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Breakdown of squid (<u>Illex illecebrosus</u>) catches in NAFO Subarea 3 and Division 4R 1980, with length and sex composition from Newfoundland inshore commercial samples and early season offshore areas.

by

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Introduction

This paper presents 1980 squid (<u>Illex</u> <u>illecebrosus</u>) commercial catches, broken down by month and NAFO Division. Length frequency distributions, maturity stages, mean lengths, weights and sex composition are also included for commercial samples plus samples from an offshore research cruise in June at NAFO Divisions 3N, 30 and 3Ps.

Catches of squid in previous years (Beck et al., MS 1980, Hurley et al., MS 1979; Collins and Ennis, MS 1978; Mercer, MS 1973a; Squires, 1957) show an increase in the offshore trawling fishery to 1978. Inshore catches have increased steadily from 1974 to a peak of 83,118 metric tons in 1979.

Materials and Methods

Monthly catches of squid by NAFO Division (Fig. 1) were obtained from the Economics and Intelligence Branch, Department of Fisheries and Oceans, Newfoundland Region. Offshore catches in Subarea 3 were made available by the FLASH information system and from logs of developmental charters.

During 1980 samples were obtained from various inshore locations (Fig. 2); Holyrood (NAFO Div. 3L), Twillingate and La Scie (NAFO Div. 3K), and Cox's Cove (NAFO Div. 4R).

The offshore samples for the period of June were obtained from a research cruise from June 4-23, 1980 on the ZAGREB trip 2 (Fig. 3). The gear used on this trip was an Engles Hi Rise otter trawl with a $1 \frac{1}{8}$ knotless nylon

liner. This represents the only difference in gear, as all other samples were obtained using Japanese mechanical jigging devices.

Dorsal mantle lengths by sex were reported to the nearest half centimeter. Maturities were classified based on a scale proposed by Mercer (MS 1973b). Length frequencies were summarized biweekly for those periods when samples were taken.

Results and Discussion

Reported Catches

The total reported catch for NAFO Subarea 3 and Div. 4R, 1980 was 32,429 t (Table 1). This represents a substantial drop from the reported catch of 83,118 t for 1979. However, it is still a substantial amount when compared to previous years (Fig. 4).

Many factors contributing to this decline included: Lower prices paid to fishermen which resulted in reduced effort as some fishermen found it a non-profitable fishery, a dispute between fishermen and industry in the months of July and August cut processing time for the season as well (Dawe, unpubl. material). The strike had different effects in different areas. In areas where drying of squid normally occurs it meant an increased effort in drying. Thus the overall dried squid production for 1980 was not reduced as much as were fresh squid catch levels for the same period (Dawe, unpubl. material). This production would probably have been greater but for poor weather conditions.

It is noteworthy that the catch of 9 tons for December in Div. 3K (Table 1) was dried squid. This reported catch is likely misplaced temporally as time taken by fishermen to cure dried squid and finally to be obtained by buyers would be enough to misplace the catch. This could be true for other reported landings of dried squid.

The real abundance of squid was subjectively described as abundant (Dawe and Hurley, this meeting). Abundance varied among areas with the lowest abundance being in NAFO Div. 3Ps, as reflected in the reported catches. During the season of 1980 Div. 3Ps contributed 4.8% of the total catch, whereas in 1979 it contributed 17.7%. This reflects well the comments of fishermen that abundance in that area was scarce to very scarce.

The contribution of the offshore fishery in Subarea 3 was less than 1% of the total catch for 1980. Conversations with captains of commercial fishing vessels revealed that fewer squid were caught as by-catch or discarded than during the previous year.

Squid were reported inshore as far north as Nain in Labrador, NAFO Div. 2H (Fig. 1). However the major contribution to the reported catches for 1980 came from White Bay in NAFO Div. 3K through NAFO Div. 3L to Hermitage Bay in NAFO Div. 3Ps.

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Length Distribution, Sex Compositions and Weights

Length frequency distribution by sex for Holyrood, Twillingate, La Scie, Cox's Cove and offshore areas in NAFO Div. 3N, 30 and 3Ps are shown in Fig. 5, 6, 7, 8 and 9 respectively.

All sexual maturities were classified visually. This resulted in various levels of maturity for males as these are quite noticable macroscopically. All females with the exception of one, were classified as immature. The one mature female from Cox's Cove (NAFO Div. 4R) represented the first reported in the Newfoundland area (Dawe and Drew, this meeting). The samples from Cox's Cove are interesting in that the sexual maturity of males was slightly more advanced than for other areas at the same time. The mean length for these males was greater than those in the other areas sampled. In general sexual maturities for males in all areas excluding Cox's Cove were not as advanced in 1980 as they were in 1979.

Seasonal changes in mean mantle length (Fig. 10), mean body weight (Fig. 11) and sex ratios (Fig. 12) are also described. During 1980 lengths increased throughout the season for both sexes in all areas (Fig. 10). The greatest increase in length occurred during the biweekly periods ending June 15 and June 30 offshore in NAFO Div. 3Ps. The later biweekly periods for all areas indicate a decline in the rate of growth. Yearly comparisons of biweekly periods for length at Twillingate and Holyrood show that squid were smaller in 1980 than in 1979 (Beck et al., MS 1980).

The greatest weight increases between biweekly periods occurred at Holyrood and Twillingate, particularly for females (Fig. 11). It is noteworthy that the late season mean weight increase was lowest at La Scie which is the most northerly and most westerly area on that coast of all sampling locations. This represents the only area where there was no evidence of an increase in weight over 3 biweekly periods.

With the exception of La Scie all inshore samples demonstrated a decrease in the percent of males over the season (Fig. 12). It is of particular interest that for the period Oct. 15 in Holyrood for 1980, males comprised only 16.3% of the sample, whereas for the corresponding period for 1979 males comprised approximately 50% of the sample. Such a decrease of males at Holyrood has also been reported for the years 1971 and 1965 (Mercer, 1973), when females predominated in the later periods.

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NAFO Div.	Month							
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals
2G								· · · ·
2H								
2J		•	•					. •
3K	_	63	847	2,062	2,221	101	9	5,303
3L	4	512	2,401	10,979	11,595	62		25,553
3M								
3N								
30								
3Ps	-	155	270	577	546	7		1,555
3Pn	· · ·	- ·	9		1			. 10
4R	-	ан. 1 —	6	. 1 .	1	-		8
Totals	4	730	3,533	13,619	14,364	170	9	32,429
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Table 1. Squid catches (metric tons) at Newfoundland by NAFO Division, 1980.

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Fig. 1. Map of northwest Atlantic NAFO Subareas.

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Fig. 2. Map of Newfoundland inshore sampling locations.



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