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Witch Flounder in NAFO Divisions 3N0

by

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### The fishery

Catches of witch flounder in NAFO Divisions 3N0 over the last 10 year period ranged from a high of 8,000 t in 1974 to a low of 2400 t in both 1980 and 1981 (Fig. 1; Table 1). Catches over the last few years (1978-83) have averaged about 3,000 t annually.

There are two (2) main exploiters of this fishery, namely Canada (N) and the Soviet Union (Table 1). From 1974-77 the catches by each country were predominantly in Div. 30; however, subsequent to that time catches were mainly in 3N up to 1981 when catches were almost entirely in Div. 3N. In 1982, the catches were about the same in both divisions.

The first TAC was placed upon this stock in 1974 at a level of 10,000 based upon current catch levels at that time. This TAC remained in effect until 1978. Based upon an analytical assessment in 1978, it was concluded that a TAC of 10,000 t was too high and was subsequently reduced to 7,000 t in 1979 and remained in effect for 1980. A general production analysis presented to NAFO in June 1980 indicated that  $2/3 F$  (MSY) at equilibrium would suggest an annual catch of 4000-5000 t. Furthermore, it was indicated that fishing mortality at that time was probably near  $F_{0.1}$  when catches were about 5000 - 6000 t. The TAC was therefore reduced to 5000 t and has been unchanged since that time.

### Catch and Effort

Catch and effort statistics for Canada (N) trawlers (OTB5) are presented in Table 2 and Fig. 2. These are based upon witch flounder being reported as main species in the catch and not necessarily being greater than 50 percent of the catch. The highest catch was in 1972 at a level of 0.716 t/hr. However, total catches prior to 1974 were based upon a breakdown into flatfish species from landings of unspecified flounder and may not be accurate enough to use catch and CPUE prior to 1974 as an index of abundance. Since 1974 the highest catch rate was in 1982 and 0.667 t/hr. Catch rates have generally fluctuated around 0.300 t/hr. with the 1972-83 average being 0.379 t/hr. equal to the catch rate in 1983. The average catch rate over the last three (3) years is higher than any in the previous nine (9) years, indicating that the stock is probably in good condition at current catch levels.

### Catch at age from the Commercial fishery

Some catch at age data were presented to NAFO in June 1983 and it indicated substantial differences between divisions and was considered to be the result of sampling two (2) different stocks. It was further shown that a shift towards younger fish was apparent due to an increase in size at age. For comparison, some sampling data for 1983 catch at age is presented with 1982 data (Fig. 3). In 1983, ages ranged from 6 to 16, basically similar to that of 1982. However, the shift to younger ages is still apparent. In 1982, the majority of catch was 10-12 year olds, whereas in 1983 it was 9-11 year olds. In particular, age 13 contributes only about 2 percent in 1983, compared to about 16 percent in 1982.

Although an analytical assessment isn't possible with these data, the data indicate that the stock is probably not declining, and according to the available catch rate data may be stable or possibly showing some increase.

Table 1. Landings of witch flounder in Divisions 3N and 3Ø by Canada and USSR from 1974-1982.

Year	Country	3N	3Ø
1974	Canada	454	2353
	USSR	1765	3470
	Total	2219	5823
1975	Canada	407	730
	USSR	2135	2884
	Total	2542	3614
1976	Canada	1325	1719
	USSR	1103	1888
	Total	2428	3607
1977	Canada	337	2676
	USSR	1768	974
	Total	2105	3650
1978	Canada	378	787
	USSR	2108	167
	Total	2486	954
1979	Canada	559	634
	USSR	1477	391
	Total	2036	1025
1980	Canada	219	206
	USSR	1069	925
	Total	1288	1131
1981	Canada	313	68
	USSR	2034	10
	Total	2347	78
1982	Canada	383*	1377*
	USSR	1551*	418*
	Total	1934*	1795*
1983	Canada	526*	1148*
	USSR	1853*	89*
	Total	2379*	1237*

\* Provisional

Table 2. Catch effort statistics for witch flounder in Divisions 3NØ, 1972-1983 from Canada (N) based trawlers (TC5).

Year	CPUE (t/hr)	Main species catch (t)	Total catch	% Main species
1972	0.716	2751	9177	30
1973	0.502	4080	6691	61
1974	0.337	1015	8045	13
1975	0.252	595	6156	10
1976	0.271	1291	6035	21
1977	0.365	2436	5806	42
1978	0.249	452	3454	13
1979	0.186	25	3051	1
1980	0.267	25	2419	1
1981	0.352	177	2425	7
1982	0.667	601	3729*	16
1983	0.379	816	3616*	23

Mean 1972-83 = 0.379 t/hr.

\* Provisional data.

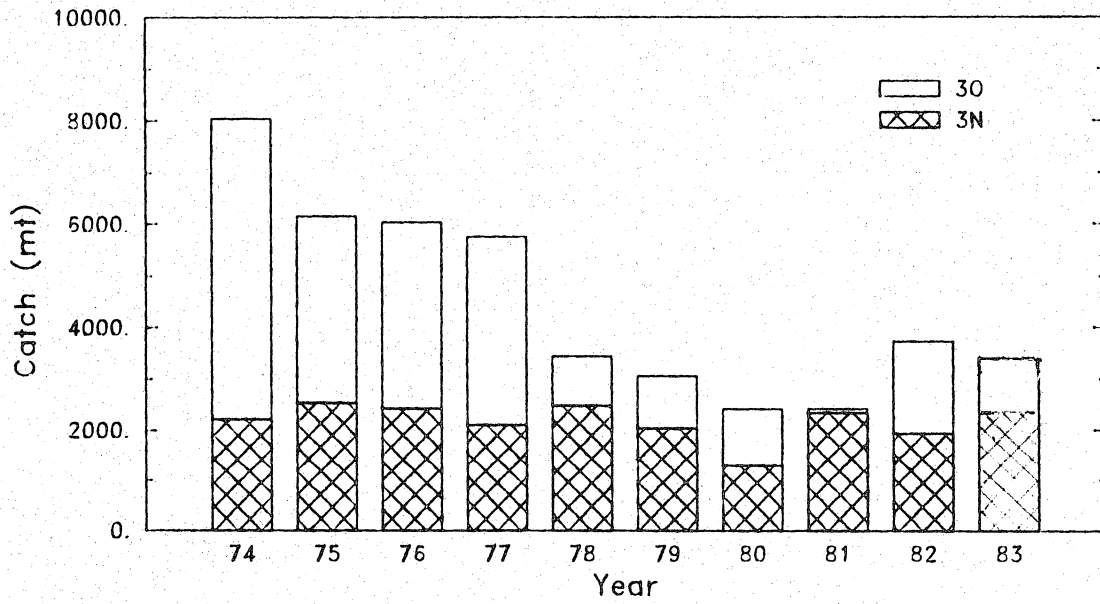


Fig.1. Nominal catches of witch in Div. 3NO, 1974-1983.  
(1983 Provisional for 3NO combined)

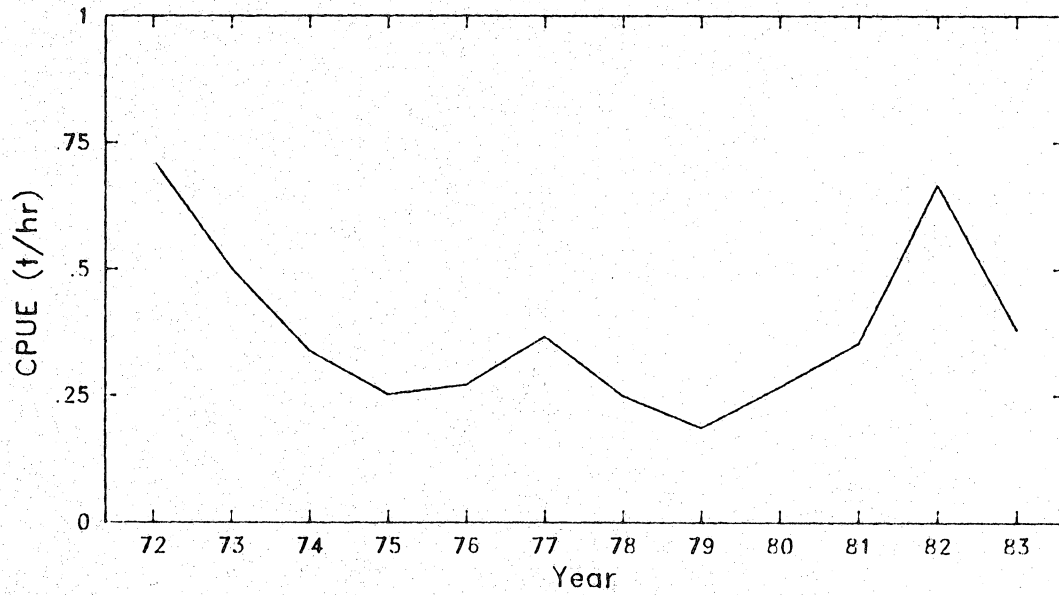


Fig.2. CPUE for witch in Div. 3NO, 1972-1983 for Canadian (Nfld.) based trawlers (TC5).

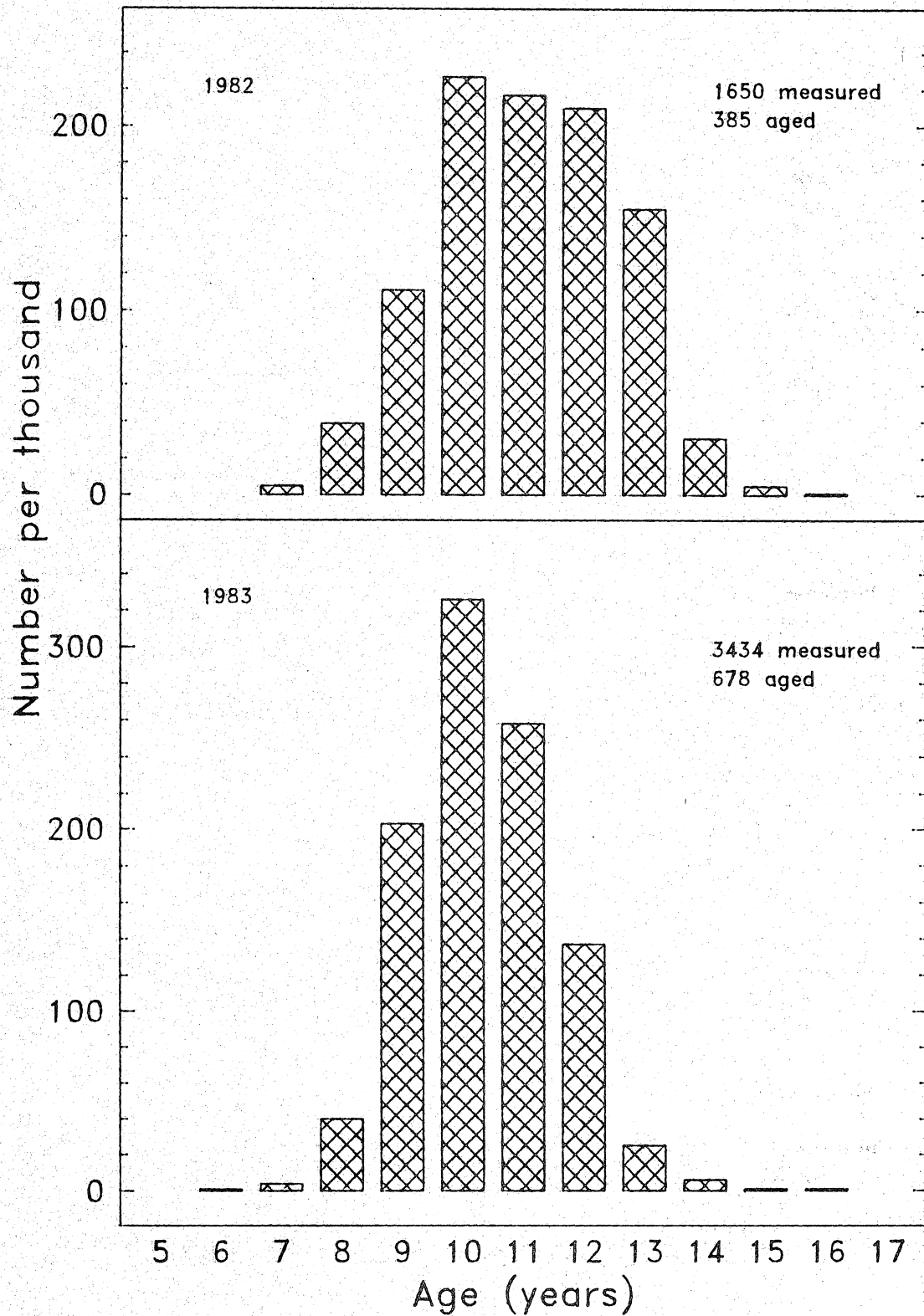


Fig.3: Number of witch caught at age per thousand in the Canadian (Nfld.) commercial fishery in Div. 3NO in 1982 and 1983.