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The 1988 4T Herring Gillnet Questionnaire

by

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ABSTRACT

A telephone survey was conducted to collect information from herring gillnetters about their 1988 fishery in the southern Gulf of St. Lawrence (NAFO Division 4T). The survey gathered data on the fishing effort for abundance estimates, on mesh size distribution for determination of partial recruitment, and on disposition of the catch for validation of purchase slip information. In addition, the gillnetters were asked their opinion on the abundance of herring in 1988. The average number of nets fished per trip (used in the historical effort index) dropped slightly in the spring from 1987, but did not change in the fall. The pattern of mesh size distribution has not changed since 1984. In the spring fishery, most areas sold more of their catch to processors than in 1987. The fall catch is generally all sold to processors. Gillnetters in both the spring and the fall felt that herring abundance was about the same as it was in 1987. The fall abundance was seen to be about average while the spring abundance was seen to be a little lower than average.

RÉSUMÉ

On a effectué un sondage téléphonique auprès des pêcheurs de hareng au filet maillant afin de recueillir des données sur la pêche de 1988 dans le sud du golfe du Saint-Laurent (Division 4T de l'OPANO). On a ainsi obtenu des données sur l'effort de pêche, permettant d'établir des estimations d'abondance, des données sur la répartition des maillages, servant à déterminer le recrutement partiel et des données sur le sort des prises, qui permettent de confirmer les renseignements contenus sur les bordereaux d'achat. De plus, on a sollicité l'opinion de ces pêcheurs au sujet de l'abondance du hareng en 1988. Le nombre moyen de filets utilisés par voyage (chiffre servant à établir l'indice d'effort temporel) a légèrement diminué au printemps par rapport à l'année précédente, mais est resté le même à l'automne. La répartition des maillages n'a pas changé depuis 1984. Dans la plupart des secteurs, les participants à la pêche de printemps ont vendu plus de prises aux transformateurs qu'ils ne l'avaient fait en 1987. Les prises d'automne sont en général entièrement vendues aux transformateurs. Les participants à la pêche du hareng au filet maillant ont estimé que l'abondance était à peu près la même qu'en 1987, que ce soit au printemps ou à l'automne, celle du hareng d'automne étant à peu près égale à la moyenne et celle du hareng de printemps légèrement inférieure à la moyenne.

INTRODUCTION

Since 1985, herring gillnetters in the Gulf of St. Lawrence have been interviewed annually to obtain information about the distribution and intensity of fishing effort, the sizes and distribution of meshes fished, and the disposition of the catch.

METHODS AND ANALYSIS

Sample Selection

The southern Gulf of St. Lawrence coastline was divided into eight areas of major herring gillnet fishing activity (Table 1, Figure 1). For the Maritime Provinces, lists of licenced gillnetters were compared to purchase slip records to obtain a list of active gillnetters for 1988. A systematic random sample was drawn from this list to obtain a sample with numbers in each area proportional to the number of active gillnetters. As in previous years, purchase slips were not available for Quebec and the Magdalen Islands, so random samples were chosen from the lists of licenced gillnetters. Table 2 summarizes gillnet statistics for 1988.

The interviews were conducted by telephone in the official language of the gillnetters' choice, during January and February 1989. Each respondent was given up to three telephone calls to be contacted.

The Questionnaire

The interview was divided into five sections (detailed in appendix A):

1. The first set of questions 'located' the respondents in the fishery. The status of the respondents was verified - that they were active herring gillnetters in 1988; the number of nets owned was asked; and the seasons fished were recorded.
2. The second set of questions dealt with fishing effort. For each season fished respondents were asked:
 - their fishing location
 - the total number of days fished and the number of days fished in the peak of the season
 - the number of nets used during the peak as well as during the non-peak of the season
 - the length of time the nets rested in the water before being hauled (soak time) during the peak as well as during the non-peak
 - the number of times a day the nets were hauled.

Two indices of effort for each area-season combination were calculated and compared to those from previous surveys:

- i. The average number of net-hauls per gillnetter (NHF).
- ii. The average number of net-hauls per trip (NHT).

$$i) \quad NHF_i = \frac{1}{n_i} \sum_j (dp_j * np_j + dnp_j * nnp_j) * h_j$$

where n_i = number of responses in area-season i
 dp_j = number of days in the peak for resp. j in area-season i
 np_j = number of nets in the peak for resp. j in area-season i
 dnp_j = number of days in the non-peak for resp. j in area-season i
 nnp_j = number of nets in the non-peak for resp. j in area-season i
 h_j = number of hauls/day for resp. j in area-season i

$$ii) \quad NHT_i = \frac{1}{n_i} \sum_j \frac{ (dp_j * np_j + dnp_j * nnp_j) * h_j }{ (dp_j + dnp_j)}$$

Overall indices for 4T were calculated by weighting the area averages by the landed catch (Table 2).

3. For each season fished, the types of gillnets fished, average length of a net, and mesh sizes and numbers of nets for each mesh size fished were determined.

4. For each season fished, the catch and percent of the catch that was kept for bait, dumped, and sold to processors were recorded.

5. The respondents were asked the number of years they had fished with gillnets in the Gulf of St. Lawrence. In addition, they were asked two questions about how they felt about the abundance of herring. The first question asked gillnetters to rate the abundance of herring in 1988 on a scale of 1 to 10, assuming that 5 is average abundance. The second question asked respondents to compare herring abundance in 1988 versus 1987. On a scale of 1 to 10, compared with 1987, the responses mean:

- 0 = abundance was much less in 1988 than 1987
- 2½ = abundance was somewhat less in 1988 than in 1987
- 5 = abundance was the same in 1988 as in 1987
- 7½ = abundance was somewhat more in 1988 than in 1987
- 10 = abundance was much more in 1988 than in 1987

RESULTS AND DISCUSSION

In total, 349 herring gillnetters were interviewed. The area-by-area breakdown of the responses (Tables 3 and 4) shows that all areas and both seasons were well covered. In general, the area of fishing is the same as the area of home port. However, there was some mixing in the fall fisheries between gillnetters from the Acadian Peninsula and Quebec, east P.E.I. and Nova Scotia, and south east N.B. and west P.E.I.

Effort Parameters

The responses to the questions concerning the intensity of effort show large differences among areas and seasons (Tables 5 and 6). Comparisons of the fishing effort for 1984-1988 are shown in Figures 2 and 3.

Spring

The number of days fished during the peak season in the spring fishery increased noticeably from 1987 in Quebec, the Acadian Peninsula, Escuminac, and west P.E.I., but decreased in southeast N.B. During the non-peak there were large increases in Quebec and southeast N.B. and moderate increases in the Magdalen Islands, Nova Scotia, and west P.E.I.

From 1987, there was an increase for Quebec and decrease for P.E.I. in the number of nets fished in the peak of the spring season. During the non-peak, the only large changes were increases for the Acadian Peninsula and Escuminac. Escuminac and southeast New Brunswick continued to use the greatest number of nets per respondent in the spring.

Fall

During the peak fall fishery, the number of days fishing increased from 1987 in Quebec and west P.E.I. but decreased in the Acadian Peninsula and east P.E.I. Gillnetters from Quebec and southeast N.B. spent more time fishing in the non-peak than they did in 1987.

For most areas, the number of nets fished in the fall season (both during the peak and during the non-peak) did not greatly change from 1987. Quebec and west P.E.I. gillnetters used a few more while Escuminac gillnetters used somewhat fewer.

Net soak and net haul parameters

Information relating to the number of hours that the nets are left in the water (soak time) and the number of times each day that the nets are emptied (hailed) are shown in Figure 4 and summarized in Table 7.

In the 1988 spring fishery the net soak time, with few exceptions, was very close to 24 hours (both peak and non-peak). But in the fall, except for the 2 responses each from the Magdalen Islands and southeast N.B., the net soak time was less than 4 hours during the peak and less than 16 hours during the non-peak. For the spring, changes from 1987 brought the soak time closer to 24 hours except for Quebec, Nova Scotia and east P.E.I. in the peak, and the Magdalen Islands in the non-peak. For the fall, the soak time was generally longer in 1988 than in 1987.

The average number of hauls of the nets per day per respondent is more variable in the fall fishery than in the spring fishery. The number of hauls/day in the spring increased from 1987 for Nova Scotia and east P.E.I. gillnetters, but decreased for west P.E.I. gillnetters. In the fall, there was a large increase from 1987 in the number of hauls/day in Escuminac and west P.E.I.

Effort Indices

The effort indices for 1984 to 1988 calculated from survey results are shown in Figures 5 and 6. In the spring fishery, the two indices are consistent from 1987 to 1988 for every fishing area except southeast N.B. However, the overall gulf net-hauls/gillnetter increased but net-hauls/day decreased from 1987. Comparisons between the 1984 and 1988 levels show consistency in the indices, with the overall gulf index 1988 level approximately the same as the 1984 level. In the fall, east P.E.I. is the only area showing an inconsistency between the two indices from 1987 to 1988. But, as in the spring, the overall gulf indices show inconsistent trends. The comparison with 1984 levels is not as clear as for the spring.

The effort index used in the assessment of 4T herring stocks is the average number of nets fished per trip, assuming one haul of the nets per trip and one trip per day. The spring Gulf index is determined by weighting the Acadian Peninsula and a combination of the Escuminac, southeast New Brunswick, and partial west P.E.I. averages by the landings in those areas (O'Boyle and Cleary 1981, Cleary 1983, and Chadwick and Cairns 1988). The fall index is set equal to the Acadian Peninsula value. The historic effort index shown in Figure 7 shows a slight decrease for the spring from 1987, but no change for the fall.

Abundance Indices

The responses to the questions about relative abundance of herring in 1988 are shown in Figures 8 and 9. All areas rated the 1988 spring fishery about the same as or slightly worse than 1987 (ratings between 4.1 and 5.6), except for the Magdalen Islands which felt that the fishery was worse in 1988 than 1987 (a rating of 2.7). On a scale of 1 to 10, the spring values ranged from 3.0 to 5.8 and were less than the 1987 values. In the fall, all areas rated 1988 about the same as 1987 except west P.E.I., which rated 1988 somewhat better (6.9). On a scale of 1 to 10, the fall values were about average (4.5 to 6.2) and less than the 1987 values, except for west P.E.I. (7.0).

Gillnet Mesh Size Distribution

Figures 10 and 11 illustrate the changes in gillnet mesh sizes used from 1985 to 1988. Most nets used in the spring were between 2.25 and 2.5 inch mesh, but there was a fairly wide distribution of net sizes used. In the fall, fewer mesh sizes were used, and they were generally larger than in the spring, with most of the

nets being between 2.5 and 2.75 inch mesh. There has not been a great deal of change over time - particularly in the areas with the largest catches (the Acadian Peninsula, Escuminac, and southeast N.B. in the spring, and the Acadian Peninsula, Nova Scotia, and east P.E.I. in the fall).

The average length of net fished varied from area to area and between seasons within area (Table 8). The length of nets used in the spring tended to be shorter than those used in the fall, except for Quebec gillnetters (and those from the Magdalen Islands and southeast N.B.).

Almost all of the gillnets fished in the spring were set nets (both ends anchored to the ground) but a large percentage of those used in the fall, except in the Magdalen Islands, Nova Scotia, and east P.E.I. were modified nets (one end attached to the boat) (Table 9).

Use Of The Catch

Questions about the percent of the catch kept for personal use, sold to processors, or dumped, revealed some differences from 1987. In the spring, higher proportions of the catch in all areas except Quebec and Nova Scotia were sold to processors. There was almost no dumping in 1988. In the fall, the catch continued to be primarily sold to processors. Figure 12 shows the trends in percent sold to processors from 1986 to 1988. The 1985 percentages were not included because they cannot be calculated in a comparable manner. Data from 1986 and 1987 were recalculated to correct for an inconsistency and do not appear exactly as they did in previous reports. In general, in the spring, the trend is increasing for each area. In the fall, most of the catch has, since 1986, been sold to processors.

Concluding Remarks

The questionnaire elicits information about peak and non-peak gillnet fishing activity on an area-by-area basis, allowing detailed calculations of fishing effort based on the number of nets or net-hauls. Indices of effort based on these calculations are, however, not comparable with the historical index based on the average number of nets per trip with its assumptions of one trip/day and one net-haul/trip and exclusion of some areas from the index. Calculation of effort does not currently take into consideration such factors as restrictions on fishing activity imposed by processors, area quotas, or differences in the fisheries (fishing on spawning grounds or migrating stocks).

ACKNOWLEDGEMENTS

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Table 1. Statistical Districts making up the geographic divisions for the 8 herring fishing areas of the southern Gulf of St. Lawrence.

Area	Statistical Districts
Magdalen Islands	26, 27, 28
Quebec	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
Acadian Pen.	63, 64, 65, 66, 67, 68, 70
Escuminac	71, 73, 75, 76
Southeast N.B.	77, 78, 80
Nova Scotia	45, 46, 1, 2, 3, 10, 11, 12, 13, 14
East P.E.I.	85, 86, 87, 88
West P.E.I.	82, 83, 92, 93, 95, 96

Table 2. Herring gillnet statistics for the southern Gulf of St. Lawrence in 1988.

Area	Landings (Tonnes)		Number of Licences	Number of Boats (CFVN's)
	Spring	Fall		
Magdalen Is.	116	1	310	—
Quebec	794	2628	543	—
Acadian Pen.	5471	19664	624	345
Escuminac	3542	1263	326	170
Southeast N.B.	1322	8	264	124
Nova Scotia	186	8454	432	246
East P.E.I.	104	6499	379	151
West P.E.I.	515	2541	478	207
TOTAL	12050	41058	3356	1243

Table 3. Response to the questionnaire by home area of gillnetter.

Area	Number Sampled	Number of Reports	Number of Phone, Address Problems	Number not Contacted	Number Unavailable or Uncooperative	Number not Fishing
Magdalen Is.	31	28	0	0	0	3
Quebec	54	34	2	6	0	12
Acadian Pen.	94	82	4	6	2	0
Escuminac	50	45	1	3	0	1
Southeast N.B.	32	29	0	3	0	0
Nova Scotia	72	55	4	12	0	1
East P.E.I.	40	36	0	3	1	0
West P.E.I.	51	40	2	4	1	4
Total	424	349	13	37	4	21

Table 4. Number of respondents fishing in each area in 1988.

Area	Fishing in the Spring	Fishing in the Fall
Magdalen Is.	28	2
Quebec	31	22
Acadian Pen.	66	62
Escuminac	45	10
Southeast N.B.	28	2
Nova Scotia	18	53
East P.E.I.	11	35
West P.E.I.	35	20
Total	262	206

Table 5. Effort parameters for the 1988 spring gillnet fishery (Mean \pm 1 standard deviation of the mean)

Area	No. of Days Fished			No. of Nets Fished	
	total	peak	non-peak	peak	non-peak
Magdalen Is.	21.9 \pm 2.9	1.8 \pm 1.0	20.1 \pm 3.2	5.3 \pm 0.3	6.1 \pm 0.7
Quebec	52.5 \pm 4.6	17.6 \pm 5.1	34.9 \pm 6.1	11.5 \pm 2.3	5.9 \pm 1.0
Acadian Pen.	26.5 \pm 1.8	21.5 \pm 2.1	4.7 \pm 1.2	8.9 \pm 1.0	13.6 \pm 2.4
Escuminac	23.3 \pm 1.8	20.5 \pm 2.2	2.8 \pm 1.0	19.5 \pm 1.9	27.1 \pm 2.5
Southeast N.B.	23.3 \pm 2.6	6.6 \pm 2.0	16.7 \pm 3.3	29.2 \pm 2.0	29.8 \pm 2.0
Nova Scotia	29.4 \pm 1.4	11.4 \pm 4.9	17.9 \pm 4.7	3.0 \pm 0.8	3.7 \pm 0.7
East P.E.I.	15.0 \pm 4.7	6.0 \pm 2.1	9.0 \pm 5.3	3.3 \pm 0.8	4.2 \pm 1.5
West P.E.I.	28.7 \pm 2.8	15.7 \pm 3.7	13.0 \pm 2.5	15.0 \pm 3.0	19.2 \pm 2.8

Table 6. Effort parameters for the 1988 fall gillnet fishery (Mean \pm 1 standard deviation of the mean)

Area	No. of Days Fished			No. of Nets Fished	
	total	peak	non-peak	peak	non-peak
Magdalen Is	4.0 \pm 3.0	1.0 \pm 1.0	3.0 \pm 3.0	2.0 \pm 0.0	6.0 \pm 5.0
Quebec	33.0 \pm 8.7	10.1 \pm 5.4	22.9 \pm 8.2	5.0 \pm 0.7	6.5 \pm 1.7
Acadian Pen.	15.6 \pm 1.3	10.1 \pm 1.2	5.5 \pm 1.3	4.9 \pm 0.2	5.7 \pm 0.7
Escuminac	11.6 \pm 2.3	9.7 \pm 2.7	1.9 \pm 1.4	7.9 \pm 1.4	5.5 \pm 3.5
Southeast N.B.	18.8 \pm 11.3	0.0 \pm 0.0	18.8 \pm 11.3	-	7.0 \pm 5.0
Nova Scotia	14.1 \pm 1.1	10.9 \pm 1.1	3.2 \pm 1.0	6.3 \pm 0.3	6.8 \pm 0.8
East P.E.I.	9.9 \pm 0.8	9.0 \pm 0.9	0.9 \pm 0.5	7.3 \pm 0.2	7.5 \pm 0.9
West P.E.I.	20.8 \pm 4.7	20.8 \pm 4.7	0.0 \pm 0.0	8.2 \pm 0.9	-

Table 7. Soak time (hours) in the 1988 gillnet fishery
(Mean \pm 1 standard deviation of the mean)

Area	Spring		Fall	
	peak	non-peak	peak	non-peak
Magdalen Is.	24.0 \pm 0.0	23.4 \pm 0.6	12.0 \pm 0.0	12.0 \pm 0.0
Quebec	22.4 \pm 1.6	24.0 \pm 0.0	4.2 \pm 2.0	15.8 \pm 3.0
Acadian Pen.	23.5 \pm 0.4	24.0 \pm 0.0	4.2 \pm 1.3	10.2 \pm 2.8
Escuminac	24.0 \pm 0.0	24.0 \pm 0.0	1.4 \pm 0.5	10.3 \pm 4.8
Southeast N.B.	24.0 \pm 0.0	24.0 \pm 0.0	-	24.0 \pm 0.0
Nova Scotia	18.0 \pm 4.0	24.0 \pm 0.0	2.5 \pm 0.7	5.5 \pm 2.7
East P.E.I.	22.1 \pm 1.9	24.0 \pm 0.0	1.6 \pm 0.2	1.4 \pm 0.4
West P.E.I.	24.0 \pm 0.0	24.0 \pm 0.0	2.8 \pm 1.2	-

Table 8. Length of gillnets used in the 1988
herring fishery (Fathoms).

Area	Spring	Fall
Magdalen Is.	16.9	15.8
Quebec	23.8	20.5
Acadian Pen.	16.1	17.7
Escuminac	16.2	20.8
Southeast N.B.	15.4	12.8
Nova Scotia	18.6	22.7
East P.E.I.	19.4	19.9
West P.E.I.	16.3	20.3

Table 9. Percent distribution of gillnet types
used in the 1988 herring fishery.

Area	Spring		Fall	
	Set	Modified	Set	Modified
Magdalen Is.	95	5	87	13
Quebec	75	25	56	44
Acadian Pen.	100	0	27	73
Escuminac	100	0	8	92
Southeast N.B.	100	0	0	100
Nova Scotia	100	0	97	3
East P.E.I.	80	20	97	3
West P.E.I.	100	0	68	32

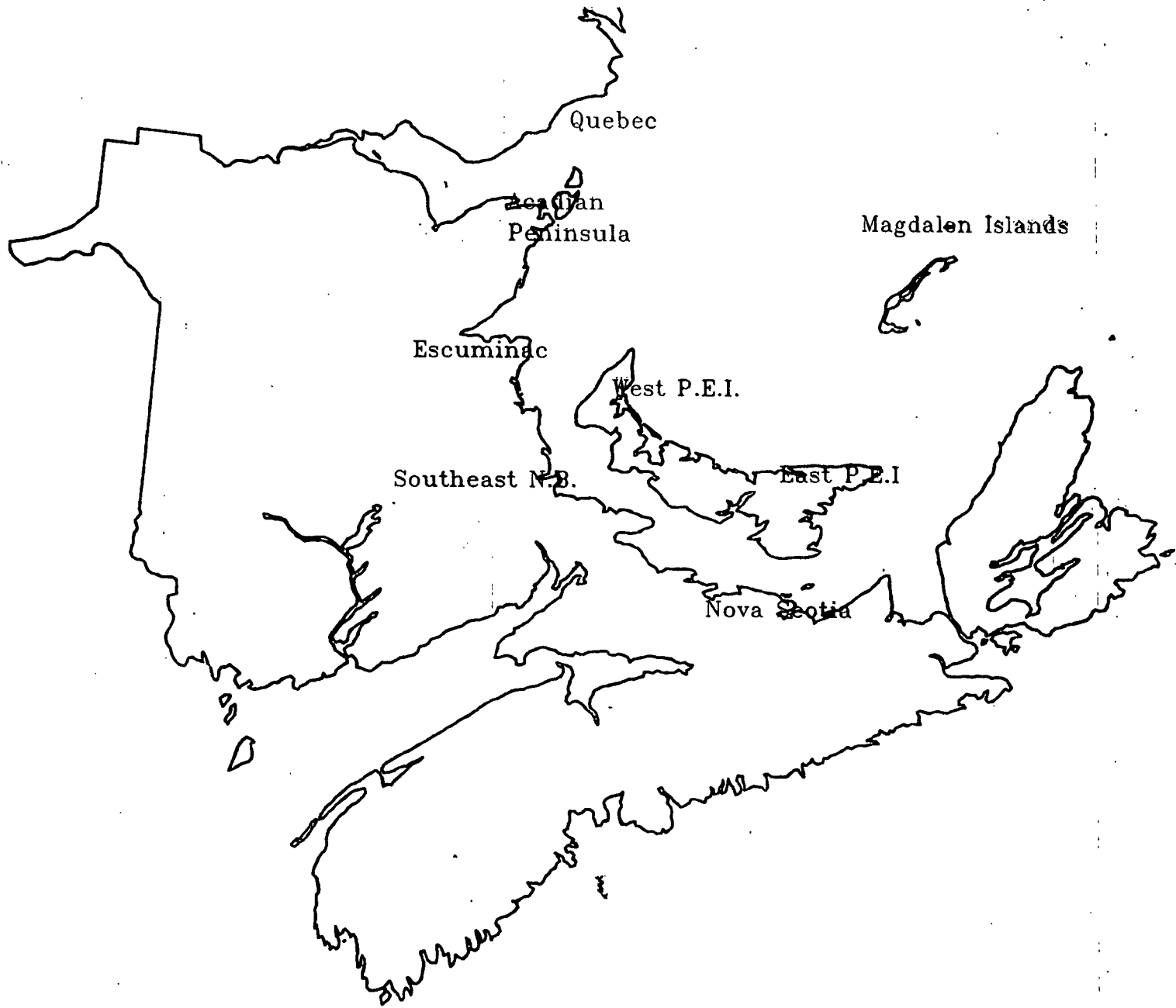
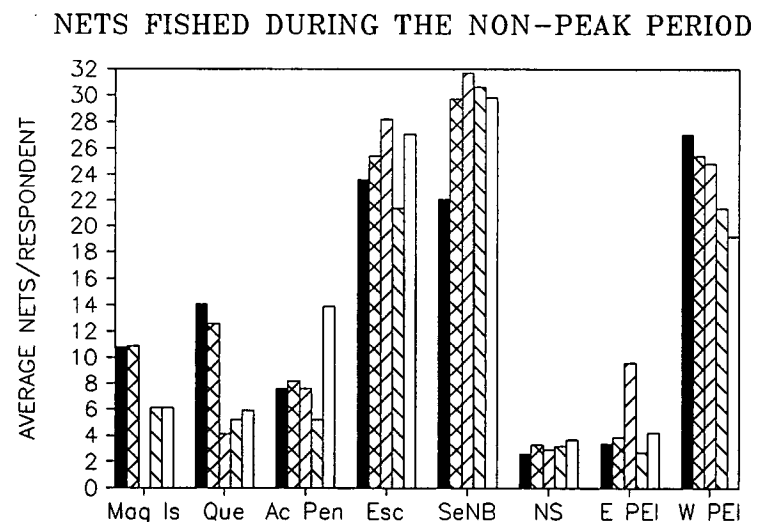
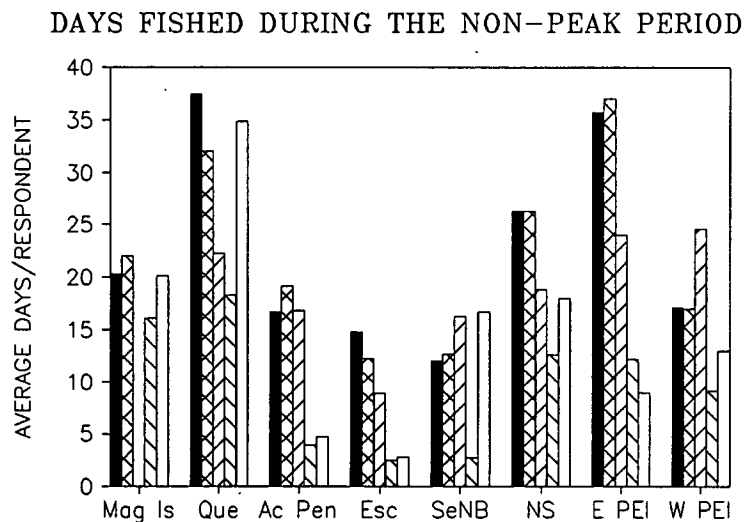
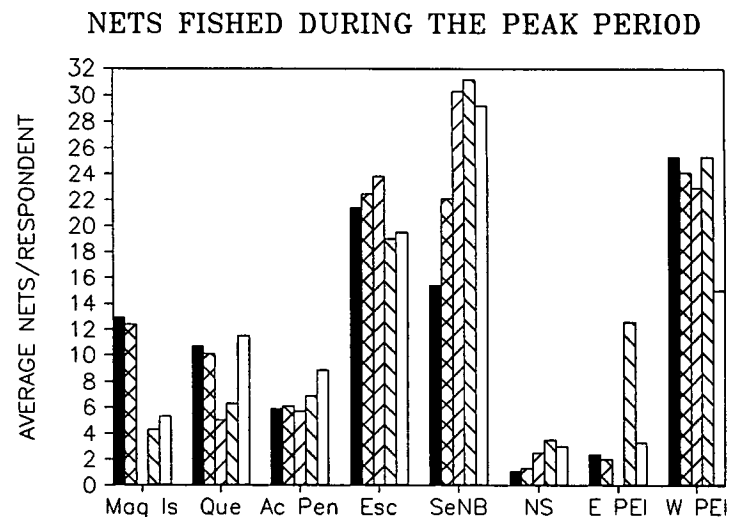
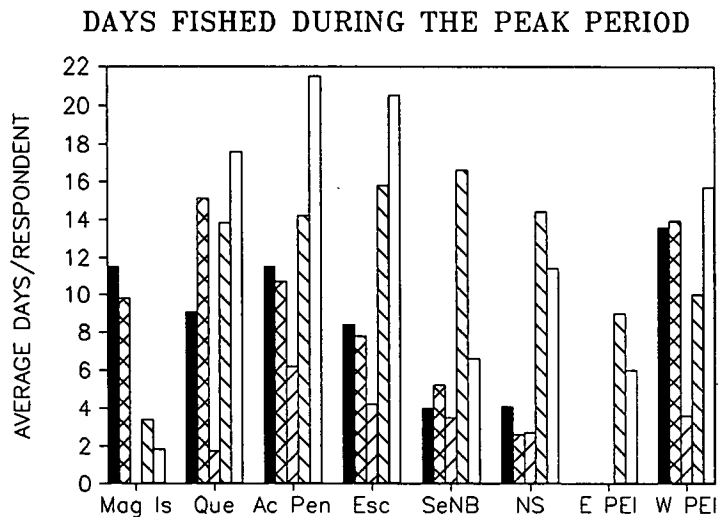


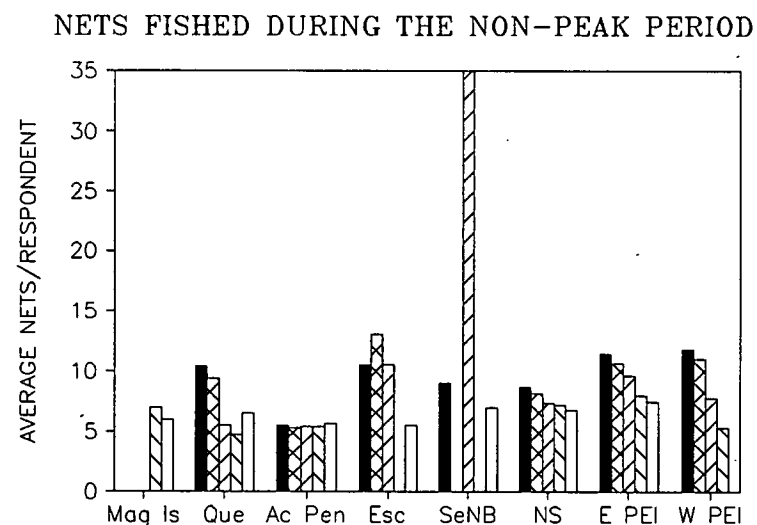
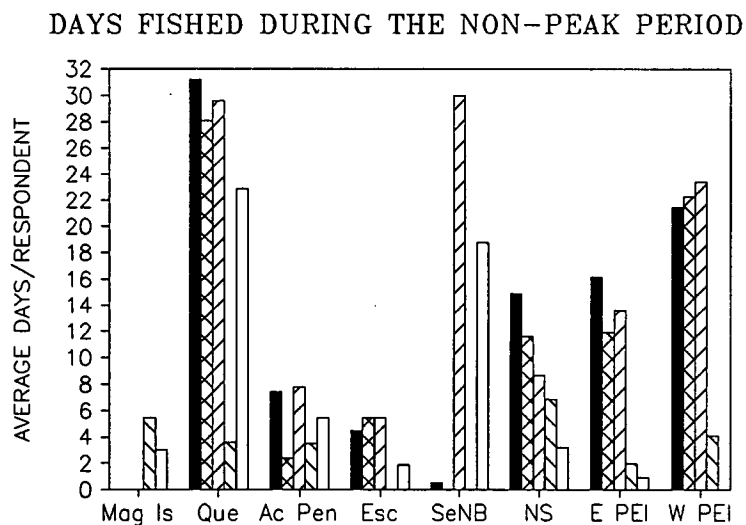
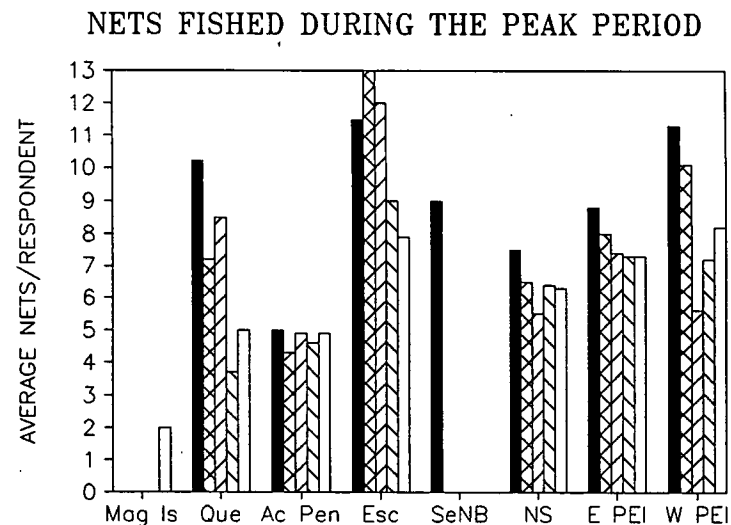
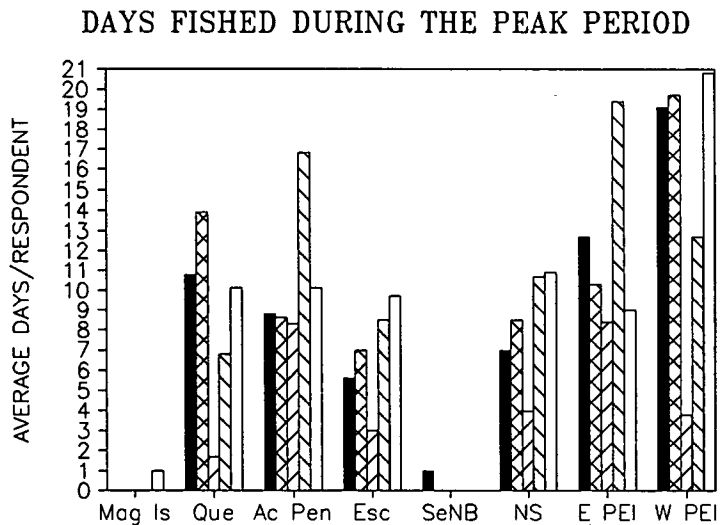
Figure 1. Geographic division of the southern Gulf of St. Lawrence used in the 1988 herring gillnet survey



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■ 1984 ⊠ 1985 ▨ 1986 ▩ 1987 □ 1988

Figure 2. Effort parameters for the 4T spring fishery

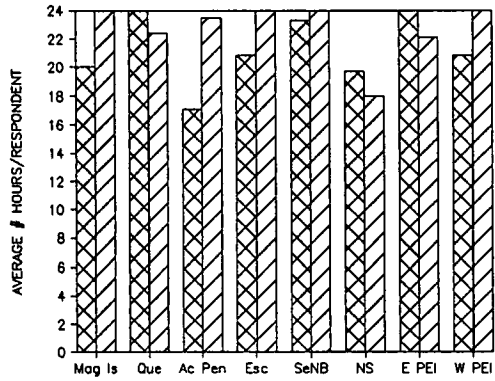


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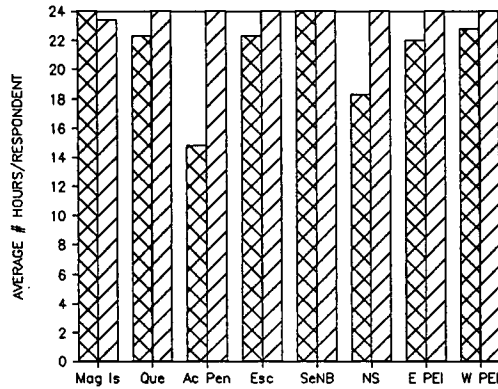
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Figure 3. Effort parameters for the 4T fall fishery

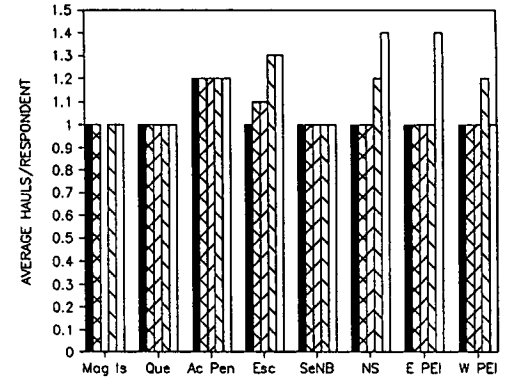
NET SOAK TIME DURING THE PEAK - SPRING



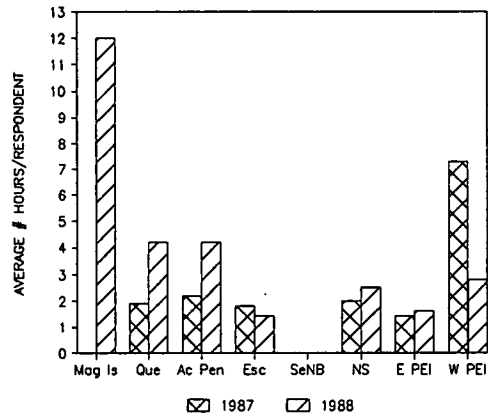
NET SOAK TIME IN THE NON-PEAK - SPRING



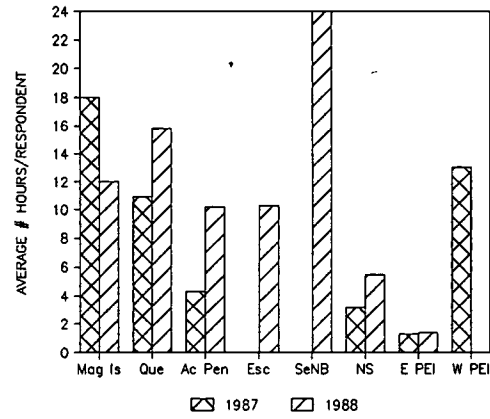
HAULS/DAY DURING THE SPRING FISHERY



NET SOAK TIME DURING THE PEAK - FALL



NET SOAK TIME IN THE NON-PEAK - FALL



HAULS/DAY DURING THE FALL FISHERY

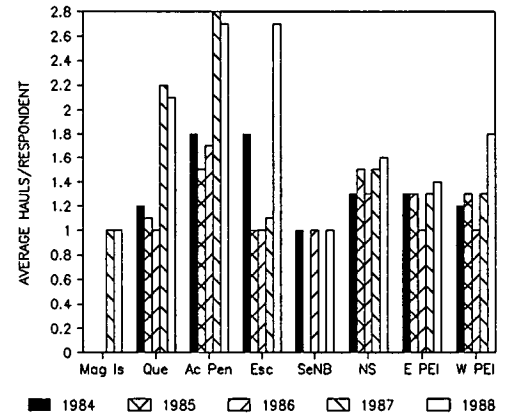
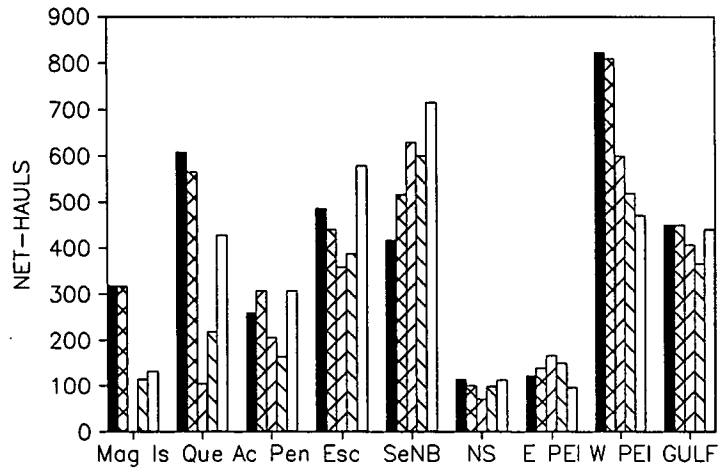
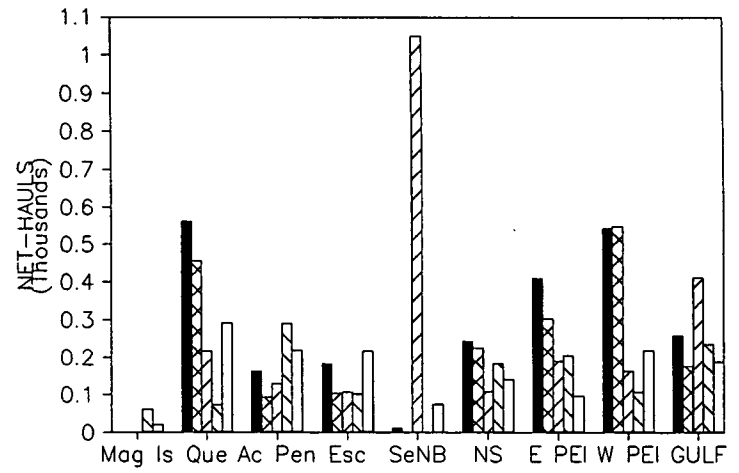


Figure 4. Net soak parameters for the 4T fishery

NET-HAULS/GILLNETTER

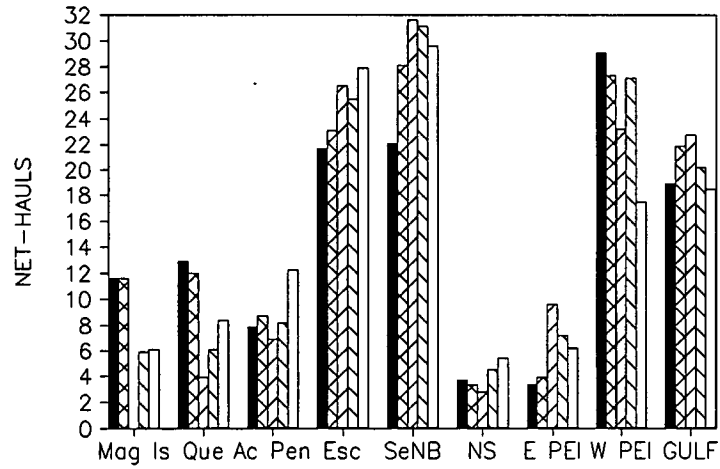


NET-HAULS/GILLNETTER

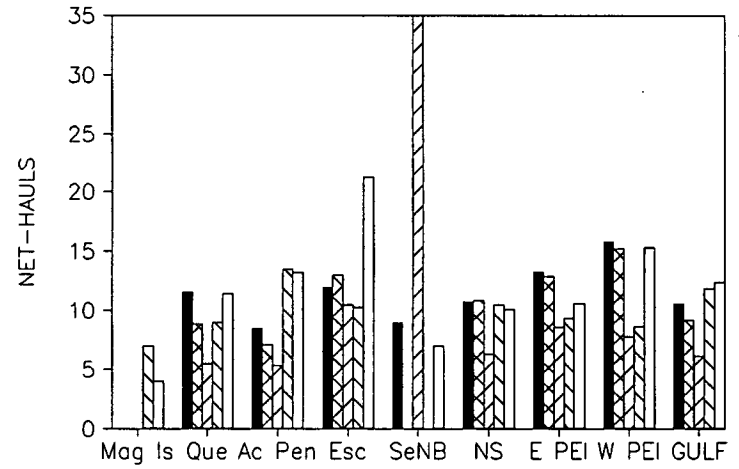


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NET-HAULS/DAY



NET-HAULS/DAY



■ 1984 ⊠ 1985 ▨ 1986 ▩ 1987 □ 1988

■ 1984 ⊠ 1985 ▨ 1986 ▩ 1987 □ 1988

Figure 5. Effort expended in the spring fishery

Figure 6. Effort expended in the fall fishery

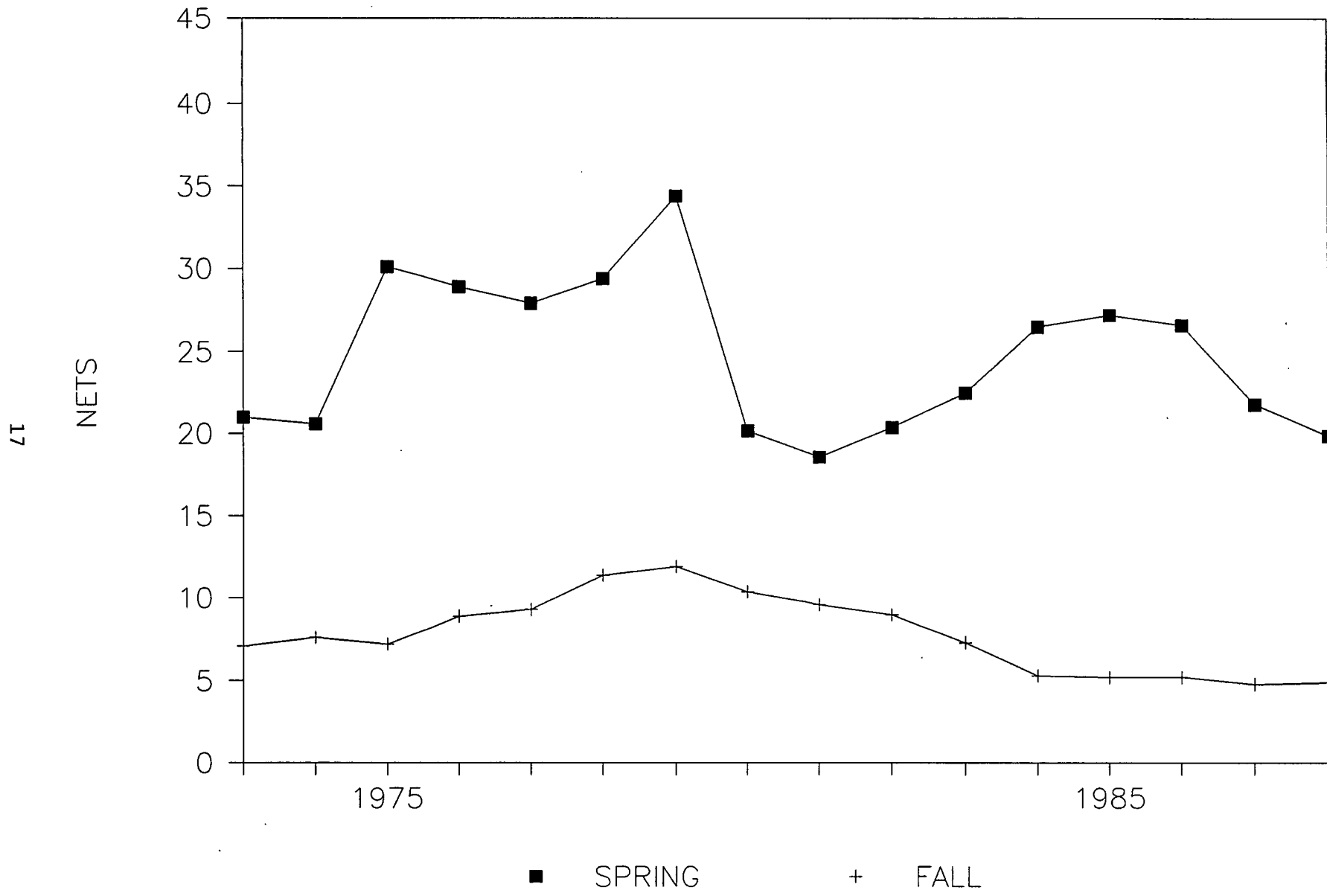


Figure 7. Historical effort index – number of nets fished per trip

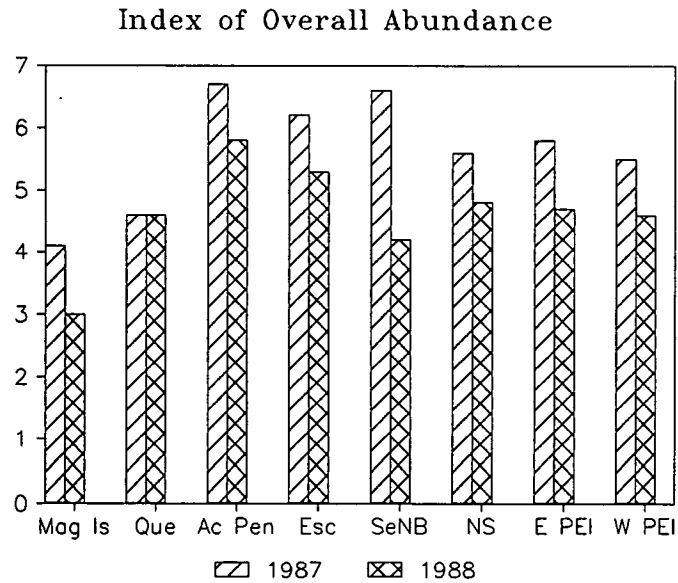
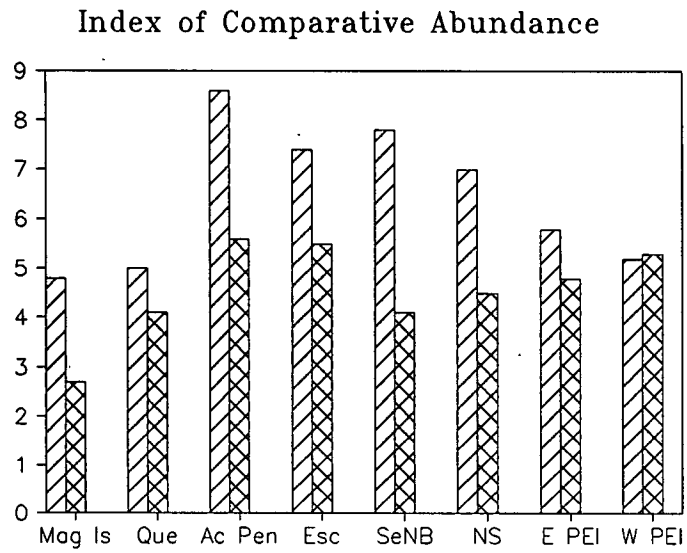


Figure 8. Spring indices of abundance

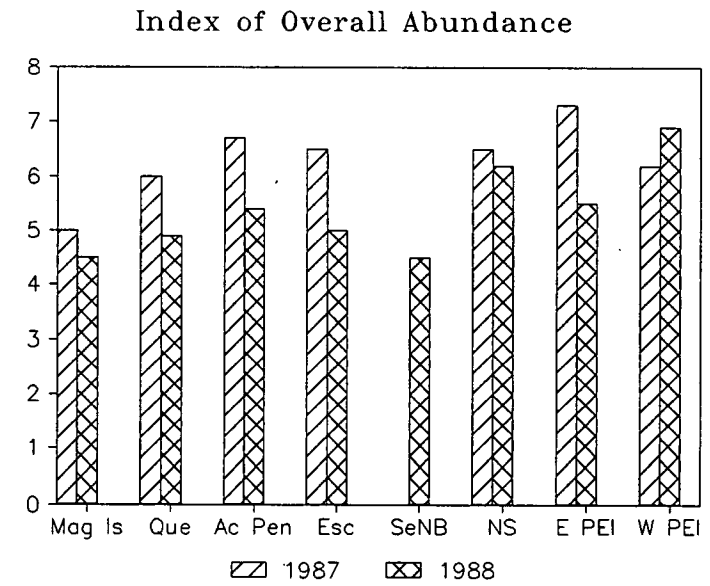
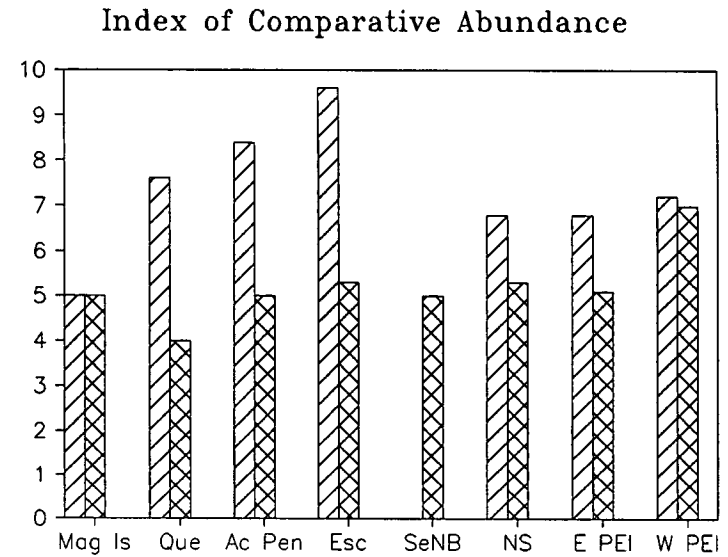


Figure 9. Fall indices of abundance

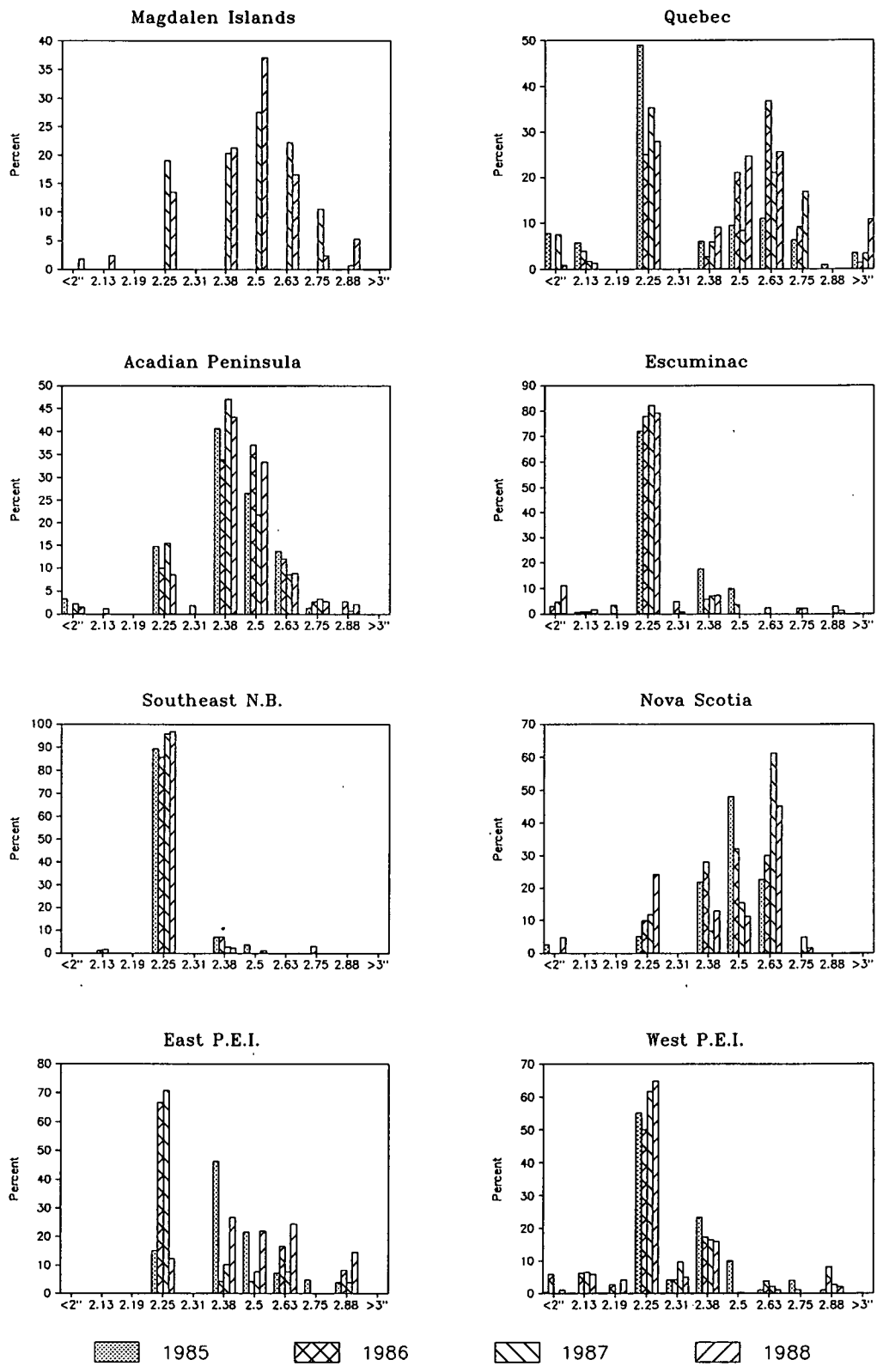


Figure 10. Change in gillnet meshsizes used in the spring fishery

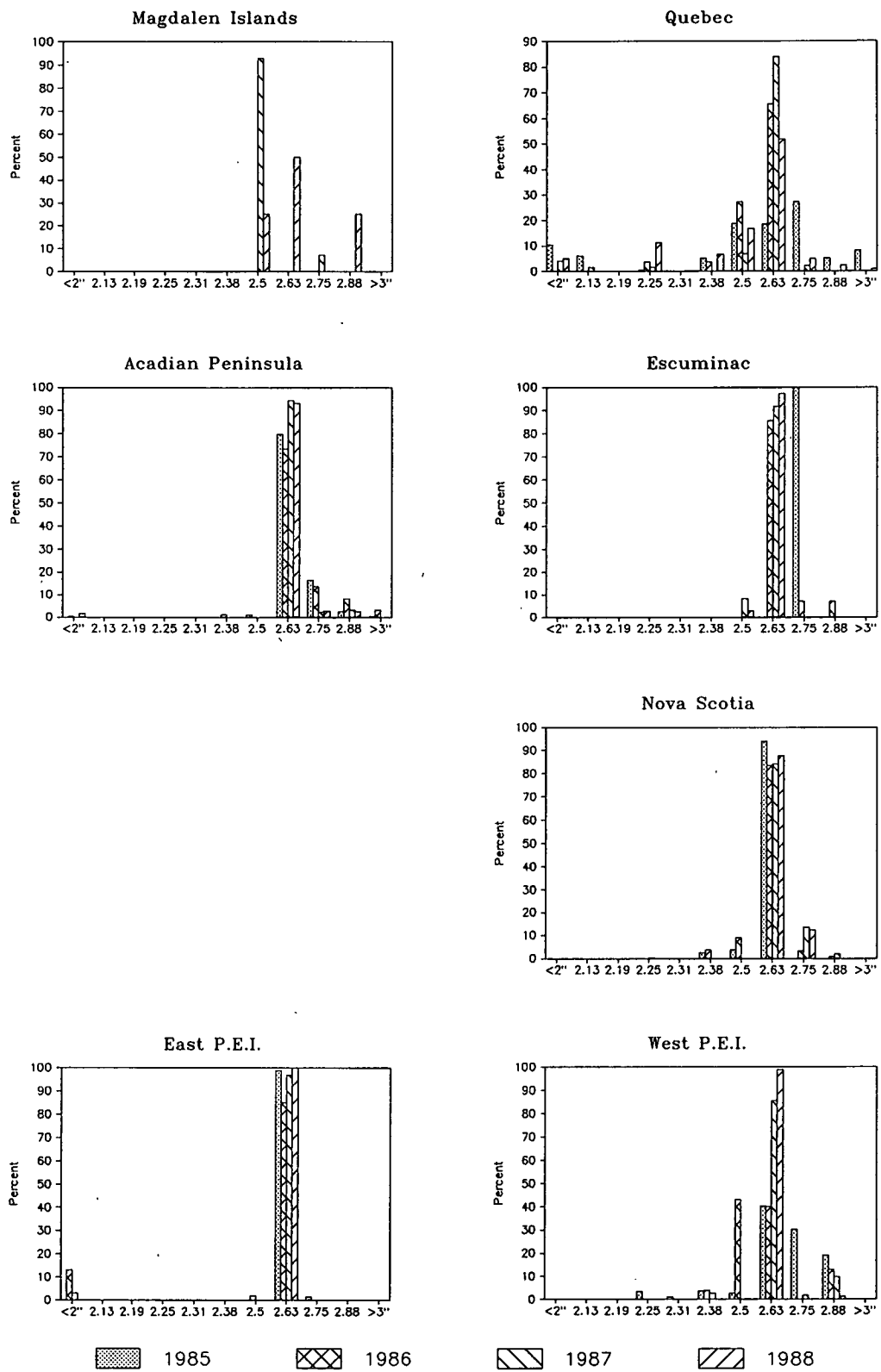
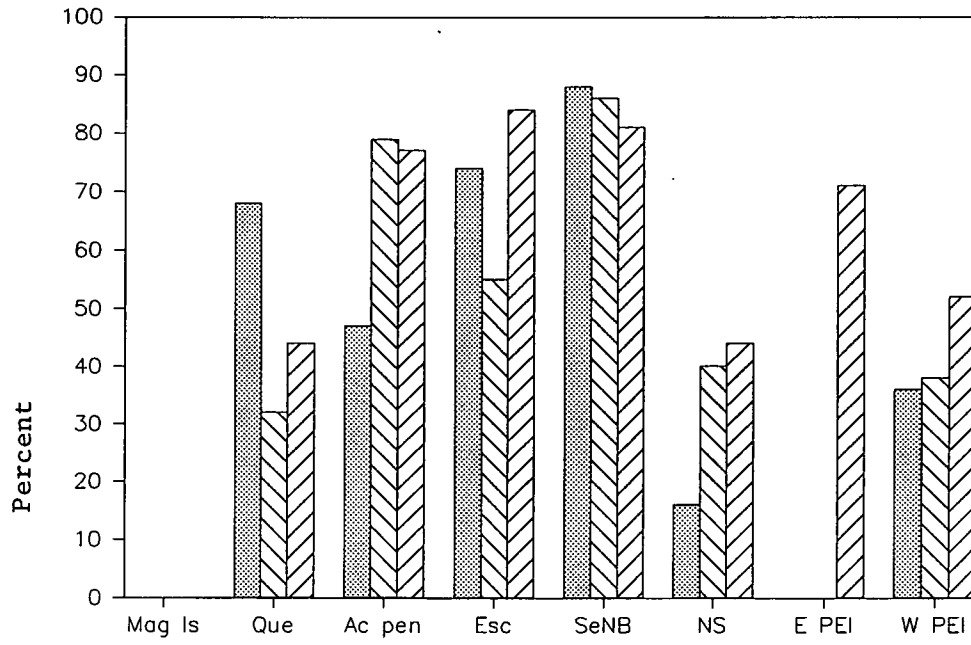


Figure 11. Change in gillnet meshsizes used in the fall fishery

Spring



Fall

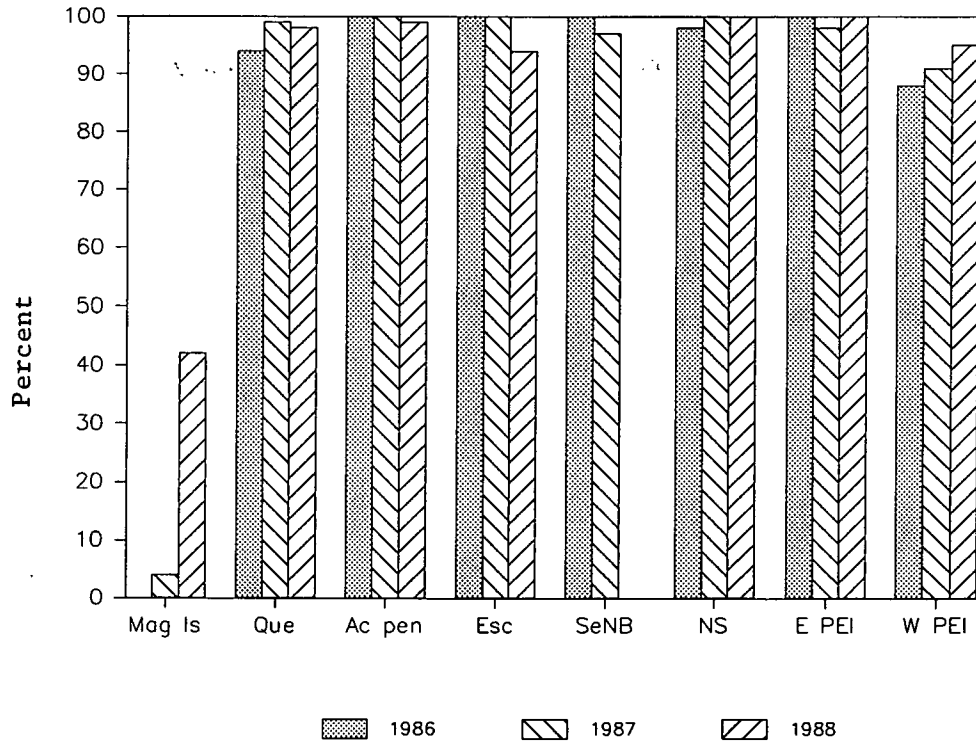


Figure 12. Percent of 4T catch sold to processors

HERRING GILLNET QUESTIONNAIRE 1988

Interviewer _____

Home Stat Dist _____

Date _____

Resp I.D. _____

Record # 1

1. Did you fish herring with gillnets in 1988? YES _____
 NO _____ (If NO, then end of the questionnaire)

2. How many gillnets do you own? _____

3. Did you fish herring in the spring in 1988? YES _____ (S)
 NO _____ (If NO, then go to question 22)

(location 1)

(location 2)

4. Where did you fish herring in the spring? _____ () _____ ()

5. How many days did you fish in (each location)? _____

6. Would you say there was a 'peak' in the season (ie. a time when the catches were really good)?
 YES _____ NO _____ YES _____ NO _____

IF A 'PEAK' WAS IDENTIFIED:

7. About how many days did you fish during the peak? _____

8. How many nets did you fish per day during the peak? _____

9. On average, how many hours did your nets stay in the water during the peak period before you hauled them? _____

10. How many nets did you fish per day in the non-peak? _____

11. On average, how many hours did your nets stay in the water during the non-peak period before you hauled them? _____

IF A 'PEAK' WAS NOT IDENTIFIED:

12. How many nets did you fish per day? _____

13. On average, how many hours did your nets stay in the water during the peak period before you hauled them? _____

14. How many times each day did you empty your nets? _____

15. What is the average length of a single gillnet that you used? _____ fathoms

16. What are the numbers and sizes of mesh # type mesh # type
nets that you used in the spring? (in) nets (set/modified) (in) nets (set/modified)

(A set net is one that is anchored to the ground at both ends)

(A modified net is one that is anchored to the boat at one end)

17. How many barrels of herring did you catch during the spring season? _____ barrels = _____ lbs

18. Approximately how much of your herring catch
-did you keep for personal use or bait? _____ lbs = _____ %
-did you sell to processors? _____ lbs = _____ %
-were you forced to dump? _____ lbs = _____ %

19. The Department of Fisheries and Oceans is interested in whether gillnetters think that herring are becoming more or less abundant.
First of all, how long have you been fishing herring in your area in the spring? _____ yrs.

IF FISHING FOR TWO OR MORE YEARS:

20. We would like you to compare the abundance of herring in this year's fall fishery with abundance in last year's fall fishery.

Would you say that herring this year are: more abundant _____ -> much more _____
little more _____
about the same _____

less abundant _____ -> much less _____
little less _____

21. On a scale of 1 to 10, considering 5 as an average year, how would you rate this year's abundance of herring?

HERRING GILLNET QUESTIONNAIRE 1988

Interviewer _____

Home Stat Dist _____

Date _____

Resp I.D. _____

Record # 2

22. Did you fish herring in the fall in 1988? YES ___ (F)
NO ___ (If NO, then end of the questionnaire)

(location 1)

(location 2)

23. Where did you fish herring in the fall? _____ () _____ ()

24. How many days did you fish in (each location)? _____

25. Would you say there was a 'peak' in the season YES ___
(ie. a time when the catches were really good)? NO ___

IF A 'PEAK' WAS IDENTIFIED:

26. About how many days did you fish during the peak? _____

27. How many nets did you fish per day during the peak? _____

28. On average, how many hours did your nets stay in
the water during the peak period before you
hailed them? _____

29. How many nets did you fish per day in the non-peak? _____

30. On average, how many hours did your nets stay in
the water during the non-peak period before you
hailed them? _____

IF A 'PEAK' WAS NOT IDENTIFIED:

31. How many nets did you fish per day? _____

32. On average, how many hours did your nets stay in
the water during the non-peak period before you
hailed them? _____

33. How many times each day did you empty your nets? _____

34. What is the average length of a single gillnet that you used? _____ fathoms _____ fathoms

35. What are the numbers and sizes of nets that you used in the fall?	mesh (in)	# nets	type (set/modified)	mesh (in)	# nets	type (set/modified)
	_____	_____	_____	_____	_____	_____
(A set net is one that is anchored to the ground at both ends)	_____	_____	_____	_____	_____	_____
(A modified net is one that is anchored to the boat at one end)	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____

36. How many barrels of herring did you catch during the fall season? _____ barrels = _____ lbs _____ barrels = _____ lbs

37. Approximately how much of your herring catch

-did you keep for personal use or bait? _____ lbs = _____ % _____ lbs = _____ %

-did you sell to processors? _____ lbs = _____ % _____ lbs = _____ %

-were you forced to dump? _____ lbs = _____ % _____ lbs = _____ %

38. The Department of Fisheries and Oceans is interested in whether gillnetters think that herring are becoming more abundant or less abundant. First of all, how long have you been fishing herring in your area in the fall? _____ yrs.

IF FISHING FOR TWO OR MORE YEARS:

39. We would like you to compare the abundance of herring in this year's fall fishery with abundance in last year's fall fishery.

Would you say that herring this year are: more abundant _____ -> much more _____
 little more _____
 about the same _____
 less abundant _____ -> much less _____
 little less _____ ()

40. On a scale of 1 to 10, considering 5 as an average year, how would you rate this year's abundance of herring? _____

QUESTIONNAIRE - HARENG 1988

Interviewer _____

Home Stat Dist _____

Date _____

Resp I.D. _____

Record # 1

1. Avez-vous peche le hareng en 1988 a l'aide de filets maillants? OUI _____
NON _____ (Si NON, c'est le fin de questionnaire)

2. Combien de filets maillants possedez-vous? _____

3. Avez-vous peche le hareng durant le printemps en 1988? OUI _____
NON _____ (Si NON, question 22)

(location 1)

(location 2)

4. Ou avez-vous peche durant le printemps? _____ () _____ ()

5. Combien de jours avez-vous peche (chaque endroit)? _____

6. D'apres vous est-ce qu'il y a eu une periode de capture forte (ie. une periode lorsque les prises etaient bonnes)? OUI _____
NON _____

SI UNE PERIODE DE CAPTURE FORTE A ETE IDENTIFIEE:

7. Combien de jours avez-vous peche durant la periode de capture forte? _____

8. Combien de filets par jour avez-vous peches durant la periode de capture forte? _____

9. Durant la periode de capture forte, pendant combien d'heures par moyenne est-ce que vos filets ont reste dans l'eau avant qu'ils soient retires? _____

10. Combien de filets par jour avez-vous peches durant le reste de la saison? _____

11. Durant le reste de la saison, pendant combien d'heures par moyenne est-ce que vos filets ont reste dans l'eau avant qu'ils soient retires? _____

SI UNE PERIODE DE CAPTURE FORTE N'A PAS ETE IDENTIFIEE:

12. Combien de filets par jour avez-vous peches? _____

13. Par moyenne, pendant combien d'heures est-ce que vos filets ont reste dans l'eau avant qu'ils soient retires? _____

14. Combien de fois par jour avez-vous relevé vos _____
filets? _____

15. Quelle était la longueur moyenne d'un filet
maillant que vous utilisiez? _____ brasses _____ brasses

16. Quelle est la grandeur de mailles maille # type
des filets et le nombre de filets (po) filets (ancre/modifié)
ce chaque grandeur que vous avez (po) filets (ancre/modifié)
utilisée?

(Un filet ancre en est un
qui est ancre au fond
à chaque bout)

(Un filet modifié est un qui
est attaché au bateau à
un bout)

17. Combien de hareng avez-vous pris? _____ barils = _____ poids _____ barils = _____ poids

18. Quel pourcentage de votre prise de hareng

-avez-vous gardé pour des fins personnels _____ poids = _____% _____ poids = _____%
ou de la boîte?

-avez-vous vendu aux usines de transformation? _____ poids = _____% _____ poids = _____%

-avez-vous du jeter? _____ poids = _____% _____ poids = _____%

19. Le Ministère de Pêches et Océans veut savoir si les pêcheurs à filet maillant
considèrent que le hareng devient plus abondant ou moins abondant. Tout d'abord,
depuis combien de temps avez-vous pêché du hareng dans votre région durant l'automne? _____ ans.

SI LE RÉPONDANT A PÊCHÉ LE HARENG DEPUIS DEUX ANS OU PLUS:

20. Pourriez-vous faire une comparaison de l'abondance du hareng
dans la pêche de ce printemps avec l'abondance du hareng dans la
pêche du printemps dernier.

Est-ce que vous diriez que l'hareng ce printemps est plus abondant _____ -> beaucoup plus abondant _____
un peu plus abondant _____

à peu près la même _____

moins abondant _____ -> beaucoup moins abondant _____
un peu moins abondant _____ ()

21. Sur une échelle de 1 à dix, avec 5 comme année moyenne, sur quel point
de l'échelle est-ce que vous placeriez l'abondance du hareng cette année? _____

QUESTIONNAIRE - HARENG 1988

Interviewer _____

Home Stat Dist _____

Date _____

Resp I.D. _____

Record # 2

22. Avez-vous peche le hareng durant l'automne en 1988? OUI _____
 NON _____ (Si NON, c'est la fin de la questionnaire)

(location 1)

(location 2)

23. Ou avez-vous peche durant l'automne? _____ () _____ ()

24. Combien de jours avez-vous peche (chaque endroit)? _____

25. D'apres vous est-ce qu'il y a eu une periode de capture forte (ie. une periode lorsque les prises etaient bonnes)? OUI _____
 NON _____

=====

SI UNE PERIODE DE CAPTURE FORTE A ETE IDENTIFIE:

26. Combien de jours avez-vous peche durant la periode de capture forte? _____

27. Combien de filets par jour avez-vous peches durant la periode de capture forte? _____

28. Durant la periode de capture forte, pendant combien d'heures par moyenne est-ce que vos filets ont reste dans l'eau avant qu'ils soient retires? _____

29. Combien de filets par jour avez-vous peches durant le reste de la saison? _____

30. Durant le reste de la saison, pendant combien d'heures par moyenne est-ce que vos filets ont reste dans l'eau avant qu'ils soient retires? _____

=====

SI UNE PERIODE DE CAPTURE FORTE N'A PAS ETE IDENTIFIE:

31. Combien de filets par jour avez-vous peches? _____

32. Par moyenne, pendant combien d'heures est-ce que vos filets ont reste dans l'eau avant qu'ils soient retires? _____

=====

33. Combien de fois par journee avez-vous releve vos _____
filets? _____

34. Quelle etait la longueur moyenne d'un filet
maillant que vous utilisiez? _____ brasses _____ brasses

35. Quelle est la grandeur de mailles maille # type
des filets et le nombre de filets (po) filets (ancre/modifie) maille # type
ce chaque grandeur que vous avez (po) filets (ancre/modifie)
utilisee? _____

(Un filet ancre en est un maille # type
qui est ancre au fond (po) filets (ancre/modifie)
a chaque bout) _____

(Un filet modifie est un qui maille # type
est attache au bateau a (po) filets (ancre/modifie)
un bout) _____

36. Combien de hareng avez-vous pris? _____ barils = _____ poids _____ barils = _____ poids

37. Quel pourcentage de votre prise de hareng
-avez-vous garde pour des fins personnels _____ poids = _____% _____ poids = _____%
ou de la boette?
-avez-vous vendu aux usines de transformation? _____ poids = _____% _____ poids = _____%
-avez-vous du jeter? _____ poids = _____% _____ poids = _____%

38. Le Ministere de Peches et Oceans veut savoir si les pecheurs a filet maillant
considerent que le hareng devient plus abondant ou moins abondant. Tout d'abord,
depuis combien de temps avez-vous peche du hareng dans votre region durant l'automne? _____ ans.

SI LE REpondant A PEche LE HARENG DEPUIS DEUX ANS OU PLUS:

39. Pourriez-vous faire une comparaison de l'abondance du hareng
dans la peche de cet automne avec l'abondance du hareng dans la
peche de l'automne dernier.

Est-ce que vous diriez que l'hareng cet automne est plus abondant _____ -> beaucoup plus abondant _____
un peu plus abondant _____
a peu pres la meme _____

moins abondant _____ -> beaucoup moins abondant _____
un peu moins abondant _____ ()

40. Sur une echelle de 1 a dix, avec 5 comme annee moyenne, sur quel point
de l'echelle est-ce que vous placeriez l'abondance du hareng cette annee? _____