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Trends in the witch fishery in Subarea 3

by

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Introduction

The purpose of this document is to summarize the landings of witch flounder and to indicate trends that have occurred in recent years. This species has become of increasing importance particularly to the Canadian inshore and near water fleet, especially in ICNAF Division 3K and to a lesser extent in the northern half of Division 3L because of the decline in the abundance of cod, the introduction of larger boats, and the use of gillnets. In addition to this, since flatfish generally have become more important to the industry in recent years, quota regulations presently in force on plaice and yellowtail could result in increased fishing for witch offshore especially near Funk Island Bank and northward to Hawke Channel, as well as in Divisions 3N-3O and 3Ps.

Division 3K (Table 1)

Nominal catches of flatfish in ICNAF Division 3K were not completely separated by species until 1970. Poland, however, separated Greenland halibut since 1964. Assuming that these 1970 and 1971 figures roughly reflected the proportion of plaice and witch, the Polish catches of "unspecified flounder" were separated on the basis of 97% witch and 3% plaice. For the USSR the 1970 and 1971 proportions of witch in the total catch of about 32% was used to estimate the quantities of that species in the previous years.

The Canadian fishery for witch occurs principally in the Notre Dame Bay area in depths of 140-200 fath (256-366 m) (Fig. 1). The fishery has gradually moved farther offshore beyond Funk Island, possibly because of the depletion of the virgin stock and as larger boats were added to the fleet (50-100 tons).

It seems probable that witch fished by the Canadian inshore boats and by the European fleet belong to the same population. No tagging data are available on movements of witch in this area; however, Powles and Kohler (1970) reported seasonal movements of witch flounder off Nova Scotia and it seems possible that witch in Notre Dame Bay move to deeper water during the winter.

Apparently the same length groups are taken inshore as in the offshore fishery with the different proportions apparently being a function of the type of gear and mesh size (Fig. 2). The Canadian gillnets catch more fish in the larger size groups than the Polish otter trawlers.

Division 3L (Table 2)

Canadian landings of witch in Division 3L were almost entirely from inshore areas by gillnets. For Poland and the USSR it was difficult to tell how much of the reported "unspecified flounder" was witch. In 1970 and 1971 when the flatfish species were separated the Polish and USSR catches were very small and the proportions probably not representative of the previous years. However, in the case of Poland at least, a substantial proportion of the "unspecified flounder" was probably witch.

Divisions 3N and 3O (Table 3)

The Canadian fishery for witch was primarily as a by-catch of the haddock fishery of the 1950's and early 60's. The USSR began catching substantial quantities in 1966 (5713 tons) with an estimated catch of about 16 thousand tons in 1967, 13 thousand tons in 1968 and about 15 thousand tons in 1971.

Data from research cruises by the St. John's Station indicate that most of the witch are along the southwest slope of the bank (Division 3O) and along the southern tail (Division 3N).

Division 3Ps (Table 3)

The Canadian fishery for witch in this Division was primarily by otter trawler although some Danish seining also occurred during the 1960's in Fortune Bay. The fairly substantial USSR catches in 1968 and 1969 of "unspecified flounder" may have consisted entirely of plaice if the 1970 and 1971 figures were indicative of previous years. The latter country reports 336 tons of plaice only in 1970 and 407 tons of plaice and 11 tons of yellowtail in 1971.

Discussion

Data on which to base an assessment of the witch populations in Subarea 3 are at present lacking. One of the major gaps in the knowledge of witch in Subarea 3 is the location of the juvenile fish. The only place where small witch were reported was along the south coast (3Ps-3Pn). Powles and Kohler (1970) reported good catches from the northern part of Division 4R, in the Esquiman Channel. The latter area may be a possible source of recruitment for Division 3K. However, research cruises on the Grand Bank and northward to Funk Island Deep and Hawke Channel have not produced any substantial numbers of small fish. Powles and Kohler (1971) suggested that off Nova Scotia at least 10-30 cm (2-5 yr) witch were in deeper water than the older mature fish.

Although we have no real knowledge of stock size, research vessel catches and the catches from the commercial fishery would seem to indicate that the stocks are not large when compared with American plaice on the Grand Bank. A very high effort level by the USSR in 1967 and 1968 in Divisions 3N and 3O, although primarily for cod, probably did not produce more than 16 thousand tons of witch.

The relatively good catches made in Division 3K and in the southern part of 2J apparently were primarily composed of large old fish constituting part of the virgin stock of that area. The removal of some of these fish may be an asset in some respects; however, without further knowledge of the size of the spawning stock it might be prudent to limit the total removals in all areas at least until more information is available. The St. John's Biological Station is starting a research program during 1973 and with the data previously collected more precise information should be available in 1974-75.

References

- Powles, P. M. and A. C. Kohler. 1970. Depth distribution of various stages of witch flounder (*Glyptocephalus cynoglossus*) off Nova Scotia and in the Gulf of St. Lawrence. J. Fish. Res. Bd. Canada 27(11): 2053-2062.

Table 1. Nominal catches of flatfish in Division 3K used to estimate witch catches. Quantities underlined are estimated values. a = witch by Poland, 97% of unspecified flounder; b = witch by USSR, 32% of flounder; c = total witch using estimates; d = listed in Stat. Bull. as halibut but assumed to be Greenland halibut. "Other" (consists mostly of non-members) were converted on the basis of 1971 figures, i.e. witch = 65%.

Year	Country	Plaice	Witch	Greenland halibut	Unspecified flounder	Year	Country	Plaice	Witch	Greenland halibut	Unspecified flounder
1962	Canada	60	...	479	...	1967	Canada	380	42	2,892	...
	Poland	...	68a	...	70		Poland	...	743a	1,888	766
	USSR	...	43b	...	133		USSR	...	576b	3,160d	1,802
	Other	1	13	2	2		Other	9	101	...	158
	Total	61	124c	481	205		Total	389	1,462c	7,940	2,726
1963	Canada	116	...	592	...	1968	Canada	712	37	3,672	...
	Poland	...	1,165a	...	1,202		Poland	...	3,190a	3,732	3,289
	USSR	...	152b	...	477		USSR	...	3,125b	6,091d	8,765
	Other	2	4	7	...		Other	...	274	...	91
	Total	118	1,321c	599	1,679		Total	712	6,626c	13,496	12,135
1964	Canada	95	...	870	...	1969	Canada	1,679	79	7,140	...
	Poland	...	1,989a	1,398	2,052		Poland	...	1,356a	3,128	1,398
	USSR	...	85b	...	265		USSR	...	2,287b	1,836	7,147
	Other	...	2	1	1		Other	...	...	1	...
	Total	95	2,076c	2,269	2,318		Total	1,679	3,722c	12,105	8,540
1965	Canada	222	82	2,129	...	1970	Canada	3,751	1,665	5,937	...
	Poland	...	2,773a	492	2,859		Poland	330	2,485	6,665	280
	USSR	...	60b	...	189		USSR	6,249	5,519	4,704	...
	Other	5	5	...	...		Other	64	...	172	...
	Total	227	2,920c	2,621	3,053		Total	10,394	9,669	17,478	280
1966	Canada	227	21	3,691	...	1971	Canada	2,470	2,646	4,160	...
	Poland	...	1,795a	665	1,851		Poland	219	4,251	2,778	504
	USSR	...	520b	...	1,628		USSR	917	1,100	1,647	...
	Other	8	488	...	...		Other	13	465	243	...
	Total	235	2,874c	4,356	3,551		Total	3,619	8,462	8,828	504

Table 2. Nominal catches of witch and "unspecified flounder" in ICNAF Division 3L.

Year	Country	Witch	Unspecified flounder	Year	Country	Witch	Unspecified flounder
1962	Canada	29	...	1967	Canada	854	85
	Poland	...	171		Poland	...	3492
	USSR	...	1834		USSR	...	...
	Other	11	8		Other	75	556
	Total	40	2013		Total	929	4133
1963	Canada	17	...	1968	Canada	404	142
	Poland	...	782		Poland	...	337
	USSR	...	21		USSR	...	483
	Other	575	...		Other	161	111
	Total	592	803		Total	565	1073
1964	Canada	103	...	1969	Canada	1275	75
	Poland	...	10		Poland	...	31
	USSR	...	1831		USSR	...	533
	Other	23	...		Other	...	8
	Total	126	1841		Total	1275	647
1965	Canada	39	82	1970	Canada	2355	104
	Poland	...	1192		Poland	50	60
	USSR	...	4474		USSR	58	...
	Other	55	182		Other	2	...
	Total	94	5930		Total	2465	164
1966	Canada	166	...	1971	Canada	5384	2
	Poland	...	908		Poland	98	47
	USSR	...	144		USSR	...	...
	Other	32	191		Other	131	...
	Total	198	1243		Total	5613	49

Table 3. Nominal catch of witch and "unspecified flounder" in (A) Divisions 3N and 30 and (B) Division 3Ps. Quantities underlined are estimated values based on 1970-71 figures with witch 32% of total flounder (3N-30). Unspecified flounder from "other" countries was apparently plaice according to 1970 and 1971 figures for 3N-30.

A. 3N and 30						B. 3Ps							
Year	Country	Witch	Unspecified flounder	Year	Witch	Unspecified flounder	Year	Country	Witch	Unspecified flounder	Year	Witch	Unspecified flounder
1962	Canada	4,482	37	1967	2,863	28	1962	Canada	963	...	1967	3,376	696
	USSR	82	264		15,890	50,444		USSR
	Other	275	...	44	650	Other	10	...	33	747			
	Total	4,839	301	18,797	51,094	Total	973	...	3,409	1,443			
1963	Canada	895	...	1968	1,503	...	1963	Canada	771	1	1968	2,560	5
	USSR	406	1,310		13,110	41,620		USSR	...	...		...	10,981
	Other	795	7	18	19	Other	153	1	106	...			
	Total	2,096	1,317	16,152	41,639	Total	924	2	2,666	10,986			
1964	Canada	1,055	...	1969	479	6	1964	Canada	963	...	1969	2,308	18
	USSR	28	91		8,197	23,352		USSR	...	265		96	4,340
	Other	11	21	...	3	Other	48	...	...	...
	Total	1,094	112	8,676	23,361	Total	1,011	265	2,404	4,358			
1965	Canada	1,324	...	1970	723	...	1965	Canada	555	...	1970	2,591	...
	USSR	404	1,286		6,039	...		USSR	...	...		...	...
	Other	5	355	...	...	Other	15	66	111	...			
	Total	1,733	1,641	6,762	...	Total	570	66	2,702	...			
1966	Canada	3,644	...	1971	178	...	1966	Canada	1,338	76	1971	2,193	...
	USSR	5,713	18,135		14,774	...		USSR	...	419		...	...
	Other	30	190	13	...	Other	21	324	57	...			
	Total	9,387	18,325	14,965	...	Total	1,359	818	2,250	...			

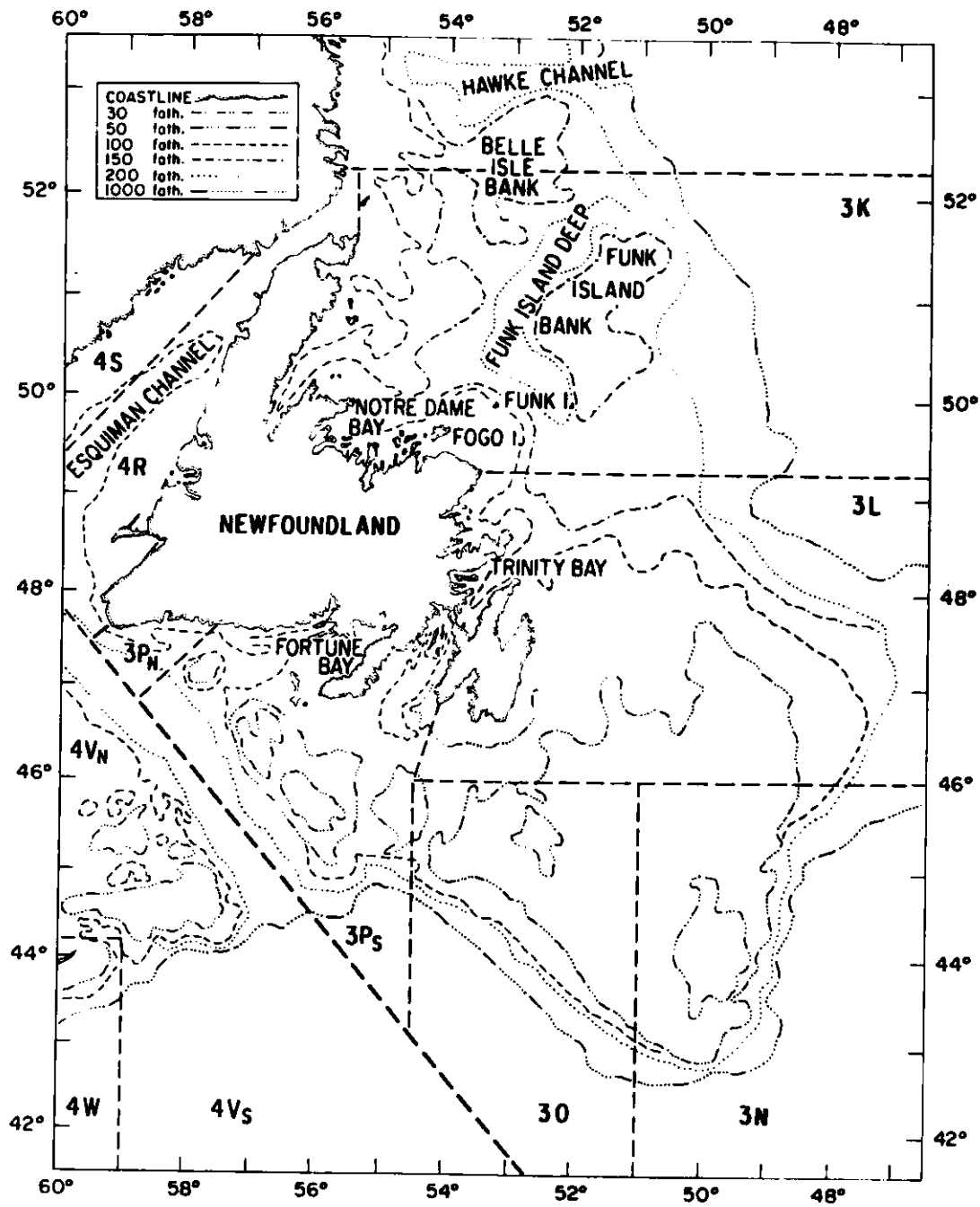


Fig. 1. Map indicating places mentioned in the text.

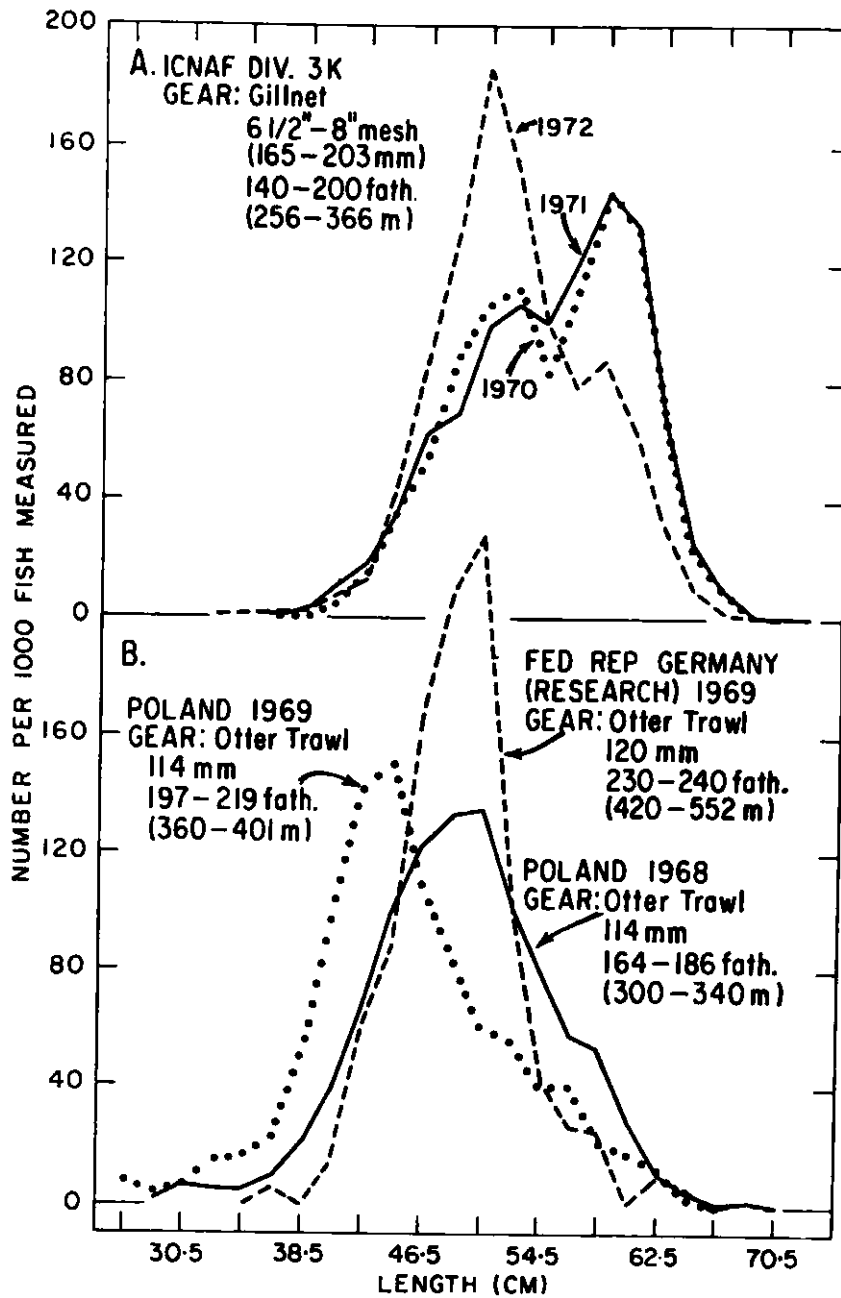


Fig. 2. A. Length frequencies of witch from Canada (N) longlines and gillnets from the northeast coast of Newfoundland (3K). B. Length frequencies for Poland fishing vessels and for Fed. Rep. Germany research vessels (Sampling Yearbooks 1969, 1970).

