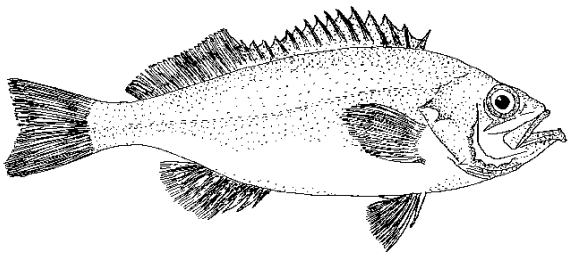

SA2 + Div. 3K Redfish

Background

Redfish, also known as ocean perch, are commercially fished in both the Atlantic and Pacific Oceans. They occur on both sides of the Atlantic Ocean in cool waters (3° to 8° C) along the slopes of banks and deep channels in depths of 100-700 m, and in the Irminger Sea between Iceland and Greenland in depths between 200-950 m over ocean depths greater than 3000 m. In the west Atlantic, redfish range from Baffin Island to waters off New Jersey.

Three species of redfish are present in the Northwest Atlantic (Sebastes mentella, S. fasciatus and S. marinus). These are nearly impossible to distinguish by their appearance, are not separated in the fishery and are managed together. S. marinus is relatively uncommon. Along the continental shelf and slope, S. mentella range predominantly from the Gulf of St. Lawrence northward whereas S. fasciatus range predominantly from the southern Grand Banks to the Gulf of Maine. S. mentella is generally distributed deeper than S. fasciatus.

The fishery was first under TAC regulation in 1974 with a 30,000 t quota. The TAC was increased to 35,000 t in 1980 and remained at that level until it was lowered to 20,000 t in 1991. The TAC decreased to 1,000 t in 1994 and was at 200 t in 1995 and 1996. Since 1997 a moratorium has been imposed on directed fishing. During 1999 a shift was implemented from a calendar year based TAC to a fiscal year based TAC. The moratorium is currently in effect from April 1, 2001 to March 31, 2002.

Prior to the implementation of the 200-mile economic zone in 1977, non-Canadian fleets took most of the catch (average 30,000 t from 1961-1977). Canada entered the fishery in 1975 and averaged about 16,500 t from 1978-1986. The steady reduction in catches from 1986-1990 was due to a major redirection of Canadian effort to other redfish fisheries and the reduction and subsequent elimination of effort by foreign fleets with bilateral fishing agreements with Canada.

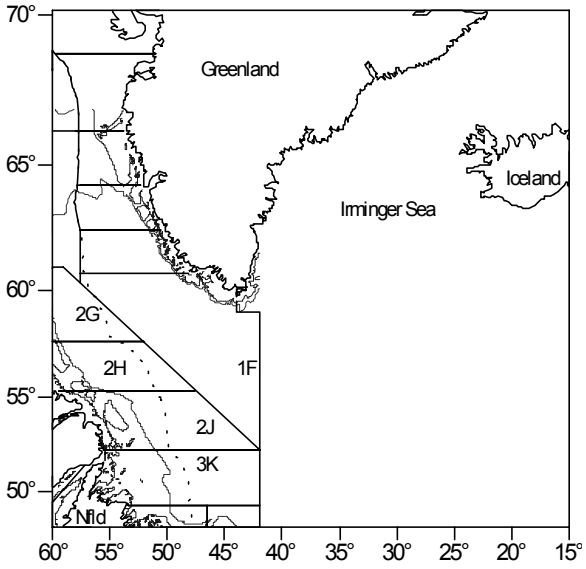

Figure 1: Map showing SA2+Div. 3K management area for redfish.

Summary

- DFO surveys continue to indicate the resource is at a very low level with poor recruitment for the past 25 years.
- Stock structure is poorly understood, particularly the relationship between redfish in SA2+Div. 3K and those in Davis Strait and the Irminger Sea pelagic stock.

The Fishery

The highest catch taken from this management unit was 187,000 t in 1959. Between 1961 and 1979 reported catches averaged about 30,000 t, ranging between 17,500 t and 56,000 t. (Figure 2).

From 1980-83 catches averaged 16,000 t, increased to about 27,000 t from 1984-1986 in response to improved markets and declined thereafter. There has not been a persistent directed effort on this stock since 1990 when 2,400 t were landed. Landings declined to 280 t in 1991, and were less than 19 t in each year from 1992-2000.

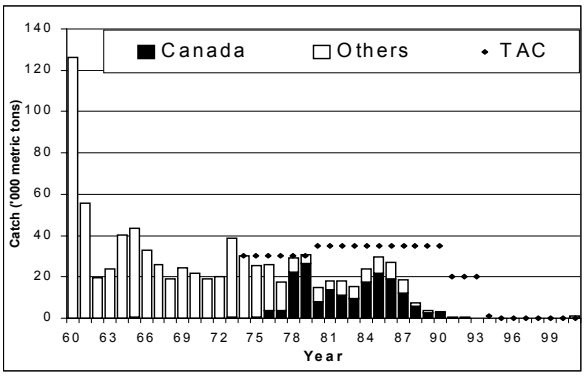

Figure 2: Reported catches and TACs (in tons) in SA2+Div. 3K.

Preliminary catch data for the 2001-2002 fishing year indicates 1,300 t have been taken in Div 2J in August by Russia and Lithuania. This catch was taken outside the Canadian 200-mile limit utilizing large midwater trawls and is likely from the pelagic stock of redfish that resides primarily in the Irminger Sea. In recent years mid-summer trawl-acoustic surveys of the Irminger Sea population have measured a portion of the summer concentration within the 2J3K boundary.

Estimates of redfish bycatch discarded from shrimp fisheries in the Div. 2G to Div. 2K area since 1980 have ranged from 14 t in 1983 to 665 t in 1990. In 2000 an estimated 95 t of redfish were taken in the shrimp fisheries within SA2+Div. 3K. An estimated 51 t of redfish have been taken to the end of October 2001.

In the 1980s, most of the landings were taken from Div. 3K. This was primarily due to the prevalence of external parasites in Div. 2J that render fillets unmarketable. Throughout the existence of this fishery, the predominant fishing gear has been the bottom otter trawl.

Landings (thousand tonnes)

Year	61-76 Avg.[1]	77-96 Avg.	1997	1998	1999-2000[2]	2000-2001[3]	2001-2002[3]
TAC	30	28	0	0	0	0	0
Can.	0.4	8.7	0	0	0	0	0
Others	29	4	0	0	0	0	1.3[4]
Total	29	12.7	0	0	0	0	1.3

[1] TAC average 1974-1976
[2] Catch and TAC for Jan 1999-March 2000.
[3] April 1-March31.
[4] Likely Irminger Sea stock (see text)

There has been limited commercial data available since 1990 when this fishery became mainly a by-catch fishery. In the mid-1980s prior to the decline in catches the bulk of the fishery consisted of fish in the 28-40 cm range which correspond to ages from 10-20 years.

Length distribution of the redfish bycatch discarded in shrimp fisheries in 2000 indicated that the size range was between 5cm to 27 cm (Figure 3). The bulk of the bycatch came from the 12cm-18cm group (4 to 6 year old fish). Average exploitation within this size range in 2000, based on a comparison to the 1999 autumn DFO Survey population numbers, is estimated to be less than 1% in 2000.

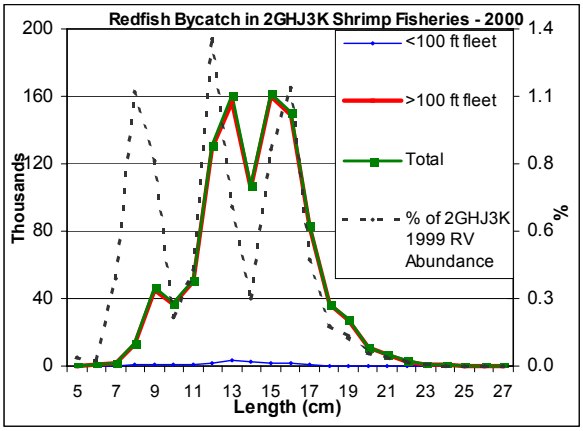

Figure 3: Estimates of redfish bycatch (numbers) from Div. 2GHJ3K shrimp fisheries in 2000 and relative exploitation (%) based on DFO survey population numbers.

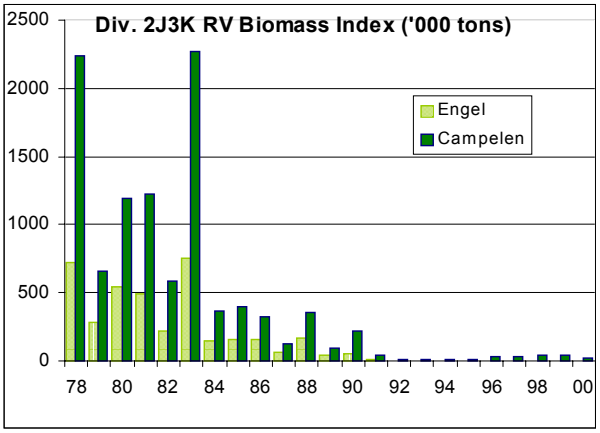

Figure 4: DFO Research survey biomass index for Div. 2J3K.

Resource Status

Indices of Stock Size

Stratified random groundfish surveys were conducted in the autumn in Div. 2J and Div. 3K from 1977-1995, with coverage to depths down to 1000 m and from 1996-2000 with coverage to 1500 m. Surveys in Div 2G and Div. 2H have been conducted sporadically with varying spatial coverage and timing between 1978 and 1991. More recently Div. 2GH surveys were conducted from 1996-1999 to 1500 m. Beginning in the autumn of 1995, the survey gear was changed from the Engel trawl to a Campelen shrimp trawl. Comparative fishing showed this new gear has a similar catchability for large redfish (> 35cm), but a much greater catchability for very small redfish (<20cm). For this year's assessment of the resource, conversion factors were applied to the Engel trawl for a more appropriate comparison to the Campelen data. The result was that although trends remained very similar there was an increase in the biomass index in years where the Engel was used (Figure 4).

The results from Div. 2J and Div. 3K suggest the resource was at an historically low level in 1994. Survey biomass estimates for Div. 2J3K from 1995-2000 (average 32,000 t), are less than 5% of the average from 1978 to 1990 (775,000 t) based on the converted Engel data. The information from Div. 2GH surveys prior to 1992 suggests that density and survey biomass of redfish in these areas was relatively low when compared to surveys in Div. 2J3K conducted in equivalent years. The more recent Campelen surveys from 1996-1999 suggest that survey biomass in Div. 2GH is slightly lower (average 23,000 t) than in Div 2J3K.

Length compositions from the surveys, (Figure 5) indicated most of the abundance in 2000 is composed of fish less than 25 cm (10 inches). Included in this are two pulses of recruitment at 6cm (2.5 inches) and 10cm (4 inches) that correspond to the 1999 and 1997 year-classes respectively. However, abundance in the survey is very low for all size groups compared to the late 1970s surveys.

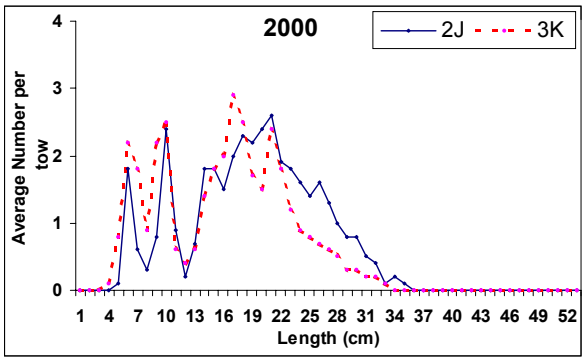

Figure 5: DFO Research survey abundance at length index.

Industry Perspectives

A number of reasons have been cited for the substantial reduction in landings since 1986 according to Canadian companies which had a directed fishery on this stock. There was the continuous complaint of parasite infestation (Sphyrion lumpi, an external copepod which attaches itself to the flesh), particularly in Div. 2J. There was also a bacterial infection of the skin that rendered them undesirable for the prime market. Fish concentrations had also diminished on traditional fishing grounds according to veteran trawler captains of this fishery. Finally the major Canadian stakeholder, National Sea Products, had diverted effort to other fisheries because the Div. 2J3K fishery was not considered viable.

Sources of Uncertainty

Catches in 2001 by Russia and Lithuania fishing outside the 200 mile limit are likely from the Irminger Sea pelagic stock. It has been hypothesised that this stock has shifted it's summer distribution and that a portion extends into the NAFO Div. 1F and to some degree into Div. 2J. The relationship between redfish that reside in SA2+3K on the continental slope and areas shoreward with the pelagic stock is unknown.

Redfish in SA2+Div. 3K are composed of a mixture of *Sebastes mentella* and *S. fasciatus*. These species are very similar in appearance and are not separated in the commercial catch nor the research survey catch because it is time consuming and require special skills.

Because of these uncertainties it is very difficult to provide detailed scientific advice on the current status of the stock.

Outlook

This **stock remains at a very low level**. Recruitment has been very poor since the year classes of the early 1970's. Most of the abundance in the 2000 survey is composed of fish less than 25cm (10 inches).

There are no indications that the status of the stock will change in a positive way in the foreseeable future.

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