2,3 Jan-Jun

1977	-						
1978	.44	.45	.19	.0361	1.67	.23	3
1979	.22	.22	.33	.1089	1.66	.14	3
1980	.34	.38	.19	.0361	.73	.14	3
1981	.54	.60	.44	.1936	0	-1.51	8
1982	.36	.36	.20	.0400	.29	-1.63	8
1983	.39	.53	.60	.3600	1.82	3.34	6
1984	1.00	1.06	.40	.1600	1.36	1.70	8

4VW TC 2,3 July-Dec

1977	-						
1978	-						
1979	-						
1980	.65	.73	.25	.0625	.92	.78	2
1981	.53	.53	.31	.0961	.56	.38	11
1982	.43	.64	.88	.7744	3.17	10.58	12
1983	.34	.45	.20	.0400	-0.60	-1.22	6
1984	.80	1.11	.98	.9604	2.53	7.59	13

4X+5 TC 3 June-Aug

1977	.69	.92	.82	.6724	1.76	4.21	31
1978	.66	.96	.82	.6724	1.44	.94	32
1979	.62	.54	.34	.1156	1.24	2.17	37
1980	.57	.56	.37	.1369	1.01	.90	48
1981	.49	.88	1.22	1.4884	2.76	7.55	38
1982	.41	.41	.22	.0484	.87	.66	38
1983	.48	.51	.72	.5184	5.02	27.86	36
1984	.59	.60	.43	.1849	1.38	1.80	52

Table 40. Continued.

4X+5 TC 4+ June-Aug

YEAR	CPUE	MEAN	SD	VAR.	SKEW	KURT	N
1977	.56	.82	.87	.5569	2.33	5.76	10
1978	.67	.59	.31	.0961	.26	-1.42	20
1979	1.96	1.98	1.04	1.0816	.01	-.65	15
1980	.97	.95	.86	.7396	1.34	1.43	25
1981	-						
1982	1.33	1.02	.84	.7056	.96	-.15	20
1983	.83	.86	.96	.8639	4.21	19.38	24
1984	1.43	2.47	2.67	7.1289	2.20	5.20	11

4X+5 TC 4+ Jan-June

1977	.75	.71	.67	.4489	1.82	2.88	62
1978	1.01	.79	.61	.3721	2.77	12.29	50
1979	.88	1.32	1.32	1.7424	2.09	5.85	46
1980	1.07	1.17	1.59	2.4336	4.24	22.35	43
1981	1.13	1.00	.78	.6084	2.10	7.34	32
1982	1.27	.85	.54	.2916	1.37	2.97	21
1983	1.40	1.24	1.01	1.0201	2.27	7.46	28
1984	1.19	1.04	1.22	1.4884	2.63	7.57	15

4X+5 TC 4+ July-Dec

1977	1.05	.89	.80	.6400	1.56	2.06	25
1978	1.28	.95	.72	.5184	1.53	1.27	15
1979	1.57	1.37	1.37	1.8769	1.79	3.58	24
1980	.69	.94	1.30	1.6900	4.09	19.23	28
1981	1.28	1.20	1.49	2.2201	3.86	17.88	29
1982	1.01	.98	.78	.6084	.93	.02	40
1983	.67	.69	.33	.1089	1.43	3.62	20
1984	1.65	1.95	2.13	4.5369	3.11	11.15	17

Table 41. Catch rates for Canadian vessels (OTB-1, 2 (TC 4+)) from the International Observer Program with trips and sets directed for pollock.

4VW				4X+5			
Year	Month	Trip	Set	Year	Month	Trip	Set
1980	Feb	1.23	1.90	1980	Feb	2.48	1.33
	Mar	2.09	2.46		Mar	2.17	0.53
	Nov	0.59	0.71		Sep	1.00	3.50
	Dec	0.77	2.70		Nov	0.40	1.40
1981	Jan	0.30	0.43	1981	Jan	0.63	0.70
	Feb	1.70	1.89		Feb	1.16	1.30
	Mar	1.00	1.07		Mar	1.35	1.87
	May	0.025	1.00		Apr	0.71	0.48
	Jun	0.69	1.02		Sep	0.68	0.74
	Apr	0.38	0.93		Oct	0.74	1.83
	Sep	0.47	0.57		Nov	0.72	1.16
	Oct	0.65	0.87		Dec	2.78	4.37
	Nov	1.78	2.19				
	Dec	2.65	3.27				
1982	Jan	0.91	1.47	1982	Jan	1.22	2.34
	Mar	0.40	0.98		Apr	0.28	0.24
	Apr	1.01	0.90		May	1.20	1.20
	May	1.55	1.12		Jun	2.94	4.16
	Jun	0.25	0.54		Aug	1.30	2.77
	Aug	0.73	1.56		Oct	1.19	2.19
	Oct	0.75	1.18		Nov	0.79	1.90
	Nov	1.59	2.22		Dec	0.10	0.10
	Dec	1.76	2.02				
	Sep	-	0.38		Feb	-	0.71
					Sep	-	0.94
1983	Jan	1.64	1.64	1983	Jan	0.47	0.91
	Mar	1.72	2.03		Mar	1.84	1.92
	Apr	1.09	1.63		Jun	0.30	1.74
	May	1.47	3.10		Jul	0.35	1.75
	Jun	0.80	1.03		Sep	0.58	1.59
	Jul	0.44	0.32		Nov	0.68	2.61
	Sep	1.04	1.52				
	Nov	0.77	0.71		Aug	-	0.85
	Dec	0.92	1.75		Oct	-	0.10
	Aug	-	1.18				
	Oct	-	0.37				
1984	Jan	0.22	0.22	1984	Jan	0.56	3.63
	Feb	0.55	1.11		Feb	1.11	1.32
	Mar	1.60	2.11		Mar	0.79	1.14
	May	1.83	1.31		May	4.95	4.95
	Jun	1.24	1.77		Jul	2.00	2.00
	Jul	0.29	0.94		Sep	0.02	0.05
	Sep	1.39	0.35		Oct	1.25	1.25
	Oct	1.18	2.91		Nov	1.46	1.64
	Nov	1.08	2.30				
	Dec	2.20	2.49				

Table 41. Continued.

4VW				4X+5			
Year	Month	Trip	Set	Year	Month	Trip	Set
1985	Jan	2.20	2.20	1985	Jan	0.71	0.94
	Mar	0.99	2.93		Feb	0.56	1.15
	May	0.51	1.09		Mar	1.16	2.19
	Jun	0.57	1.63		Apr	0.51	2.20
	Jul	1.89	2.32		Jul	-	0.75
	Feb	-	2.18				
	Apr	-	1.82				

FROM PPL FUNCTIONS FOR STOCK ASSESSMENT (REVISED), VERSION 1.0
ADAPTED FOR BIG BY S. WHITE, 02/04/09.

POPULATION NUMBERS

4/12/85

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	27744	36003	43065	52476	40360	11676	21126	102576	52046	20432	26304
3	43369	23845	29140	34793	42614	32683	7365	16764	62007	42340	15676
4	13076	29672	16475	21187	25795	32318	23640	6135	11700	61722	33635
5	10453	8345	16677	10263	13429	17043	20715	14637	2331	7257	42199
6	3588	5573	5122	7627	6005	7677	10405	11196	6351	1265	3733
7	1670	1927	3065	3078	4986	3266	4183	3356	5070	3003	378
8	821	946	1075	1640	1434	2203	2025	2338	3085	2977	1233
9	400	331	654	646	742	577	1402	1336	1446	1362	1192
10	351	233	221	509	357	273	300	914	767	527	563
11	290	185	129	152	335	155	159	156	371	383	67
2+	104105	107082	115645	134393	136477	106103	93323	161827	166380	141247	128620
3+	74360	71079	72561	81895	76097	76404	72195	57251	114333	120815	100107
4+	30771	47234	43441	47102	53263	63521	62830	42287	32323	78476	83411
5+	17673	17542	26746	25915	27266	31203	39191	36152	20623	16747	47378

MEAN POPULATION BIOMASS (KG)

4/12/85

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	21616	28861	31413	44167	31393	7545	23142	94667	42774	10546	31692
3	52124	29319	36676	33199	39933	36930	14261	25060	114224	44377	21154
4	22985	47383	28693	26372	33292	50871	42924	9946	23256	68829	61066
5	23617	19611	36110	19464	27158	38473	47495	28724	3756	16663	93840
6	11123	16369	15092	23630	16414	21412	25395	29307	17164	3666	10509
7	6496	7300	10277	9342	16574	11579	13132	17744	17606	6768	2277
8	3296	4935	4364	6374	5122	11234	9807	10228	10747	9679	5265
9	2075	1926	3552	3109	3073	2540	7118	6682	5554	4631	3375
10	1683	1292	1410	3006	1713	1559	1731	5671	3607	1440	2729
11	1715	1125	766	942	2457	973	1017	736	3177	2020	369
2+	147132	158341	172554	169605	177132	187117	186045	228986	244270	190420	234715
3+	125517	129461	141141	125437	145739	177372	162902	134319	201496	177874	202623
4+	73393	100142	102465	92239	105806	138642	148621	109240	87272	135498	181667
5+	50407	52759	73572	65867	72514	87770	105697	99294	84016	48667	120603

FISHING MORTALITY

4/12/85

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	0.021	0.011	0.013	0.004	0.005	0.022	0.019	0.024	0.006	0.002	0.010
3	0.184	0.169	0.119	0.092	0.081	0.130	0.223	0.171	0.064	0.024	0.105
4	0.251	0.377	0.275	0.256	0.222	0.245	0.264	0.766	0.278	0.160	0.210
5	0.429	0.288	0.350	0.338	0.359	0.293	0.415	0.650	0.411	0.485	0.280
6	0.449	0.393	0.309	0.456	0.409	0.407	0.464	0.412	0.349	0.547	0.350
7	0.369	0.363	0.425	0.564	0.614	0.276	0.382	0.352	0.512	0.690	0.350
8	0.708	0.169	0.310	0.593	0.710	0.254	0.218	0.280	0.617	0.716	0.350
9	0.331	0.203	0.050	0.393	0.768	0.455	0.228	0.352	0.309	0.701	0.350
10	0.440	0.396	0.174	0.217	0.636	0.351	0.454	0.271	0.580	1.665	0.350
11	0.439	0.327	0.340	0.424	0.450	0.314	0.391	0.455	0.493	0.476	0.350
2+	0.453	0.363	0.325	0.482	0.541	0.353	0.400	0.373	0.566	0.737	0.350

Table 42. Cohort Analysis for a terminal F of 0.35

Table 43a. Input parameters for catch projections.

Catch projections were done using the geometric mean recruitment of 34 million fish at age 2 in 1985-86 and the following input data:

Age	1984 Population Numbers (000)	1984 Catch Numbers (000)	Average Weight (kg)	Partial Recruitment
2	28304	268	0.92	0.03
3	16696	1511	1.45	0.30
4	33835	5829	2.07	0.60
5	42199	9384	2.91	0.80
6	3733	1005	3.72	1.00
7	598	161	4.57	1.00
8	1233	332	5.63	1.00
9	1192	321	6.28	1.00
10	553	149	7.22	1.00
11	67	18	8.16	1.00

Table 43b. Catch projection for 4VWX + 5 pollock assuming F_{0.1} TAC is caught in 1985.

POPULATION NUMBERS				POPULATION BIOMASS (AVERAGE)			
	1984	1985	1986		1984	1985	1986
2	28304	34000	34000	2	23481.60	28212.51	28235.72
3	16696	22931	27557	3	20865.65	28712.12	34784.73
4	33835	12307	16970	4	57457.09	20976.47	29389.79
5	42199	22455	8232	5	97527.28	52148.36	19525.43
6	3733	26112	14042	6	10681.40	75165.99	41486.10
7	598	2154	15266	7	2102.04	7616.31	55406.18
8	1233	345	1259	8	5339.32	1503.05	5629.89
9	1192	711	202	9	5757.58	3456.73	1005.98
10	553	688	416	10	3070.60	3841.79	2384.55
11	67	319	402	11	420.69	2013.90	2605.25
2+	128410	122022	118346	2+	226703.26	223647.24	220453.62
3+	100106	88022	84346	3+	203221.66	195434.73	192217.90
4+	83410	65090	56789	4+	182356.01	166722.61	157433.17
5+	49575	52783	39819	5+	124898.92	145746.13	128043.39
CATCH BIOMASS				CATCH NUMBERS			
	1984	1985	1986		1984	1985	1986
2	247	285	237	2	268	310	258
3	2191	2901	2922	3	1511	2001	2015
4	12066	4239	4937	4	5829	2048	2385
5	27307	14051	4374	5	9384	4829	1503
6	3739	25316	11616	6	1005	6805	3123
7	736	2565	15514	7	161	561	3395
8	1869	506	1576	8	332	90	280
9	2016	1164	282	9	321	185	45
10	1076	1294	668	10	149	179	92
11	147	678	729	11	18	83	89
2+	51393	53000	42855	2+	18978	17091	13185
3+	51146	52715	42618	3+	18710	16781	12927
4+	48956	49814	39696	4+	17199	14781	10912
5+	36890	45575	34759	5+	11370	12733	8527
FISHING MORTALITY							
	1984	1985	1986				
2	0.011	0.010	0.008				
3	0.105	0.101	0.084				
4	0.210	0.202	0.168				
5	0.280	0.269	0.224				
6	0.350	0.337	0.280				
7	0.350	0.337	0.280				
8	0.350	0.337	0.280				
9	0.350	0.337	0.280				
10	0.350	0.337	0.280				
11	0.349	0.337	0.280				
2+	0.183	0.175	0.136				

Table 44. Grouping of catch by gears and time period for estimation of removals-at-age. OTB trawls are primarily stern bottom trawls, but there are some side trawls; GN are gillnets, LL are longlines, and others are primarily inshore fisheries.

Year	Period	Tonnage Class		Gears	No. of Samples	Area	Number Aged	Number Measured	Catch (+)	Weight-Length Relationship		
										a	b	Cruise
1970	April	TC 4+	OTB		1	4VW	55	166	1870	0.01427	2.93733	Cameron 175/176 July 1970
	Jan-Dec	TC 4+	OTB		5	4X+5	178	742	4135	0.00937	3.07143	Cameron 175/176 July 1970
1971	no samples - 4VW											
	Jan-Dec	TC 4+	OTB		5	4X+5	170	889	6465	0.03004	2.74758	Cameron 188/189 July 1971
1972	no samples - 4VW											
	Jan-Dec	TC 4+	OTB		6	4X+5	182	1101	11399	0.01871	2.89470	Cameron 201/202 July 1972
1973	Jan-Dec	TC 4+	OTB		7	4VW	276	1564	3155	0.018154	2.88880	Cameron 212/213 July 1973
	Jan-Dec	TC 4+	OTB		11	4X+5	416	2208	10725	0.014285	2.93835	Cameron 212/213 July 1973
1974	Jan-Dec	TC 4+	OTB		3	4VW	136	733	3891	0.01676	2.89081	Cameron 225/226 July 1974
	Jan-Dec	TC 4+	OTB		24	4X+5	762	5470	13371	0.02385	2.80718	Cameron 225/226 July 1974
1975	Jan-Dec	TC 1-6	GN, LL, Other		1	4VWX+5	32	224	6331	0.02286	2.83914	Cameron 236/237 July 1975
	Jan-Dec	TC 4+	OTB		5	4VW	188	1259	2230	0.01676	2.89081	Cameron 236/237 July 1975
	Jan-Dec	TC 4+	OTB		18	4X+5	716	4451	12102	0.02286	2.83914	Cameron 236/237 July 1975
1976	Jan-Dec	TC 1-6	GN, LL, Other		2	4VWX+5	63	445	7687	0.00588	3.13928	Cameron 250/251 July 1976
	Jan-Dec	TC 4+	OTB		7	4VW	306	1790	2230	0.00996	3.03793	Cameron 250/251 July 1976
	Jan-Dec	TC 4+	OTB		22	4X+5	803	5354	9041	0.00588	3.13928	Cameron 250/251 July 1976
1977	Jan-Dec	TC 1-6	GN, LL, Other		1	4VWX+5	30	256	4880	0.03096	2.76665	Cameron 265/266 July 1977
	Jan-Dec	TC 4+	OTB		16	4VW	736	4321	6794	0.01251	2.99009	Cameron 265/266 July 1977
	Jan-Dec	TC 4+	OTB		36	4X+5	1420	8182	9028	0.03046	2.76665	Cameron 265/266 July 1977
1978	Jan-Dec	TC 1-6	GN, LL, Other		10	4VWX+5	179	1821	6152	0.027	2.81326	Cameron 279/280 July 1978
	Jan-Dec	TC 4+	OTB		14	4VW	529	4786	5899	0.02081	2.86517	Cameron 279/280 July 1978
	Jan-Dec	TC 4+	OTB		31	4X+5	1019	8513	10446	0.0270	2.81326	Cameron 279/280 July 1978
1979	Jan-Dec	TC 1-6	GN, LL, Other		3	4VWX+5	106	687	7685	0.01350	2.95963	Cameron 292/293 July 1979
	Jan-Dec	TC 1-3	OTB		2	4VWX+5	56	387	6092	0.01350	2.95963	Cameron 292/293 July 1979
	Jan-Apr	TC 4+	OTB		3	4VW	99	853	1331	0.04196	2.67328	Hammond 13/14 March 1979
	May-Aug	TC 4+	OTB		28	4VW	875	8458	5008	0.01358	2.97418	Cameron 292/293 July 1979
	Sept-Dec	TC 4+	OTB		1	4VW	23	194	1710	0.00924	3.05383	Hammond 26/27 Oct 1979
	Jan-Apr	TC 4+	OTB		5	4X+5	161	1179	3414	0.0114	2.98252	Hammond 13/14 March 1979
	May-Aug	TC 4+	OTB		5	4X+5	174	1547	3246	0.01350	2.95963	Cameron 292/293 July 1979
	Sept-Dec	TC 4+	OTB		1	4X+5	37	266	982	0.00388	3.26457	Hammond 26/27 Oct 1979

Table 44. Continued.

Year	Period	Tonnage Class	Gears	No. of Samples	Area	Number Aged	Number Measured	Catch (†)	Weight-Length Relationship		
									a	b	Cruise
1980	Jan-Dec	TC 1-6	GN, LL, Other	3	4VWX+5	77	596	9351	0.04400	2.6941	Cameron 306/307 July 1980
	Jan-Dec	TC 1-3	OTB	9	4VWX+5	286	2135	6685	0.04400	2.6941	Cameron 306/307 July 1980
	Jan-Apr	TC 4+	OTB	9	4VW	282	2023	2315	0.01931	2.84627	Hammond 33/34 March 1980
	May-Aug	TC 4+	OTB	2	4VW	62	553	3849	0.03871	2.70659	Cameron 306/307 July 1980
	Sept-Dec	TC 4+	OTB	10	4VW	335	2462	3235	0.00864	3.08543	Hammond 42/43 Oct 1980
	Jan-Apr	TC 4+	OTB	10	4X+5	320	2650	4307	0.00782	3.06568	Hammond 33/34 March 1980
	May-Aug	TC 4+	OTB	6	4X+5	172	1418	3409	0.04400	2.69410	Cameron 306/307 July 1980
	Sept-Dec	TC 4+	OTB	12	4X+5	444	2541	2380	0.00820	3.09256	Hammond 42/43 Oct 1980
1981	Jan-Dec	TC 1-6	GN, LL, Other	8	4VWX+5	216	1810	9829	0.01246	2.98215	Hammond 64/65 Oct 1981
	Jan-Dec	TC 1-3	OTB	27	4VWX+5	901	6010	6268	0.01859	2.92225	Cameron 321/322 July 1981
	Jan-Apr	TC 4+	OTB	8	4VW	224	2099	3903	0.00581	3.12942	Hammond 48/49 March 1981
	May-Aug	TC 4+	OTB	5	4VW	143	1261	1342	0.03077	2.76718	Cameron 321/322 July 1981
	Sept-Dec	TC 4+	OTB	4	4VW	130	937	8417	0.00847	3.07881	Hammond 64/65 Oct 1981
	Jan-Apr	TC 4+	OTB	4	4X+5	158	1194	4223	0.00976	3.01206	Hammond 48/49 March 1981
	May-Aug	TC 4+	OTB	2	4X+5	64	532	558	0.01589	2.9225	Cameron 321/322 July 1981
	Sept-Dec	TC 4+	OTB	2	4X+5	66	488	4956	0.01246	2.98215	Hammond 64/65 Oct 1981
1982	Jan-Dec	TC 1-6	GN, LL, Other	14	4VWX+5	402	2605	10980	0.03023	2.76957	Hammond 80/81 July 1982
	Jan-Dec	TC 1-3	OTB	18	4VWX+5	659	4348	7713	0.03023	2.76957	Hammond 80/81 July 1982
	Jan-Apr	TC 4+	OTB	7	4VW	229	1686	2659	0.01446	2.91396	Hammond 71/72 March 1982
	May-Aug	TC 4+	OTB	7	4VW	228	1623	3043	0.0377	2.75290	Hammond 80/81 July 1982
	Sept-Dec	TC 4+	OTB	4	4VW	146	912	4033	0.00469	3.22032	Needier 002/003 Oct 1982
	Jan-Apr	TC 4+	OTB	9	4X+5	293	2172	1628	0.01055	2.99328	Hammond 71/72 March 1982
	May-Aug	TC 4+	OTB	5	4X+5	203	1197	3645	0.03023	2.76957	Hammond 80/82 July 1982
	Sept-Dec	TC 4+	OTB	11	4X+5	396	2606	3665	0.00874	3.08571	Needier 002/003 Oct 1983
1983	Jan-Dec	TC 1-6	Gn, LL, Other	13	4VWX+5	430	2839	8264	0.01149	2.98690	Needier 12/13 July 1983
	Jan-Dec	TC 1-3	OTB	38	4VWX+5	1252	9585	9492	0.01149	2.98690	Needier 12/13 July 1983
	Jan-Aug	TC 4+	OTB	38	4VW	1171	9812	7864	0.02903	2.76587	Needier 12/13 July 1983
	Sept-Dec	TC 4+	OTB	7	4VW	162	1994	3550	0.01134	3.00190	Needier 17/18 Oct 1983
	Jan-Aug	TC 4+	OTB	29	4X+5	1022	8078	5516	0.01149	2.98690	Needier 12/13 July 1983
	Sept-Dec	TC 4+	OTB	1	4X+5	43	356	564	0.01047	3.03012	Needier 17/18 Oct 1983
1984	Jan-Dec	TC 1-6	GN, LL, Other	13	4VWX+5	318	2649	7038	0.02339	2.8404	Needier 31/32 July 1984
	Jan-Dec	TC 1-3	OTB	41	4VWX+5	1119	8642	14184	0.02339	2.8404	Needier 31/32 July 1984
	Jan-Apr	TC 4+	OTB	12	4VW	346	3024	2080	0.01171	2.96209	Needier 24/25 March 1984
	May-Aug	TC 4+	OTB	15	4VW	345	3180	3091	0.02134	2.84581	Needier 31/32 July 1984
	Sept-Dec	TC 4+	OTB	15	4VW	431	3410	3550	0.01134	3.00190	Needier 17/18 Oct 1983

Table 44. Continued.

Year	Period	Tonnage Class		No. of Samples	Area	Number Aged	Number Measured	Catch (+)	Weight-Length Relationship			Cruise
		Gears							a	b		
1984	Jan-Apr	TC 4+	OTB	6	4X+5	203	1575	728	0.00984	3.00564	Needier 24/25	March 1984
	May-Aug	TC 4+	OTB	2	4X+5	75	624	1563	0.02339	2.84041	Needier 31/32	July 1984
	Sept-Dec	TC 4+	OTB	1	4X+5	23	218	564	0.01047	3.03012	Needier 17/18	Oct 1983
1985	Jan-June	TC 1-6	GN, LL, Other	6	4VWX+5	96	1405	978	0.02339	2.8404	Needier 31/32	July 1984
	Jan-June	TC 1-3	OTB	20	4VWX+5	358	4501	6640	0.00984	3.00564	Needier 24/25	March 1984
	Jan-June	TC 4+	OTB	25	4VW	222	6051	1841	0.01171	2.96209	Needier 24/25	March 1984
	Jan-June	TC 4+	OTB	5	4X+5	107	1307	657	0.00984	3.00564	Needier 24/25	March 1984

Table 45a. Catch at age ('000s) from OTB in Division 4X and SA5 for Canadian vessels (Maritimes and Quebec) TC 4+.

Age	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985*
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	5	98	306	27	103	113	48	13	17	4	107	19	77	10	0	0
3	98	349	831	619	2764	506	706	173	516	504	156	734	1355	358	80	2
4	299	555	944	2277	1257	1712	947	650	1344	1307	1031	318	628	1572	401	26
5	273	508	610	1455	1090	649	1427	806	1129	829	1779	885	163	193	551	52
6	166	407	355	194	437	672	316	844	409	434	765	916	388	31	56	66
7	102	137	186	80	140	281	222	351	413	189	194	339	411	115	7	29
8	53	60	42	24	79	90	56	144	74	71	58	87	122	190	14	4
9	30	1	36	27	27	33	5	30	27	14	34	33	55	77	11	9
10	14	2	10	27	28	38	1	13	8	12	9	47	27	30	6	8
11	3	-	23	5	13	27	2	5	4	6	5	-	21	6	2	7
11+	-	-	35	1	5	8	6	16	4	-	1	1	1	9	46	1
Av. Age	5.22	4.68	4.39	4.39	4.03	4.79	4.60	5.43	4.81	4.69	4.88	5.29	4.53	4.64	4.79	6.10
# Aged	178	170	182	416	762	716	803	1420	1019	372	936	288	892	1065	301	107
# Measured	742	889	1101	2208	5470	4451	5354	8182	8513	2992	6609	2214	5975	8434	2417	1307
Catch (t)	4135	6465	11399	10725	13371	12102	9041	9028	10446	7642	10096	9737	8938	6080	2855	657

* January-June only

Table 45b. Weights at age (kg) from OTB in Division 4X and SA5 for Canadian vessels (Maritimes and Quebec) TC 4+.

Age	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985*
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	.97	1.67	1.06	.95	.85	.86	.63	.87	1.18	.78	1.13	1.03	.91	.71	-	-
3	1.84	2.32	1.86	1.37	1.44	1.34	1.27	1.14	1.30	1.22	1.66	1.68	1.28	1.20	1.31	1.16
4	2.93	2.12	2.93	1.89	2.00	2.09	1.89	1.80	1.93	1.73	1.89	2.69	2.73	1.67	2.07	1.77
5	3.79	3.15	4.44	2.63	3.04	3.08	2.67	2.57	2.68	2.33	2.27	2.73	3.38	2.90	2.67	2.53
6	4.58	4.00	5.29	3.96	4.08	4.01	3.62	3.35	3.74	3.34	2.94	3.14	4.20	3.97	3.24	3.11
7	5.77	5.00	5.95	4.84	4.99	5.21	4.33	4.24	4.49	4.27	3.96	4.17	4.41	4.78	4.56	3.80
8	6.40	6.24	6.52	6.07	6.00	6.50	5.26	5.50	5.74	5.60	5.74	6.22	5.45	5.23	5.32	5.96
9	7.51	7.25	6.84	6.47	6.57	7.61	6.86	6.18	6.92	6.97	7.28	6.37	6.58	6.02	4.68	5.82
10	6.72	9.62	7.60	7.21	7.24	7.60	6.70	7.17	7.32	7.25	8.30	9.43	8.31	6.53	5.92	5.25
11	9.24	-	6.81	9.33	7.94	8.47	7.24	7.73	8.39	9.64	9.40	-	9.94	8.12	5.74	5.97
11+	-	-	7.8	9.66	8.78	9.44	9.99	9.73	9.60	-	11.59	12.53	14.21	8.77	7.11	8.39

* January-June only

Table 46a. Catch at age ('000s) from OTB TC 4+ in Divisions 4VW (January-December) 1970-1985.

Age	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985*
1	0	-	-	0	0	0	0	0	0	0	0	0	0	1	0	0
2	0	-	-	81	17	10	40	60	2	2	9	4	0	12	1	0
3	48	-	-	185	245	150	131	946	78	190	31	100	1303	580	178	0
4	253	-	-	708	340	516	166	1561	954	1355	192	41	173	4365	769	86
5	115	-	-	368	387	199	238	403	855	1157	1350	211	43	200	2672	194
6	86	-	-	56	276	165	93	219	214	627	975	1358	365	26	85	387
7	88	-	-	20	51	39	55	114	199	100	481	1063	634	113	8	120
8	60	-	-	13	16	1	24	75	69	69	113	380	356	296	42	11
9	21	-	-	7	26	1	5	24	41	13	118	81	389	161	50	7
10	20	-	-	4	6	0	7	3	2	13	26	89	97	74	19	13
11	4	-	-	0	15	0	6	15	7	7	5	5	49	20	8	8
11+	5	-	-	0	22	1	22	48	10	-	4	17	9	24	3	5
Av. Age	5.49	-	-	4.21	4.84	4.45	5.02	4.36	4.99	4.76	5.66	6.51	5.81	4.51	4.87	5.92
# Aged	55	-	-	276	136	188	306	736	529	997	679	497	603	1333	1122	222
# Measured	166	-	-	1564	733	1259	1790	4321	4786	9505	5038	4297	4221	11806	9614	6051
Catch (+)	1870	-	-	3155	3891	2230	2230	6794	5899	8049	9399	13662	9735	11414	8721	1841

* January-June only

Table 46b. Weights at age (kg) for OTB TC 4+ in Divisions 4VW (January-December) 1970-1985.

Age	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985*
1	0	-	-	0	0	0	0	0	0	0	0	0	0	.63	0	0
2	0	-	-	.67	.59	.84	.63	.72	.81	.75	1.12	.79	.49	.81	.83	0
3	.87	-	-	1.27	1.24	1.13	1.04	1.10	.98	1.03	1.75	1.87	1.08	1.35	1.44	0
4	1.26	-	-	1.96	1.81	1.68	1.88	1.39	1.55	1.63	1.83	2.32	2.90	1.66	2.03	1.28
5	1.93	-	-	2.70	2.89	2.32	2.83	2.11	2.15	2.30	2.31	2.72	2.83	2.34	2.20	1.61
6	2.72	-	-	3.97	3.97	3.25	3.52	3.44	3.42	3.08	2.78	3.12	3.83	3.55	3.02	2.30
7	3.89	-	-	4.91	5.23	4.33	4.83	5.06	4.30	3.66	3.62	4.14	4.25	4.38	4.03	2.49
8	5.49	-	-	6.46	6.70	5.13	5.90	5.74	6.12	4.89	5.41	5.87	4.80	4.69	5.54	4.27
9	7.02	-	-	7.68	6.72	5.13	6.70	6.88	6.99	5.56	6.02	7.31	6.43	5.29	5.42	4.94
10	7.59	-	-	8.14	7.00	-	8.26	7.56	8.87	5.26	9.40	7.88	7.68	5.53	6.10	5.23
11	8.92	-	-	-	8.48	-	9.46	10.79	8.61	8.76	8.38	6.90	8.01	7.63	7.09	5.52
11+	8.11	-	-	-	13.00	8.69	8.65	11.37	10.23	-	10.98	8.99	8.27	8.51	10.04	6.62

* January-June only

Table 47a. Catch at age ('000s) from stern and side trawls (OTB1, OTB2) from Divisions 4VWX and SA5 for Canadian vessels (Maritimes and Quebec) TC 1-3.

Age	1979	1980	1981	1982	1983	1984	1985*
1	0	0	0	0	0	0	0
2	17	10	17	14	29	20	0
3	1268	28	376	542	704	416	35
4	830	228	233	520	2269	1529	201
5	632	534	514	207	341	2633	766
6	132	556	406	437	49	224	953
7	44	188	258	321	93	31	177
8	0	74	73	137	73	62	48
9	0	44	18	62	42	88	31
10	0	3	15	30	15	34	33
11	0	1	3	14	8	3	9
11+	0	0	3	8	13	4	17
Av. Age	3.91	5.62	5.16	5.17	4.20	4.75	5.74
# Aged	56	286	901	659	1252	1119	358
# Measured	387	2135	6010	4348	9585	8642	4501
Catch (t)	6092	6685	6268	7713	9492	14184	6640

* January-June only

Table 47b. Weights-at-age (kg) for stern and side trawls (OTB1, OTB2) from Divisions 4VWX and SA5 by Canadian vessels (Maritimes and Quebec) TC 1-3.

Age	1979	1980	1981	1982	1983	1984	1985*
1	-	-	-	-	-	-	-
2	0.87	1.03	1.07	0.71	0.89	1.53	-
3	1.39	1.88	1.81	1.48	1.27	1.80	1.06
4	1.88	2.61	2.41	2.51	1.83	2.36	1.88
5	3.24	3.39	3.04	3.53	3.05	2.87	2.60
6	3.74	4.31	3.66	4.08	4.15	3.94	3.03
7	4.93	5.28	4.71	4.72	5.00	5.48	3.41
8	-	6.01	6.02	5.66	5.53	6.11	3.75
9	-	6.97	6.83	6.21	6.07	5.78	6.14
10	-	7.91	7.08	7.07	6.91	6.30	5.74
11	-	8.34	8.20	8.30	8.10	9.54	6.30
11+	-	-	8.76	8.81	9.52	9.66	7.59

* January-June only

Table 48a. Catch at age ('000s) from gillnets, longlines, and other gears in Division 4VWX and SA5 for Canadian vessels (Maritimes and Quebec) TC 1-3, with some small incidental catches by vessels TC 4+, as indicated in Tables 5 & 6.

Age	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985*
1	0	0	0	0	15	50388	0	0	0	0	0
2	0	0	0	360	106	348	0	0	0	0	0
3	0	8	0	8025	1418	11	28	67	79	63	0
4	210	142	30	1174	3104	106	59	249	959	640	13
5	565	779	220	135	333	569	362	134	496	1031	88
6	423	348	769	122	335	317	1107	610	126	172	132
7	343	595	119	104	110	63	719	825	193	32	19
8	14	78	119	18	51	2	156	401	239	69	5
9	0	22	21	14	15	1	32	130	118	63	1
10	7	0	0	1	0	0	12	14	50	20	1
11	0	5	0	1	4	0	21	18	15	8	1
11+	0	0	0	1	0	0	-	1	11	0	1
Av. Age	5.62	5.87	6.11	3.21	3.99	1.10	6.29	6.56	5.44	5.04	5.72
# Aged	32	63	30	179	106	77	216	402	430	318	96
# Measured	224	445	256	1821	687	596	1810	2605	2839	2649	1405
Catch (t)	6331	7687	4880	6152	7685	9351	9029	10980	8264	7038	978

* January-June only

Table 48b. Weights at age (kg) from gillnets, longlines, and other gears in Divisions 4VWX and SA5 for Canadian vessels (Maritimes and Quebec) TC 1-3, with some small incidental catches by vessels TC 4+, as indicated in Tables 5 & 6.

Age	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985*
1	-	-	-	-	0.19	0.10	-	-	-	-	-
2	-	-	-	0.3	0.76	0.18	-	-	-	-	-
3	-	1.71	-	0.44	0.82	2.33	2.13	1.52	1.61	2.16	-
4	2.57	2.52	2.07	0.69	0.99	2.75	2.49	2.99	2.33	2.80	2.81
5	3.72	3.13	2.89	3.38	2.97	3.79	3.27	3.90	3.43	3.11	3.42
6	4.13	3.94	3.71	4.36	3.83	4.21	3.68	4.42	4.22	4.12	3.79
7	5.11	4.79	4.80	4.96	5.21	4.80	4.24	4.57	5.16	5.87	4.47
8	6.87	5.90	5.14	6.22	6.32	9.10	5.19	5.31	5.54	6.14	4.66
9	-	7.20	6.75	6.60	6.93	7.62	6.73	5.58	6.60	6.04	7.55
10	8.34	-	-	6.54	-	-	7.41	6.84	7.00	6.76	7.42
11	-	9.20	-	7.97	8.48	-	7.62	7.13	8.50	7.40	9.15
11+	-	-	-	-	-	-	-	8.06	8.20	12.20	12.50

*January-June only

Table 49a. Canadian catch at age.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	11	179	484	191	188	159	124	92	384	129	474	40	91	51	21
3	261	635	1315	1562	4752	848	1187	1397	8770	3380	226	1238	3267	1721	737
4	954	1011	1494	5789	2451	3090	1709	2791	4043	6596	1557	651	1570	9165	3339
5	698	924	965	3558	2243	1661	3124	1730	2622	2951	4232	1972	547	1230	6887
6	449	740	563	487	1053	1505	924	2097	903	1528	2613	3787	1800	232	537
7	329	250	296	197	291	757	985	700	871	443	926	2379	2191	514	78
8	193	111	67	71	148	132	191	390	198	191	247	696	1016	798	187
9	90	4	59	67	78	44	37	89	100	42	197	164	636	398	212
10	58	6	17	62	54	57	12	20	14	25	38	163	167	169	79
11	13	0	39	11	41	35	17	25	15	17	11	29	102	49	21

Table 49b. U.S.A. catch at age.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	5	75	154	1659	314	141	122	20	92	202	192	595	105	29	42
3	97	265	419	578	2864	1056	803	293	726	1359	416	1446	1162	815	510
4	353	421	475	1218	1091	2602	1029	943	550	1773	1955	645	694	2071	1859
5	259	385	307	460	1200	320	1212	681	649	1039	1556	1855	296	659	2962
6	167	308	179	155	180	258	373	826	631	500	964	762	767	193	641
7	122	104	95	106	115	123	323	326	936	243	542	372	376	364	115
8	72	47	22	74	96	42	104	261	349	285	195	258	298	177	161
9	34	2	19	26	28	21	11	99	270	114	168	98	172	128	125
10	22	3	6	15	32	28	7	62	134	47	78	123	96	120	105
11	5	0	13	0	14	17	17	20	84	25	36	33	95	83	42

Table 49c. Foreign catch at age.

Table 49d. U.S.S.R. catch at age.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	123	694	46	156	11	4	5	4	1	0	26	9	7	2	3
3	57	718	176	303	424	13	51	14	13	2	46	16	122	33	2
4	56	203	1802	1413	161	317	206	25	68	167	157	8	19	74	9
5	53	73	689	649	297	403	490	79	168	283	377	81	11	14	31
6	62	43	254	105	215	705	150	76	86	273	143	69	37	8	6
7	65	86	85	51	303	150	296	14	104	135	107	56	34	12	7
8	44	40	161	104	211	277	123	32	37	125	58	62	22	42	18
9	20	31	148	149	176	99	41	13	20	9	24	24	21	19	26
10	16	123	82	11	119	13	56	8	1	36	18	28	15	10	13
11	29	209	32	99	313	28	24	5	0	0	0	11	5	11	4

Table 50a. Total catch at age (No. x 10⁻³).

	TOTAL CATCH AT AGE (NO. IN 0005)														
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	146	1077	845	2063	525	314	253	116	478	332	694	645	204	83	67
3	620	2075	2346	2662	8341	1970	2056	1727	9521	4746	690	2709	4378	2588	1252
4	2136	2362	4266	9973	3863	6168	2967	3604	4707	6563	3362	1308	2392	11429	5219
5	1554	2047	2281	5615	3888	2452	4860	2515	3479	4293	6197	3719	857	1711	9713
6	1031	1624	1183	877	1520	2535	1456	3021	1633	2312	3738	4641	2612	435	1186
7	762	620	574	406	729	1056	1610	1050	1924	824	1582	2822	2812	875	201
8	468	276	273	269	465	457	420	688	587	603	502	1021	1341	1027	367
9	216	40	246	260	268	167	90	203	372	166	391	288	634	550	364
10	144	136	111	105	209	102	76	71	156	109	135	316	280	302	196
11	57	209	97	113	371	83	59	51	100	43	48	74	203	144	68

Table 50b. Commercial weights at age (kg).

	COMMERCIAL WEIGHTS AT AGE														
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2	0.97	1.54	1.00	0.83	0.83	0.86	0.63	0.77	0.35	0.77	0.43	1.02	0.88	0.84	1.50
3	1.66	2.14	1.75	1.36	1.43	1.30	1.25	1.11	0.51	1.11	1.73	1.75	1.24	1.30	1.36
4	2.49	1.96	2.76	1.90	1.97	2.05	1.94	1.57	1.48	1.38	2.05	2.55	2.72	1.77	2.33
5	3.48	2.91	4.13	2.64	3.01	3.21	2.80	2.50	2.54	2.59	2.63	2.71	3.52	3.06	2.83
6	4.22	3.70	4.98	3.98	4.05	3.96	3.73	3.49	3.75	3.38	3.33	3.35	4.17	4.10	3.78
7	5.27	4.62	5.59	4.85	5.03	5.12	4.64	4.47	4.50	4.43	4.11	4.24	4.47	4.87	5.41
8	6.12	5.73	6.13	6.14	6.08	6.53	5.60	5.44	5.92	5.54	5.70	5.78	5.20	5.15	5.93
9	7.40	5.44	6.38	6.60	6.62	7.55	7.04	6.50	6.90	6.52	6.46	6.95	6.25	5.90	5.72
10	7.02	8.02	7.15	7.27	7.21	7.67	7.61	7.23	7.47	6.22	9.02	8.22	7.61	6.26	6.34
11	9.14	9.00	6.29	9.33	8.14	8.47	8.60	9.57	8.46	9.00	8.84	7.56	8.29	8.03	7.43

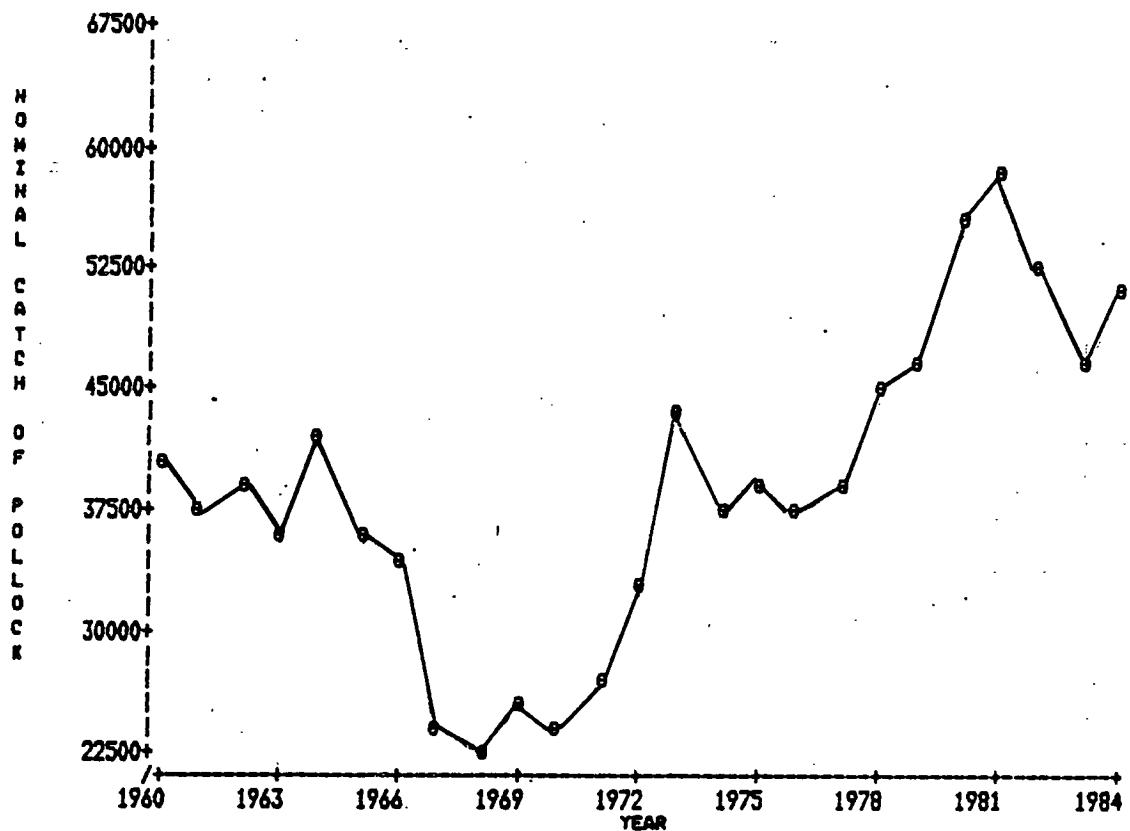
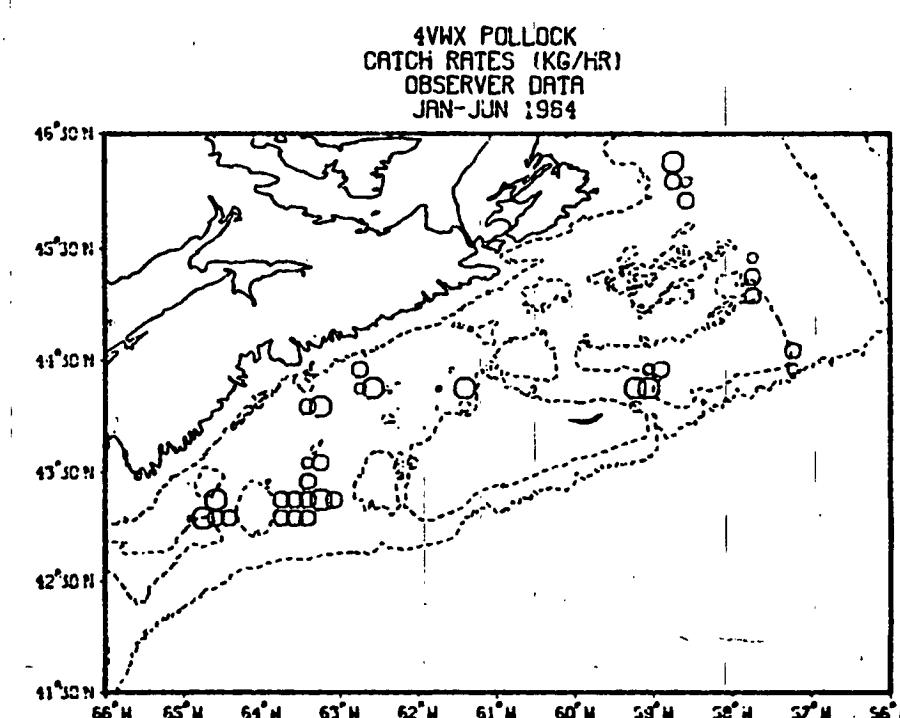
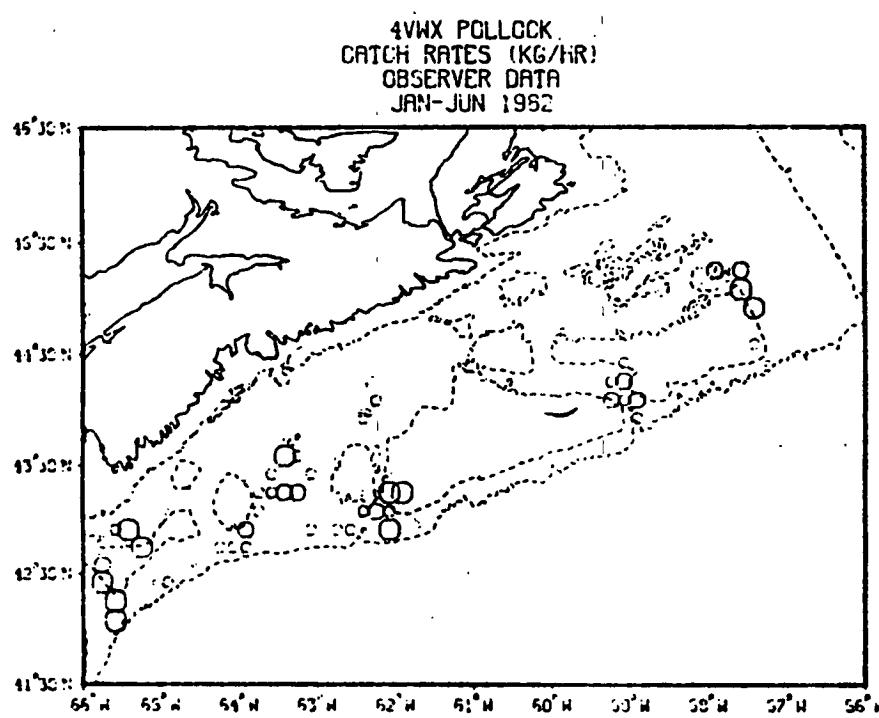
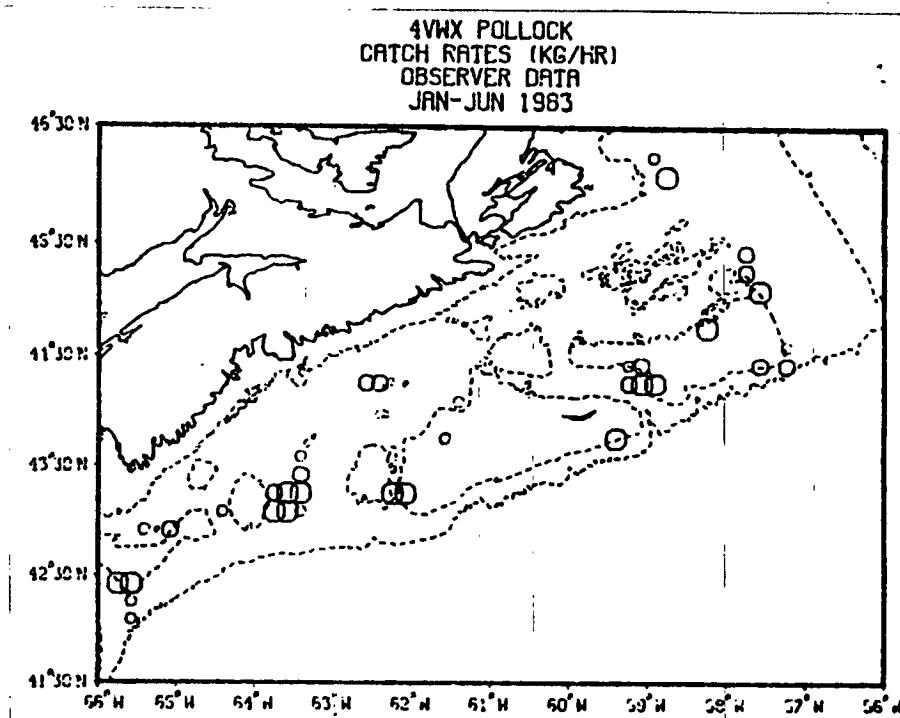
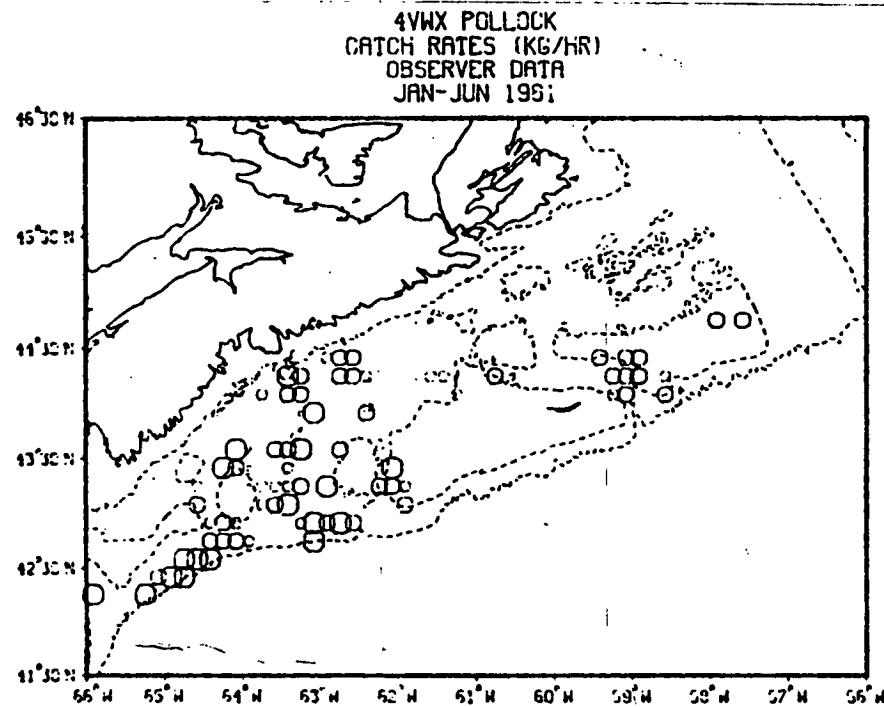


Figure 1. Nominal catches of pollock in Divisions 4VIX and Subarea 5.

Figure 2a. Distribution maps of pollock trips (1981-1984) from the International Observer Program.

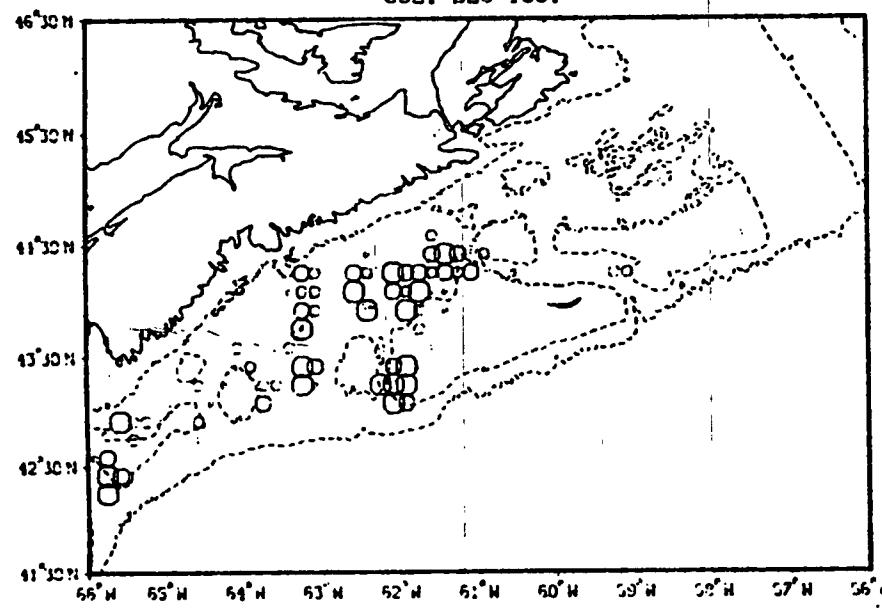


LEGEND

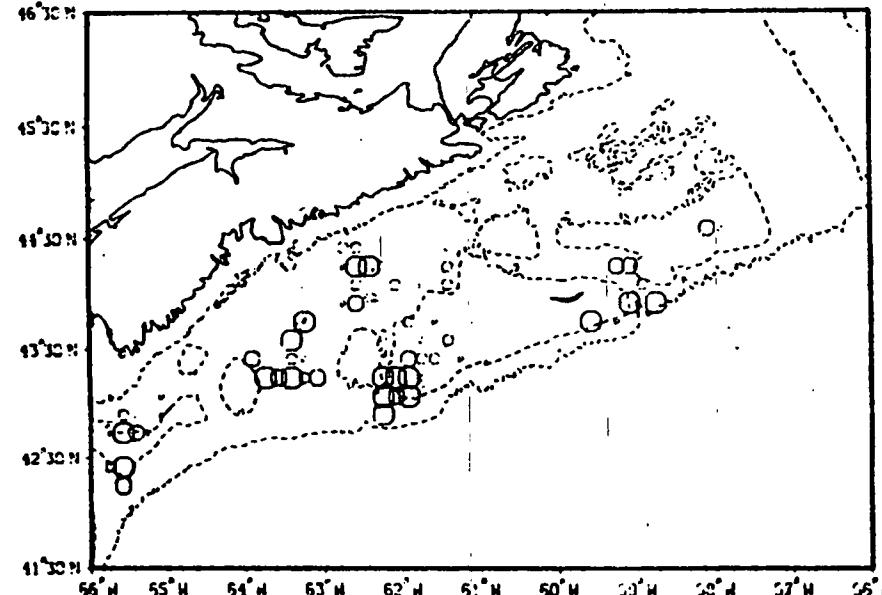
● LESS THAN 200 C 200 TO 200 O 200 TO 1700 □ MORE THAN 1700

Figure 2b.

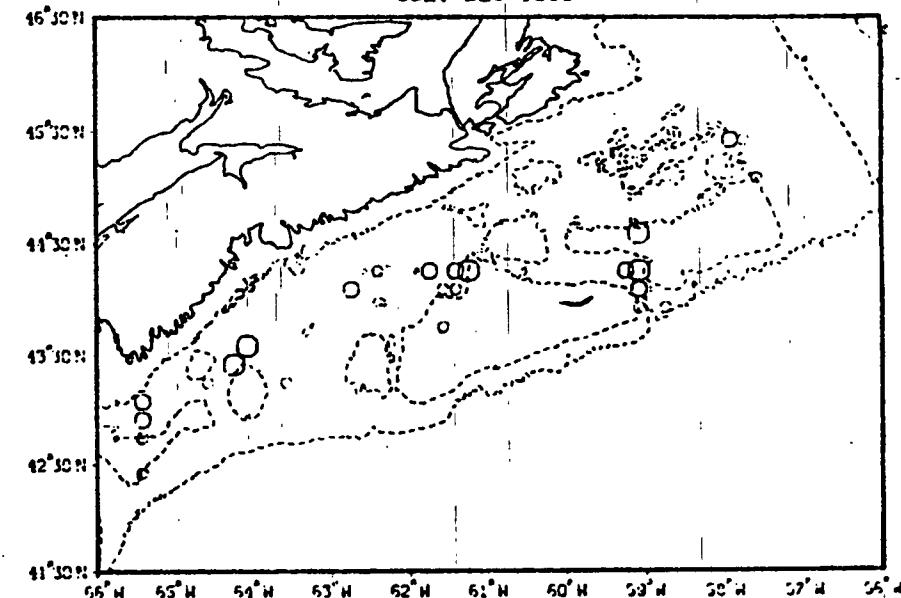
4VWX POLLOCK
CATCH RATES (KG/HR)
OBSERVER DATA
JULY-DEC 1961



4VWX POLLOCK
CATCH RATES (KG/HR)
OBSERVER DATA
JULY-DEC 1962

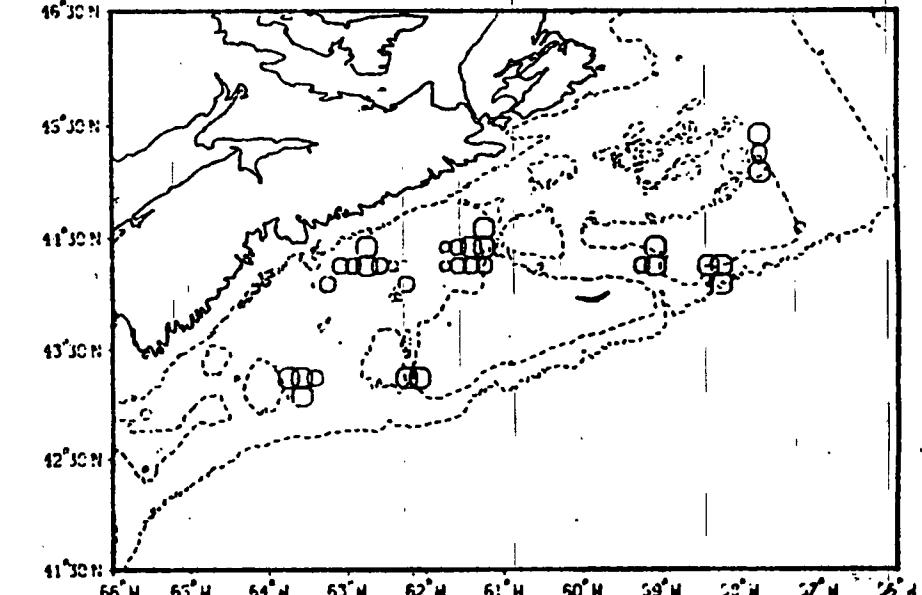


CATCH RATES (KG/HR)
OBSERVER DATA
JULY-DEC 1963



84

4VWX POLLOCK
CATCH RATES (KG/HR)
OBSERVER DATA
JULY-DEC 1964



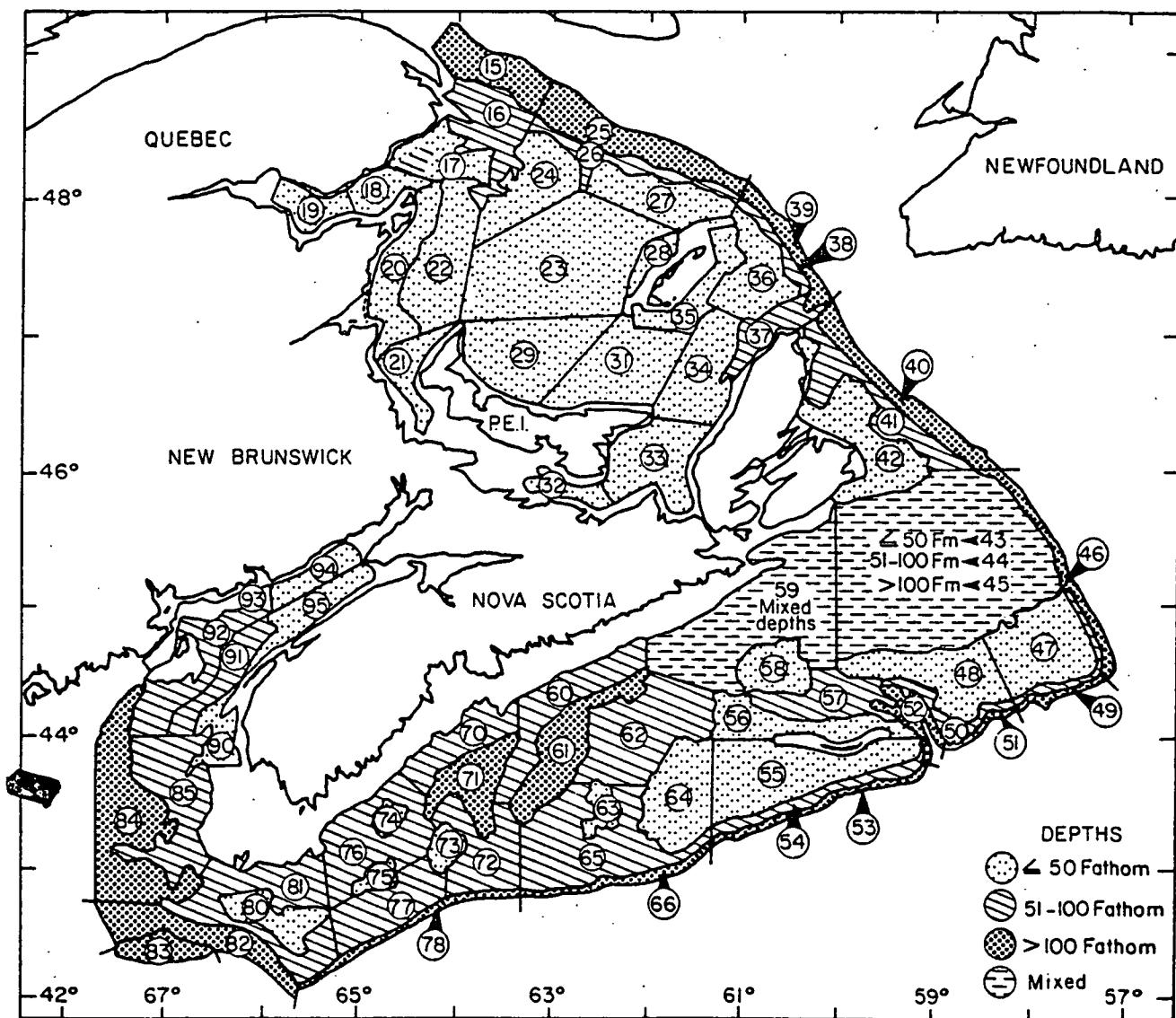


Figure 3a. Strata used in the Canadian RV surveys.

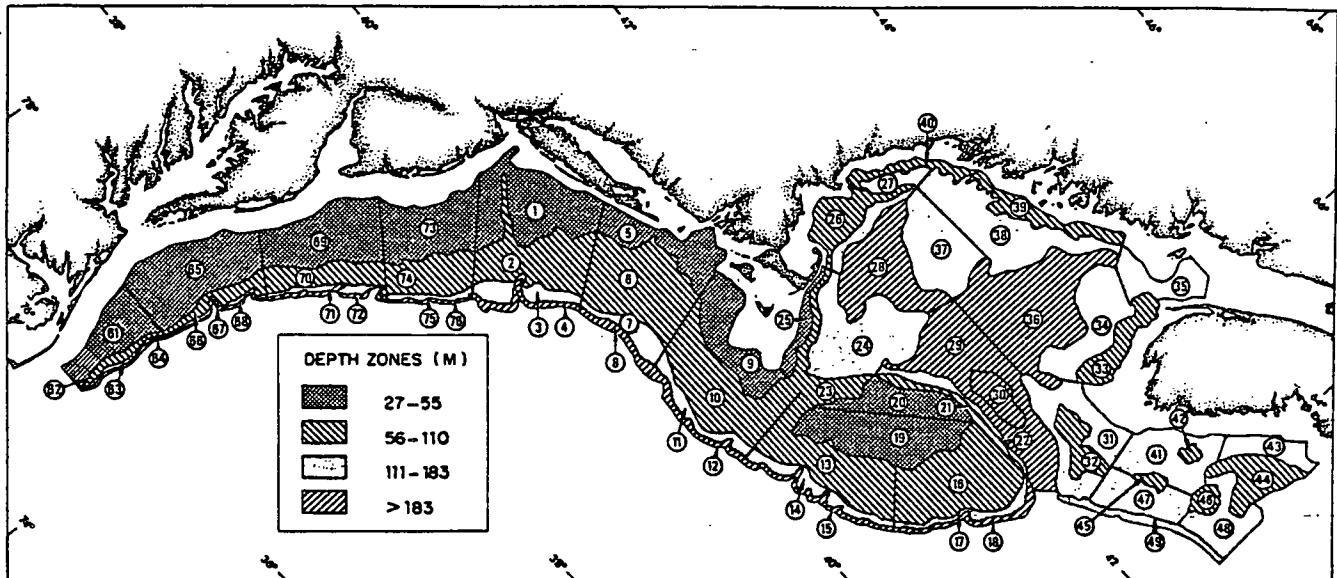


Figure 3b. Strata used in the U.S.A. RV surveys.

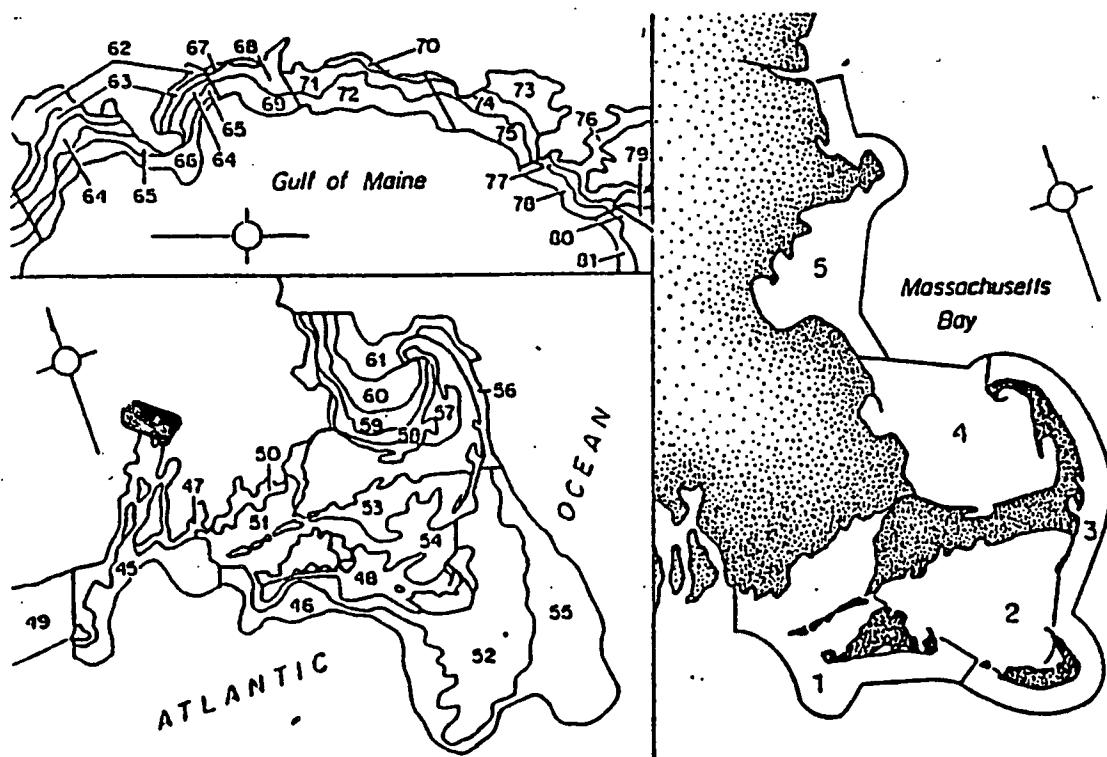
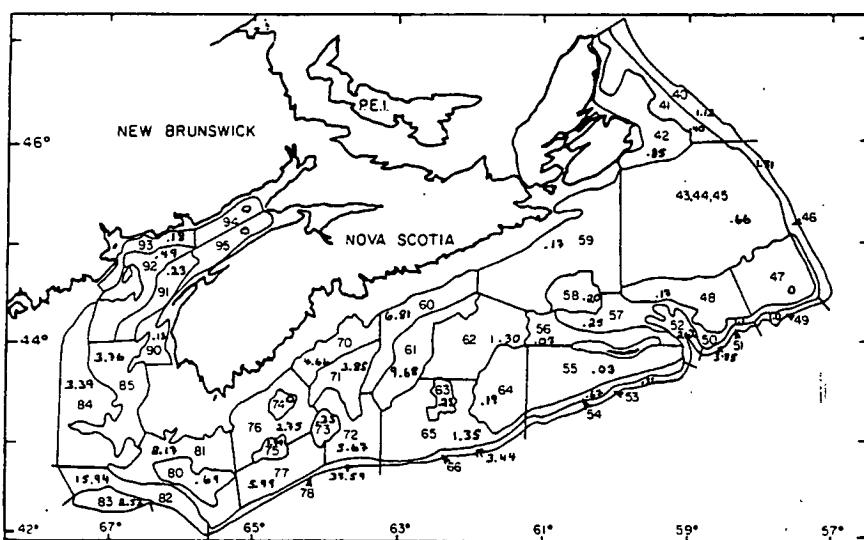


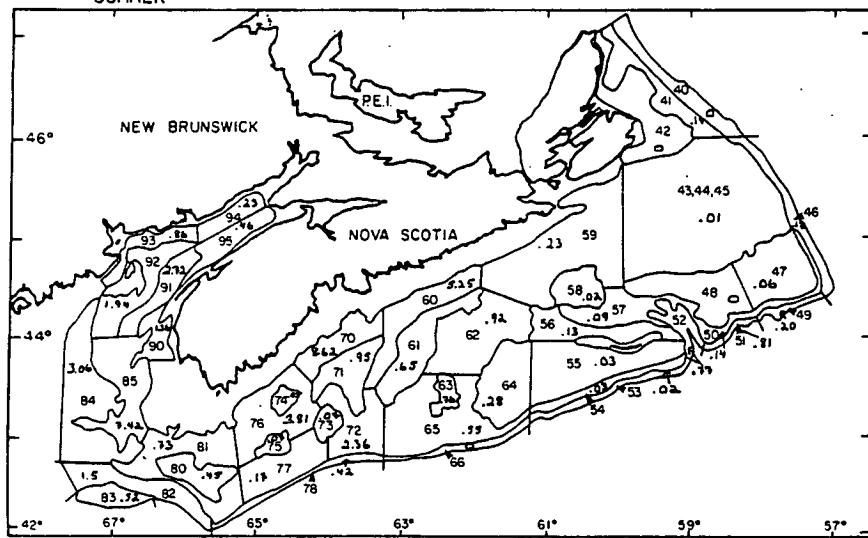
Figure 3c. Strata used in the U.S.A. Inshore surveys.

Figure 4. RV survey catch rates for spring (1978-84), summer (1970-84), and fall (1978-83).

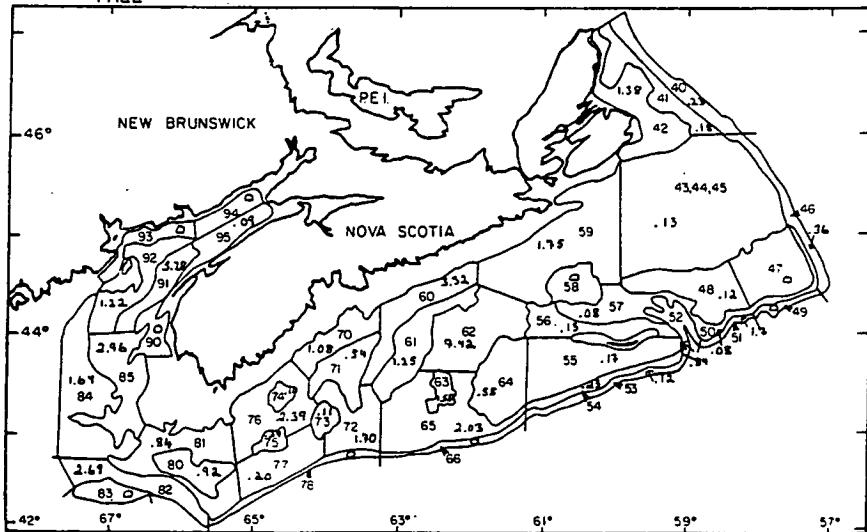
SPRING



SUMMER

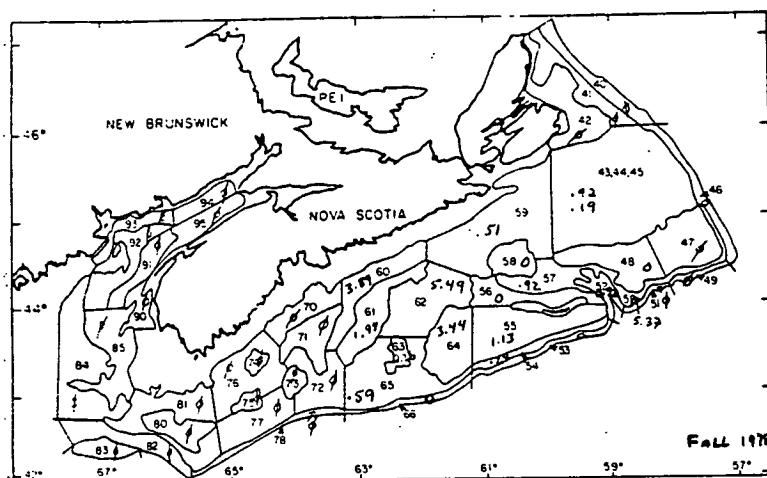


FALL



Fall RV surveys: 1978-1980

Catch Rates (kg)



Spring RV surveys: 1979-1981

Catch Rates (kg)

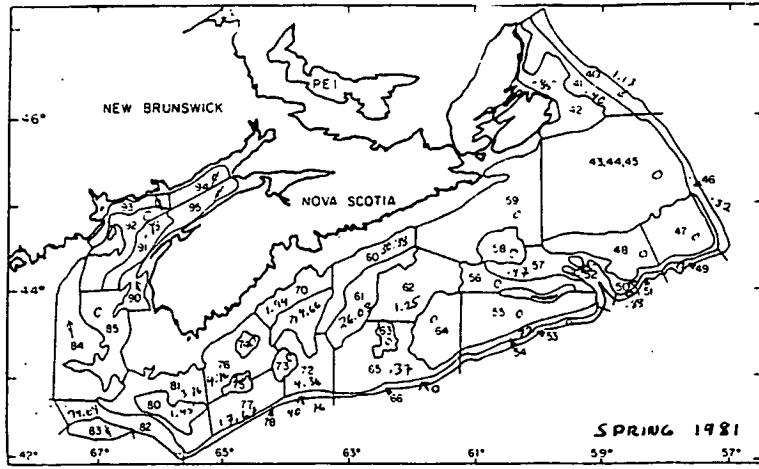
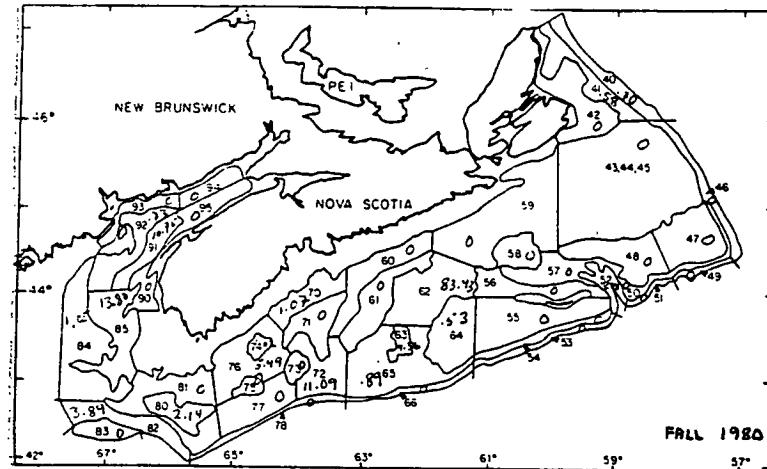
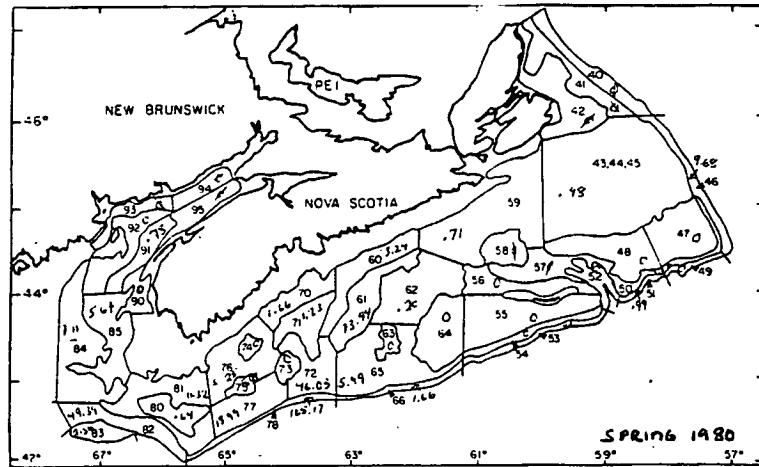
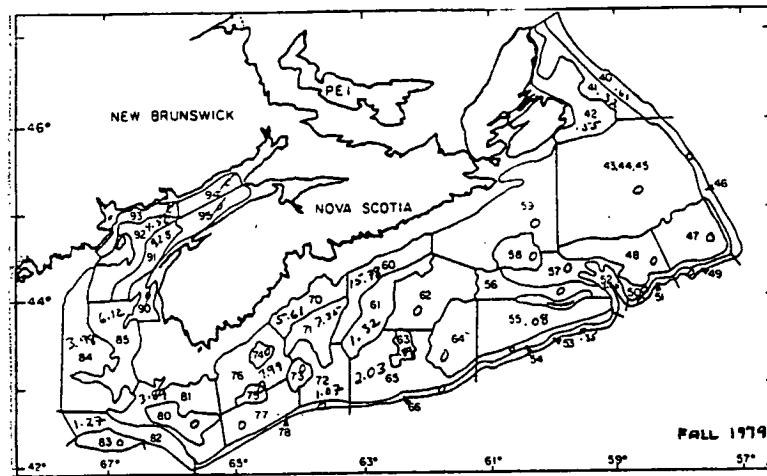
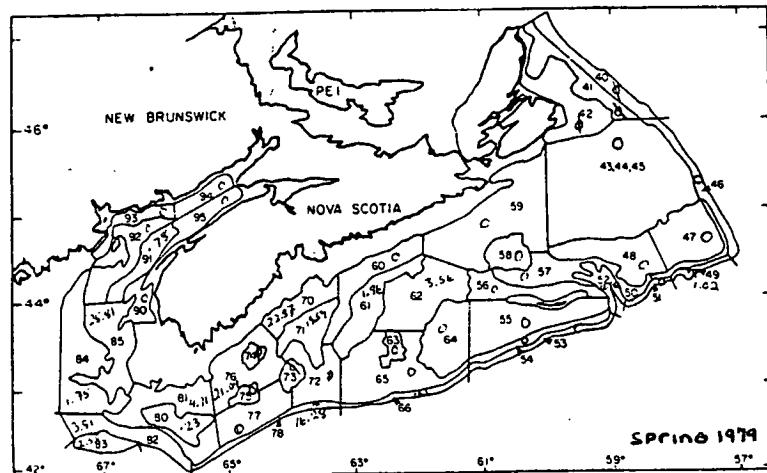
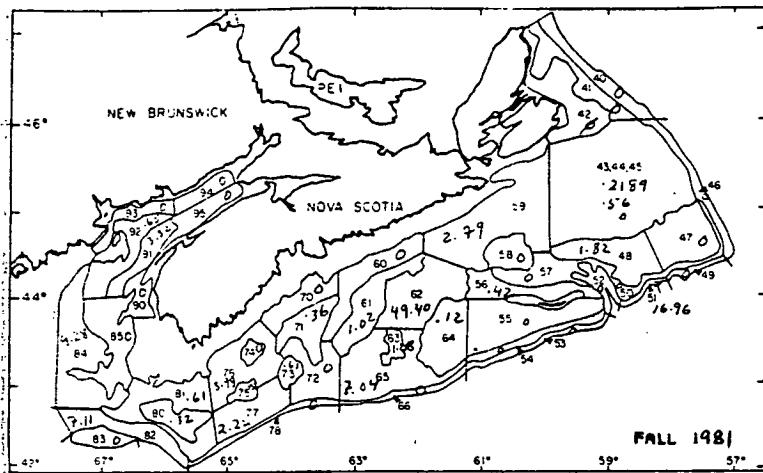


Figure 5a. Catch rates by strata from Canadian RV surveys.

Fall EV surveys: 1981-1983

Catch Rates (kg)



Spring RV surveys: 1982-1984

Catch Rates (kg)

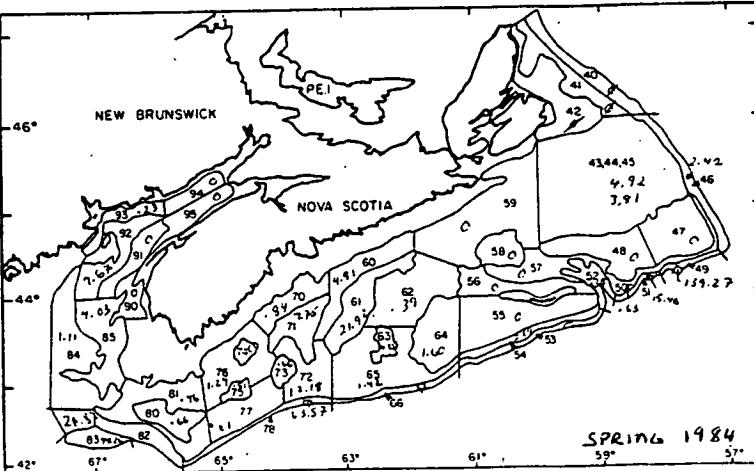
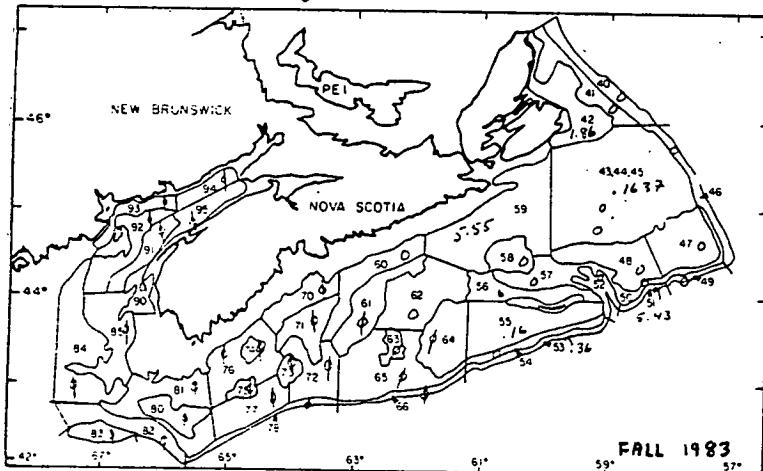
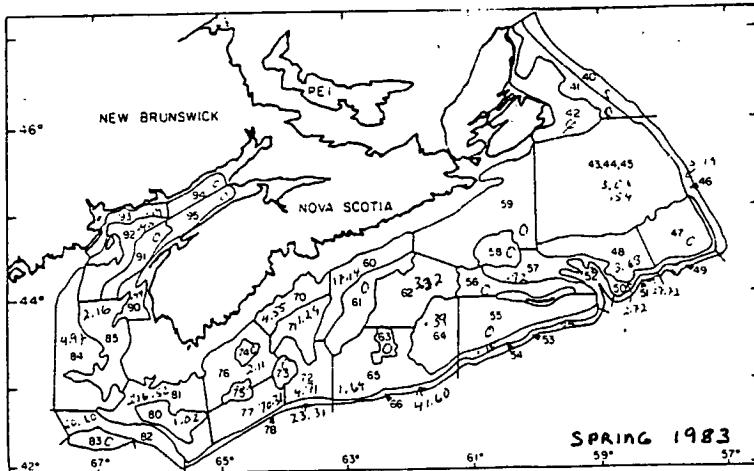
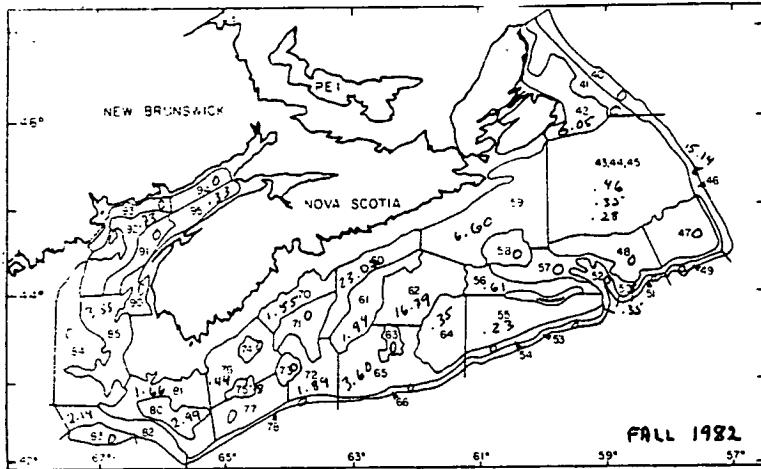
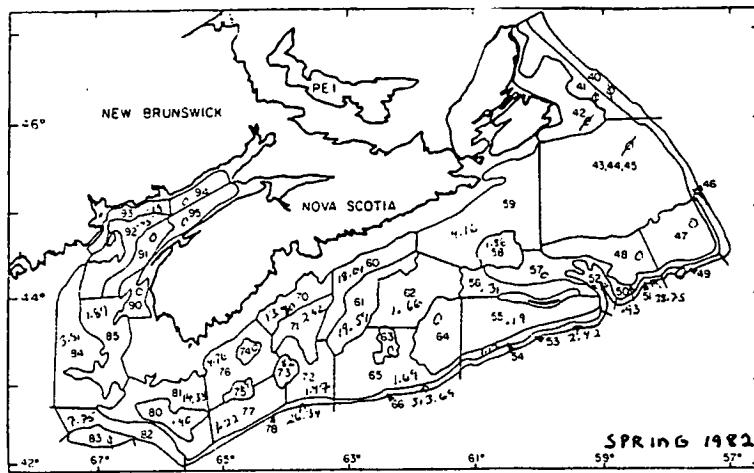
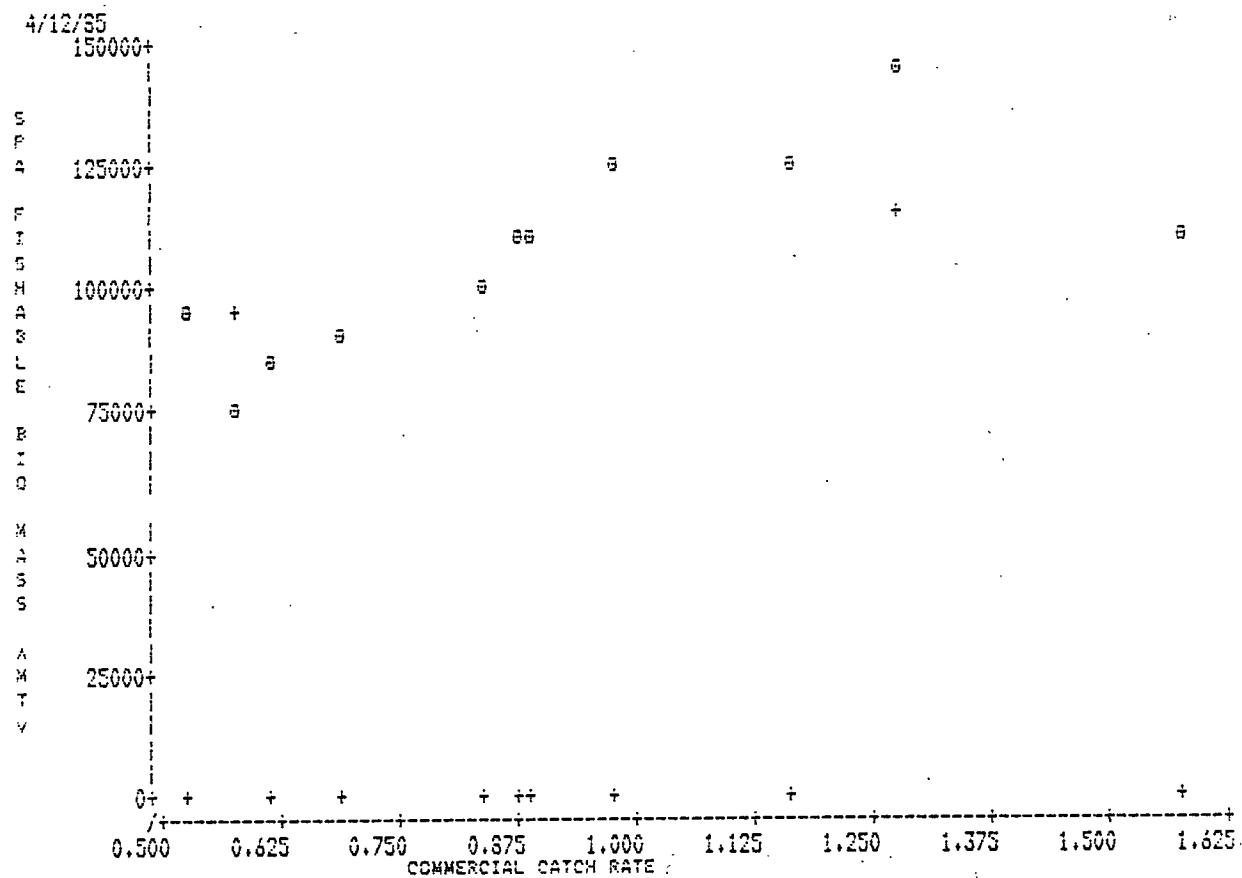


Figure 5b. Catch rates by strata from Canadian RV surveys.



YEAR	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
SPA	75677	66700	95729	89038	77748	122554	126706	109783	112326	110372	145746
CATCH RATE	0.58	0.61	0.52	0.57	0.84	1.16	0.97	0.87	1.58	0.87	1.28
ESTIMATE	92640	93702	90516	96531	101637	113155	106433	103605	126010	102893	117377
RESIDUALS	-16742	-6802	5261	-7474	-1868	9400	20473	6161	15664	7475	26346

Fig. 6. Plot of SPA Fishable Biomass vs Commercial Catch Rate (June -Aug) from the May analysis of pollock using a terminal F of 0.35.