Northwest Atlantic Fisheries Organization

Serial No. N994 NAFO SCR Doc. 85/44

SCIENTIFIC COUNCIL MEETING - JUNE 1985

The Witch Flounder Fishery in NAFO Divisions 3NO

by

W. R. Bowering

Fisheries Research Branch, Department of Fisheries and Oceans
P. O. Box 5667, St. John's, Newfoundland, Canada A1C 5X1

The fishery

Landings of witch flounder in NAFO Div. 3NØ during the last 10 years peaked at a level of 8,000 t in 1974 with the lowest catches occurring in 1980 and 1981 at a level of 2,400 t (Fig. 1; Table 1). Preliminary figures for 1984 indicate a catch of about 2,700 t, a decline from that of the last couple of years.

The fishery is essentially exclusive to Canada (N) and the Soviet Union. Most fishing was carried out in Div. 3N in recent years, particularly by the Soviet Union where witch is primarily a by-catch in the redfish fishery. Canada (N) usually fishes witch in late winter-early spring towards the tail of the Grand Bank where prespawning concentrations usually occur at this time of year.

In 1974, the first TAC of 10,000 t was placed upon this stock and remained in effect until 1978. This TAC was not based upon an analytical assessment but simply a reflection of catch levels at the time. An analytical assessment was presented to NAFO in 1978 and indicated that the 10,000 t level was too high and could not be sustained. The TAC was, therefore, reduced to 7,000 t in 1979 and 1980. Based upon a general production analysis presented to NAFO in 1980, it appeared that at 2/3 F (MSY), an annual catch of 4,000-5,000 t would be more realistic for this stock, especially since fishing mortality was probably near $F_{0.1}$ when catches were about 5,000-6,000 t. The TAC was, therefore, reset at 5,000 t in 1981 and has remained here since that time although the TAC has never been reached.

Catch and effort

Catch and effort statistics were available from the Canada (N) otter trawl fishery (OTB 5). A fishery for witch was considered to be directed when witch flounder was the main species in the catch. The results are shown in Table 2 and Fig. 2. It is clear from Table 2 that the witch flounder fishery in Div. 3NØ is essentially a by-catch fishery when comparing the amount of main species catch versus the total catch.

The catch rate peaked at 0.716 t/hr in 1972 then declined rapidly to 0.252 t/hr in 1975 during the period when landings were highest. Catch rates were fairly stable from 1975-79 but started to increase again with the 1982 catch rate of 0.667 t/hr, the highest since 1972. The catch rate of between 0.3 to 0.4 t/hr for the last two years is near the overall average for the last 10-12 years. These catch rates, however, should be considered with a degree of caution since many have been derived based upon very low levels of directed catch, particularly 1979-81 and 1984. In general, the catch rates during the last four years have been reasonably good and indicate that at current catch levels, the stock is relatively stable.

Commercial catch at age

The first assessment of this stock in 1975 (Bowering and Pitt MS 1975) indicated that the 1974 commercial catch had an age range up to 19 years with more than half the catch coming from ages 14-19 years. An examination of recent catch at age data (1982-84) shows that ages beyond 16 years no longer exist in the catch and that ages beyond 13 years account for only about 2% of the catch numbers in recent years (Fig. 3). An assessment presented to NAFO in 1983 (Bowering MS 1983) showed that while there has been a reduction in the number of age

groups in the population, there has also been an accompanying increase in growth rate. This would also explain a shift to the predominance of younger fish in the recent catches. Over the last three years, however, the age composition appears reasonably stable with the same age range and relatively similar age compositions of the commercial catch.

Although an analytical assessment of this stock is not possible with the data available, all the information indicates probable stability at current levels of fishing effort and catches of 3,000-4,000 t annually. However, the data are not precise enough to indicate any change in the present TAC of 5,000 t.

REFERENCES

Bowering, W. R. MS 1983. Some biological considerations of witch flounder on the southern Grand Bank (NAFO Divisions 3NØ). NAFO SCR Doc. 83/56, Ser. No. N714, 7 p.

Bowering, W. R., and T. K. Pitt. MS 1975. Yield per recruit assessment of witch (Glyptocephalus cynoglossus) for ICNAF Divisions 3N and 3Ø. ICNAF Res. Doc. 75/23, Ser. No. 3478, 5 p.

Table 1. Landings of witch flounder in Divisions 3N and 3Ø by Canada and USSR from 1974-1984.

Year	Country	3N	3O
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[a]	1148[a]
	USSR	1853[a]	89[a]
	Total	2379[a]	1237[a]
1984	Canada	104[a]	707[a]
	USSR	1934[a]	-
	Total	2038[a]	707[a]

[a]Provisional.

Table 2. Catch effort statistics for witch flounder in Divisions 3NØ, 1972-1984 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[a]	23
1984	0.327	160	2758[a]	6

[a]Provisional.

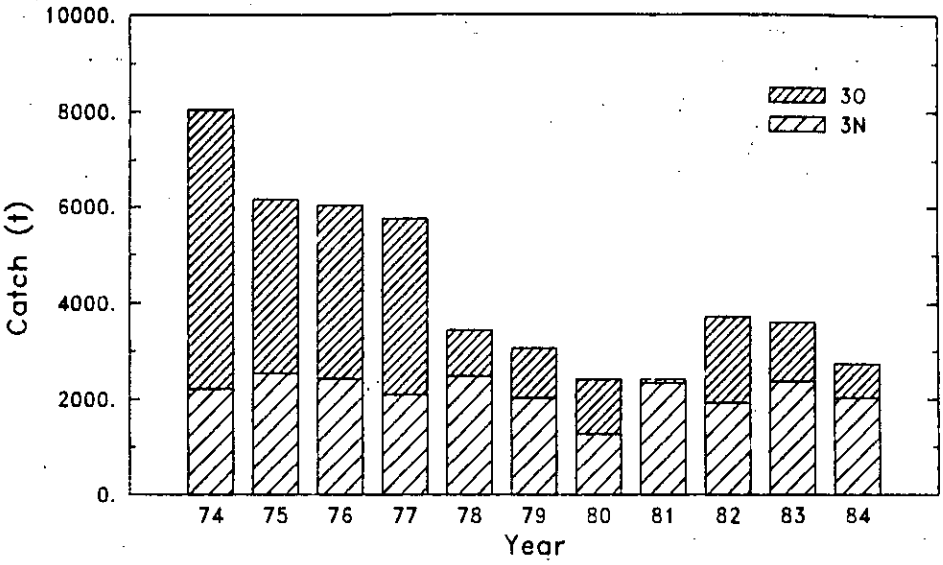

Fig.1: Nominal catches of witch in Div. 3NO, 1974–1984 (1983 and 1984 provisional).

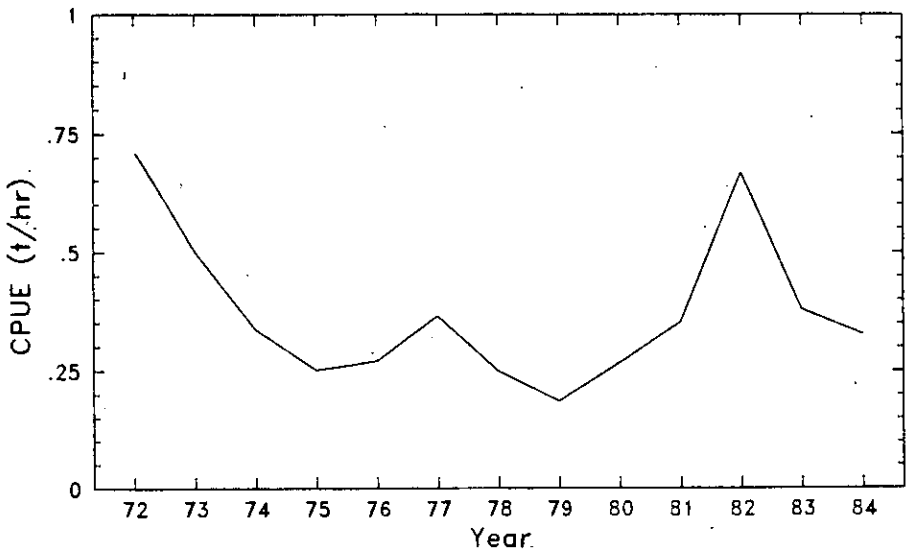

Fig.2: CPUE for witch in Div. 3NO, 1972–1984 for Canadian (Nfld) based otter trawlers (TC5).

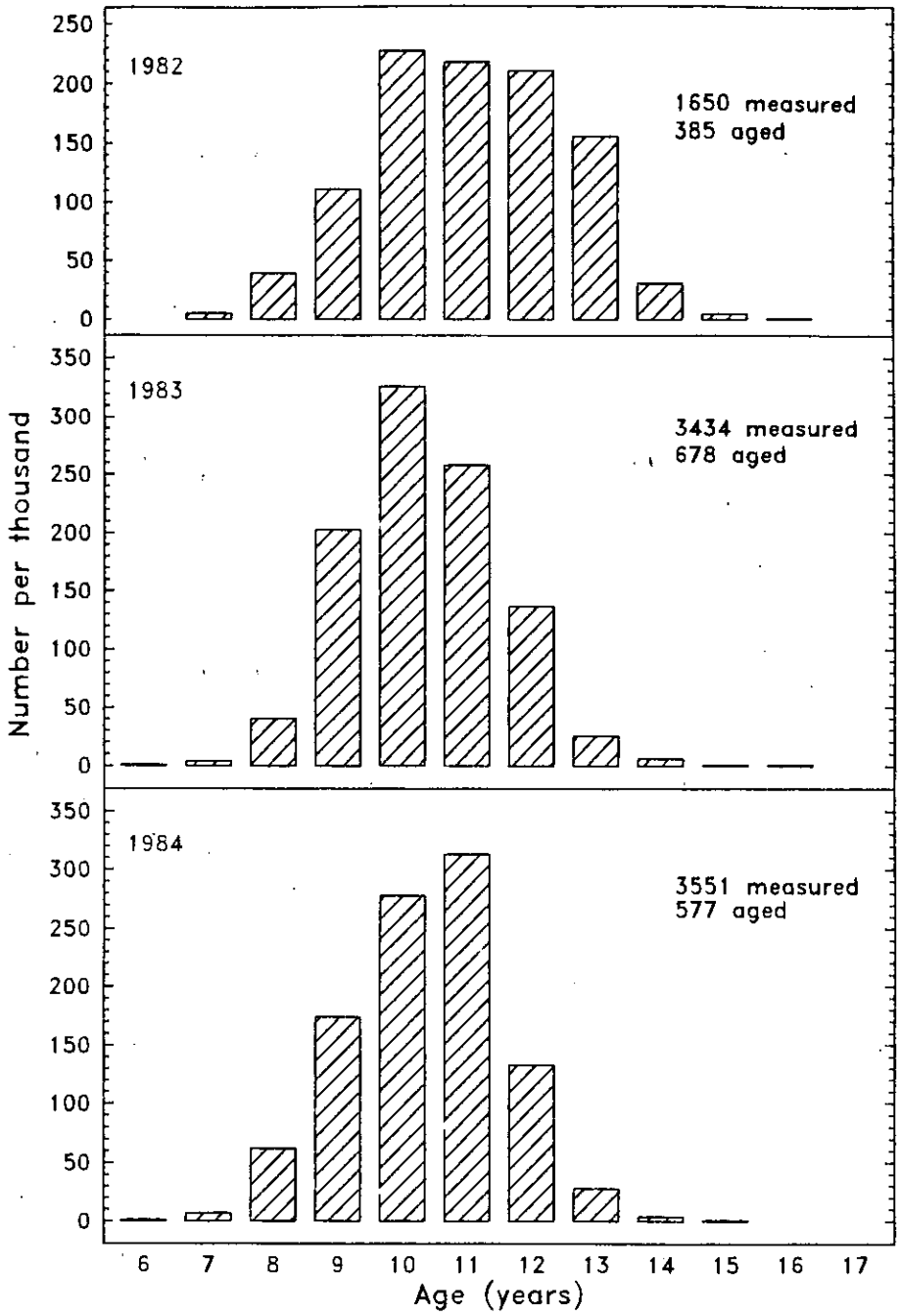

Fig.3: Number of witch caught at age per thousand in the Canadian (Nfld) commercial fishery in Div. 3NO, 1982–1984.