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1979 Performance of Commercial Sampling for East Coast Canadian Fisheries

by

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ABSTRACT

This paper presents a review of the 1979 performance of commercial catch sampling for East Coast Canadian Fisheries. The review indicates that squid, certain shrimp stocks and a few groundfish and pelagic stocks do not meet the ICNAF minimum sampling requirement- one sample for each 1,000 tons caught of each species per division, quarter and gear - for all of their gear-categories in all quarters. For many groundfish and pelagic stocks, sampling efforts are not distributed over gear-types and over time so as to generate representative samples of the commercial catch. The paper also comments on the importance of commercial catch sampling data for the estimation of input parameters for analytical assessments.

RÉSUMÉ

Ce document fait l'analyse de la performance de l'échantillonnage des prises commerciales pour les Pêcheries Canadiennes de la Côte Est en 1979. Cette analyse indique que l'encornet, certains stocks de crevettes et quelques stocks de poissons de fond et de poissons pélagiques ne rencontrent pas le taux minimum d'échantillonnage recommandé par l'ICNAF - un échantillon pour chaque 1,000 tonne de chaque espèce capturée par division, trimestre et engin de pêche - pour tous les types d'engins de pêche dans chacun des trimestres. Pour plusieurs stocks de poissons de fond et de poissons pélagiques, l'effort d'échantillonnage n'est pas distribué parmi les types d'engins de pêche et dans le temps de façon à produire un échantillonnage représentatif des prises commerciales. Ce document adresse également l'importance des données d'échantillonnage des prises commerciales pour l'estimation des paramètres de base pour les évaluations fondées sur des méthodes analytiques.

In 1975, several case studies indicated that the sample size required to obtain the target of estimating numbers at age with a coefficient of variation of not more than 10% considerably exceeded the ICNAF minimum requirement (1975 ICNAF Redbook). The Statistics and Sampling Subcommittee of STACRES thus recommended that countries make every effort to meet this goal by reaching and exceeding where necessary the ICNAF minimum sample requirement of one sample for each 1,000 tons caught of each species per division, quarter and gear. This paper presents a review of the 1979 performance of commercial catch sampling for East Coast Canadian Fisheries. Even though this review does not cover all of the East Coast Canadian catch for TAC species (see Table 1), its coverage (85%) is sufficient to draw preliminary conclusions on the 1979 performance of commercial catch sampling.

Adequacy of 1979 Canadian Sampling

By weight and % of 1979 landings

Our analysis of the 1979 sampling rates for the Canadian East Coast Fisheries indicate that 68% (by weight) of all catches considered were sampled at or above the recommended ICNAF minimum rate. However, 32% did not meet the minimum requirements, with 94,000 mt of cod, 112,000 mt of squid, 13,000 mt of haddock, 14,000 mt of pollock and 10,000 mt of redfish that were either not sampled or were sampled at a lesser rate than the recommended ICNAF sampling level (Table 2). In percent of the total commercial catch considered for this review, this represents 30% for cod; 100%, for squid; 37%, for haddock; 46%, for pollock; 19%, for redfish. In fact, 287,000 mt of fish landed during 1979 received a total of 69 samples, for an average of one sample for each 4,200 metric tons of fish caught (Tables 2 and 3). For the first quarter, no sampling data were available for a total of 22,000 mt: this includes 12,000 mt for cod only. During the second quarter, 21,000 mt of cod received only 2 samples, i.e. one sample for each 10,500 mt of fish caught. During the fourth quarter, 89,000 mt were subjected to only 15 samples, for an average of one sample for each 5,900 mt of fish caught.

The above analysis merely identifies the proportion of the landings, by weight, which either meets or does not meet ICNAF minimum requirements; it gives no indication of the actual distribution of sampling intensity over time, gear-types, or stocks. This is an important consideration when one is striving for good coverage of commercial landings and such analysis is undertaken hereafter.

By gear categories

A wide variety of measures of efficiency can be used to illustrate the coverage of commercial sampling over gears for a given stock within each quarter. For example, a measure of efficiency can be obtained from the percent of the gear-categories for which minimum sampling requirements were met in a given quarter for a given species. Since many gear-categories within a given stock do not contribute significantly to the landings in a given quarter, this measure would tend to underestimate the desired efficiency index. On the other hand, we want to detect those species and stocks for which commercial sampling is not representative of the catch in

a given quarter. In view of the fact that each gear-category would land 11% of the total catch in a given quarter if the catch is equally distributed among 9 gear-categories (i.e. the maximum number of gear-categories considered for a given quarter), we considered for the calculation of the above-mentioned percentage only gear-categories contributing to more than 5% of the catch in a given quarter for a given stock. This 5% rule is arbitrary but does permit the elimination of those gear-categories which do not contribute significantly to the catch in a given quarter. Depending upon the selection pattern of a given gear-type, it is felt that any catch higher than 5% (by weight) of the total catch in a given quarter may play a significant role for the determination of the age-structure of the catch for that quarter.

The number of gear-categories, by stock, by species and by quarter, for which sampling requirements were not met is shown in Table 4. On the average, less than 53% of the gear-categories for a given stock in each quarter are sampled with the recommended levels. Sampling efficiency varies from 59%-63% in the first two quarters to 43-50% in the last two. Lower efficiency in the second half of the year is mainly related to inadequate sampling for cod in 3Pn-4Rs, herring in 4Vn and squid in all Divisions and/or Sub-areas. For cod, the quarterly average of sampling efficiency is 48% of the total gear/stock categories in each quarter; for haddock, it is 62%; for redfish, 59%; for pollock, 38%. Yellowtail and witch show an average efficiency of 86% and 69%, respectively, while american plaice and Greenland halibut experience lower efficiencies (32% and 50%, respectively). Pelagic stocks experienced better sampling rates: sampling efficiency averages 47% for mackerel but reaches 85% for herring and 64% for capelin. For invertebrates, certain shrimp stocks and all squid stocks did not meet minimum sampling requirements for all of their gear-categories. In short, this analysis indicates that within each stock, many gear-types are not properly sampled.

The following list identifies the stocks with an average sampling efficiency of 33% or less: (in other words, less than 33% of their gear-categories which contribute significantly to the catch were sampled at, or above, the recommended levels)

Species	NAFO Division or Sub-area	Total Catch (mt) Considered
Cod	3Pn-4Rs	46,200
	4Vn (May-Dec)	4,723
	4X	28,378
	SA-5	6,363
Haddock	4T	49
Redfish	30	4,800
	4RST	6,223
Silver hake	4VWX	157
American plaice	3Ps	3,300
	4RST	1,200
	4T	8,413

Species	NAFO Division or Sub-area	Total Catch (mt) Considered
G. halibut	4Vn	700
	4R	2,600
Herring	4Vn	1,136
Capelin	4ST	2,920
Shrimp	4T	478
	4VWX	790
Squid	3+4 (Nfld.)	85,910
	4T	740
	4VWX	25,558

For these stocks, the age-composition of the catch, as derived from commercial sampling, should be used cautiously since commercial sampling is not considered as being representative of the total catch. In most cases, only a few gear-categories (strata), if any, have been sampled at or above ICNAF minimum levels. For certain stocks, total Canadian catch is less than 1,000 mt and therefore minimum sampling requirements were not expected to be met in these cases.

Some stocks with intermediate sampling efficiencies deserve also mentioning:

Species	NAFO Division or Sub-area	Total Catch (mt) Considered	Comments
Cod	4T-4Vn	10,246	no samples, second quarter (2,072 mt)
	4T (May-Dec)	22,569	poor sampling for certain gears
Haddock	SA-5	5,399	no samples, first and fourth quarters
Redfish	3P	7,400	no samples, first quarter (1,200 mt)
Pollock	4VWX+5	29,983	first and fourth quarters, poor sampling (11,158 mt)
Witch	4RST	3,200	-
Mackerel	3+4	13,785	poor sampling, fourth quarter
	Nfld. area	14,360	poor sampling, fourth quarter, all gears (7,970 mt)

The reader is referred to Appendix A and B for details concerning the 1979 sampling rates of commercial catch in each quarter, by gear-categories.

By stock

On the average, 12 to 20 fish stocks out of a total of 49 "TAC stocks" did not meet sampling requirements for all of their gear-types within each quarter (Table 5). In a given quarter, this represents 19% of cod stocks, 31% of haddock stocks, 24% of redfish stocks, 100% of silver hake stocks, 26% of american plaice stocks, 29% of witch stocks, 44% of Greenland halibut stocks, 20% of capelin stocks, 50% of shrimp stocks and 100% of squid stocks. Consequently, on a stock-wise basis, mackerel, pollock, silver hake, shrimp and squid are the species which mostly suffer from inadequate sampling. Due to the low coverage of this review for silver hake, these results may not be indicative of inadequate sampling for this species. On the average, the ICNAF minimum sampling requirement was met for less than 70% of the stocks in each quarter. For the following ICNAF (NAFO) Divisions, certain stocks did not meet the minimum sampling requirements for all of their gear-categories in all quarters:

Species	NAFO Division (or Sub-area)
Haddock	4T
Silver Hake	4VWX
Capelin	4ST
Shrimp	4T
	4VWX
Squid	3-4 (Newfoundland)
	4T (Maritimes and Quebec)
	4VWX (Maritimes and Quebec)

It is also informative to calculate the percent of gear-categories adequately sampled in 1979 within each stock, when gear-categories are divided into three classes: namely, landings of 1,000 metric tons or more, 500-999 mt, and 100-499 mt. Table 6 shows these percentages for each of these three classes, using the criterion of 1 sample per 1,000 metric tons. For most stocks, gear-types which landed 1,000 mt or more per quarter were relatively well sampled although in only three cases are all of these units adequately sampled. For gear-types landing at rates of 100 to 999 metric tons per quarter, sampling is generally poor. The lack of adequate sampling in these categories could be the result of logistics problems in obtaining the samples. The catch of these gear-categories is usually landed at the smaller ports where sampling is difficult (it involves travelling to the ports and finding enough fish there to make up a representative sample). As observed in Table 4, Table 6 also indicates inadequate sampling for cod in 4Vn, in 4X and in Sub-area 5; for haddock in Sub-area 5; for pollock in 4VWX-5; for american plaice in 4T; for redfish in 4RST.

Discussion

Our review of commercial catch sampling in 1979 indicates that squid, certain shrimp stocks and a few groundfish and pelagic stocks suffer from inadequate sampling for all of their gear-categories in all quarters. In

view of the use of commercial catch sampling data for analytical assessments, the following species - i.e. cod, haddock, redfish, american plaice, Greenland halibut, herring and capelin - showed significant sampling deficiencies when the coverage of gear-types was considered within some stocks. On the average, less than 53% of the gear-types for each stock within a quarter are sampled with the recommended levels. For many stocks, sampling efforts are not distributed over gear-types and over time (quarters, in this case) so as to generate representative samples of the commercial catch.

At present, a review of the domestic sampling program is underway in the Maritimes to establish the historical levels of finfish landings. The results of this analysis should indicate where and when landings occur and should reveal any consistent patterns in these landings. Once these patterns have been established, they can be compared with the actual distribution of sampling effort to determine whether or not these efforts are effectively distributed with observed landings. This analysis should constitute an important step for the definition of problem areas, i.e. undersampling areas of peak landings, oversampling areas at the expense of other more important ones, or disproportionate sampling of gear-types.

The ultimate aim of management is to determine the levels of sampling of commercial landings required to generate reliable input parameters to current assessment models. To date such a definition of precision requirements has not been established but rather, an arbitrary sampling level of 1 sample per 1,000 metric tons per species/stock per gear-type has been implemented by ICNAF (NAFO). The definition of required precision levels is a large and complex task, whose solution is couched in both biological and economic terms, and the recommended baseline sampling requirements should be viewed as a jumping off point toward future refinements.

Table 1. Coverage of the present review.

Species	Total Catch (mt) Considered in this Review	Total 1979 Canadian Catch (mt)	% Coverage
Cod	313,353	377,985	83%
Haddock	33,593	34,598	97%
Redfish	51,036	80,627	64%
Pollock	29,983	31,220	96%
Silver Hake	157	12,840	1%
American Plaice	59,913		
Yellowtail	18,100[2]		
Witch	6,100[2]	150,580	80%
Greenland Halibut	26,600[2]		
Flatfish	10,263[1]		
Herring	179,526	187,568	96%
Mackerel	28,145	30,245	93%
Capelin	21,470	22,093	99%
Shrimp	6,038	13,002	46%
Squid	112,208	112,656	100%
TOTAL	896,485	1,053,414	85%

[1] Maritimes catch and/or landings only.

[2] Newfoundland catch and/or landings; for Maritimes, the catch of these species is reported under "Flatfish".

Table 2. Total catch in metric tons, by species and by quarter, corresponding to the landings which were sampled at a lesser rate than the recommended sampling level (1 sample for 1000 mt).

Species	Quarter (1)	(2)	(3)	(4)	Total Catch (mt)	% of Catch Considered
Cod	11,934	20,824	40,057	24,203	97,018	31
Haddock	1,468	6,073	4,338	709	12,588	37
Redfish	1,873	1,727	2,468	3,718	9,786	19
Pollock	3,962	454	2,244	7,200	13,860	46
Silver Hake	8	0	144	4	156	100
American Plaice	318	3,560	4,267	1,523	9,668	16
Yellowtail	0	0	0	100	100	1
Witch	200	600	300	300	1,400	23
G. halibut	2,400	800	-	600	3,800	14
Flatfish	54	1,398	989	397	2,838	28
Herring	147	1,539	4,996	1,614	8,296	5
Mackerel	1	174	1,384	9,522	11,081	39
Capelin	0	3,290	0	3,080	6,370	29
Shrimp	0	450	722	97	1,269	21
Squid	1	666	73,468	38,072	112,207	100
TOTAL	22,366	41,555	135,377	91,139	290,437	32
% of catch considered	23%	20%	36%	42%		

For Newfoundland only, groundfish catch values were rounded off to the nearest 100 mt and catches less than 100 mt have been omitted.

Table 3. Total number of samples, by species and by quarter, corresponding to those cases for which minimum sampling requirements were not met.

Species	Quarter (1)	(2)	(3)	(4)	Total
Cod	0	2	9	3	14
Haddock	0	4	4	0	8
Redfish	0	0	1	3	4
Pollock	0	0	0	2	2
Silver Hake	0	0	0	0	0
American Plaice	0	0	1	0	1
Yellowtail	0	0	0	0	0
Witch	0	0	0	0	0
G. halibut	0	0	0	0	0
Flatfish	0	1	0	0	1
Herring	0	0	4	1	5
Mackerel	0	0	0	1	1
Capelin	0	0	1	0	1
Shrimp	0	0	0	0	0
Squid	0	0	27	5	32
	0	7	47	15	69*

* i.e. 69 samples for a total of 287,158 mt of fish landed (see Table 2): this represents an average of one sample for each 4,200 metric tons of fish caught

Table 4. Number of gear-categories, by stock, by species and by quarter, for which minimum sampling requirements were not met. The number above the slashed line represents the number of gear-categories for which sampling rate is less than 1 sample per 1000 mt, while the number below the line represents the total number of gear/stock categories for a given species in a given quarter. For this table, only gear-categories contributing to more than 5% of the catch for a given stock in a given quarter have been considered.

Species	Sub-area or Division	Quarter (1)	(2)	(3)	(4)	Total	Average Sampling Efficiency
Cod	2J-3KL	0/1	1/2	1/4	1/4	3/11	73%
	3NO	0/1	0/1	0/1	0/1	0/4	100%
	3Ps	2/3	1/3	0/4	1/2	4/12	67%
	3Pn-4Rs	1/2	1/3	4/5	4/4	10/14	29%
	4T-4Vn	0/2	3/3	-	0/1	3/6	50%
	4Vn (May-Dec)	-	1/3	2/3	4/4	7/10	30%
	4T (May-Dec)	-	2/4	3/5	1/2	6/11	45%
	4VsW	2/2	0/2	0/3	1/4	3/11	73%
	4X	2/4	4/5	3/4	4/5	13/18	28%
	5	1/1	2/2	1/2	1/1	5/6	17%
	Total	8/16	15/28	14/31	17/28	54/103	48%
Haddock	3O	-	0/1	-	-	0/1	100%
	4VW	0/2	0/2	0/2	0/2	0/8	100%
	4X	0/2	2/3	0/3	0/2	2/10	80%
	4T	-	2/2	3/3	2/2	7/7	0%
	5	1/1	0/1	1/3	1/1	3/6	50%
	Total	1/5	4/9	4/11	3/7	12/32	62%
Redfish	2+3K	0/1	0/1	0/1	0/1	0/4	100%
	3LN	0/1	0/1	0/1	0/1	0/4	100%
	3M	-	0/1	0/1	-	0/2	100%
	3O	-	1/1	1/1	0/1	2/3	33%
	3P	1/1	0/1	1/2	0/1	2/5	60%
	4RST	2/3	2/2	1/3	2/2	7/10	30%
	4VWX	2/2	0/2	0/2	2/2	4/8	50%
	Total	5/8	3/9	3/11	4/8	15/36	59%
Pollock	4VWX+5	1/1	0/2	2/3	2/2	5/8	38%
Silver hake	4VWX	2/2	2/2	1/1	1/1	6/6	0%
American plaice	2+3K	1/1	1/2	0/1	-	2/4	50%
	3LNO	0/1	1/2	0/2	0/1	1/6	83%
	3Ps	0/1	1/1	4/4	1/2	6/8	25%
	4RST	0/1	2/2	4/4	1/1	7/8	13%
	4T	2/3	3/4	4/4	3/4	12/15	20%
	Total	3/7	8/11	12/15	5/8	28/41	32%

Table 4.

Species	Sub-area or Division	Quarter (1)	(2)	(3)	(4)	Total	Average Sampling Efficiency
Yellowtail	3LNO	0/1	0/1	0/1	0/1	0/4	100%
	3Ps	0/1	0/1	-	1/1	1/3	66%
	Total	0/2	0/2	0/1	1/2	1/7	86%
Witch	2J-3KL	0/1	1/1	0/1	0/1	1/4	75%
	3NO	1/1	0/1	-	0/1	1/3	66%
	3Ps	0/1	0/2	-	-	0/3	100%
	4RST	0/1	1/2	1/1	1/1	3/5	40%
	4VWX	0/1	-	-	-	0/1	100%
	Total	1/5	2/6	1/2	1/3	5/16	69%
G. halibut	2J-3KL	0/1	1/2	0/1	0/2	1/6	83%
	4R	1/1	0/1	1/1	2/2	4/5	20%
	4Vn	1/1	-	-	-	1/1	0%
	Total	2/3	1/3	1/2	2/4	6/12	50%
Flatfish	4VWX	0/1	0/2	2/3	1/2	3/8	63%
Mackerel	3+4	-	0/2	1/5	5/5	6/12	50%
	Nfld. area	-	-	1/3	2/2	3/5	40%
	Total	-	0/2	2/8	7/7	9/17	47%
Herring	Nfld. W. Coast	0/1	0/2	0/1	0/2	0/6	100%
	Fortune Bay	0/1	0/1	-	0/1	0/3	100%
	St.Marys-Plac.	0/2	0/3	-	-	0/5	100%
	S.W. Nfld.	-	1/2	-	-	1/2	50%
	Conception Bay	0/1	0/3	-	-	0/4	100%
	Trinity Bay	-	0/3	-	0/1	0/4	100%
	Bonavista Bay	-	1/3	-	0/2	1/5	80%
	Notre Dame	0/1	0/3	1/2	1/3	2/9	78%
	4T	-	0/2	0/2	0/1	0/5	100%
	4Vn	-	0/1	4/4	1/2	5/7	29%
	4WX	0/2	0/3	0/3	0/2	0/10	100%
	Total	0/8	2/26	5/12	2/14	9/60	85%
Capelin	2+3K	-	1/2	-	-	1/2	50%
	3L	-	0/3	1/3	-	1/6	83%
	4R	-	0/1	-	-	0/1	100%
	4ST	-	2/2	-	-	2/2	0%
	Total	-	3/8	1/3	-	4/11	64%

Table 4.

Species	Sub-area or Division	Quarter (1)	(2)	(3)	(4)	Total	Average Sampling Efficiency
Shrimp	2H	-	-	0/1	-	0/1	100%
	2J	-	-	0/1	-	0/1	100%
	4R	0/1	0/1	0/1	0/1	0/4	100%
	4T	-	1/1	1/1	1/1	3/3	0%
	4VWX	-	1/1	1/1	1/1	3/3	0%
	Total	0/1	2/3	2/5	2/3	6/12	50%
Squid	3+4 (Nfld.)	-	-	1/1	2/2	3/3	0%
	4T	-	-	3/3	2/2	5/5	0%
	4VWX	2/2	1/1	4/4	3/3	10/10	0%
	Total	2/2	1/1	8/8	7/7	18/18	0%
Grand Total		25/61	43/114	58/116	55/96	181/387	
Average Efficiency		59%	63%	50%	43%	53%	

Table 5. Number of stocks, for each species, which are not sampled with the recommended levels for all of their gear-types within each quarter. The number above the slashed line represents the number of stocks for which ICNAF minimum sampling levels are not met for all of their gear-categories, while the number below the line represents the total number of stocks being exploited for that species in a given quarter.

Species	Quarter (1)	(2)	(3)	(4)	Total no.	%
Cod	2/8	2/10	0/9	3/10	7/37	19%
Haddock	1/3	1/5	1/4	2/4	5/16	31%
Redfish	2/5	2/7	1/7	2/6	7/25	28%
Pollock	1/1	0/1	0/1	1/1	2/4	50%
Silver Hake	1/1	1/1	1/1	1/1	4/4	100%
American Plaice	1/5	2/5	3/5	1/4	7/19	37%
Yellowtail	0/2	0/2	0/1	1/2	1/7	14%
Witch	1/5	1/4	1/2	1/3	4/14	29%
G. halibut	2/3	0/2	1/2	1/2	4/9	44%
Flatfish	0/1	0/1	0/1	0/1	0/4	0%
Herring	0/6	0/11	1/5	0/8	1/30	3%
Mackerel	-	0/1	0/1	2/2	2/4	50%
Capelin	-	1/4	0/1	-	1/5	20%
Shrimp	0/1	2/3	2/5	2/3	6/12	50%
Squid	1/1	1/1	3/3	3/3	8/8	100%
TOTAL	12/42	13/58	14/48	20/50	59/198	30%
Percent	29%	22%	29%	40%		

Table 6. Percent of gear-categories adequately sampled in 1979 for selected stocks. In this table, gear-categories are amalgamated in 3 classes: 1) landings greater than or equal to 1,000 mt, 2) landings between 500-999 mt, and 3) landings between 100-499 mt. Gear-categories which showed landings smaller than 100 mt were not considered.

SPECIES	STOCK	≥1000 mt	500-999 mt	100-499 mt
Cod	4TVn	100	0	0
	4Vn	0	-	38
	4T	83	0	11
	4VsW	86	100	13
	4X	45	33	14
	5	50	0	-
Haddock	4VW	-	100	100
	4X	80	100	0
	4T	-	-	-
	5	67	-	50
Pollock	4VWX-5	33	50	17
Redfish	4RST	50	0	50
	4VWX	67	-	0
American Plaice	4T	50	0	40
Flatfish	4VWX	80	-	20
Herring	4T	80	-	50
	4Vn	-	100	0
	4WX	100	0	0
Mackerel	3-4 (Maritimes and Quebec)	100	67	0
Squid	3+4 (Nfld.)	0	-	0
Capelin	3L	60	100	-

APPENDIX A - NEWFOUNDLAND

Tables showing the number of samples by stock, quarter and gear for each 1000 metric tons of catch landed in Newfoundland in 1979. In these tables, "sampling efficiency" is defined as the ratio of the number of length samples and the number of measurements to the catch in 1000 ton units.

NOTE: Catches of less than 100 metric tons for a particular stock, gear and quarter have been omitted. Asterisks (*) under "sampling efficiency" indicate the absence of sampling data. When sampling data were reported for cases where the catch was less than 100 tons, the sampling efficiency is simply the number of samples and number of measurements in parentheses.

1979 Canada(N) Landings Vs. Samples (Port + Observer Sampling)

Stock		Catch (000's MT)				# Samples (# Meas.)				Sampling Efficiency # Samples/MT's (000's)				Sampling Efficiency # Meas./MT's (000's)			
Area	Gear	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Cod																	
2GH	OT					1(41)				(1)				(41)			
2J3KL	OT	18.1	14.0	2.2	5.5	29(17047)	23(9682)	12(4916)	16(6421)	1.6	1.6	5.5	2.9	941.8	691.6	2234.5	1167.5
	Trap		0.8	23.0	0.2			37(19123)			*	1.6	*		*	831.4	*
	GN		2.9	24.3	3.9			72(12475)	6(2079)		*	3.0	1.5		*	513.4	533.1
	HL		0.2	9.2	4.5			42(7807)	22(4220)		*	4.6	4.9		*	848.6	937.8
	LT		0.2	9.6	5.9			1(646)	2(383)		*	0.1	0.3		*	67.3	64.9
3NO	OT	1.6	2.0	1.5	1.9	4(2577)	10(4302)	10(3789)	10(3018)	2.5	5.0	6.7	5.3	1610.6	2151.0	2526.0	1588.4
3Ps	OT	1.8	0.2			4(2002)				2.2	*			1112.2	*		
	Trap		0.4	1.6				4(1456)			*	2.5			*	910.0	
	GN	0.2	0.6	3.1	0.2		2(379)	4(859)		*	3.3	1.3	*	*	631.7	277.1	*
	HL		0.2	2.6	0.3			3(918)			*	1.2	*		*	353.1	*
	LT	1.4	3.3	5.3	4.2		22(9420	15(4593)	9(2669)	*	6.7	2.8	2.1	*	2854.5	866.6	635.5
	Other																
3Pn4Rs	OT	8.4	3.9	3.2	0.2	16(8201)	1(577)			1.9	0.3	*	*	976.3	147.9	*	*
	Trap			3.1				5(2487)				1.6				802.3	
	GN		2.5	8.2	0.7		8(3572)	7(2548)			3.2	0.9			1428.8	310.7	
	HL		0.4	2.3	0.5						*	*	*		*	*	*
	LT	1.8	4.2	4.0	2.2		5(2790)			*	1.2	*	*	*	664.3	*	*
	Other		0.2	0.4							*	*			*	*	
4TVn	OT	1.2			2.3	3(1355)			25(4483)	2.5			10.9	1129.2			1949.1
4VSW	OT	1.4			1.3		1(694)			*	(1)		*	*	(694)		*

1979 Canada(N) Landings Vs. Samples (Port + Observer Sampling)

Stock		Catch (000's MT)				# Samples (# Meas.)				Sampling Efficiency # Samples/MT's (000's)				Sampling Efficiency # Meas./MT's (000's)			
Area	Gear	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Haddock																	
30	OT		0.3				2(1174)				6.7				3913		
4X	OT		0.2								*				*		
5	OT			0.1				*								*	
Redfish																	
2+3K	OT	1.3	2.1	4.8	2.8	7(2533)	3(1252)	7(4124)	3(1677)	5.4	1.4	1.5	1.1	1948.5	596.2	859.2	598.9
	GN		0.1	0.2							*	*			*	*	
3LN	OT	1.0	0.7	2.0	1.5	7(2902)	1(318)	6(3225)	8(3048)	7.0	1.4	3.0	5.3	2902	454.2	1612.5	2032.0
3M	OT		3.3	1.3			5(2828)	3(1584)			1.5	2.3			857.0	1218.5	
30	OT		0.3	2.0	2.5			1(356)	4(3302)		*	0.5	1.6		*	178.0	1320.8
3P	OT	1.2	2.0	2.2	1.8		7(3205)	21(6019)	6(2441)	*	3.5	9.5	3.3	*	1602.5	2735.9	1356.1
	GN			0.2								*				*	
	LT																
4RST	OT	0.4				3(1237)			1(131)	7.5			(1)	3092.5			(131)
	Other			0.1								*				*	
4VWX	OT	0.1	1.0	1.9	0.2		2(557)	15(2351)		*	2.0	7.9	*	*	557.0	1237.4	*
Am. Plaice																	
2+3K	OT	0.3	0.5				3(994)		4(860)	*	6.0		(4)	*	1998		(860)
	GN		0.3	1.4				7(2377)			*	5.0			*	1698	
3LNO	OT	4.9	11.0	15.9	10.2	13(5771)	21(8633)	48(24664)	41(16997)	2.7	1.9	3.0	4.0	1178	785	1551	1666
	GN		0.9	1.0	0.4			7(2582)	3(1802)		*	7.0	7.5		*	2582	4505
	Other			0.2								*				*	
3Ps	OT	1.9	0.3	0.3	0.3	9(3773)			3(1433)	4.7	*	*	10.0	1986	*	*	4777
	GN			0.2								*				*	
	LL			0.1								*				*	
	Other			0.1	0.1							*	*			*	*

1979 Canada(N) Landings Vs. Samples (Port + Observer Sampling)

Stock		Catch (000's MT)				# Samples (# Meas.)				Sampling Efficiency # Samples/MT's (000's)				Sampling Efficiency # Meas./MT's (000's)			
Area	Gear	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Am. Plaice																	
4RST	OT	0.1		0.2		2(1398)			5(352)	20.0		*	(5)	13980		*	(352)
	GN		0.1	0.3							*	*			*	*	
	LT			0.1								*				*	
	Other		0.1	0.2	0.1						*	*	*		*	*	*
Yellowtail																	
3LNO	OT	0.3	5.1	5.3	6.8	2(810)	18(10237)	23(11234)	17(7710)	6.7	3.5	4.3	2.5	2700.0	200 7.3	2119.6	1133.8
3Ps	OT	0.3	0.2		0.1	2(1098)	1(561)			6.7	5.0		*	3660.0	2805.0		*
Witch																	
2J3KL	OT	0.2	0.2		0.2	1(406)			5(2043)	5.0	*		25.0	2030.0	*		10215.0
	GN			0.5				1(237)				2.0				474.0	
3 NO	OT	0.2	0.1		0.7		1(549)		2(977)	*	10.0		2.9	*	5490.0		1395.7
3Ps	OT	0.2	0.2			1(597)	1(450)			5.0	5.0			2985.0	2250.0		
	Other		0.1				1(573)				10.0				5730.0		
4RST	OT	2.1	0.1			6(4812)	1(414)			2.9	10.0			2291.4	4140.0		
	Other		0.4	0.3	0.3						*	*	*		*	*	*
4VWX	OT	0.3				1(475)				3.3				1583.3			
G. Halibut	OT	0.3	0.8	0.3	1.7	2(750)	2(772)	3(563)	9(3532)	6.7	2.5	10.0	5.3	2500.0	965.0	1876.7	2077.6
2+3KL	GN		0.8	12.5	6.9			21(6406)	11(3820)		*	1.7	1.6		*	512.5	5536
4R	OT	1.7	0.1		0.2		2(429)			*	20.0		*	*	4290.0		*
	GN			0.2	0.4							*	*			*	*
4Vn	OT	0.7								*				*			

1979 Canada (Newfoundland) - Landings vs. Samples

(Catches in 000's MT)

STOCKS	GEAR	Qtr. 1 # Samples	Qtr. 1 Catch	Qtr. 1 Efficiency	Qtr. 2 # Samples	Qtr. 2 Catch	Qtr. 2 Efficiency	Qtr. 3 # Samples	Qtr. 3 Catch	Qtr. 3 Efficiency	Qtr. 4. # Samples	Qtr. 4. Catch	Qtr. 4. Efficiency
Mackerel													
Nfld. area	Ringnet							17	4.97	3.4	1	2.74	0.4
	Bar seine							-	0.95	*	-	4.88	*
	Gillnet							6	0.33	18.2	-	0.35	*
	Trap							3	0.14	21.4			
	Other							1	+	(1)			
Herring													
Nfld.W. Coast	Purse Seine				30	7.16	4.2				8	2.83	2.8
	Gillnet				17	4.34	3.9	16	2.18	7.3	7	1.67	4.2
	Other	1	+	(1)	4	+	(4)	1	+	(1)			
Fortune Bay	Purse Seine	4	0.29	13.8									
	Bar Seine				11	0.81	13.6						
	Gillnet				2	+	(2)				2	+	(2)
St.Marys-Placentia	Purse Seine	4	0.36	11.1									
	Ring Net	71	2.15	33.0	20	0.31	64.5						
	Bar Seine				2	0.15	13.3						
	Gillnet	0	0.11	*	18	0.53	34.0						
Portion of S. Gulf Stock S.W. Nfld & edge landed in Nfld.	Purse Seine				24	2.11	11.4						
	Gillnet				0	0.16	*						
Conception Bay-Southern Shore	Ring net				15	0.44	34.1						
	Bar Seine				3	+	(3)						
	Gillnet	6	+	(6)	9	0.23	39.1						
	Trap				6	0.17	35.3						
Trinity Bay	Ring net				13	0.67	19.4				3	0.51	5.9
	Bar Seine				15	1.60	9.4						
	Gillnet				27	0.63	42.9						

		# Samples	Catch	Efficiency	# Samples	Catch	Efficiency	# Samples	Catch	Efficiency	# Samples	Catch	Efficiency
Herring													
Bonavista Bay	Ringnet				18	1.67	10.8				19	1.83	10.4
	Bar Seine				0	0.36	*						
	Gillnet				7	1.15	6.1				1	1.17	0.9
Notre Dame-White Bay	Ring net				7	0.72	9.7	3	0.80	3.8	2	1.28	1.6
	Bar Seine				15	2.24	6.7						
	Gillnet	3	1.87	1.6	34	6.71	5.1				2	1.31	1.5
	Trap				0	0.16	*	0	0.25	*	0	0.26	*
Shrimp													
2H	ST							60	1.33	45.1			
2J	ST							55	0.33	166.7			
4R	ST	2	0.59	3.4	14	1.12	12.5	11	0.85	12.9	6	0.55	10.9
Squid													
3+4	Trap							0	2.52	*	0	0.24	*
	Stern Trawl							0	1.13	*	0	1.61	*
	Other							27	56.83	0.5	5	23.58	0.2
Capelin													
2+3K	Bar Seine				0	0.37	*						
	Ring net				5	0.16	31.3						
3L	Trap				11	3.70	3.0	1	1.85	0.5			
	Bar Seine				17	2.55	6.7	1	0.92	1.1			
	Ring net				2	2.06	1.0	0	1.23	*			
4R	Purse seine				10	5.71	1.8						
4T	" "				20	3.00[1]	6.7						

[1] No catch data available in Newfoundland for Div. 4T unofficial estimates put catch at 3000 t (maximum). Catches are made by non-Newfoundland vessels and landed in Division 4T. Capelin were sampled by Newfoundland personnel.

APPENDIX B - MARITIMES AND QUÉBEC

Tables showing the number of samples per 1000 metric tons and the total catch for each gear-type used, by quarter and by stock, during 1979.

NOTE: For cod, haddock, redfish, silver hake and pollock, gear-types were combined in the following manner:

Gear Type	Codes Combined	Abbreviation
Otter Trawls	21, 22, 11, 12	OT
Other Trawls	10, 19, 20, 28, 29, 56, 59	T
Danish & Scottish Seines	17, 18	DS/SS
Other Seines	4, 15, 25, 55	S
Gill Nets (all types)	5, 6, 46, 65, 66, 67	GN
Longlines	14, 24, 44	LL
Handlines	7, 47	HL
Traps and Weirs	1, 2, 41, 61	T/W
Others	(any not covered above)	Other

For other species, gear-types were combined as follows:

Species	Gear-Types	Abbreviation
Flatfish	Danish Seines	DS
	Scottish Seines	SS
	Shrimp Trawlers	SHR
Herring, Mackerel and Capelin	All seine types were combined	S
Shrimp	All trawl types were combined	T

In each of the following tables, the first line for any given quarter represents the total catch for that gear-type in metric tons, while the second line represents the number of samples per 1000 metric tons.

SPECIES: **COD** STOCK: 4TVn (Jan-April)

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	4388.367	213.494	17.685	0	0	54.661	0	.045	0	4674.25
	2.50	0	0	0	0	0	0	0	0	2.35
2	911.373	.055	754.834	63.922	1.850	246.061	0	.231	93.459	2071.785
	0	0	0	0	0	0	0	0	0	0
3	—	—	—	—	—	—	—	—	—	—
4	—	—	—	—	—	—	—	—	—	—

SPECIES: **COD** STOCK: 4Vn (May-December)

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
2	158.598	0	147.150	0	1.591	166.222	2.292	.773	3.399	480.025
	6.33	0	0	0	0	6.02	0	0	0	4.18
3	131.630	26.082	31.109	.092	2.490	1213.066	321.453	2.245	22.250	1750.417
	7.58	0	0	0	0	0	0	0	0	.57
4	153.027	4.431	99.425	.152	0	1606.535	316.308	1.048	311.792	2492.718
	0	0	0	0	0	0	0	0	0	0

SPECIES: **COD** STOCK: 4T (May-December)

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
2	2538.937	72.331	2830.506	303.620	611.554	31.654	199.969	79.720	402.081	7070.372
	1.58	0	1.41	0	0	0	5.00	0	0	1.27
3	666.430	11.086	1242.773	3.355	1972.821	41.053	457.082	31.485	496.408	4922.493
	0	0	3.22	0	1.02	0	0	0	0	1.22
4	6118.350	101.830	3293.753	10.203	471.661	170.922	277.706	.609	131.338	10576.372
	1.80	0	.30	0	0	0	0	0	0	1.14

SPECIES: **COD** STOCK: 4VsW

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	5285.987	1.608	1.111	0	57.359	228.502	0	0	11.022	5585.789
	0	0	0	0	0	0	0	0	0	0
2	8294.894	172.406	475.946	3.667	90.655	1231.106	39.085	6.745	143.759	10458.263
	1.69	0	0	0	0	3.23	0	0	0	1.72
3	1644.908	36.077	2132.642	0	100.987	2400.970	143.698	1.433	293.525	6754.240
	6.08	0	2.34	0	0	2.5	6.99	0	0	3.27
4	10470.174	3.186	717.860	0	73.484	942.760	66.008	.024	200.610	12474.106
	1.15	0	4.18	0	0	2.12	0	0	0	1.36

SPECIES: **COD** STOCK: 4X

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	1081.887	10.886	16.396	.904	383.501	1844.638	3.411	16.695	257.690	3616.008
	1.85	0	0	0	0	1.08	0	0	0	1.11
2	2252.530	5.987	17.671	3.625	496.825	3122.739	985.552	125.119	492.546	7522.594
	0	0	0	0	0	1.60	0	0	0	.67
3	1962.591	0	17.011	12.995	445.604	4145.244	2564.549	118.017	1003.358	10269.369
	1.02	0	0	0	2.25	0	0.39	0	0	.39
4	2084.437	0	0	1.621	2317.236	1311.342	586.619	63.134	606.234	6970.623
	1.44	0	0	0	0	0	0	0	0	.43

SPECIES: **COD** STOCK: SA5

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	563.084	0	0	0	0	8.431	0	0	1.023	572.538
	0	0	0	0	0	0	0	0	0	0
2	1829.363	0	0	0	0	553.273	0	0	1.348	2383.984
	0.53	0	0	0	0	0	0	0	0	.41
3	2108.468	0	0	0	0	774.597	0	0	.663	2883.728
	2.85	0	0	0	0	0	0	0	0	2.08
4	511.99	0	0	0	0	10.465	0	0	.678	523.133
	0	0	0	0	0	0	0	0	0	0

SPECIES: HADDOCK STOCK: 4VW

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	259.483	0	13.788	0	1.361	159.358	0	0	0	433.990
	7.71	0	0	0	0	6.28	0	0	0	6.91
2	466.291	7.223	54.075	.282	6.616	348.692	.251	.010	2.237	885.677
	8.58	0	0	0	0	8.60	0	0	0	7.90
3	278.557	.079	2.327	0	35.300	504.312	11.947	.472	29.614	862.602
	17.39	0	429.18	0	0	7.93	0	0	0	11.41
4	573.730	0	1.188	0	12.789	223.187	7.979	0	25.170	844.043
	3.49	0	0	0	0	13.44	0	0	0	5.92

SPECIES: HADDOCK STOCK: 4X

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	4912.142	48.279	17.141	0	.699	861.785	.481	.024	0	5840.551
	2.24	0	58.82	0	0	1.16	0	0	0	2.23
2	5357.770	0	72.683	.282	50.912	834.808	189.573	11.426	5.614	6523.068
	.746	0	0	0	0	2.40	0	0	0	.92
3	4050.696	.063	0.887	0	178.598	1838.190	579.501	1.541	22.994	6672.47
	.99	0	0	0	0	3.26	1.73	0	0	1.65
4	4416.165	0	0	0	170.068	816.649	68.407	.238	10.585	5482.112
	2.26	0	0	0	0	2.45	0	0	0	2.19

SPECIES: HADDOCK STOCK: 4T

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
2	3.998	1.565	28.973	0	.754	.515	.020	0	1.351	37.176
	0	0	0	0	0	0	0	0	0	0
3	.147	0	.687	0	3.566	0	1.030	0	.097	5.527
	0	0	0	0	0	0	0	0	0	0
4	5.056	0	.083	0	.073	.783	.169	0	.095	6.259
	0	0	0	0	0	0	0	0	0	0

SPECIES: **HADDOCK** STOCK: SA5

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	1402.726	0	0	0	0	0	0	0	.411	1403.137
	0	0	0	0	0	0	0	0	0	0
2	1604.733	0	0	0	0	77.005	0	0	.782	1682.52
	4.36	0	0	0	0	0	0	0	0	4.16
3	1640.380	0	0	0	0	266.747	0	0	.019	1907.146
	2.44	0	0	0	0	3.76	0	0	0	2.62
4	397.495	0	0	0	0	7.931	0	0	1.150	406.576
	0	0	0	0	0	0	0	0	0	0

SPECIES: **REDFISH** STOCK: 4RST

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	163.487	10.148	0	0	0	0	0	0	0	173.635
	0	0	0	0	0	0	0	0	0	0
2	972.863	340.313	0	0	.544	0	0	0	0	1313.72
	0	0	0	0	0	0	0	0	0	0
3	2702.246	341.304	0	0	.045	0	0	0	0	3043.595
	2.06	2.94	0	0	0	0	0	0	0	2.16
4	1119.271	71.847	0	0	.675	0	0	0	0	1191.793
	.89	0	0	0	0	0	0	0	0	.84

SPECIES: **REDFISH** STOCK: 4VWX

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	393.262	3.162	0	0	0	2.891	0	0	0	399.315
	0	0	0	0	0	0	0	0	0	0
2	2318.487	7.582	2.455	0	0	3.551	0	0	.181	2332.256
	4.74	0	0	0	0	0	0	0	0	4.72
3	3259.263	65.576	.412	0	.45	.539	1.115	0	0	3327.355
	4.60	0	0	0	0	0	0	0	0	4.51
4	2176.372	2.113	.011	0	.532	75.019	.269	0	.016	2254.332
	.92	0	0	0	0	0	0	0	0	.89

SPECIES: **POLLOCK** STOCK: 4VWX + SA5

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	3835.680	25.548	.112	0	90.564	9.794	.049	.412	0	3962.159
	0	0	0	0	0	0	0	0	0	0
2	7988.787	0	.580	.011	809.617	138.220	269.425	52.275	45.287	9304.202
	1.75	0	0	0	1.24	0	0	38.46	0	1.83
3	7058.043	.842	.096	.795	782.481	212.129	1053.373	31.314	375.440	9515.513
	3.12	0	0	1.26	0	9.43	0	0	0	2.52
4	3395.540	.360	.065	.036	3259.275	239.740	230.891	8.430	66.372	7200.709
	.59	0	0	0	0	0	0	0	0	.28

SPECIES: **SILVER HAKE** STOCK: 4VWX

QUARTER	GEAR									
	OT	T	DS/SS	S	GN	LL	HL	T/W	Other	Total
1	6.148	0	0	0	0	2.178	0	0	0	8.326
	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	.037	.053	0	.090
	0	0	0	0	0	0	0	0	0	0
3	143.424	0	0	0	.355	.053	.347	0	.010	144.189
	0	0	0	0	0	0	0	0	0	0
4	.210	0	0	0	.045	4.123	0	.034	.021	4.433
	0	0	0	0	0	0	0	0	0	0

SPECIES: **AMERICAN PLAICE** STOCK: 4T

QUARTER	GEAR									
	OT	DS	SS	SHR	S	GN	LL	HL	Other	Total
1	26.014	7.871	0	0	0	0	0	0	10.012	43.897
	38.46	0	0	0	0	0	0	0	0	22.78
2	1103.49	1157.444	110.292	49.80	10.384	324.429	3.188	1.697	311.358	3072.082
	1.77	0	9.09	0	0	0	0	0	0	.96
3	810.961	1161.145	137.032	1.787	4.386	234.429	0.841	8.810	544.981	2904.372
	0	0.90	14.60	0	0	0	0	0	0	1.05
4	1069.17	893.533	145.279	29.684	10.669	29.098	2.224	6.708	205.840	2392.205
	3.74	0	0	0	0	0	0	0	0	1.67

SPECIES: **FLATFISH** STOCK: 4VWX

QUARTER	GEAR									
	OT	DS	SS	SHR	S	GN	LL	HL	Other	Total
1	1418.835	46.659	1.089	0	.029	.003	6.185	0	0	1472.8
	2.12	0	0	0	0	0	0	0	0	2.04
2	2041.640	1057.971	76.901	14.678	22.201	55.348	167.358	1.053	2.587	3439.737
	4.41	0.95	0	0	0	0	0	0	0	2.91
3	1844.723	485.780	15.374	438.406	32.060	3.098	264.300	8.762	6.00	3098.503
	10.30	0	0	0	0	0	22.73	0	0	8.07
4	1855.350	274.774	.917	4.374	.923	.984	92.253	10.493	12.26	2252.328
	5.39	0	0	0	0	0	0	0	0	4.44

SPECIES: **HERRING** STOCK: 4T

QUARTER	GEAR								
	T/W	GN	S	OT	HL	LL	T	Other	Total
1	0	0	0	0	0	0	0	0	0
	0	(2)	0	0	0	0	0	0	0
2	36.402	4719.908	11613.240	.124	3.24	3.00	0	376.528	16752.442
	521.98	9.53	1.64	0	0	0	0	0	4.96
3	.366	2969.297	4095.609	9.042	1.506	0	0	29.470	7105.29
	0	9.43	.98	0	0	0	0	0	4.51
4	0	249.147	15240.231	0	.020	0	0	2.604	15492.0
	0	4.02	2.30	0	0	0	0	0	2.32

SPECIES: **HERRING** STOCK: 4Vn

QUARTER	GEAR								
	T/W	GN	S	OT	HL	LL	T	Other	Total
1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
2	45.716	262.189	0	0	0	0	0	0	307.905
	0	0	0	0	0	0	0	0	0
3	6.804	3.629	3.130	0	.046	0	0	8.873	22.482
	0	0	0	0	0	0	0	0	0
4	0	2.268	690.376	0	0	113.064	0	0	805.708
	0	0	26.08	0	0	0	0	0	22.34

SPECIES: **HERRING** STOCK: 4WX

QUARTER	GEAR								
	T/W	GN	S	OT	HL	LL	T	Other	Total
1	2028.02	10.053	7472.549	0	0	0	0	26.971	9537.593
	20.22	0	6.16	0	0	0	0	0	9.12
2	6292.275	2903.087	1879.835	.147	15.063	43.377	0	107.892	11241.676
	17.32	3.79	6.39	0	0	0	0	0	11.74
3	24124.814	4818.679	24522.083	0	48.521	7.217	0	552.001	54073.315
	7.88	3.74	4.77	0	0	0	0	0	5.99
4	8919.655	50.271	4011.322	0	2.231	.012	0	13.819	12997.31
	9.75	0	2.49	0	0	0	0	0	7.47

SPECIES: **MACKEREL** STOCK: SA4 + SA3

QUARTER	GEAR								
	T/W	GN	S	OT	HL	LL	T	Other	Total
1	0	1.047	0	0	0	0	0	0	1.047
	0	0	0	0	0	0	0	0	0
2	2842.387	3797.655	14.030	3.702	27.895	28.645	0	99.407	6813.721
	4.93	10.27	0	0	0	0	0	0	7.78
3	645.323	2305.480	1176.683	.914	856.272	34.625	0	398.875	5418.172
	9.30	11.71	5.95	0	4.67	0	0	0	8.12
4	389.117	656.717	105.979	5.769	283.345	8.218	0	102.882	1552.027
	0	0	0	0	0	0	0	0	0

SPECIES: **CAPELIN** STOCK: 4ST

QUARTER	GEAR		
	T	S	Total
1	0	0	0
	0	0	0
2	175.742	2744.381	2920.123
	0	0	0
3	0	0	0
	0	0	0
4	0	0	0
	0	0	0

SPECIES: **SHRIMP** STOCK: 4T

QUARTER	GEAR		
	T	Other	Total
1	0	0	0
	0	0	0
2	274.410	0	274.410
	0	0	0
3	143.175	0	143.175
	0	0	0
4	60.282	.433	60.715
	0	0	0

SPECIES: **SHRIMP** STOCK: 4VWX

QUARTER	GEAR		
	T	Other	Total
1	0	0	0
	0	0	0
2	175.441	0	175.441
	0	0	0
3	578.71	0	578.71
	0	0	0
4	36.044	0	36.044
	0	0	0

SPECIES: **SQUID** STOCK: 4T

QUARTER	GEAR							
	T/W	GN	HL	OT	LL	S	Other	Total
1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0
3	0	4.969	6.596	.107	0	0	1.539	13.211
	0	0	0	0	0	0	0	0
4	3.599	27.306	571.764	0	25.369	5.322	93.00	726.360
	0	0	0	0	0	0	0	0

SPECIES: **SQUID** STOCK: 4VWX

QUARTER	GEAR								
	T/W	GN	HL	LL	OT	S		Other	Total
1	0	1.020	0	.181	0	0	0	0	1.201
	0	0	0	0	0	0	0	0	0
2	646.659	14.909	.931	1.134	0	0	0	2.297	665.93
	0	0	0	0	0	0	0	0	0
3	1361.349	100.281	1179.057	49.022	7460.374	0	2591.509	233.461	12975.05
	0	0	0	0	0	0	0	0	0
4	311.611	115.417	1654.374	101.928	6105.301	0	3585.402	42.035	11916.068
	0	0	0	0	0	0	0	0	0