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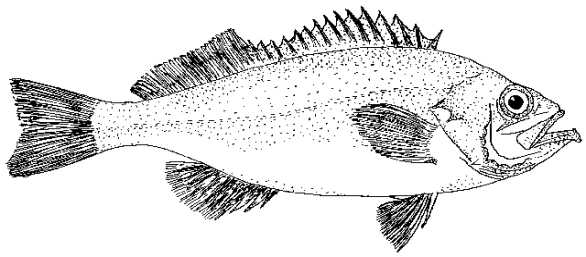
Newfoundland and Labrador Region **Stock Status Report 2004/016**



UNIT 2 Redfish

Stock Status Update

Background

The Unit 2 management unit for redfish was implemented in 1993. The resources in this area (NAFO 3Ps4Vs, 3Pn4Vn-June to Dec. $4W_{fgj}$) were previously managed separately as a 3P stock and part of a 4VWX stock. Although three species exist within the management unit, it is believed that the fishery has predominantly harvested the deep water species, Sebastes mentella.

The first quota for Unit 2 in 1993 was 28,000 t. TACs were reduced successively to 10,000 t for 1996 as a conservation measure and maintained about that level to 1999. There was an adjustment to 18,240 t in 1999 with an extension to March 31, 2000 to allow for the transition to an April 1 to March 31 based TAC. The 2000-2001 TAC was set at 10,000 t and lowered to 8,000 t in 2001-2002 which has remained in effect to 2003-2004. Reductions since 1999 were based on concerns for the lack of recruitment since the strong 1980 year class of S. mentella. Since 2001-2002 there has been an increase in the proportion of the shallow water species S. fasciatus in the fishery.

In 1995 area/season closures were implemented to (i) minimise possible mixed harvests with Unit 1 redfish given a lack of understanding of redfish migration patterns and (ii) allow for a period of closure when peak spawning of females is likely to occur. A small fish protocol, currently at 22 cm (10 inches), has been in effect since 1996.

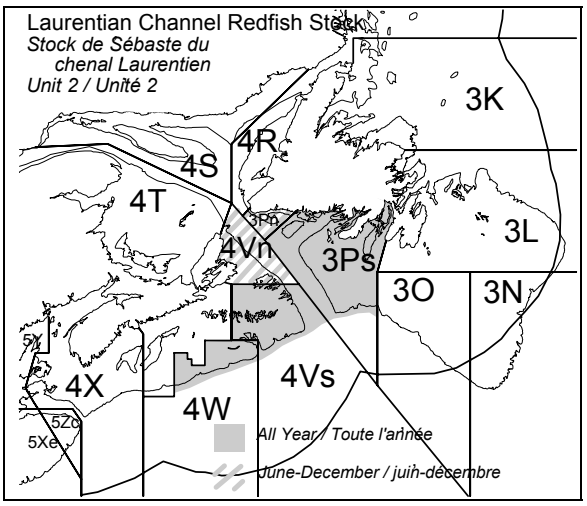


Figure 1: Map showing Unit 2 management area for redfish.

Summary

- The most recent zonal assessment of the status of UNIT 2 Redfish was conducted in November, 2001. The present update provides information on the 2003 commercial catch and the results of the 2002 DFO and 2003 industry bottom-trawl surveys.

- The DFO survey index indicates stability to 2002. The industry survey index indicated a decline between 2001 and 2003 to the lowest in the time series. It is difficult to determine whether this decline is representative of stock abundance.

- There is recruitment to the stock from the 1994 and 1998 year-classes but their absolute size is unknown.

- Questions remain concerning stock structure and mixing in Unit 1 and Unit 2.

The Fishery

From 1960 to 1968, **landings** averaged about 20,000 t, but then increased to an average of 43,000 t up to 1975, mainly due to increased catches by non-Canadian fleets, then declined to about 8000 t in 1984 (Figure 2). Since then, catches steadily increased to about 27,000 t by 1993 then subsequently declined to about 11,000 t by 1998. Catches were at 11,000 t in calendar year 1999 before an additional 6000 t was allocated and eventually caught to allow for the transition to the April-March TAC year beginning in 2000. The catch declined from 10,000 t in 2000 to 8000 t in 2001 and has remained at about that level since. Up to mid-March 2004, about 6600 t had been taken from the 8000 t TAC for 2003-2004.

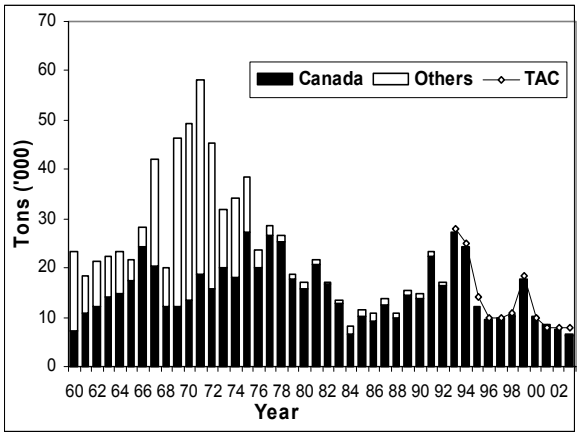


Figure 2: Reported catches and TACs (in tons).

Landings (thousand tonnes)

Year	70-76 Avg.	77-98 Avg.	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
TAC	-	16[2]	18.2	10	8	8	8
Can.	21	16	17.5	10	8.4	7.5	6.3
Others	20	1	0.4	0.3	0.3	0.1	0.2
Total	41	17	17.9	10.3	8.7	7.7	6.5

[1]Provisional to Mar. 19, 2004
[2]1993-1998.

Since declaration of the 200-mile limit in 1977, catches have been taken mainly by Canadian fleets. Maritimes vessels have generally accounted for the majority of landings from Subdivisions 4Vs and 4Vn whereas Newfoundland vessels concentrated in Subdivisions 3Ps and 3Pn. Since 1996, about 50% of the total catch has been taken in the first quarter of the year, primarily from 3Psd, 3Psg and 4Vsc.

Sampling of the 2003 fishery indicated fish born after 1980 (those less than 35 cm) represented about 74% of the catch numbers and 60% of the catch weight and were dominated by the 1988 year class. The 1994 year class was also represented in the catch (less than 25 cm). The remainder of the catch was comprised of the 1980 year class.

Size compositions varied between 3P and 4V (Figure 3). In Div. 4V, which accounted for 40% of total catch, fish less than 35 cm comprised about 84% of the catch numbers while in Div. 3P this group represented 64% of the catch numbers.

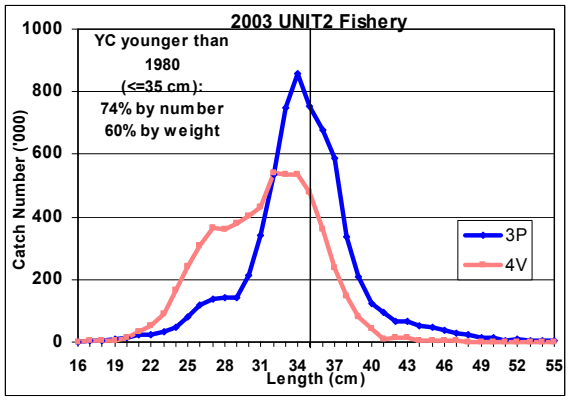


Figure 3: Catch numbers at length from the 2003 UNIT2 fishery.

Resource Status

The most recent peer review of this stock was conducted during November 2001. Readers are referred to the status report from that assessment (DFO 2001) for a more detailed discussion of the data sources and the interpretation of various population indices.

In summary, research vessel surveys conducted by DFO suggested stability over the time period from 1994-1997 and 2000. Industry surveys conducted by The Groundfish Enterprise Allocation Council

(GEAC) supported this from 1997-1998 but indicated some decline to 2001. Since the last review, there was a DFO survey conducted in 2002 and a GEAC survey conducted in 2003 (Figure 4).

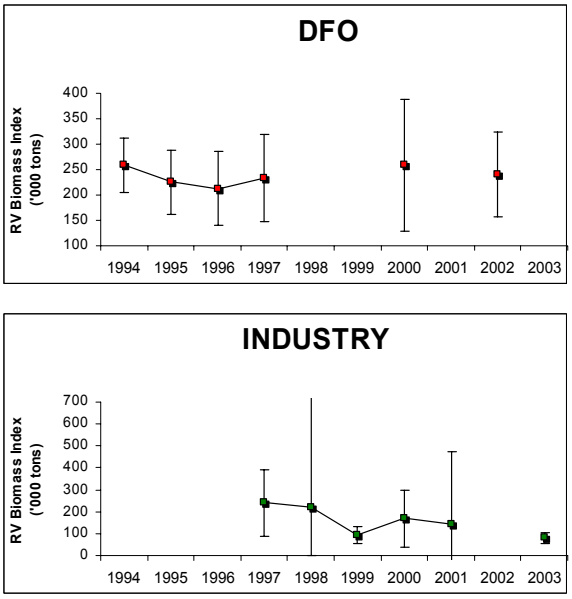


Figure 4: UNIT2 redfish survey indices.

The DFO surveys continue to indicate stability over the time series to 2002. The 2003 GEAC survey index is the lowest and least variable in the time series.

Both surveys consistently indicate the presence of both the 1980 and 1988 year-classes. Both also indicate more recent recruitment to the stock from the 1994 and 1998 year-classes. In the 2002 DFO survey, these year classes represented 42% of the survey abundance index. In the 2003 GEAC survey, these year-classes represented about 21% of the survey abundance index.

Sources of uncertainty

It is believed that recent catches, in the range of 8000 t, have generated relatively low exploitation on this resource. However, it is not possible to determine this with confidence.

Results of recent studies from the Strategic High Priority Funding for redfish from 1995-1998 indicated that a stock complex appears to exist in the area encompassing Unit 1 and Unit 2 (Gascon 2003). These require careful consideration and clarification with respect to stock management.

The ability to monitor the dynamics of this stock is becoming more difficult. The DFO surveys and the GEAC industry surveys have been conducted in alternating years since 2001 without any clear trend between the two.

Although the absolute size of the 1988 year-class is uncertain, it is expected to remain an important component of the fishery. Its relative strength in all surveys suggested it is not as large as the 1980 year-class which has supported the fishery for about 13 years. Therefore, the overall yield that the 1988 year-class may produce, although uncertain, is expected to be lower than the total yield from the 1980 year-class. The causes of the apparent reduction of the strength of the 1988 year-class through the late 1990s, as estimated from two independent survey series, despite low exploitation, also are unknown.

Outlook

The 2003 fishery was dominated by exploitable year-classes born after 1980, most notably the 1988 year-class. Current information suggests the 1988 year-class is not as strong as the 1980 that has already produced about 13 years of yield.

The most recent GEAC survey indicated a decline between 2001 and 2003. It is difficult to determine whether this decline is representative of what is happening in the stock.

It is not possible to estimate fishing mortality for this resource or the sustainability of recent catches in the range of 8,000 t.

There appears to be improved recruitment to the stock from the 1994 and 1998 year-

classes but their absolute size is unknown. Although the 1994 year-class was evident in the 2003 fishery, both these year-classes will not contribute significantly to the fishery or the spawning stock for several years yet.

The prospects for both the stock and fishery in the next few years depend heavily on the degree to which the 1988 and 1994 year-class contributes to reproductive potential and yield, respectively. This requires careful monitoring over the coming years, and future management actions should be responsive to the results of that monitoring.

Management considerations

Because of the winter mixing and lack of characteristics for separation of redfish from the two Units, it would not be possible to allocate the relative impact of late fall and winter fisheries in 3Pn and Cabot Strait, to Unit 1 and Unit 2 stocks. Therefore conservation of both Units requires continuation of current closures in 3Pn and 4Vn from October to December to prevent significant exploitation of redfish during the period of mixing.

It is important to consider continuation of the current spawning closure, particularly in light of the apparent lack of recruitment of *S. mentella* which was an important component of historical fisheries.

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References

DFO, 2001. Status of Redfish Stocks in the Northwest Atlantic: Redfish in Units 1, 2, and in Division 3O. DFO Can. Sci. Advi. Sec. Stock Status Rep. A1-01(2001).

Gascon, D. (ed.) 2003. Redfish Multidisciplinary Research Zonal Program (1995-1998): Final Report. Can. Tech. Rep. Fish. Aquat. Sci. 2462: xiii + 139 p.

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